CHAPTER 8

TRANSPLANTATION

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TRANSPLANTS PERFORMED IN 2009

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 (1)**	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 (14)**	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)**	69	13	2	0	**84 (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	444	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	673	88	11	0	0	**772 (326)**	109	12	0	0	**121 (67)**

AUSTRALIA

The 772 transplant operations performed in 2009 represents a decrease of 5% compared with 2008 (813 operations, an historic high) (Figure 8.1). This represents a transplant rate of 35 per million population per year, compared with 38 per million in 2008. There was a decrease of 8% for living donors from 2008 (326 from 354) (Figure 8.2). There has been a large increase in the number of kidney transplants from non-heart beating donors (Figure 8.4); in 2009 such kidneys accounted for 17% of deceased donor kidney transplants.

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

Living donor transplants accounted for 42% (326 grafts) in 2009, down from 44% in both 2008 (354 grafts) and 2007 (271 grafts).

Primary recipients (those receiving a first transplant) received 87% of all kidneys transplanted in 2009, similar to 2008 and 2007.

NEW ZEALAND

The number of transplant operations (121) performed in 2009 represents a transplant rate of 28 per million population per year compared with 29 in 2008 (Figure 8.1).

The percentage of living donors remained steady at 55% of all operations in 2009 (Figure 8.3). Only three transplants were from non-heart beating donors in 2009.

Of the grafts performed in 2009, 90% were to primary recipients, a proportion that has been relatively steady for the last six years.

Figure 8.2

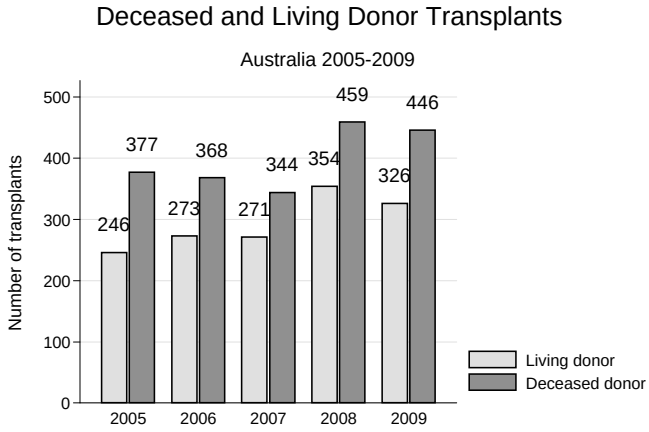


Figure 8.3

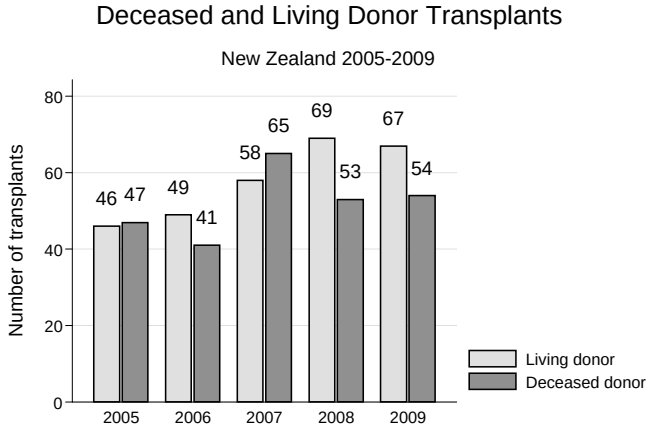
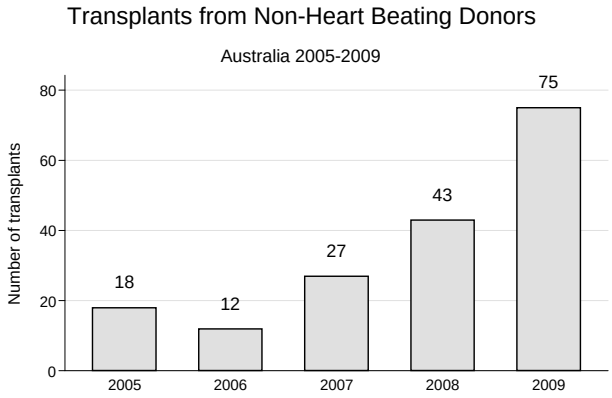


Figure 8.4



TRANSPLANT RATE OF PATIENTS DIALYSED

In Australia transplantation was the mode of RRT for 772 of 12,676 (6.1%) of patients who would have otherwise been managed with dialysis in 2009. This ratio of 6.1% represents a decrease from 6.5% in 2008 but an increase from 5.2% in 2007 (Figure 8.5).

