



## CHAPTER 8

# TRANSPLANTATION

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## TRANSPLANTS PERFORMED IN 2012

Figure 8.1

Number of Kidney Transplant Operations  
Total (Living Donors)

Year	Australia						New Zealand				
	1st	2nd	3rd	4th	5th	Total	1st	2nd	3rd	4th	Total
1963	5	1	0	0	0	6 (0)	0	0	0	0	0
1964	2	0	0	0	0	2 (0)	0	0	0	0	0
1965	12	1	1	0	0	14 (3)	1	0	0	0	1 (1)
1966	18	2	0	0	0	20 (5)	10	3	0	0	13 (0)
1967	69	2	0	0	0	71 (2)	18	4	1	0	23 (1)
1968	97	10	0	0	0	107 (0)	17	4	0	0	21 (2)
1969	149	12	0	0	0	161 (0)	39	5	0	0	44 (0)
1970	168	12	2	0	0	182 (1)	21	3	1	0	25 (0)
1971	207	22	1	0	0	230 (1)	26	6	0	0	32 (1)
1972	183	16	0	0	0	199 (2)	43	8	0	0	51 (1)
1973	213	30	1	0	0	244 (7)	50	10	2	0	62 (0)
1974	224	35	4	0	0	263 (6)	35	5	1	0	41 (3)
1975	271	29	3	1	0	304 (7)	61	13	0	0	74 (2)
1976	223	41	4	0	0	268 (10)	38	13	1	0	52 (1)
1977	265	57	4	0	0	326 (16)	46	10	2	0	58 (4)
1978	269	43	2	0	0	314 (17)	43	11	3	0	57 (11)
1979	293	35	5	0	0	333 (34)	61	13	3	2	79 (16)
1980	287	63	9	0	0	359 (36)	57	13	4	0	74 (18)
1981	306	58	9	1	0	374 (35)	51	8	1	0	60 (10)
1982	321	72	6	0	0	399 (53)	48	17	0	0	65 (8)
1983	272	63	10	2	0	347 (48)	69	25	4	0	98 (11)
1984	362	72	10	1	0	445 (48)	63	11	0	0	74 (16)
1985	318	79	17	1	0	415 (36)	60	25	3	0	88 (6)
1986	366	63	7	2	0	438 (32)	79	19	6	1	105 (13)
1987	310	58	21	3	0	392 (40)	57	17	4	1	79 (20)
1988	391	62	10	2	1	466 (46)	61	11	6	0	78 (8)
1989	433	46	10	2	0	491 (48)	71	11	1	0	83 (12)
1990	387	45	9	2	0	443 (59)	86	14	2	0	102 (23)
1991	386	70	11	3	0	470 (78)	62	10	4	1	77 (13)
1992	404	57	13	3	0	477 (70)	105	5	5	0	115 (17)
1993	385	63	6	4	1	459 (66)	68	13	2	0	83 (20)
1994	384	41	12	2	1	440 (103)	70	11	1	1	83 (20)
1995	371	60	11	0	0	442 (94)	84	7	3	0	94 (24)
1996	416	50	9	0	0	475 (115)	88	7	1	0	96 (26)
1997	447	51	6	1	0	505 (147)	101	10	1	0	112 (31)
1998	443	62	11	2	0	518 (161)	95	10	1	0	106 (31)
1999	403	43	9	0	0	455 (169)	97	11	4	0	112 (42)
2000	476	47	7	1	0	531 (181)	91	13	2	0	106 (31)
2001	488	45	6	2	0	541 (213)	101	9	0	0	110 (43)
2002	537	60	5	2	0	604 (230)	103	12	2	0	117 (48)
2003	472	60	10	1	0	543 (218)	94	13	4	0	111 (44)
2004	583	53	11	3	0	650 (244)	98	7	0	0	105 (48)
2005	539	67	15	2	0	623 (246)	87	5	0	1	93 (46)
2006	549	70	17	5	0	641 (273)	80	8	2	0	90 (49)
2007	527	75	11	0	2	615 (271)	112	9	2	0	123 (58)
2008	708	84	16	5	0	813 (354)	111	10	1	0	122 (69)
2009	674	88	11	0	0	773 (327)	109	12	0	0	121 (67)
2010	744	83	18	1	0	846 (296)	104	5	1	0	110 (60)
2011	744	68	10	3	0	825 (255)	110	7	1	0	118 (57)
2012	747	80	15	1	2	845 (238)	99	9	0	0	108 (54)

## AUSTRALIA

The 845 transplant operations performed in 2012 represent a slight increase over 2011. This was driven by an increase in the number of deceased donor kidney transplants, offsetting a continuing fall in living donor numbers.

The 2012 numbers represent a transplant rate of 37 per million population per year, unchanged from 2011. The progressive increase in the number of kidney transplants from non-heart beating donors appears to have stabilised (Figure 8.4).

For more up to date figures on the deceased organ donor rate, see [www.anzdata.org.au/anzod/updates/anzodupdate.htm](http://www.anzdata.org.au/anzod/updates/anzodupdate.htm)

Living donor transplants accounted for 28% (238 grafts) in 2012, down from 31% in 2011 and 35% in 2010.

Primary recipients (those receiving a first transplant) received 88% of all kidneys transplanted in 2012, similar to recent years.

## NEW ZEALAND

The number of transplant operations (108) performed in 2012 represents a transplant rate of 24 per million population per year compared with 27 in 2011 (Figure 8.1).

The percentage of living donors remained steady at 50% of all operations in 2012 (Figure 8.3). There were no transplants from non-heart beating donors in 2012.

Of the grafts performed in 2012, 92% were to primary recipients.

Figure 8.2

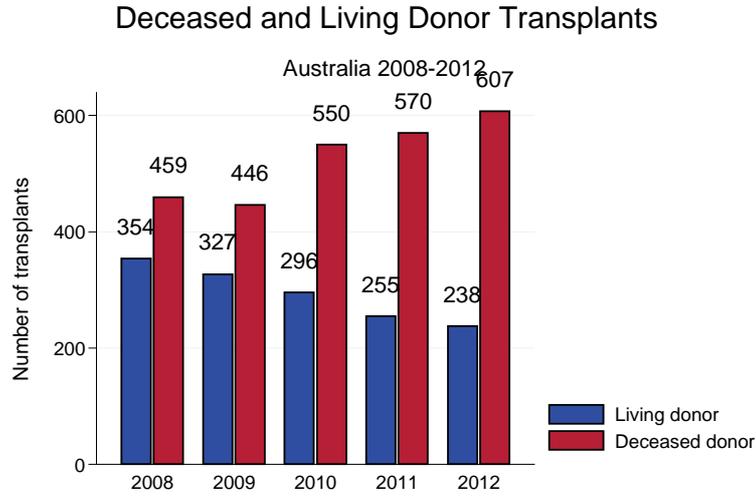


Figure 8.3

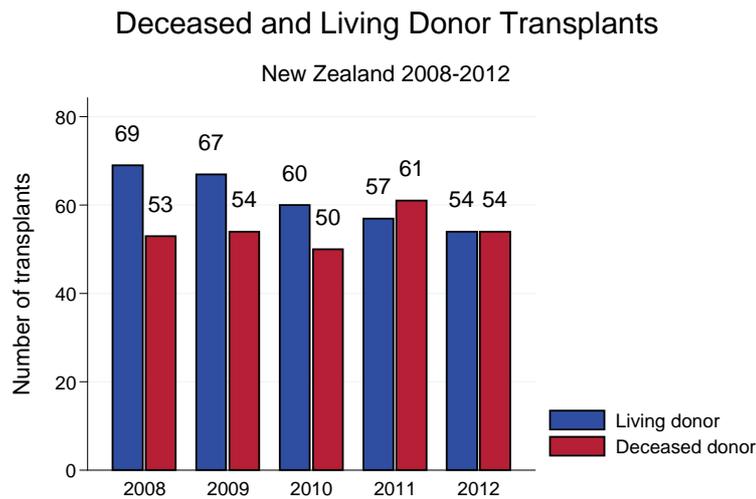
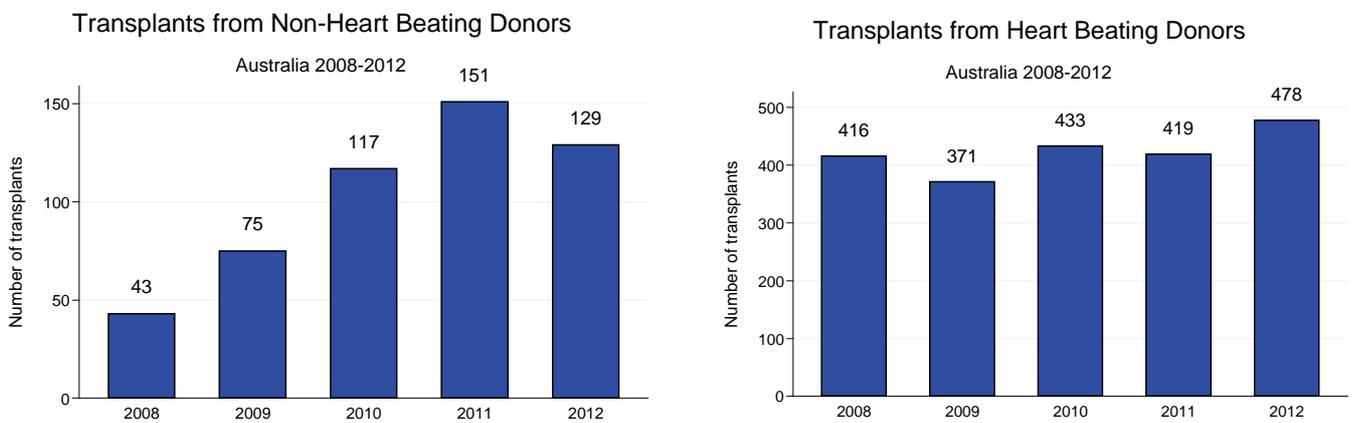


Figure 8.4





## TRANSPLANT RATE OF PATIENTS DIALYSED

In Australia transplantation was performed in 6% of patients who received dialysis in 2012.

Of all patients in the 15-64 year age group who received dialysis treatment during 2012, 10% were transplanted in 2012, the same as in 2011 (Figure 8.6).

The ratio of transplantation to numbers dialysing in Australia was the highest in the age groups 5-14 years (41%) and 0-4 and 15-24 years of age (24%) and declined with increasing age (Figure 8.7).

In New Zealand transplantation was performed for 4% of patients, the same percentage as 2011 (Figure 8.5).

As in Australia, the rate of transplantation for New Zealand patients was highest among those less than 14 years old (Figure 8.8).