Of all patients in the 15-64 year age group who received dialysis treatment during 2009, 10.3% (685 patients) were transplanted in 2009, compared with 11.0% (724 patients) in 2008 (Figure 8.6).

In New Zealand, transplantation was the mode of RRT for 121 of 2,701 (4.5%) of patients, compared with 4.7% in 2008 (Figure 8.5).

The ratio of transplantation to numbers dialysing in Australia was the highest in the age group 5-14 years (50%) and 0-4 years of age (34%) and continued to decline with increasing age (Figure 8.7).

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

Figure 8.5

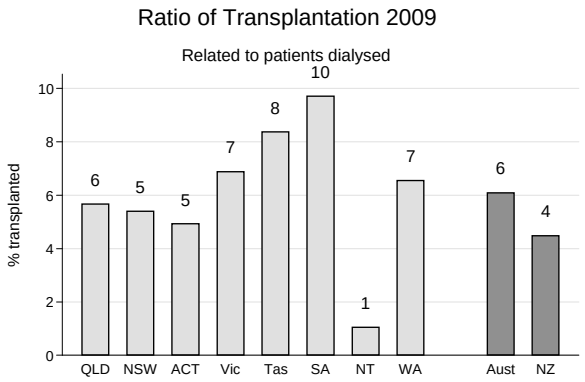


Figure 8.6

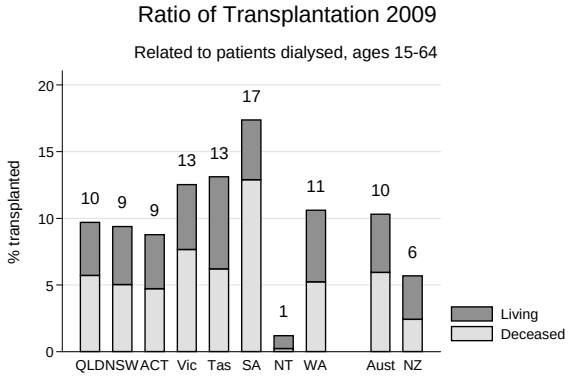


Figure 8.7

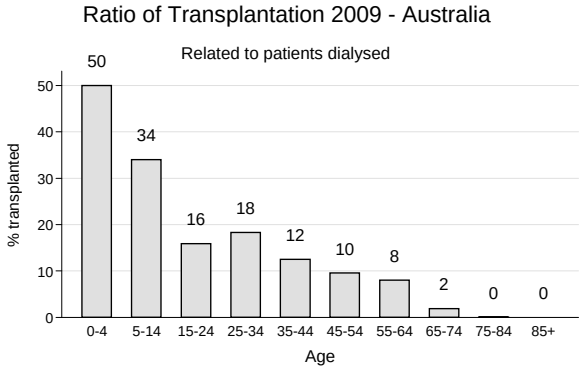
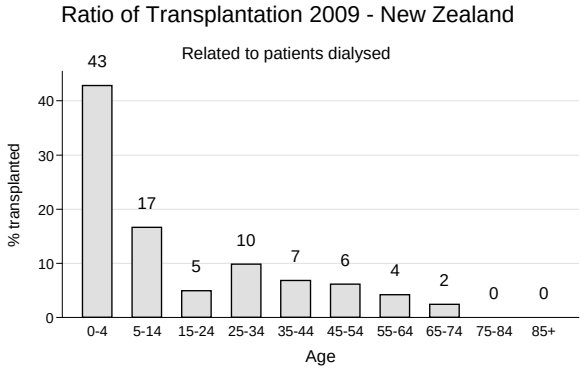


Figure 8.8



* Preemptive transplant patients included

AGE OF RECIPIENTS TRANSPLANTED IN 2009

Figure 8.9

Graft Number and Age of Patients Transplanted 2009

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	
Australia											
Deceased	1	4	5	5	34	66	100	125	35	2	**376**
	2	1	0	4	7	18	16	14	3	0	**63**
	3	0	0	0	3	0	3	1	0	0	**7**
Living Donor	1	6	12	23	41	47	71	78	19	0	**297**
	2	0	0	1	8	9	4	3	0	0	**25**
	3	0	0	0	2	1	1	0	0	0	**4**
Total		**11**	**17**	**33**	**95**	**141**	**195**	**221**	**57**	**2**	**772**
New Zealand											
Deceased	1	1	0	0	5	7	13	14	10	0	**50**
	2	0	0	0	0	3	1	0	0	0	**4**
Living Donor	1	2	2	3	6	7	19	15	5	0	**59**
	2	0	0	1	3	2	1	1	0	0	**8**
Total		**3**	**2**	**4**	**14**	**19**	**34**	**30**	**15**	**0**	**121**

AUSTRALIA

The median age of transplant recipients in 2009 was 49 years, compared with 48 years in 2008. The age range was 1 to 83 years (Figures 8.9 and 8.10).

Forty-four percent of recipients were in the 35-54 year age group. Thirty-six percent of recipients in 2009 were over 54 years of age, compared with 32% in 2008.

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

NEW ZEALAND

The median age of transplant recipients in 2009 was 49 years compared with 45.5 years in 2008. The age range was 1 to 72 years (Figures 8.9 and 8.11).

Recipients aged between 35 and 54 years comprised 48% of the total. Thirty-seven percent of recipients were over 54 years of age in 2009.

Figure 8.10

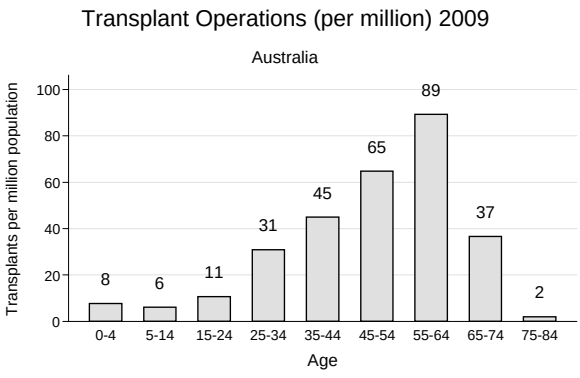
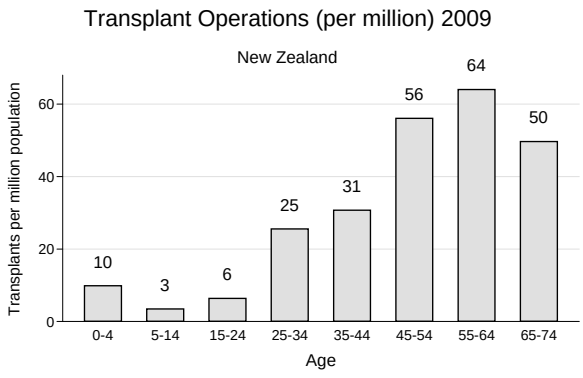


Figure 8.11



ETHNICITY OF TRANSPLANT RECIPIENTS

AUSTRALIA

Figure 8.12.

For the 15-64 year age group in 2009, 12.9% of dialysed Caucasoid 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
2000 - 2009

Year	Caucasoid			Aboriginal and Torres St. Islanders			All Patients		
	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate
2000	3539	429	12.1%	613	18	2.9%	4725	490	10.4%
2001	3672	433	11.8%	675	21	3.1%	4952	503	10.2%
2002	3722	479	12.9%	729	17	2.3%	5085	549	10.8%
2003	3787	414	10.9%	783	12	1.5%	5247	478	9.1%
2004	3869	491	12.7%	856	25	2.9%	5432	581	10.7%
2005	4038	459	11.4%	928	20	2.2%	5709	547	9.6%
2006	4235	480	11.3%	987	27	2.7%	6028	578	9.6%
2007	4375	471	10.8%	1061	17	1.6%	6319	557	8.8%
2008	4476	602	13.4%	1171	29	2.5%	6610	724	11.0%
2009	4449	572	12.9%	1187	23	1.9%	6641	685	10.3%

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 2009 was substantially lower than other groups.

Figure 8.13 New Zealand

Transplantation Rate - Age Group 15-64 years 2000 - 2009

Year	Caucasoid			Maori			Pacific People			All Patients		
	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate
2000	481	72	15.0%	423	12	2.8%	236	4	1.7%	1216	95	7.8%
2001	511	71	13.9%	465	15	3.2%	267	5	1.9%	1328	101	7.6%
2002	541	70	12.9%	494	12	2.4%	267	15	5.6%	1397	102	7.3%
2003	545	64	11.7%	530	16	3.0%	271	13	4.8%	1441	101	7.0%
2004	541	65	12.0%	558	10	1.8%	285	12	4.2%	1482	96	6.5%
2005	569	73	12.8%	563	3	0.5%	303	3	1.0%	1523	82	5.4%
2006	569	59	10.4%	606	9	1.5%	322	5	1.6%	1600	80	5.0%
2007	577	82	14.2%	617	15	2.4%	343	6	1.7%	1648	111	6.7%
2008	587	84	14.3%	619	12	1.9%	375	9	2.4%	1696	112	6.6%
2009	599	77	12.9%	631	13	2.1%	403	6	1.5%	1772	101	5.7%

AUSTRALIA AND NEW ZEALAND

Figure 8.14 shows this data another way.