Figure 8.5

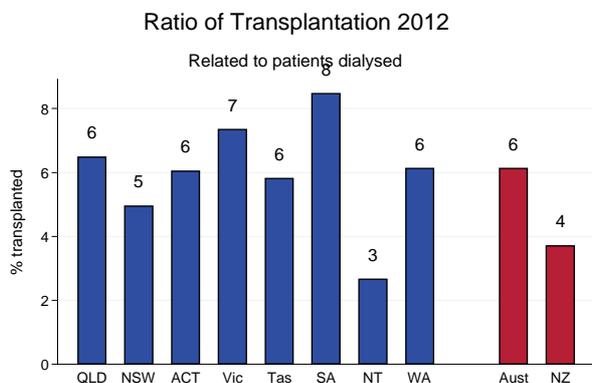


Figure 8.6

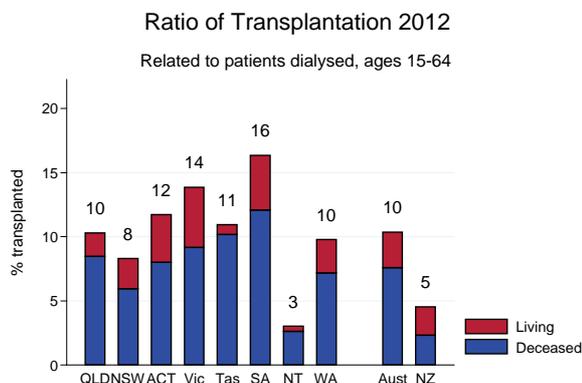


Figure 8.7

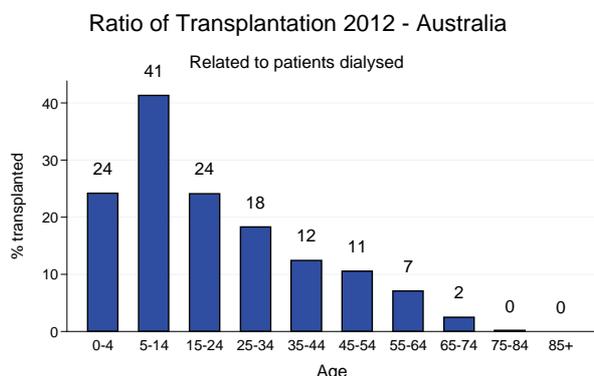
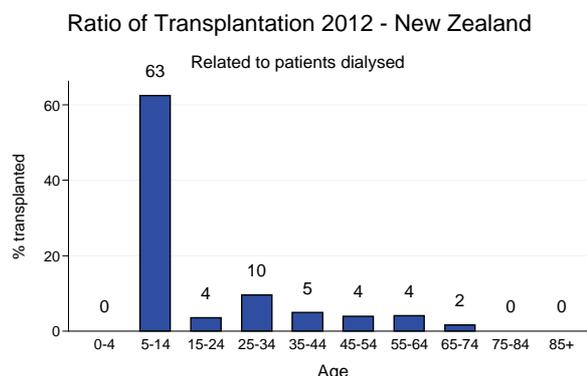


Figure 8.8



\* Pre-emptive transplant patients included

### AGE OF RECIPIENTS TRANSPLANTED IN 2012

Figure 8.9

Graft Number and Age of Patients Transplanted 2012

Donor Source	Graft No.	Age Groups									Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	
<b>Australia</b>											
Deceased	1	2	6	16	66	85	143	155	58	2	533
	2	0	0	4	4	12	25	14	2	0	61
	3	0	0	2	0	3	5	1	0	0	11
	4	0	0	0	0	1	1	0	0	0	2
Living Donor	1	5	13	29	23	41	40	43	18	2	214
	2	0	0	2	6	6	2	1	2	0	19
	3	0	0	0	0	1	3	0	0	0	4
	4	0	0	0	0	0	1	0	0	0	1
<b>Total</b>		<b>7</b>	<b>19</b>	<b>53</b>	<b>99</b>	<b>149</b>	<b>220</b>	<b>214</b>	<b>80</b>	<b>4</b>	<b>845</b>
<b>New Zealand</b>											
Deceased	1	0	0	3	0	10	5	9	16	7	50
	2	0	0	0	0	0	0	3	1	0	4
Living Donor	1	0	0	7	2	3	8	8	17	4	49
	2	0	0	0	1	1	1	2	0	0	5
<b>Total</b>		<b>0</b>	<b>0</b>	<b>10</b>	<b>3</b>	<b>14</b>	<b>14</b>	<b>22</b>	<b>34</b>	<b>11</b>	<b>108</b>

**AUSTRALIA**

The median age of transplant recipients in 2012 was 49 years. The age range was 1 to 80 years (Figures 8.9 and 8.10).

The transplantation rate per million for each age group and as a percentage of dialysed patients for each age group are shown in Figures 8.7 and 8.10.

**NEW ZEALAND**

The median age of transplant recipients in 2012 was 50.5 years. The age range was 8 to 73 years (Figures 8.8 and 8.11).

Recipients aged between 35 and 54 years comprised 26% of the total. Sixty-two percent of recipients were over 54 years of age in 2012.

Figure 8.10

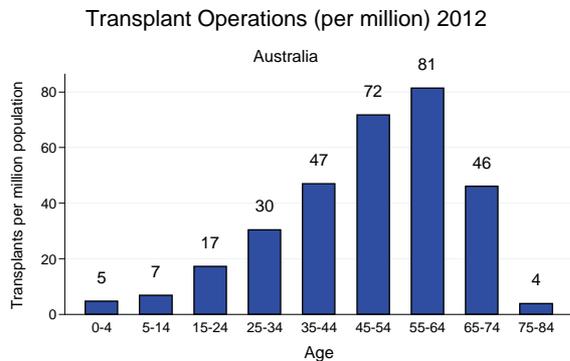
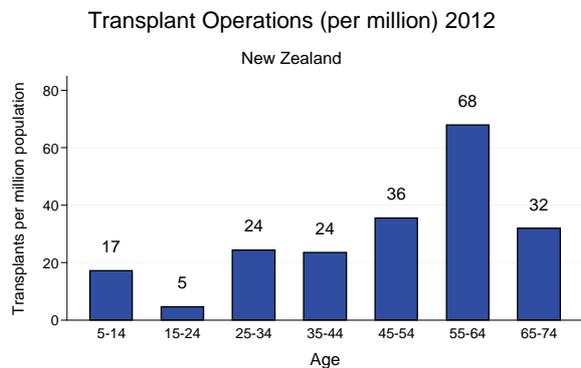


Figure 8.11





ETHNICITY OF TRANSPLANT RECIPIENTS

AUSTRALIA

Figure 8.12.

For the 15-64 year age group in 2012, 13.0% of dialysed Caucasian patients were transplanted. For Australian Aboriginals and Torres Strait Islanders (ATSI), the numbers receiving transplants remains low.

In contrast, the number of ATSI patients dialysed continues to increase each year.

Figure 8.12										Australia	
Transplantation Rate - Age Group 15-64 years 2003 - 2012											
Year	Caucasian			Aboriginal and Torres St. Islanders			All Patients				
	Tx	Dialysed	Rate	Tx	Dialysed	Rate	Tx	Dialysed	Rate		
2003	414	3790	10.9%	12	783	1.5%	478	5251	9.1%		
2004	491	3875	12.7%	25	856	2.9%	581	5438	10.7%		
2005	460	4040	11.4%	20	930	2.2%	548	5716	9.6%		
2006	481	4241	11.3%	27	989	2.7%	579	6039	9.6%		
2007	471	4380	10.8%	17	1065	1.6%	557	6331	8.8%		
2008	602	4488	13.4%	29	1176	2.5%	724	6632	10.9%		
2009	574	4497	12.8%	23	1199	1.9%	687	6719	10.2%		
2010	607	4438	13.7%	27	1215	2.2%	734	6727	10.9%		
2011	550	4474	12.3%	25	1274	2.0%	695	6879	10.1%		
2012	585	4512	13.0%	19	1337	1.4%	734	7082	10.4%		

NEW ZEALAND

Figure 8.13.

Amongst the 15-64 year age group, the proportion of Maori and Pacific People who received a renal transplant in 2011 was substantially lower than other groups.

Figure 8.13													New Zealand	
Transplantation Rate - Age Group 15-64 years 2003 - 2012														
Year	Caucasian			Maori			Pacific People			All Patients				
	Tx	Dialysed	Rate	Tx	Dialysed	Rate	Tx	Dialysed	Rate	Tx	Dialysed	Rate		
2003	64	545	11.7%	16	531	3.0%	13	271	4.8%	101	1442	7.0%		
2004	65	542	12.0%	10	558	1.8%	12	285	4.2%	96	1483	6.5%		
2005	73	568	12.9%	3	563	0.5%	3	303	1.0%	82	1523	5.4%		
2006	59	567	10.4%	9	606	1.5%	5	322	1.6%	80	1599	5.0%		
2007	82	576	14.2%	15	616	2.4%	6	344	1.7%	111	1648	6.7%		
2008	84	586	14.3%	12	620	1.9%	9	376	2.4%	112	1699	6.6%		
2009	77	599	12.9%	13	637	2.0%	6	405	1.5%	101	1783	5.7%		
2010	62	593	10.5%	17	662	2.6%	8	445	1.8%	95	1860	5.1%		
2011	67	606	11.1%	18	652	2.8%	7	467	1.5%	104	1887	5.5%		
2012	60	601	10.0%	12	672	1.8%	7	488	1.4%	88	1942	4.5%		

AUSTRALIA AND NEW ZEALAND

Figure 8.14 shows these data in another format.

In Australia in 2012, 2.4% of transplant recipients were of Aboriginal/TSI ethnicity.

In New Zealand, 13.9% of transplant recipients were Maoris and 6.5% were Pacific People.

Figure 8.14					
New Transplanted Patients 2008 - 2012 Related to Ethnicity					
Race	2008	2009	2010	2011	2012
<b>Australia</b>	<b>813 (100.0%)</b>	<b>773 (100.0%)</b>	<b>846 (100.0%)</b>	<b>825 (100.0%)</b>	<b>845 (100.0%)</b>
Caucasian	675 (83.0%)	651 (84.2%)	706 (83.5%)	657 (79.6%)	669 (79.2%)
Aboriginal/Torres St. Islanders	31 (3.8%)	24 (3.1%)	28 (3.3%)	28 (3.4%)	20 (2.4%)
Asian	83 (10.2%)	75 (9.7%)	83 (9.8%)	97 (11.8%)	88 (10.4%)
Other	24 (3.0%)	23 (3.0%)	29 (3.4%)	43 (5.2%)	68 (8.0%)
<b>New Zealand</b>	<b>122 (100.0%)</b>	<b>121 (100.0%)</b>	<b>110 (100.0%)</b>	<b>118 (100.0%)</b>	<b>108 (100.0%)</b>
Caucasian	93 (76.2%)	91 (75.2%)	71 (64.5%)	77 (65.3%)	74 (68.5%)
Asian	7 (5.7%)	5 (4.1%)	8 (7.3%)	11 (9.3%)	11 (10.2%)
Maori	12 (9.8%)	19 (15.7%)	20 (18.2%)	20 (16.9%)	15 (13.9%)
Pacific	10 (8.2%)	6 (5.0%)	9 (8.2%)	9 (7.6%)	7 (6.5%)
Other	-	-	2 (1.8%)	1 (0.8%)	1 (0.9%)

## AUSTRALIAN REGIONAL TRANSPLANTATION ACTIVITY

Figure 8.15

Transplants in each Region 2008 - 2012  
Number of Operations  
(per Million Population per year)

State	2007	2008	2009	2010	2011
Queensland	136 (32)	140 (32)	137 (31)	155 (35)	159 (35)
New South Wales / ACT *	243 (33)	238 (32)	265 (35)	232 (31)	247 (32)
Victoria / Tasmania *	246 (42)	233 (39)	285 (48)	278 (46)	268 (44)
South Australia / NT *	110 (60)	83 (45)	82 (44)	74 (40)	88 (47)
Western Australia	78 (36)	79 (35)	77 (34)	86 (37)	83 (34)
<b>Australia</b>	<b>813 (38)</b>	<b>773 (35)</b>	<b>846 (38)</b>	<b>825 (37)</b>	<b>845 (37)</b>

\* For calculation of population related totals, the populations of these States were summed

Figure 8.16

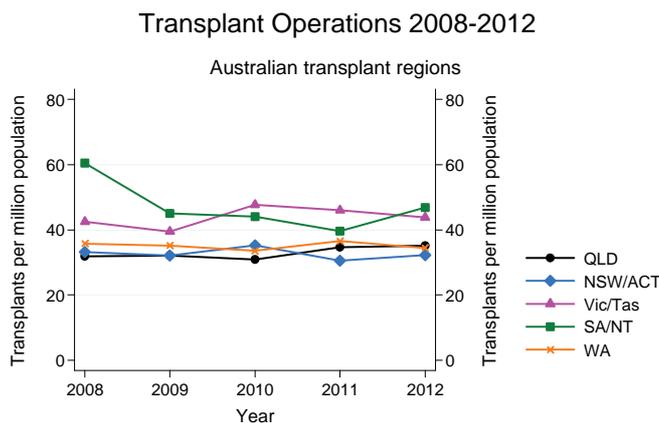
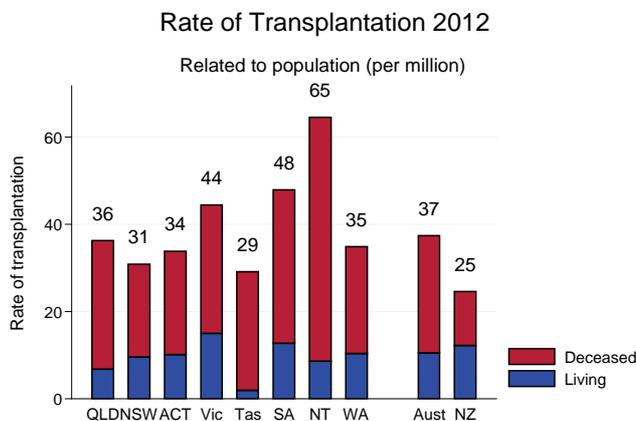


Figure 8.17



NSW population excludes residents of the Southern Area Health Service  
 ACT population includes residents of the Southern Area Health Service  
 Medical services in the ACT service the Southern Area Region

The rate of transplantation for each transplant region is shown in Figures 8.15 and 8.16.