In Australia in 2009, 3% of transplant recipients were of Aboriginal/TSI ethnicity.

In New Zealand, 16% of transplant recipients were Maoris and 5% were Pacific People.

Figure 8.14

New Transplanted Patients 2005 - 2009
Related to Ethnicity

Race	2005	2006	2007	2008	2009
Australia	**(623)**	**(641)**	**(615)**	**(813)**	**(772)**
Caucasoid	526 (84.4%)	537 (83.8%)	524 (85.2%)	675 (83%)	650 (84.2%)
Aboriginal/Torres St. Islanders	22 (3.5%)	27 (4.2%)	18 (2.9%)	31 (3.8%)	24 (3.1%)
Asian	59 (9.5%)	59 (9.2%)	56 (9.1%)	83 (10.2%)	75 (9.7%)
Other	16 (2.6%)	18 (2.8%)	17 (2.8%)	24 (3%)	23 (3%)
New Zealand	**(93)**	**(90)**	**(123)**	**(122)**	**(121)**
Caucasoid	83 (89%)	65 (72.2%)	91 (74%)	93 (76.2%)	91 (75.2%)
Maori	3 (3.2%)	10 (11.1%)	17 (13.8%)	12 (9.8%)	19 (15.7%)
Pacific People	4 (4.3%)	7 (7.8%)	6 (4.9%)	10 (8.2%)	6 (5%)
Asian	3 (3.2%)	8 (8.9%)	9 (7.3%)	7 (5.7%)	5 (4.1%)
Other	-	-	-	-	-

AUSTRALIAN REGIONAL TRANSPLANTATION ACTIVITY 2009

Figure 8.15

Transplants in each Region 2005 - 2009
Number of Operations
(per Million Population per year)

State	2005	2006	2007	2008	2009
Queensland	99 (25)	101 (25)	114 (27)	136 (32)	140 (32)
New South Wales / ACT *	212 (30)	195 (27)	187 (26)	243 (33)	237 (32)
Victoria / Tasmania *	162 (29)	185 (33)	183 (32)	246 (42)	233 (39)
South Australia / NT *	68 (39)	96 (55)	78 (43)	110 (60)	83 (45)
Western Australia	82 (41)	64 (31)	53 (25)	78 (36)	79 (35)
Australia	**623 (31)**	**641 (31)**	**615 (29)**	**813 (38)**	**772 (35)**

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

Figure 8.16

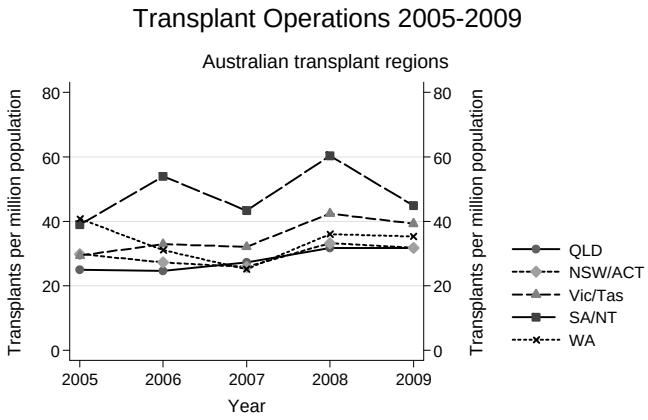
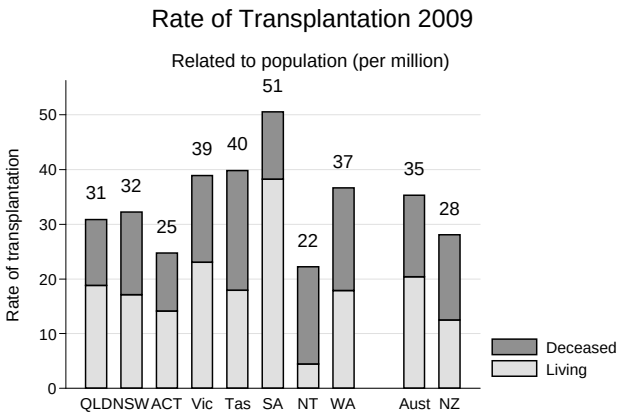


Figure 8.17



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 respectively. These regions share common waiting lists and allocation protocols.

South Australia and the Northern Territory had the highest transplant rate in 2009 (45 per million), followed by 39 per million in the Victoria/Tasmania region.

The transplant rates for residents of each State and the Northern Territory are shown in Figure 8.17. The highest rate (51 per million) occurred in South Australia, followed by Tasmania (40 per million) and Victoria (39 per million). The lowest rate (22 per million) was in the Northern Territory.