Transplants performed for people resident in Tasmania and the Northern Territory patients are included in figures for Victoria and South Australia regions respectively. These regions share common waiting lists and allocation protocols.

The transplant rates for residents of each State and New Zealand are shown in Figure 8.17.

The highest rate (65 per million) occurred in the Northern Territory, followed by South Australia (48 per million) and Victoria (44 per million). The lowest rate (29 per million) was in Tasmania.



## FUNCTIONING TRANSPLANTS AT 31ST DECEMBER 2012

### AUSTRALIA

There have been 20,704 transplant operations performed on 17,884 patients since 1963. Fourteen percent of transplanted kidneys and 14% of functioning grafts were regrafts. Living donor transplants accounted for 24% of operations.

There were 9320 patients with functioning grafts at the end of 2012. Of these, 63% were from deceased donors. The number of functioning grafts at the end of 2012 represents a 5% increase over the previous year. The annual rate of increase has remained steady (Figures 8.20 and 8.21).

The prevalence of functioning grafts in each State is shown in Figures 8.20 and 8.21. South Australia/Northern Territory had the highest prevalence of functioning renal transplants (547 per million). The lowest prevalence was in Western Australia (372 per million) and NSW/ACT (374 per million).

The age distribution of functioning transplants as a proportion of patients on renal replacement therapy is shown in Figure 8.23. The proportion depending on living donor grafts is greater in the younger age groups (Figures 8.23 and 8.24).

The details of age are shown Figure 8.25, and details of age, gender and ethnicity are shown in figure 8.28.

The majority of recipients with functioning grafts were male (61%). The ethnic origin of recipients was Caucasian 85%, Asian 9.5%, Aboriginal and Torres Strait Islanders 2% and Others 3% (Figure 8.28).

Thirty-five percent of grafts were functioning ten or more years and 9% for 20 or more years. There were 205 recipients with grafts functioning 30 years or longer (Figure 8.29). The longest functioning graft had functioned for 44 years at 31<sup>st</sup> December, 2012.

### NEW ZEALAND

There have been 3,851 operations performed on 3,287 patients since 1965 (Figure 8.19). Fifteen percent of operations were regrafts. Kidneys from living donors accounted for 28% of operations.

There were 1,524 patients with functioning grafts at the end of 2011. Of these, 10% were regrafts.

The age relationship and donor source are shown in Figure 8.25. The majority were male (59%) and the racial distribution was Caucasian 75%, Maori 10%, Pacific People 6% and Asian 8% (Figure 8.28).

The majority (68%) of patients with functioning grafts were in the 35-64 year age group and the mean and median ages were 51 and 53 years respectively. The modal age group was 55-64 years (Figure 8.25).

The longest surviving graft had functioned for 42 years at 31<sup>st</sup> December 2012. There were 168 grafts functioning for 20 or more years and 30 for 30 or more years (Figure 8.30).

Figure 8.18

Summary of Kidney Transplantation Australia 1963 - 2012			
	Graft No.	Performed	Functioning*
<b>Deceased Donor</b>	First	13386	5132
	Second	1997	615
	Third	326	105
	Fourth	48	14
	Fifth	6	2
	<b>Total</b>	<b>15763</b>	<b>5868</b>
<b>Living Donor</b>	First	4462	3121
	Second	409	262
	Third	59	44
	Fourth	10	8
	Fifth	1	0
	<b>Total</b>	<b>4941</b>	<b>3435</b>
<b>Unknown</b>	First	<b>0</b>	<b>15</b>
	Second	<b>0</b>	<b>2</b>
<b>Total</b>		<b>20704</b>	<b>9320</b>

\* Lost to follow up not included

Figure 8.19

Summary of Kidney Transplantation New Zealand 1965 - 2012			
		Performed	Functioning*
<b>Deceased Donor</b>	First	2282	748
	Second	400	78
	Third	76	18
	Fourth	7	0
		<b>Total</b>	<b>2765</b>
<b>Living Donor</b>	First	998	626
	Second	82	48
	Third	6	4
		<b>Total</b>	<b>1086</b>
<b>Unknown</b>	First	<b>0</b>	<b>2</b>
<b>Total</b>		<b>3851</b>	<b>1524</b>

\* Lost to follow up not included

Figure 8.20

**Functioning Transplants 2003 - 2012**  
**Transplanting Region, Australia and New Zealand**  
 (Number Per Million Population)

Year	QLD	NSW/ACT *	VIC/Tas *	SA/NT *	WA	Australia	NZ
2003	1243 (326)	1976 (282)	1593 (295)	726 (419)	551 (282)	6089 (306)	1164 (289)
2004	1289 (330)	2077 (295)	1671 (306)	773 (444)	585 (295)	6395 (318)	1218 (298)
2005	1329 (333)	2148 (303)	1756 (317)	783 (445)	640 (317)	6656 (326)	1243 (301)
2006	1376 (336)	2232 (312)	1870 (333)	825 (464)	684 (332)	6987 (338)	1256 (300)
2007	1425 (341)	2286 (316)	1961 (344)	870 (484)	709 (335)	7251 (345)	1300 (307)
2008	1505 (352)	2394 (327)	2095 (362)	912 (502)	748 (343)	7654 (358)	1350 (316)
2009	1576 (361)	2497 (336)	2252 (382)	935 (508)	787 (350)	8047 (370)	1404 (325)
2010	1649 (373)	2648 (353)	2416 (404)	975 (524)	818 (356)	8506 (386)	1440 (330)
2011	1717 (384)	2740 (362)	2573 (426)	988 (528)	860 (366)	8878 (398)	1483 (337)
2012	1810 (400)	2866 (374)	2718 (444)	1029 (547)	897 (372)	9320 (413)	1524 (344)

\* For calculation of population related totals, the population of these States were combined  
 Patients lost to follow up are not included

Figure 8.21

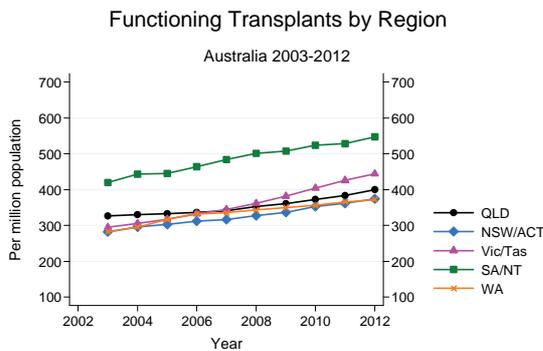


Figure 8.22

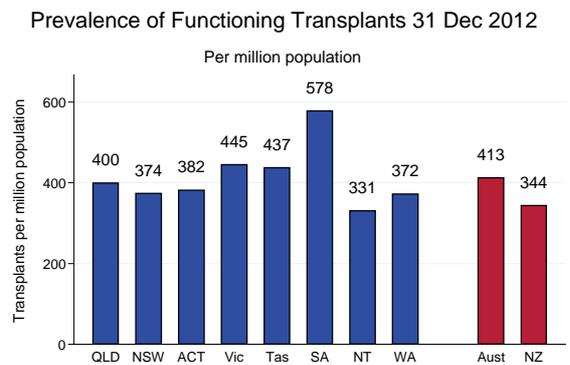


Figure 8.23

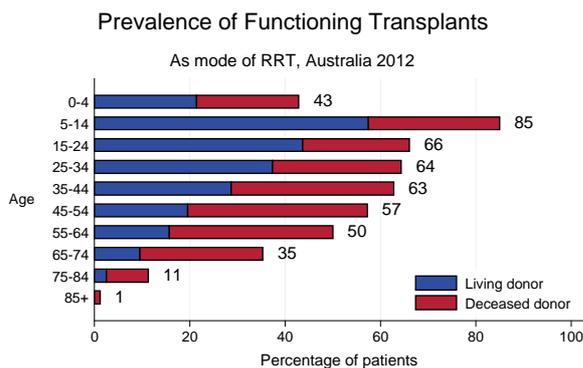


Figure 8.24

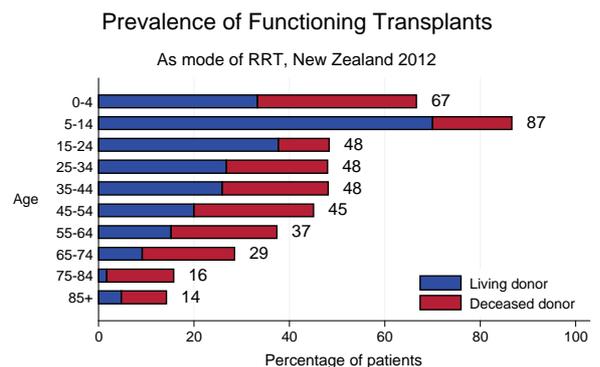




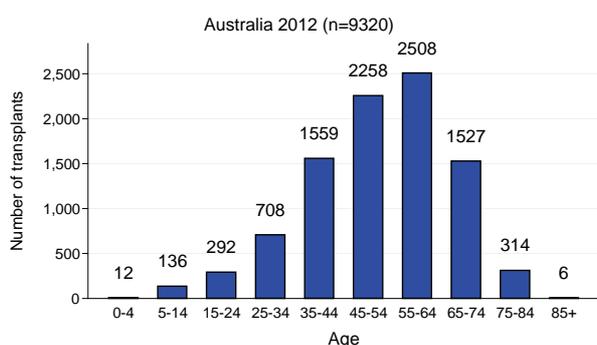
Figure 8.25

Age of All Functioning Transplant Patients  
Resident Country at Transplant 31-Dec-2012

Donor Source	Graft No.	Age Groups										Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
<b>Australia</b>		<b>12</b>	<b>136</b>	<b>292</b>	<b>708</b>	<b>1559</b>	<b>2258</b>	<b>2508</b>	<b>1527</b>	<b>314</b>	<b>6</b>	<b>9320</b>
Deceased Donor	1	6	40	89	249	715	1240	1538	1022	228	5	5132
	2	-	4	8	40	103	198	163	82	16	1	615
	3	-	-	2	8	25	41	18	11	-	-	105
	4	-	-	-	-	5	6	3	-	-	-	14
	5	-	-	-	-	-	1	1	-	-	-	2
	<b>Total</b>	<b>6</b>	<b>44</b>	<b>99</b>	<b>297</b>	<b>848</b>	<b>1486</b>	<b>1723</b>	<b>1115</b>	<b>244</b>	<b>6</b>	<b>5868</b>
Living Donor	1	6	89	180	376	627	687	720	386	65	-	3136
	2	-	3	12	32	71	64	56	21	5	-	264
	3	-	-	1	1	11	19	8	4	-	-	44
	4	-	-	-	2	2	2	1	1	-	-	8
		<b>Total</b>	<b>6</b>	<b>92</b>	<b>193</b>	<b>411</b>	<b>711</b>	<b>772</b>	<b>785</b>	<b>412</b>	<b>70</b>	<b>-</b>
<b>New Zealand</b>		<b>4</b>	<b>26</b>	<b>59</b>	<b>120</b>	<b>221</b>	<b>386</b>	<b>423</b>	<b>236</b>	<b>46</b>	<b>3</b>	<b>1524</b>
Deceased Donor	1	2	5	12	51	82	178	224	151	41	2	748
	2	-	-	1	2	14	32	22	7	-	-	78
	3	-	-	-	-	6	5	5	2	-	-	18
	<b>Total</b>	<b>2</b>	<b>5</b>	<b>13</b>	<b>53</b>	<b>102</b>	<b>215</b>	<b>251</b>	<b>160</b>	<b>41</b>	<b>2</b>	<b>844</b>
Living Donor	1	2	21	44	62	104	151	162	76	5	1	628
	2	-	-	2	5	14	17	10	-	-	-	48
	3	-	-	-	-	1	3	-	-	-	-	4
	<b>Total</b>	<b>2</b>	<b>21</b>	<b>46</b>	<b>67</b>	<b>119</b>	<b>171</b>	<b>172</b>	<b>76</b>	<b>5</b>	<b>1</b>	<b>680</b>