LIVING DONOR TRANSPLANTS

Figure 8.18

Living Donor Operations as a Proportion (%) of Annual Transplantation Australia 2004 - 2009

Recipient Age Groups	Year of Transplantation					
	2004	2005	2006	2007	2008	2009
00-04 years	100%	50%	100%	89%	75%	55%
05-14 years	59%	52%	55%	56%	59%	71%
15-24 years	64%	70%	71%	65%	67%	73%
25-34 years	40%	48%	48%	57%	53%	54%
35-44 years	39%	42%	37%	38%	36%	40%
45-54 years	35%	34%	37%	43%	41%	39%
55-64 years	28%	31%	40%	35%	39%	37%
65-74 years	31%	19%	41%	45%	44%	33%
75-84 years	0%	100%	0%	0%	0%	0%
All Recipients	38%	39%	43%	44%	44%	42%

Figure 8.19

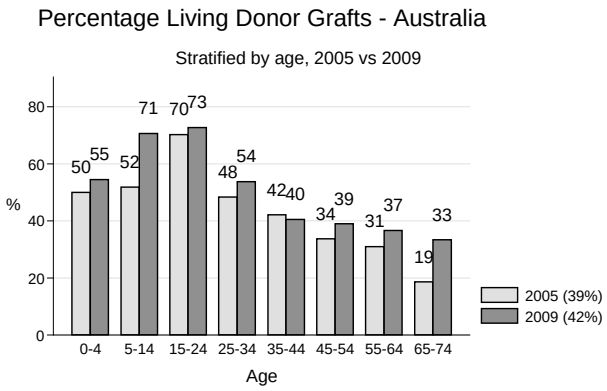
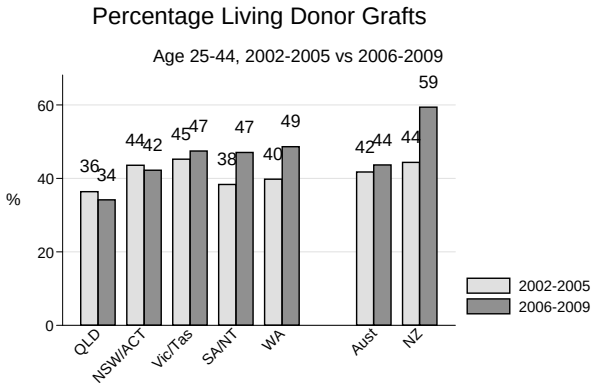


Figure 8.20



AUSTRALIA

There were 326 living donor kidney transplants performed in 2009 in Australia, representing 42% of all transplant operations. This proportion is similar as in 2006-2008 (Figures 8.2 and 8.18).

Figure 8.19 shows the age-related proportion of living donor transplants for the years 2005 and 2009. The overall proportion of living donors increased in every age group under 75 except ages 35-44. There were no living donor recipients over the age of 74.

The proportion of living donor transplants for each State and New Zealand for recipients aged 25-44 years is shown for the years 2002-2005 and 2006-2009 in Figure 8.20. Overall there has been an increase in this age group for both countries from 2002-2005 to 2006-2009, the highest in New Zealand in 2009 (59%).

The proportion of genetically unrelated donors was 44% (142 donors) in 2009 compared with 50% (177 donors) in 2008, shown in Figure 8.22. Seventy-two percent of living unrelated donors were spouses or partners. The age distribution of living donors is shown in Figure 8.21.

The first paired kidney exchange donors were transplanted in 2007 in Western Australia and there were a further five in 2008, followed by another two in 2009. There were four non directed donors in 2009. Thirty of the living donors in 2009 were blood group incompatible with the recipient, down from 36 in 2008 (Figure 8.24).

The number of related donors increased by 4% (184 donors) from 177 donors in 2008 (Figure 8.25).

NEW ZEALAND

The rate of living donor transplantation decreased by 3% (67 donors) in New Zealand in 2009, as shown in Figure 8.23.

There were 25 genetically unrelated kidney donors in 2009, compared with 31 in 2008.

Fifty-five percent of grafts were from a living donor (57% in 2008 and 47% in 2007). Unrelated donors represented 37% of all living donors in 2009, shown in Figure 8.23. Four (16%) of these were from a spouse or partner, whereas friends accounted for 52% of all unrelated donors. There were six non-directed donors in 2009 (compared with eight in 2008) (Figure 8.25).