Figure 8.26

Age Distribution of Functioning Transplants



Age Distribution of Functioning Transplants

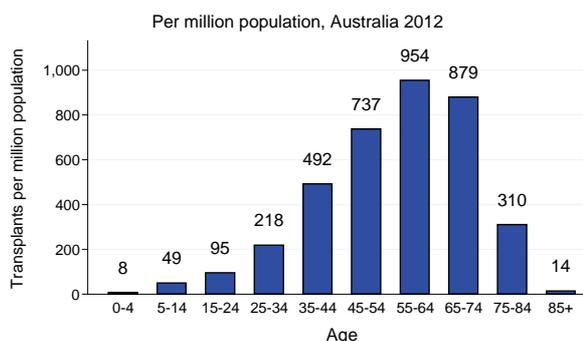
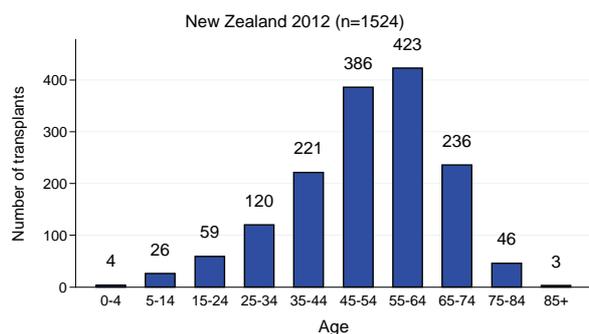


Figure 8.27

Age Distribution of Functioning Transplants



Age Distribution of Functioning Transplants

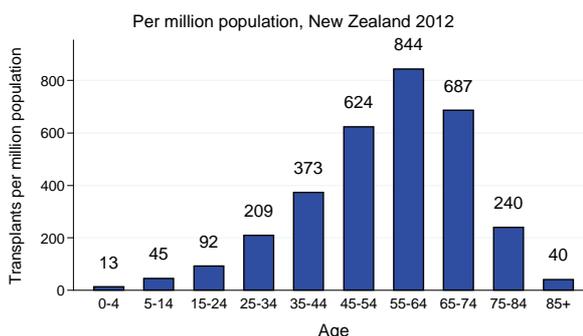


Figure 8.28

Functioning Transplant Patients - Resident Country at Transplant  
Related to Ethnicity and Age Group 31-Dec-2012

Gender	Racial Origin	Prevalent Age Groups										Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
Australia		12	136	292	708	1559	2258	2508	1527	314	6	9320
Female	Caucasian	2	34	100	235	492	690	778	524	132	2	2989
	Aboriginal/TSI	-	2	2	7	21	25	21	5	-	-	83
	Asian	1	4	8	30	78	101	133	47	7	-	409
	Other	1	8	8	23	26	29	25	9	2	-	131
<b>Total</b>		<b>4</b>	<b>48</b>	<b>118</b>	<b>295</b>	<b>617</b>	<b>845</b>	<b>957</b>	<b>585</b>	<b>141</b>	<b>2</b>	<b>3612</b>
Male	Caucasian	6	68	147	355	808	1219	1335	852	158	4	4952
	Aboriginal/TSI	-	3	5	7	21	29	34	10	1	-	110
	Asian	-	7	13	32	83	126	139	63	11	-	474
	Other	2	10	9	19	30	39	43	17	3	-	172
<b>Total</b>		<b>8</b>	<b>88</b>	<b>174</b>	<b>413</b>	<b>942</b>	<b>1413</b>	<b>1551</b>	<b>942</b>	<b>173</b>	<b>4</b>	<b>5708</b>
New Zealand		4	26	59	120	221	386	423	236	46	3	1524
Female	Caucasian	-	8	25	28	75	115	129	76	20	1	477
	Asian	-	1	4	6	3	17	14	6	1	-	52
	Maori	-	4	4	6	14	12	9	6	3	-	58
	Pacific	-	1	-	7	6	14	6	3	1	-	38
Other	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>-</b>	<b>14</b>	<b>33</b>	<b>47</b>	<b>98</b>	<b>158</b>	<b>158</b>	<b>91</b>	<b>25</b>	<b>1</b>	<b>625</b>
Male	Caucasian	4	10	22	45	102	177	193	102	16	2	673
	Asian	-	-	-	11	8	12	27	13	3	-	74
	Maori	-	1	4	11	6	26	22	19	2	-	91
	Pacific	-	1	-	5	6	11	19	9	-	-	51
Other	-	-	-	1	1	2	4	2	-	-	10	
<b>Total</b>		<b>4</b>	<b>12</b>	<b>26</b>	<b>73</b>	<b>123</b>	<b>228</b>	<b>265</b>	<b>145</b>	<b>21</b>	<b>2</b>	<b>899</b>

Figure 8.29

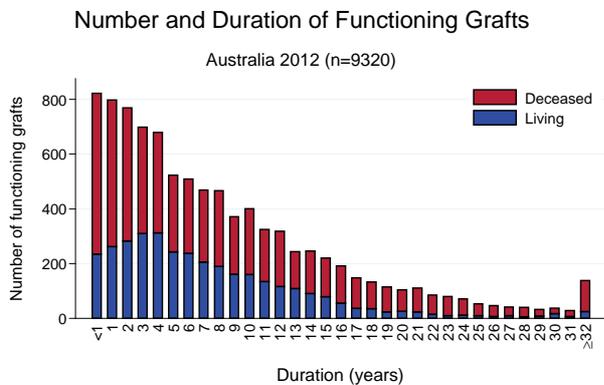
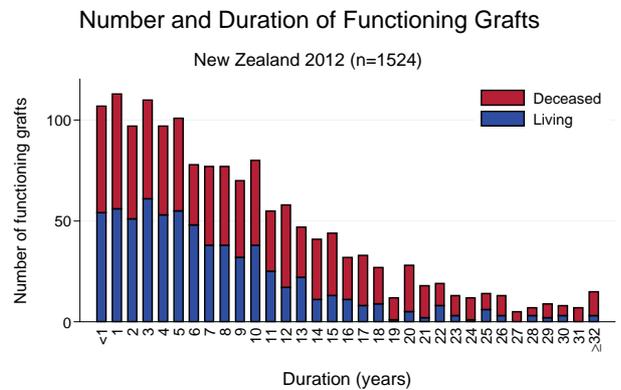


Figure 8.30





### RATES OF GRAFT LOSS

The rates of loss of graft function and death with a functioning graft in Australia in 2012 were 2.4% and 1.6% per patient year respectively; in total 4.1% of grafts at risk were lost (Figure 8.31).

In 2012, the rate of loss of graft function in New Zealand was 2.4% and death with functioning graft was 1.7%; in total 4.1% of grafts at risk were lost (Figure 8.31).

The causes of graft failure from 2003 to 2012 are shown in Figure 8.32.

Chronic allograft nephropathy and death with function remain the key impediments to long term graft survival.

The importance of death with function, chronic allograft nephropathy and other causes of graft loss after one year is evident in Figure 8.33. Among the causes of death with functioning graft, cardiovascular disease and malignancy were predominant.

Figure 8.31

Graft Loss Rate 2003 - 2012										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Australia</b>	<b>6401</b>	<b>6739</b>	<b>7018</b>	<b>7297</b>	<b>7602</b>	<b>8064</b>	<b>8427</b>	<b>8893</b>	<b>9331</b>	<b>9723</b>
Death with Function	2.2%	2.1%	2.3%	2.0%	2.1%	2.1%	1.7%	2.0%	2.3%	1.6%
Loss of Graft Function	2.6%	3.1%	2.7%	2.4%	2.5%	2.9%	2.7%	2.3%	2.3%	2.4%
All Losses	4.9%	5.2%	5.0%	4.4%	4.6%	5.0%	4.4%	4.3%	4.7%	4.1%
<b>New Zealand</b>	<b>1224</b>	<b>1269</b>	<b>1311</b>	<b>1333</b>	<b>1379</b>	<b>1422</b>	<b>1471</b>	<b>1514</b>	<b>1558</b>	<b>1591</b>
Death with Function	2.2%	2.2%	2.3%	2.6%	3.2%	1.8%	2.3%	2.2%	2.7%	1.7%
Loss of Graft Function	2.5%	1.8%	3.4%	3.5%	2.9%	2.0%	2.4%	2.1%	2.0%	2.4%
All Losses	4.7%	4.0%	5.6%	6.0%	6.1%	3.9%	4.7%	4.4%	4.7%	4.1%

Figure 8.32

Year of Graft Loss Due to Death or Failure 2003 - 2012												
Loss	Cause of Failure	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
<b>Australia</b>												
<b>Failed</b>	Death with Function	146	146	165	146	165	175	148	177	221	164	<b>1653</b>
	Rejection - Acute	3	5	3	7	11	10	17	8	10	10	<b>84</b>
	Chronic Allograft (CAN)	112	145	136	108	133	174	153	149	151	178	<b>1439</b>
	Rejection - Hyperacute	-	-	-	1	-	2	-	-	-	1	<b>4</b>
	Vascular	15	18	13	14	8	14	17	11	6	10	<b>126</b>
	Technical Problems	3	2	4	5	2	4	3	3	5	2	<b>33</b>
	Glomerulonephritis	12	13	16	23	15	10	15	15	15	16	<b>150</b>
	Non Compliance	10	9	6	3	8	6	12	6	6	9	<b>75</b>
	Other	13	20	15	19	17	16	15	18	26	25	<b>184</b>
<b>Total</b>		<b>314</b>	<b>358</b>	<b>358</b>	<b>326</b>	<b>359</b>	<b>411</b>	<b>380</b>	<b>387</b>	<b>440</b>	<b>415</b>	<b>3748</b>
<b>New Zealand</b>												
<b>Failed</b>	Death with Function	27	27	31	34	44	26	34	33	41	27	<b>324</b>
	Rejection - Acute	1	-	2	2	1	1	1	-	3	1	<b>12</b>
	Chronic Allograft (CAN)	18	14	23	31	20	20	28	17	15	26	<b>212</b>
	Rejection - Hyperacute	-	1	-	-	-	-	-	-	-	-	<b>1</b>
	Vascular	1	-	4	-	3	1	2	3	2	1	<b>17</b>
	Technical Problems	2	-	2	3	1	-	-	-	-	-	<b>8</b>
	Glomerulonephritis	4	2	3	6	5	5	-	4	4	5	<b>38</b>
	Non Compliance	3	-	1	1	6	1	1	5	3	-	<b>21</b>
	Other	4	4	8	4	5	1	2	2	4	5	<b>39</b>
<b>Total</b>		<b>60</b>	<b>48</b>	<b>74</b>	<b>81</b>	<b>85</b>	<b>55</b>	<b>68</b>	<b>64</b>	<b>72</b>	<b>65</b>	<b>672</b>

Figure 8.33

Graft Losses 2008 - 2012						
Cause of Loss	Australia			New Zealand		
	Graft Function			Graft Function		
	< 1 year	>= 1 year	Any Time	< 1 year	>= 1 year	Any Time
<b>Death with functioning Graft</b>						
Cardiac	19 (27%)	178 (22%)	197 (22%)	5 (50%)	44 (29%)	49 (30%)
Vascular	7 (10%)	69 (8%)	76 (9%)	1 (10%)	8 (5%)	9 (6%)
Infection	29 (41%)	133 (16%)	162 (18%)	-	23 (15%)	23 (14%)
Social	2 (3%)	66 (8%)	68 (8%)	1 (10%)	8 (5%)	9 (6%)
Malignancy	5 (7%)	276 (34%)	281 (32%)	2 (20%)	53 (35%)	55 (34%)
Miscellaneous	8 (11%)	93 (11%)	101 (11%)	1 (10%)	15 (10%)	16 (10%)
<b>Total</b>	<b>70 (100%)</b>	<b>815 (100%)</b>	<b>885 (100%)</b>	<b>10 (100%)</b>	<b>151 (100%)</b>	<b>161 (100%)</b>
<b>Graft Failure</b>						
Rejection - Acute	30 (21%)	25 (2%)	55 (5%)	-	6 (4%)	6 (4%)
Rejection - Chronic Allograft (CAN)	10 (7%)	795 (79%)	805 (70%)	1 (7%)	105 (71%)	106 (65%)
Rejection - Hyperacute	3 (2%)	-	3 (<1%)	-	-	-
Vascular	44 (31%)	14 (1%)	58 (5%)	5 (33%)	4 (3%)	9 (6%)
Technical Problems	12 (9%)	5 (<1%)	17 (1%)	-	-	-
Glomerulonephritis	8 (6%)	63 (6%)	71 (6%)	-	-	-
Non Compliance	1 (1%)	38 (4%)	39 (3%)	1 (7%)	9 (6%)	10 (6%)
Other	33 (23%)	67 (7%)	100 (9%)	5 (33%)	9 (6%)	14 (9%)
<b>Total</b>	<b>141 (100%)</b>	<b>1007 (100%)</b>	<b>1148 (100%)</b>	<b>15 (100%)</b>	<b>148 (100%)</b>	<b>163 (100%)</b>



IMMUNOSUPPRESSION

AUSTRALIA

Immunosuppression data for 2012 was reported poorly in both Australia and New Zealand. At the time of data lock for analysis, over half of patients transplanted in 2012 were transplanted in hospitals where the proportion of patients reported to be receiving no baseline immunosuppression was unrealistically low. For this reason we are not reporting immunosuppression data at this stage.