Figure 8.21

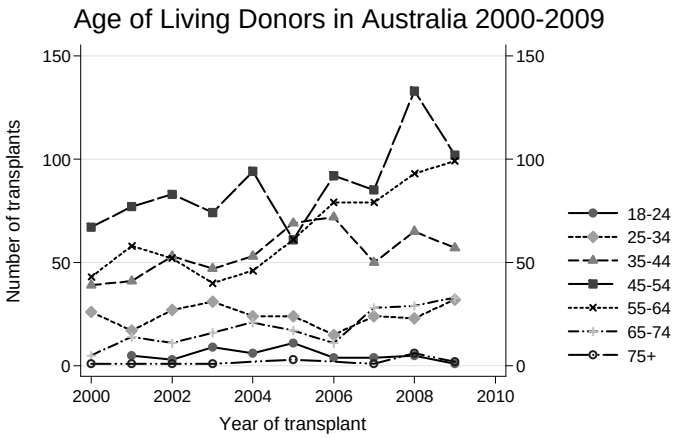


Figure 8.22

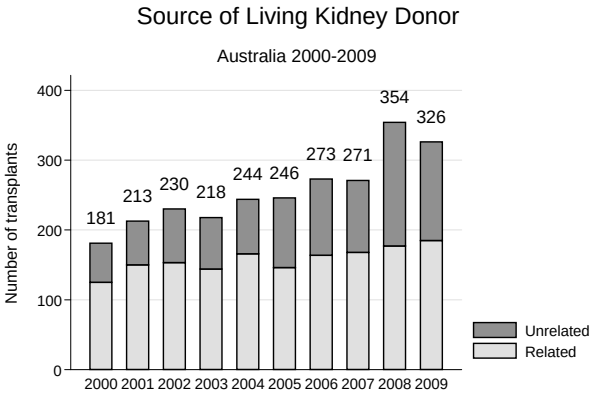


Figure 8.23

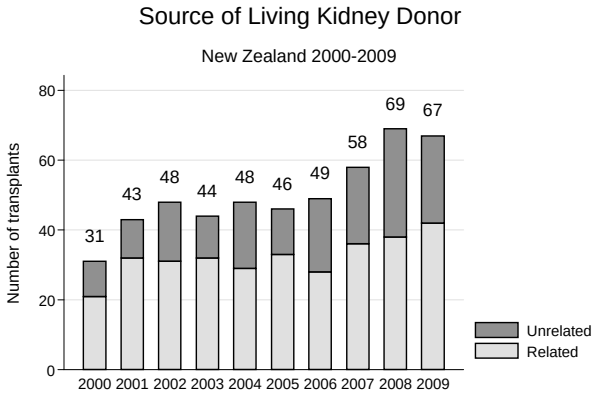


Figure 8.24

Figure 8.25

Source of Living Donor Kidneys 2005 - 2009

(x = identical twin) (+ = non identical twin)

Source	Australia					New Zealand				
	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
Total Living Donors	**246**	**273**	**271**	**354**	**326**	**46**	**49**	**58**	**69**	**67**
Related	**(146)**	**(164)**	**(168)**	**(177)**	**(184)**	**(33)**	**(28)**	**(36)**	**(38)**	**(42)**
Mother	39	40	60	46	53	7	5	5	7	5
Father	30	35	37	41	27	3	3	5	9	6
Brother	31	25	21	35	31	8	6 (1x)	5	5	12
Sister	26 (1+)	35 (1+)	29 (1+)	32 (1+)	43 (2+)	9 (1x)	6	11	8	8
Son	3	9	7	3	4	3	4	4	2	3
Daughter	5	6	3	6	4	1	3	3	1	4
Grandfather	1	2	-	-	-	-	-	-	-	-
Grandmother	1	1	-	2	5	-	-	-	-	-
Cousin	5	4	7	5	5	1	1	2	2	-
Nephew	1	-	-	-	2	-	-	1	-	-
Niece	2	1	1	-	1	-	-	-	1	2
Uncle	1	1	2	1	3	-	-	-	2	-
Aunt	1	5	1	6	6	1	-	-	1	2
Unrelated	**(100)**	**(109)**	**(103)**	**(177)**	**(142)**	**(13)**	**(21)**	**(22)**	**(31)**	**(25)**
Wife	37	53	40	64	63	-	5	8	5	2
Husband	23	17	14	35	33	-	-	5	5	1
Mother-in-Law	1	1	1	-	1	-	-	-	-	-
Father-in-Law /Adoptive Father	3	-	-	2	-	-	-	-	-	-
Son-in-Law / Adoptive Son	2	-	-	2	1	-	-	-	-	1
Stepdaughter	-	-	-	1	-	-	-	-	-	-
Stepfather	2	2	1	2	-	-	-	1	1	-
Stepmother	-	-	-	1	-	-	-	-	-	-
Sister-in-Law	3	2	2	4	4	-	1	-	1	-
Brother-in-Law	-	2	3	1	3	1	-	-	1	-
Partner	6	6	6	10	6	1	1	1	-	1
Fiance / Fiancee	-	1	-	-	-	-	-	-	-	-
Friend	14	16	15	27	18	7	10	6	10	13
Stepsister / Stepson	-	1	-	1	-	-	-	-	-	1
Non-Directed	3	2	1	6	4	3	4	1	8	6
Pathological	4	4	16	13	6	-	-	-	-	-
Paired Kidney Exchange	-	-	2	5	2	-	-	-	-	-
Other	2	2	2	3	1	1	-	-	-	-

Figure 8.26

Gender of Living Donor Kidneys 2006 - 2009

Source and State / Country of Transplant	2006			2007			2008			2009		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Related												
Queensland	50%	50%	22	41%	59%	22	35%	65%	17	31%	69%	26
New South Wales/ACT	55%	45%	55	42%	58%	59	58%	42%	62	48%	52%	65
Victoria/Tasmania	37%	63%	49	39%	61%	61	39%	61%	56	26%	74%	58
South Australia/NT	42%	58%	19	42%	58%	19	50%	50%	24	44%	56%	16
Western Australia	47%	53%	19	57%	43%	7	39%	61%	18	55%	45%	20
Australia	**46%**	**54%**	**164**	**42%**	**58%**	**168**	**47%**	**53%**	**177**	**39%**	**61%**	**185**
New Zealand	**46%**	**54%**	**28**	**42%**	**58%**	**36**	**47%**	**53%**	**38**	**50%**	**50%**	**42**
Unrelated												
Queensland	32%	68%	19	45%	55%	22	33%	67%	27	41%	59%	29
New South Wales/ACT	34%	66%	35	42%	58%	31	31%	69%	52	37%	63%	41
Victoria/Tasmania	27%	73%	37	34%	66%	29	52%	48%	60	35%	65%	40
South Australia/NT	14%	86%	7	14%	86%	7	29%	71%	17	86%	14%	7
Western Australia	55%	45%	11	36%	64%	14	33%	67%	21	38%	63%	24
Australia	**32%**	**68%**	**109**	**38%**	**62%**	**103**	**38%**	**62%**	**177**	**40%**	**60%**	**141**
New Zealand	**19%**	**81%**	**21**	**45%**	**55%**	**22**	**39%**	**61%**	**31**	**40%**	**60%**	**25**

TIMING OF LIVING DONOR TRANSPLANTS

The timing of living donor transplants is shown in Figure 8.27.

The proportion of all primary living donor transplants performed "pre-emptively" in Australia was 37%, compared with 29% in 2008. This continues a broader trend of increasing use of pre-emptive transplantation (Figure 8.28). Thirty-three percent had received dialysis treatment for twelve months or longer prior to a first living donor graft.

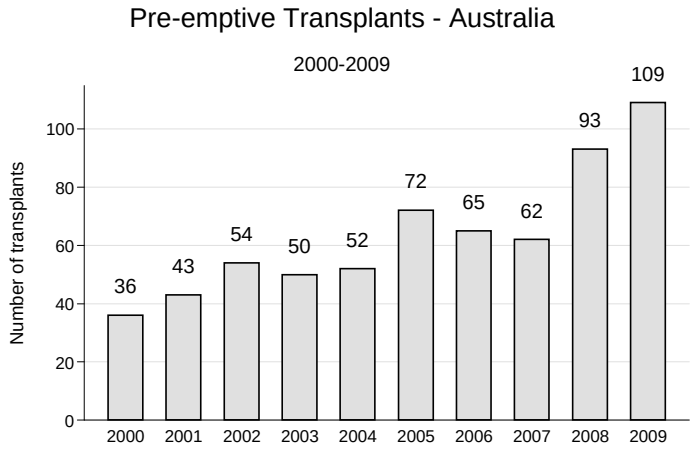
The proportion of pre-emptive primary living donor transplants in New Zealand was 31% in 2009, compared with 30% 2008 (Figure 8.28). Fifty-four percent received dialysis for twelve months or longer prior to being transplanted.