ANZDATA is following up with contributing units and hopes to release an online-only supplement to this year's Report once data capture is considered complete. We are also planning to revise our data collection form to improve completeness of reporting.

Figure 8.34 Australia

Immunosuppressive Therapy - Primary Deceased Donor Graft 2005 - 2012

	Year	Aza	CyA	Tacrol	MMF	MPA	Sirol	Everolimus	Pred	Number of Deceased Donor Grafts
<b>Initial treatment</b>	2005	9 (3%)	131 (41%)	172 (54%)	299 (94%)	4 (1%)	17 (5%)	-	308 (97%)	<b>319</b>
	2006	-	155 (51%)	139 (45%)	260 (85%)	24 (8%)	3 (1%)	19 (6%)	296 (97%)	<b>306</b>
	2007	2 (1%)	138 (48%)	140 (49%)	244 (85%)	36 (13%)	-	5 (2%)	285 (99%)	<b>287</b>
	2008	2 (1%)	137 (35%)	240 (61%)	364 (93%)	22 (6%)	-	-	389 (99%)	<b>391</b>
	2009	4 (1%)	62 (16%)	310 (82%)	356 (95%)	13 (3%)	-	3 (1%)	375 (100%)	<b>376</b>
	2010	-	66 (14%)	409 (86%)	426 (89%)	37 (8%)	1 (<1%)	3 (1%)	477 (100%)	<b>478</b>
	2011	1 (<1%)	54 (11%)	446 (87%)	300 (59%)	204 (40%)	-	-	505 (99%)	<b>511</b>
	2012									
<b>Treatment at 12 months</b>	2005	23 (8%)	83 (29%)	172 (59%)	229 (79%)	21 (7%)	29 (10%)	3 (1%)	262 (90%)	<b>291</b>
	2006	12 (4%)	94 (34%)	145 (52%)	216 (78%)	27 (10%)	21 (8%)	20 (7%)	259 (93%)	<b>278</b>
	2007	13 (5%)	86 (32%)	149 (56%)	189 (71%)	51 (19%)	12 (5%)	14 (5%)	252 (95%)	<b>265</b>
	2008	17 (5%)	84 (23%)	251 (70%)	288 (80%)	37 (10%)	12 (3%)	9 (2%)	345 (96%)	<b>361</b>
	2009	18 (5%)	40 (11%)	283 (80%)	282 (80%)	39 (11%)	18 (5%)	9 (3%)	341 (96%)	<b>354</b>
	2010	24 (5%)	52 (11%)	370 (81%)	323 (71%)	82 (18%)	16 (4%)	11 (2%)	440 (97%)	<b>454</b>
	2011									
<b>Treatment at 24 months</b>	2005	23 (8%)	76 (27%)	156 (55%)	220 (78%)	23 (8%)	45 (16%)	5 (2%)	238 (84%)	<b>282</b>
	2006	15 (6%)	81 (30%)	144 (53%)	207 (76%)	31 (11%)	23 (8%)	25 (9%)	248 (92%)	<b>271</b>
	2007	12 (5%)	79 (31%)	152 (59%)	181 (70%)	54 (21%)	14 (5%)	13 (5%)	243 (94%)	<b>259</b>
	2008	20 (6%)	80 (23%)	238 (68%)	275 (79%)	39 (11%)	12 (3%)	9 (3%)	324 (93%)	<b>350</b>
	2009	23 (7%)	39 (11%)	273 (79%)	254 (74%)	53 (15%)	20 (6%)	11 (3%)	328 (95%)	<b>344</b>
	2010									

- Aza = Azathioprine
- CyA = Cyclosporine
- Tacrol = Tacrolimus
- MMF = Mycophenolate Mofetil
- MPA = Mycophenolic Acid (Enteric Coated)
- Sirol = Sirolimus
- Pred = Prednisolone

## IMMUNOSUPPRESSION

## NEW ZEALAND

See note on page 8-14

Figure 8.35		New Zealand								
Immunosuppressive Therapy - Primary Deceased Donor Graft 2005 - 2012										
	Year	Aza	CyA	Tacrol	MMF	MPA	Sirol	Everolimus	Pred	Number of Deceased Donor Grafts
Initial treatment	2005	-	32 (76%)	8 (19%)	41 (98%)	-	-	-	41 (98%)	42
	2006	-	26 (68%)	11 (30%)	34 (92%)	-	-	3 (8%)	37 (100%)	37
	2007	-	43 (74%)	15 (26%)	57 (98%)	-	-	1 (2%)	58 (100%)	58
	2008	-	30 (67%)	15 (33%)	42 (93%)	3 (7%)	-	-	45 (100%)	45
	2009	-	39 (78%)	10 (20%)	49 (98%)	-	-	-	49 (98%)	50
	2010	-	32 (71%)	13 (29%)	45 (100%)	-	-	-	45 (100%)	45
	2011	-	41 (71%)	17 (29%)	58 (100%)	-	-	-	58 (100%)	58
2012										
Treatment at 12 months	2005	2 (5%)	21 (55%)	16 (42%)	33 (87%)	1 (3%)	2 (5%)	1 (3%)	35 (92%)	38
	2006	-	18 (53%)	15 (45%)	29 (88%)	-	-	3 (9%)	32 (97%)	33
	2007	3 (6%)	31 (60%)	20 (38%)	43 (83%)	-	2 (4%)	1 (2%)	48 (92%)	52
	2008	2 (5%)	21 (48%)	23 (52%)	39 (89%)	1 (2%)	-	-	41 (93%)	44
	2009	-	24 (50%)	23 (48%)	48 (100%)	-	1 (2%)	-	45 (94%)	48
	2010	2 (5%)	16 (37%)	27 (63%)	41 (95%)	-	-	-	42 (98%)	43
	2011									
Treatment at 24 months	2005	2 (6%)	18 (50%)	17 (47%)	30 (83%)	1 (3%)	2 (6%)	1 (3%)	29 (81%)	36
	2006	-	16 (50%)	16 (50%)	28 (88%)	-	-	2 (6%)	30 (94%)	32
	2007	3 (6%)	29 (58%)	20 (40%)	41 (82%)	-	2 (4%)	1 (2%)	45 (90%)	50
	2008	2 (5%)	20 (48%)	22 (52%)	37 (88%)	-	1 (2%)	-	40 (95%)	42
	2009	-	21 (46%)	24 (52%)	45 (98%)	-	1 (2%)	-	42 (91%)	46
2010										

Aza = Azathioprine  
 CyA = Cyclosporine  
 Tacrol = Tacrolimus  
 MMF = Mycophenolate Mofetil  
 MPA = Mycophenolic Acid (Enteric Coated)  
 Sirol = Sirolimus  
 Pred = Prednisolone



## USE OF ANTIBODY THERAPY FOR INDUCTION IMMUNOSUPPRESSION AUSTRALIA AND NEW ZEALAND

As with the immunosuppression data, the induction antibody data reported to ANZDATA for the 2012 survey were incomplete (see note on page 8-14). For this reason we are not reporting 2012 induction antibody use at this time. Once again, we hope to release a supplemental report online once data capture is considered complete.

Figure 8.36					
Antibody Use for Induction Immunosuppression Australia and New Zealand 2008 - 2012					
Number of Kidney Transplant Recipients Receiving Each Agent by Year (% Total New Transplants)					
	2008	2009	2010	2011	2012
<b>Australia</b>					
Muromonab-CD3	-	1 (0.1%)	-	-	
Intravenous immunoglobulin	25 (3.1%)	28 (3.6%)	39 (4.6%)	42 (5.1%)	
Anti-CD25	740 (91.0%)	715 (92.5%)	800 (94.6%)	765 (92.7%)	
Rituximab	21 (2.6%)	17 (2.2%)	9 (1.1%)	10 (1.2%)	
T cell depleting polyclonal Ab	22 (2.7%)	40 (5.2%)	52 (6.1%)	33 (4.0%)	
<b>Total new transplants</b>	<b>813</b>	<b>773</b>	<b>846</b>	<b>825</b>	<b>845</b>
<b>New Zealand</b>					
Intravenous immunoglobulin	-	-	-	-	
Anti-CD25	74 (60.7%)	63 (52.1%)	65 (59.1%)	114 (96.6%)	
Rituximab	1 (0.8%)	2 (1.7%)	1 (0.9%)	3 (2.5%)	
T cell depleting polyclonal Ab	-	-	1 (0.9%)	1 (0.8%)	
<b>Total new transplants</b>	<b>122</b>	<b>121</b>	<b>110</b>	<b>118</b>	<b>108</b>

## USE OF ANTIBODY THERAPY FOR TREATMENT OF REJECTION

### AUSTRALIA AND NEW ZEALAND

Figure 8.37 shows the number of people who received antibody agents for treating acute rejection by calendar year. The number is also reported as a proportion of new transplant recipients in each calendar year, but readers should be aware that although the large majority of people experiencing acute rejection do so within the first six months of transplantation, some experience rejection after this time (when they would not necessarily be counted as a new transplant). For this reason the total number of transplant recipients treated during the year is also reported.

Muromonab-CD3 has been withdrawn from sale and was unavailable from 2011. The use of T cell depleting polyclonal Ab and Intravenous Immunoglobulin has decreased in 2012.

Figure 8.37					
Antibody Use as Treatment for Acute Rejection Australia and New Zealand 2008 - 2012					
Number of Kidney Transplant Recipients Receiving Each Agent by Year (% Total New Transplants)					
	2008	2009	2010	2011	2012
<b>Australia</b>					
Muromonab-CD3	10 (1.2%)	12 (1.6%)	2 (0.2%)	-	-
Intravenous immunoglobulin	89 (10.9%)	105 (13.6%)	92 (10.9%)	105 (12.7%)	41 (4.9%)
Anti-CD25	1 (0.1%)	1 (0.1%)	-	-	-
Rituximab	24 (3.0%)	26 (3.4%)	15 (1.8%)	11 (1.3%)	6 (0.7%)
T cell depleting polyclonal Ab	19 (2.3%)	27 (3.5%)	41 (4.8%)	42 (5.1%)	20 (2.4%)
<b>Total new transplants</b>	<b>813</b>	<b>773</b>	<b>846</b>	<b>825</b>	<b>845</b>
<b>Total transplants at risk</b>	<b>8064</b>	<b>8427</b>	<b>8893</b>	<b>9331</b>	<b>9723</b>
<b>New Zealand</b>					
Muromonab-CD3	10 (8.2%)	8 (6.6%)	4 (3.6%)	-	-
Intravenous immunoglobulin	2 (1.6%)	7 (5.8%)	4 (3.6%)	3 (2.5%)	3 (2.8%)
Anti-CD25	1 (0.8%)	-	-	1 (0.8%)	-
Rituximab	-	3 (2.5%)	-	-	1 (0.9%)
T cell depleting polyclonal Ab	3 (2.5%)	2 (1.7%)	12 (10.9%)	11 (9.3%)	4 (3.7%)
<b>Total new transplants</b>	<b>122</b>	<b>121</b>	<b>110</b>	<b>118</b>	<b>108</b>
<b>Total transplants at risk</b>	<b>1422</b>	<b>1471</b>	<b>1514</b>	<b>1558</b>	<b>1591</b>



## REJECTION RATES

### AUSTRALIA AND NEW ZEALAND

Figure 8.38 shows the proportion of patients experiencing rejection in the first six months after transplant. For both living and deceased donor primary grafts, the six month incidence of rejection has fallen over the last decade.

Rejection rates in subsequent grafts are more variable due to the lower number of recipients, but have not clearly fallen in either living or deceased donors.

Australia and New Zealand Rejection Rates at Six Months Post Transplant										
Donor Source	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Living Donor</b>										
First graft	27.7%	21.6%	19.6%	19.6%	21.1%	17.0%	16.8%	17.8%	17.5%	11.0%
Second and subsequent	33.3%	34.8%	18.5%	33.3%	34.3%	30.0%	24.3%	12.9%	18.5%	10.3%
<b>Deceased Donor</b>										
First graft	26.8%	22.8%	18.6%	16.3%	17.7%	22.0%	21.1%	18.7%	20.0%	13.7%
Second and subsequent	25.0%	27.5%	31.7%	36.4%	32.8%	32.9%	36.5%	27.3%	17.7%	19.2%

## SHORT TERM SURVIVAL - PRIMARY DECEASED DONOR GRAFTS AUSTRALIA

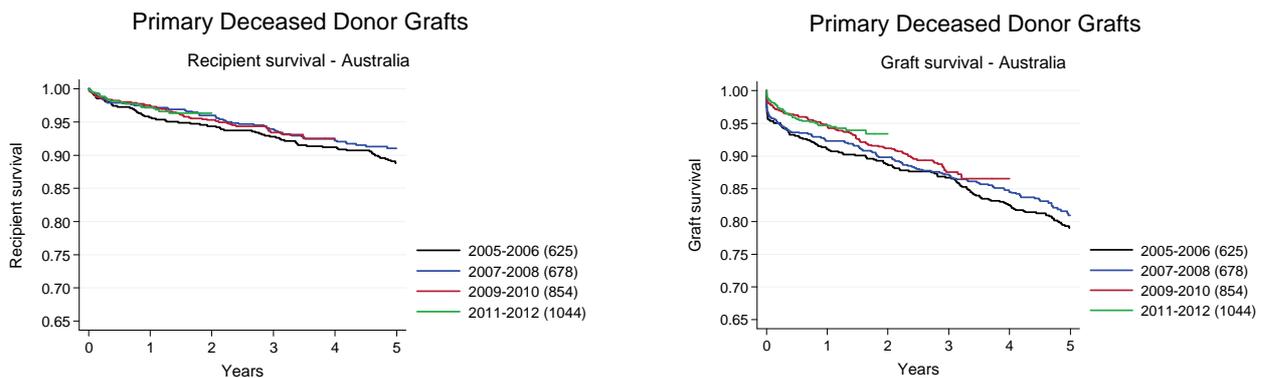
Graft and patient survival for primary deceased donor grafts performed in Australia, calculated by the Kaplan-Meier method, is shown in Figure 8.39. The figures include graft losses or deaths on the day of transplant, and graft survival is not censored for death. Unadjusted one year patient and graft survival for primary deceased donor grafts in Australia have stabilised in the past ten years. Kaplan-Meier graphs illustrating this are shown in Figure 8.40.

Figure 8.39

Primary Deceased Donor - Australia  
Recipient and Graft Survival 1993 - 2012  
% [95% Confidence Interval]

Year of Transplant	Survival			
	1 month	6 months	1 year	5 years
<b>Recipient Survival</b>				
1993-1994 (n=609)	99 (97, 99)	96 (94, 97)	95 (93, 97)	85 (82, 88)
1995-1996 (n=601)	99 (98, 100)	96 (94, 97)	95 (93, 97)	88 (85, 90)
1997-1998 (n=606)	99 (97, 99)	97 (95, 98)	96 (94, 97)	87 (84, 89)
1999-2000 (n=559)	99 (98, 100)	97 (96, 98)	96 (94, 97)	87 (84, 90)
2001-2002 (n=615)	99 (98, 100)	97 (96, 98)	96 (94, 97)	90 (88, 92)
2003-2004 (n=636)	99 (98, 100)	97 (95, 98)	96 (94, 97)	88 (85, 90)
2005-2006 (n=625)	99 (98, 100)	97 (96, 98)	96 (94, 97)	89 (86, 91)
2007-2008 (n=678)	99 (98, 100)	98 (97, 99)	97 (96, 98)	91 (89, 93)
2009-2010 (n=854)	99 (98, 100)	98 (97, 99)	98 (96, 98)	-
2011-2012 (n=1044)	100 (99, 100)	98 (97, 99)	97 (96, 98)	-
<b>Graft Survival</b>				
1993-1994 (n=609)	93 (91, 95)	89 (86, 91)	88 (85, 90)	73 (69, 76)
1995-1996 (n=601)	95 (92, 96)	90 (88, 92)	89 (86, 91)	78 (74, 81)
1997-1998 (n=606)	95 (93, 97)	92 (90, 94)	90 (88, 92)	77 (74, 80)
1999-2000 (n=559)	96 (95, 98)	93 (91, 95)	92 (89, 94)	80 (76, 83)
2001-2002 (n=615)	96 (94, 97)	94 (92, 96)	92 (90, 94)	82 (79, 85)
2003-2004 (n=636)	94 (92, 96)	92 (90, 94)	91 (88, 93)	80 (76, 83)
2005-2006 (n=625)	95 (93, 97)	93 (91, 95)	91 (89, 93)	79 (76, 82)
2007-2008 (n=678)	96 (94, 97)	94 (92, 95)	92 (90, 94)	81 (78, 84)
2009-2010 (n=854)	98 (97, 99)	96 (95, 97)	95 (93, 96)	-
2011-2012 (n=1044)	98 (97, 99)	96 (94, 97)	95 (93, 96)	-

Figure 8.40



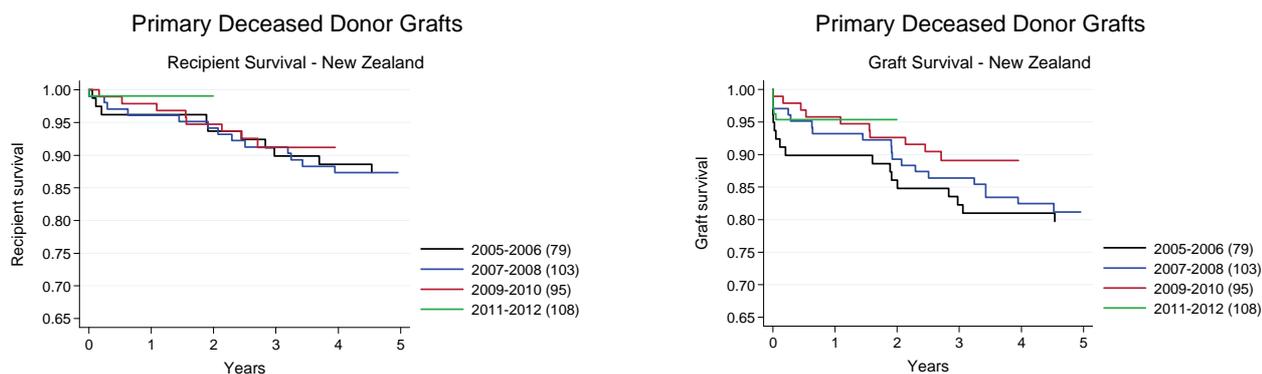


## SHORT TERM SURVIVAL - PRIMARY DECEASED DONOR GRAFTS NEW ZEALAND

Graft and patient survival for primary deceased donor grafts performed in New Zealand, calculated by the Kaplan-Meier method, is shown in Figure 8.41. Like Australia, the improvement in unadjusted one year patient and graft survival have stabilised in the past ten years, although there is greater random variation due to smaller overall numbers. Figure 8.42 presents these data as Kaplan-Meier curves.

Figure 8.41				
Primary Deceased Donor - New Zealand Recipient and Graft Survival 1993 - 2012 % [95% Confidence Interval]				
Year of Transplant	Survival			
	1 month	6 months	1 year	5 years
<b>Recipient Survival</b>				
1993-1994 (n=103)	96 (90, 99)	88 (80, 93)	85 (77, 91)	78 (68, 85)
1995-1996 (n=126)	98 (94, 100)	94 (89, 97)	93 (87, 96)	86 (78, 91)
1997-1998 (n=139)	99 (94, 100)	94 (88, 97)	94 (88, 97)	84 (77, 89)
1999-2000 (n=122)	97 (92, 99)	95 (89, 98)	93 (87, 97)	82 (74, 88)
2001-2002 (n=121)	99 (94, 100)	95 (89, 98)	95 (89, 98)	86 (78, 91)
2003-2004 (n=104)	99 (93, 100)	95 (89, 98)	95 (89, 98)	91 (84, 95)
2005-2006 (n=79)	99 (91, 100)	96 (89, 99)	96 (89, 99)	87 (78, 93)
2007-2008 (n=103)	99 (93, 100)	97 (91, 99)	96 (90, 99)	87 (79, 92)
2009-2010 (n=95)	100	99 (93, 100)	98 (92, 99)	-
2011-2012 (n=108)	99 (94, 100)	99 (94, 100)	99 (94, 100)	-
<b>Graft Survival</b>				
1993-1994 (n=103)	83 (74, 89)	78 (68, 85)	74 (64, 81)	59 (49, 68)
1995-1996 (n=126)	91 (85, 95)	88 (81, 93)	84 (76, 89)	72 (64, 79)
1997-1998 (n=139)	93 (87, 96)	87 (80, 92)	86 (79, 90)	73 (65, 80)
1999-2000 (n=122)	89 (82, 94)	87 (79, 92)	84 (76, 89)	72 (63, 79)
2001-2002 (n=121)	95 (89, 98)	92 (85, 95)	92 (85, 95)	79 (71, 86)
2003-2004 (n=104)	93 (86, 97)	88 (81, 93)	88 (81, 93)	79 (70, 86)
2005-2006 (n=79)	92 (84, 97)	90 (81, 95)	90 (81, 95)	80 (69, 87)
2007-2008 (n=103)	97 (91, 99)	95 (89, 98)	93 (86, 97)	81 (72, 88)
2009-2010 (n=95)	99 (93, 100)	97 (91, 99)	96 (89, 98)	-
2011-2012 (n=108)	95 (89, 98)	95 (89, 98)	95 (89, 98)	-

Figure 8.42



## LONG TERM SURVIVAL - PRIMARY DECEASED DONOR GRAFTS AUSTRALIA AND NEW ZEALAND

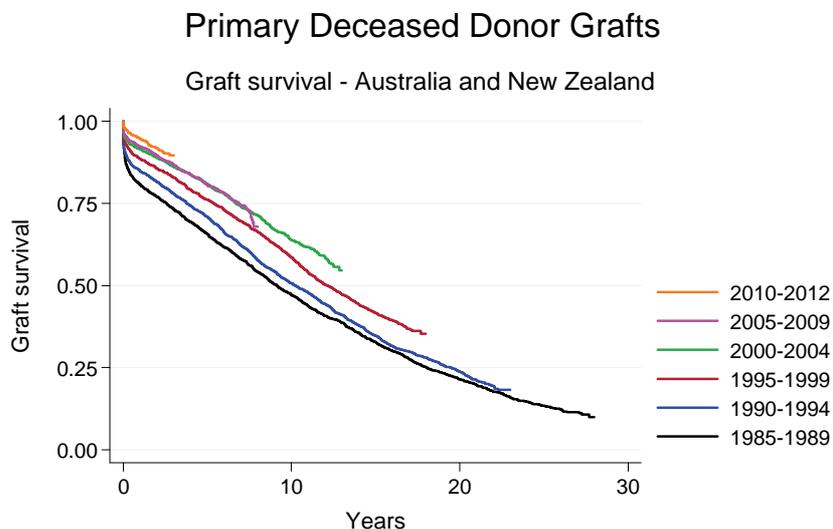
The aim of this section is to summarise the longer term outcomes of kidney transplants in a survival metric rather than as rates - that is, to describe the proportion of grafts surviving at particular time points.

As can be seen from the tables and figures, the graft survival advantage of living over deceased donor recipients and first over subsequent grafts is consistent over time. The considerable jump in survival from the 1980-84 cohort to 1985-89 coincides with the introduction of Cyclosporin into routine clinical practice in Australia. Since that time there have been lesser but consistent improvements in graft survival.

Figure 8.43

Recipient and Graft Survival of Primary Grafts Deceased Donors - Australia and New Zealand										
Time Period	Recipient Survival					Graft Survival				
	1 year	5 yrs	10 yrs	15 yrs	20 yrs	1 year	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974 (n=1149)	77.0%	57.4%	44.4%	34.2%	25.1%	58.2%	41.9%	30.3%	22.8%	14.6%
1975-1979 (n=1463)	81.0%	63.6%	49.4%	35.5%	26.2%	51.7%	36.0%	25.6%	17.7%	12.6%
1980-1984 (n=1595)	91.4%	75.1%	59.4%	45.9%	34.7%	63.3%	45.4%	32.1%	23.0%	16.2%
1985-1989 (n=1916)	92.1%	80.3%	64.5%	51.2%	39.6%	80.8%	65.8%	47.2%	32.9%	21.4%
1990-1994 (n=1906)	93.4%	83.9%	67.7%	53.2%	40.9%	85.0%	70.9%	50.7%	34.7%	23.7%
1995-1999 (n=1779)	94.7%	86.1%	72.4%	57.1%	-	88.6%	76.2%	58.6%	41.7%	-
2000-2004 (n=1850)	96.0%	89.1%	77.0%	-	-	91.6%	80.8%	64.0%	-	-
2005-2009 (n=1911)	96.7%	89.5%	-	-	-	92.3%	80.5%	-	-	-
2010-2014 (n=1675)	97.5%	-	-	-	-	94.9%	-	-	-	-

Figure 8.44



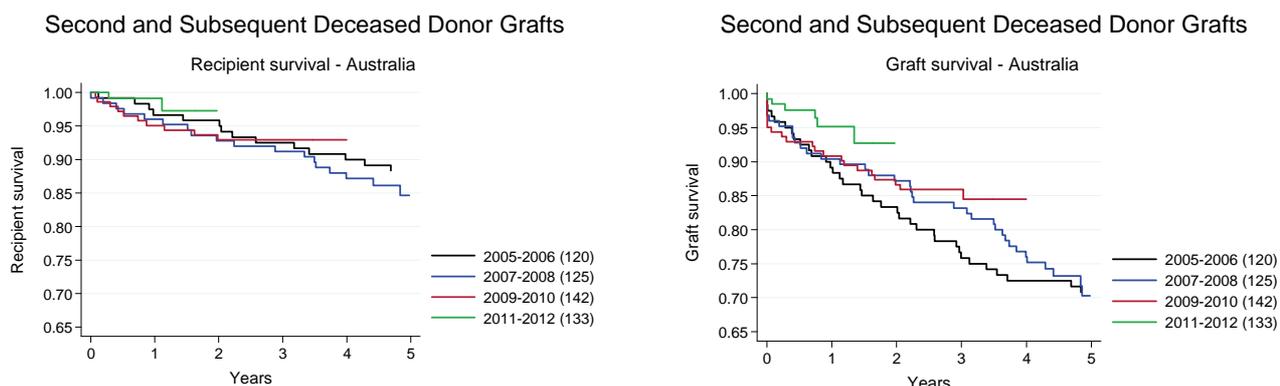


## SHORT TERM SURVIVAL - SECOND AND SUBSEQUENT DECEASED DONOR GRAFTS AUSTRALIA AND NEW ZEALAND

Patient and graft survival for second or subsequent deceased donor grafts in Australia, calculated by the Kaplan-Meier method, is shown in Figures 8.45 and 8.46.

Figure 8.45				
Second and Subsequent Deceased Donor - Australia Recipient and Graft Survival 1993 - 2012 % [95% Confidence Interval]				
Year of Transplant	Survival			
	1 month	6 months	1 year	5 years
<b>Recipient Survival</b>				
1993-1994 (n=121)	98 (94, 100)	98 (93, 99)	94 (88, 97)	86 (78, 91)
1995-1996 (n=107)	99 (94, 100)	97 (92, 99)	97 (92, 99)	86 (78, 91)
1997-1998 (n=109)	100	97 (92, 99)	95 (89, 98)	86 (78, 91)
1999-2000 (n=77)	99 (91, 100)	96 (88, 99)	95 (87, 98)	86 (76, 92)
2001-2002 (n=87)	99 (92, 100)	94 (87, 98)	92 (84, 96)	87 (78, 93)
2003-2004 (n=95)	99 (93, 100)	98 (92, 99)	95 (88, 98)	85 (76, 91)
2005-2006 (n=120)	100	99 (94, 100)	97 (91, 99)	88 (81, 93)
2007-2008 (n=125)	99 (94, 100)	98 (93, 99)	96 (91, 98)	85 (76, 90)
2009-2010 (n=142)	99 (95, 100)	97 (93, 99)	95 (90, 98)	-
2011-2012 (n=133)	100	99 (94, 100)	99 (94, 100)	-
<b>Graft Survival</b>				
1993-1994 (n=121)	87 (79, 92)	85 (77, 90)	83 (76, 89)	70 (61, 78)
1995-1996 (n=107)	83 (75, 89)	78 (68, 84)	77 (67, 84)	61 (51, 69)
1997-1998 (n=109)	93 (86, 96)	89 (81, 94)	84 (76, 90)	73 (64, 81)
1999-2000 (n=77)	92 (83, 96)	88 (79, 94)	87 (77, 93)	68 (56, 77)
2001-2002 (n=87)	92 (84, 96)	85 (76, 91)	82 (72, 88)	67 (56, 75)
2003-2004 (n=95)	94 (86, 97)	94 (86, 97)	89 (81, 94)	72 (61, 80)
2005-2006 (n=120)	97 (91, 99)	93 (87, 97)	89 (82, 94)	71 (62, 78)
2007-2008 (n=125)	96 (91, 98)	93 (87, 96)	90 (84, 94)	70 (61, 78)
2009-2010 (n=142)	94 (89, 97)	93 (87, 96)	91 (85, 95)	-
2011-2012 (n=133)	98 (94, 100)	98 (93, 99)	95 (89, 98)	-

Figure 8.46



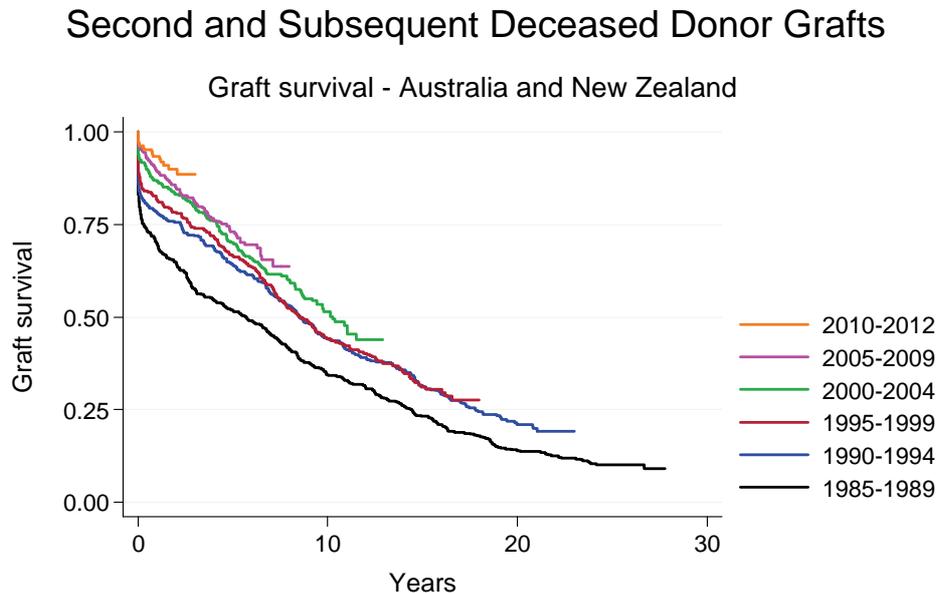
## LONG TERM SURVIVAL - SECOND AND SUBSEQUENT DECEASED DONOR GRAFTS AUSTRALIA AND NEW ZEALAND

The long-term graft and patient survival of second and subsequent grafts is shown in Figures 8.47 and 8.48. There has been a steady improvement in both graft and patient survival, such that survival of subsequent grafts is now similar to primary grafts (Figures 8.43 and 8.44).

Figure 8.47

Recipient and Graft Survival of Second and Subsequent Grafts Deceased Donors Australia and New Zealand										
Time Period	Recipient Survival					Graft Survival				
	1 year	5 yrs	10 yrs	15 yrs	20 yrs	1 year	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974 (n=158)	79.1%	55.7%	42.4%	33.5%	26.6%	58.9%	37.3%	27.2%	21.5%	14.6%
1975-1979 (n=284)	78.2%	57.4%	44.7%	31.3%	20.0%	44.0%	28.2%	20.4%	15.0%	8.1%
1980-1984 (n=417)	90.6%	74.8%	59.0%	46.8%	37.1%	48.9%	36.0%	25.6%	20.3%	14.2%
1985-1989 (n=458)	93.7%	79.2%	62.8%	47.3%	35.1%	70.1%	51.7%	34.4%	23.2%	13.9%
1990-1994 (n=374)	93.0%	82.6%	67.9%	54.0%	40.8%	78.3%	64.2%	44.1%	31.2%	21.0%
1995-1999 (n=296)	95.9%	86.1%	73.3%	60.0%	-	81.8%	66.6%	44.3%	31.1%	-
2000-2004 (n=268)	93.7%	86.2%	74.8%	-	-	86.6%	70.1%	51.5%	-	-
2005-2009 (n=343)	96.2%	87.9%	-	-	-	89.5%	73.1%	-	-	-
2010-2014 (n=217)	96.3%	-	-	-	-	93.4%	-	-	-	-

Figure 8.48





## SHORT TERM SURVIVAL - PRIMARY LIVING DONOR GRAFTS AUSTRALIA AND NEW ZEALAND

For primary living donor graft recipients, excellent patient and graft survival rates have been maintained despite the increased rates of living donor transplantation and corresponding increase in performing less ideal living donor transplants, particularly from older donors and unrelated donor transplants. Current patient and graft survival for primary living donor recipients in Australia and New Zealand are similar.

Figure 8.49		Australia			
Year of Transplant	Primary Living Donor Grafts 1993 - 2012 Recipient and Graft Survival % [95% Confidence Interval]				
	1 month	6 months	1 year	5 years	
<b>Recipient Survival</b>					
1993-1994 (n=160)	100	99 (95, 100)	98 (94, 99)	94 (89, 97)	
1995-1996 (n=186)	100	98 (95, 99)	97 (94, 99)	95 (90, 97)	
1997-1998 (n=284)	100	99 (96, 99)	98 (96, 99)	96 (93, 98)	
1999-2000 (n=320)	99 (98, 100)	98 (96, 99)	98 (96, 99)	94 (91, 96)	
2001-2002 (n=410)	100 (98, 100)	99 (97, 100)	99 (97, 99)	95 (92, 97)	
2003-2004 (n=419)	100 (98, 100)	99 (97, 100)	99 (97, 100)	94 (92, 96)	
2005-2006 (n=463)	100 (98, 100)	100 (98, 100)	99 (98, 100)	97 (95, 98)	
2007-2008 (n=557)	100 (99, 100)	99 (97, 99)	99 (97, 99)	94 (92, 96)	
2009-2010 (n=564)	100 (99, 100)	99 (98, 100)	98 (97, 99)	-	
2011-2012 (n=447)	100	100 (98, 100)	100 (98, 100)	-	
<b>Graft Survival</b>					
1993-1994 (n=160)	97 (93, 99)	96 (91, 98)	95 (90, 97)	85 (78, 90)	
1995-1996 (n=186)	93 (88, 96)	91 (86, 94)	90 (84, 93)	84 (78, 89)	
1997-1998 (n=284)	98 (96, 99)	97 (94, 98)	96 (94, 98)	87 (82, 90)	
1999-2000 (n=320)	97 (94, 98)	95 (92, 97)	94 (91, 96)	86 (82, 90)	
2001-2002 (n=410)	98 (96, 99)	96 (94, 98)	96 (93, 97)	88 (85, 91)	
2003-2004 (n=419)	99 (97, 100)	98 (96, 99)	97 (95, 98)	88 (84, 91)	
2005-2006 (n=463)	98 (97, 99)	98 (96, 99)	97 (95, 98)	90 (87, 93)	
2007-2008 (n=557)	98 (96, 99)	97 (95, 98)	97 (95, 98)	88 (85, 91)	
2009-2010 (n=564)	99 (98, 100)	98 (97, 99)	97 (95, 98)	-	
2011-2012 (n=447)	99 (97, 99)	98 (96, 99)	98 (96, 99)	-	

Figure 8.50		New Zealand			
Year of Transplant	Primary Living Donor Grafts 1993 - 2012 Recipient and Graft Survival % [95% Confidence Interval]				
	1 month	6 months	1 year	5 years	
<b>Recipient Survival</b>					
1993-1994 (n=160)	100	99 (95, 100)	98 (94, 99)	94 (89, 97)	
1995-1996 (n=186)	100	98 (95, 99)	97 (94, 99)	95 (90, 97)	
1997-1998 (n=284)	100	99 (96, 99)	98 (96, 99)	96 (93, 98)	
1999-2000 (n=320)	99 (98, 100)	98 (96, 99)	98 (96, 99)	94 (91, 96)	
2001-2002 (n=410)	100 (98, 100)	99 (97, 100)	99 (97, 99)	95 (92, 97)	
2003-2004 (n=419)	100 (98, 100)	99 (97, 100)	99 (97, 100)	94 (92, 96)	
2005-2006 (n=463)	100 (98, 100)	100 (98, 100)	99 (98, 100)	97 (95, 98)	
2007-2008 (n=557)	100 (99, 100)	99 (97, 99)	99 (97, 99)	94 (92, 96)	
2009-2010 (n=564)	100 (99, 100)	99 (98, 100)	98 (97, 99)	-	
2011-2012 (n=447)	100	100 (98, 100)	100 (98, 100)	-	
<b>Graft Survival</b>					
1993-1994 (n=35)	91 (76, 97)	89 (72, 96)	89 (72, 96)	74 (56, 86)	
1995-1996 (n=46)	98 (86, 100)	98 (86, 100)	98 (86, 100)	76 (61, 86)	
1997-1998 (n=57)	96 (87, 99)	96 (87, 99)	95 (85, 98)	72 (58, 82)	
1999-2000 (n=66)	95 (87, 99)	94 (85, 98)	94 (85, 98)	82 (70, 89)	
2001-2002 (n=83)	100	99 (92, 100)	99 (92, 100)	88 (79, 93)	
2003-2004 (n=88)	97 (90, 99)	95 (88, 98)	95 (88, 98)	86 (77, 92)	
2005-2006 (n=88)	99 (92, 100)	97 (90, 99)	95 (88, 98)	91 (83, 95)	
2007-2008 (n=120)	98 (94, 100)	98 (92, 99)	97 (91, 99)	84 (76, 90)	
2009-2010 (n=118)	99 (94, 100)	97 (92, 99)	97 (91, 99)	-	
2011-2012 (n=101)	97 (91, 99)	97 (91, 99)	95 (87, 98)	-	

Figure 8.51

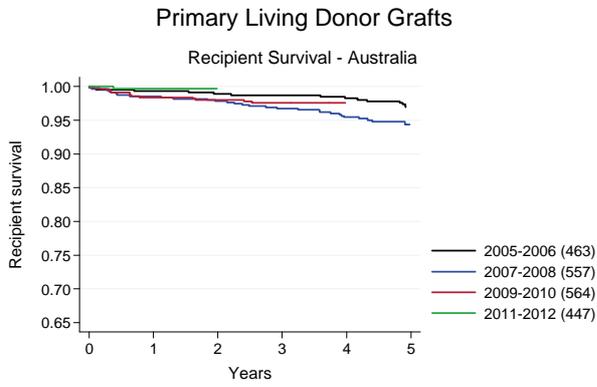


Figure 8.52

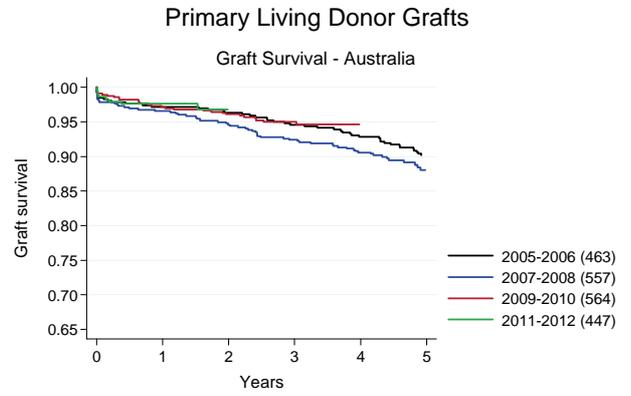
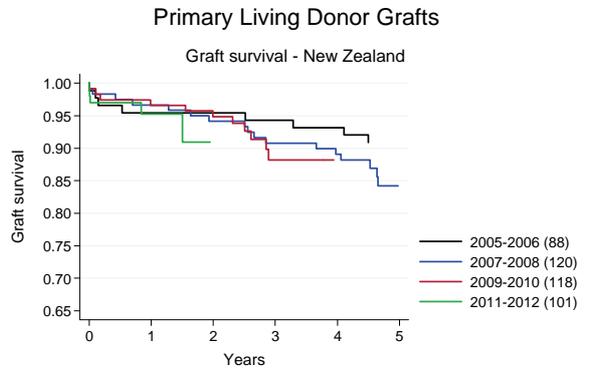


Figure 8.53



Figure 8.54





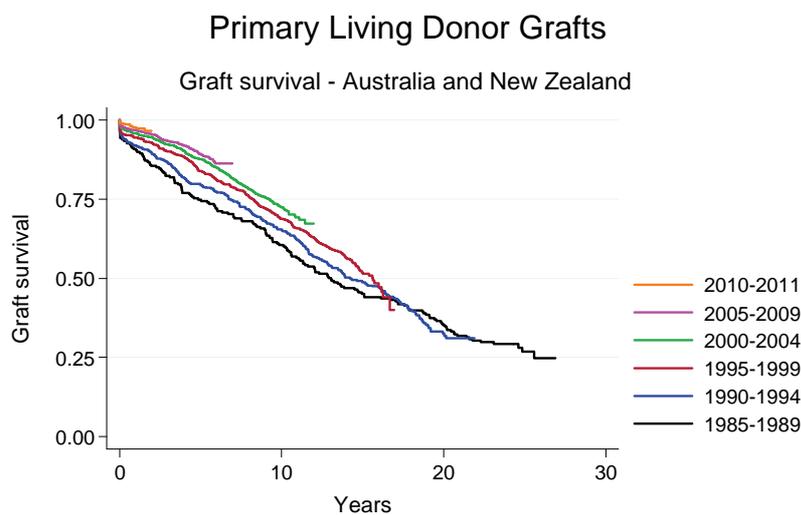
## LONG TERM SURVIVAL - PRIMARY LIVING DONOR GRAFTS AUSTRALIA AND NEW ZEALAND

Figure 8.55

Recipient and Graft Survival of Primary Grafts  
Living Donors - Australia and New Zealand

Time Period	Recipient Survival					Graft Survival				
	1 year	5 yrs	10 yrs	15 yrs	20 yrs	1 year	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974 (n=21)	90.5%	81.0%	61.9%	52.4%	42.9%	85.7%	76.2%	61.5%	46.2%	20.5%
1975-1979 (n=107)	90.7%	78.5%	71.0%	61.7%	52.2%	81.2%	63.3%	49.9%	41.2%	31.1%
1980-1984 (n=241)	96.3%	85.4%	74.9%	64.8%	55.4%	82.8%	71.2%	59.3%	46.5%	35.9%
1985-1989 (n=230)	95.2%	87.8%	79.9%	71.1%	62.9%	90.8%	74.8%	60.5%	45.1%	35.0%
1990-1994 (n=431)	97.2%	89.2%	84.0%	74.5%	68.5%	91.8%	79.6%	65.3%	48.8%	32.0%
1995-1999 (n=766)	98.6%	94.7%	86.6%	76.8%	-	94.5%	84.0%	68.8%	52.1%	-
2000-2004 (n=1193)	98.5%	94.3%	86.6%	-	-	95.9%	87.7%	72.4%	-	-
2005-2009 (n=1585)	98.5%	95.2%	-	-	-	96.7%	89.1%	-	-	-
2010-2014 (n=873)	99.0%	-	-	-	-	97.2%	-	-	-	-

Figure 8.56



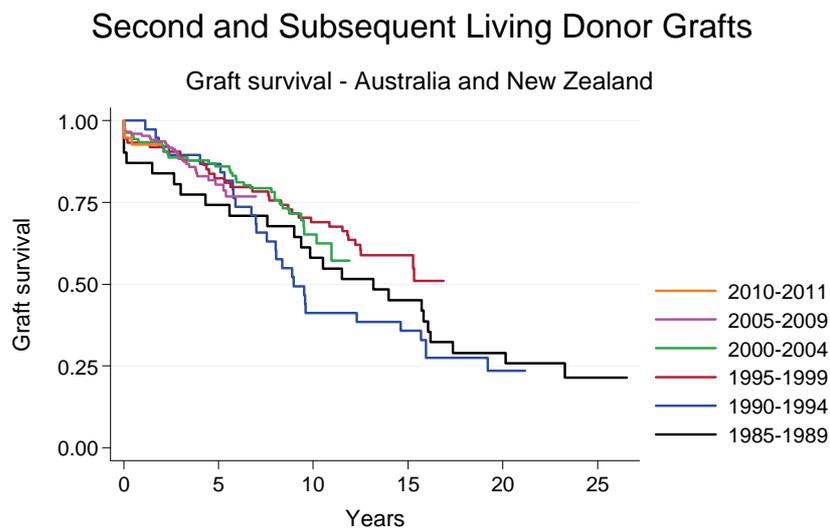
## LONG TERM SURVIVAL - SECOND AND SUBSEQUENT LIVING DONOR GRAFTS AUSTRALIA AND NEW ZEALAND

Figure 8.57

Recipient and Graft Survival of Second and Subsequent Grafts  
Living Donors - Australia and New Zealand

Time Period	Recipient Survival					Graft Survival				
	1 year	5 yrs	10 yrs	15 yrs	20 yrs	1 year	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974 (n=1)	100.0%	100.0%	-	-	-	100.0%	100.0%	-	-	-
1975-1979 (n=11)	100.0%	100.0%	81.8%	72.7%	63.6%	72.7%	45.5%	36.4%	36.4%	27.3%
1980-1984 (n=42)	97.6%	81.0%	78.6%	71.4%	51.9%	78.6%	64.3%	59.5%	50.0%	40.5%
1985-1989 (n=31)	96.8%	83.9%	71.0%	64.5%	47.5%	87.1%	74.2%	58.1%	45.2%	29.0%
1990-1994 (n=38)	100.0%	94.7%	73.3%	67.9%	51.3%	100.0%	86.8%	41.2%	35.7%	24.7%
1995-1999 (n=74)	98.6%	98.6%	89.2%	81.1%	-	93.2%	82.4%	68.9%	57.9%	-
2000-2004 (n=107)	98.1%	95.3%	85.7%	-	-	93.5%	85.0%	67.2%	-	-
2005-2009 (n=175)	98.3%	93.2%	-	-	-	95.4%	82.1%	-	-	-
2010-2014 (n=87)	98.7%	-	-	-	-	95.2%	-	-	-	-

Figure 8.58





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