Figure 8.27

Timing of Live Donor Transplantation
for Primary Grafts in Relation to Date of Dialysis Start
by Year of Transplant 2005 - 2009

		2005	2006	2007	2008	2009
Aust	Pre-dialysis	72 (33%)	65 (27%)	62 (26%)	93 (29%)	109 (37%)
	< 1 month post dialysis	5 (2%)	7 (3%)	7 (3%)	5 (2%)	9 (3%)
	1-11.9 months post dialysis	59 (27%)	66 (27%)	55 (23%)	78 (25%)	81 (27%)
	≥ 12 months post dialysis	84 (38%)	105 (43%)	116 (48%)	141 (44%)	98 (33%)
NZ	Pre-dialysis	10 (22%)	9 (21%)	23 (43%)	20 (30%)	18 (31%)
	< 1 month post dialysis	1 (2%)	-	1 (2%)	2 (3%)	1 (2%)
	1-11.9 months post dialysis	13 (29%)	12 (28%)	9 (17%)	14 (21%)	8 (14%)
	≥ 12 months post dialysis	21 (47%)	22 (51%)	21 (39%)	30 (45%)	32 (54%)

Figure 8.28



FUNCTIONING TRANSPLANTS AT 31ST DECEMBER 2009

TRANSPLANT OPERATIONS 1963 - 2009

AUSTRALIA

There have been 18,817 transplant operations performed on 15,612 patients since 1963. Of these, 7,902 grafts were functioning at 31st December 2009 (362 per million population). Fourteen percent of operations and 12% of functioning grafts were regrafts. Living donor transplants accounted for 23% of operations and 37% of functioning grafts (Figure 8.29). The number of operations performed by each hospital during this period is shown in Appendix I, available on the Web.

The number of functioning grafts at the end of 2009 represents a 5% increase over the previous year. The annual rate of increase has remained steady (Figure 8.31 and 8.32). Eighty-eight percent of the functioning grafts were primary and 63% were from deceased donors. The number of functioning grafts from living donors increased by 8% from 2008 to 2009, a rate of increase that has been steady over several years.

The prevalence of functioning grafts in each State is shown in Figures 8.31 and 8.32. South Australia/Northern Territory has the highest prevalence of functioning renal transplants (522 per million). The lowest prevalence was in Queensland (330 per million). Patients with functioning grafts numbered in excess of those dialysis dependent in South Australia only (Appendix I).

Figure 8.29

Summary of Kidney Transplantation
Australia 1963 - 2009

		Performed	Functioning*
Deceased Donor	First	11,864	4,325
	Second	1,831	545
	Third	293	90
	Fourth	45	15
	Fifth	4	1
	Total	14,037	4,976
Living Donor	First	3,748	2,655
	Second	344	230
	Third	49	35
	Fourth	8	6
	Fifth	1	0
	Total	4,150	2,926
Total		**18,187**	**7,902**

* Lost to follow up not included

The age relationship of functioning transplants as a proportion of patients on renal replacement therapy is shown in Figure 8.37. The proportion depending on living donor grafts is greater in the younger age groups (Figures 8.34 and 8.35).

The modal age group for transplant dependent patients in 2009 was 55-64 years and the mean and median ages were 50.6 and 52 years respectively (Figures 8.36 and 8.37). The modal age group for living donor recipients was 45-54 years and 44% of recipients dependent on living donor grafts were less than 45 years of age.

The majority of recipients with functioning grafts were male (61%). The ethnic origin of recipients was Caucasoid 88%, Asian 8%, Aboriginal and Torres Strait Islanders 2% and Others 2% (Figure 8.39).

The 7,902 grafts functioning at the end of 2009 represent 43% of all kidneys transplanted since 1963. Thirty-three percent of grafts were functioning ten or more years and 9% for 20 or more years. There were 129 recipients with grafts functioning 30 years or longer (Figure 8.40). The longest graft had functioned for 41 years at 31st December, 2009.

NEW ZEALAND

There have been 3,515 operations performed on 2,967 patients since 1965 with 1,403 grafts (320 per million) still functioning at 31st December 2009 (Figure 8.30). Sixteen percent of operations and 10% of functioning grafts were regrafts. Kidneys from living donors accounted for 26% of operations and 42% of functioning grafts.

The number of operations performed by individual hospitals is shown in Appendix I at the end of this Report.

The age relationship and donor source are shown in Figure 8.36. The majority were male (57%) and the racial distribution was Caucasoid 78%, Maori 9%, Pacific People 6% and Asian 6% (Figure 8.39).

The majority (70%) of functioning grafts were in the 35-64 year age group and the mean and median ages were 49.9 and 51 years respectively. The modal age group was 55-64 years (Figure 8.36).

The 1,403 grafts functioning at the end of 2009 represent 40% of all kidneys transplanted since 1965. The longest surviving graft had functioned for 39 years at 31st December 2009. There have been 126 grafts functioning for 20 or more years and 16 for 30 or more years (Figure 8.41).

Figure 8.30

Summary of Kidney Transplantation
New Zealand 1965 - 2009

		Performed	Functioning*
Deceased Donor	First	2,129	715
	Second	390	81
	Third	74	17
	Fourth	7	0
	Total	**2,600**	**813**
Living Donor	First	838	543
	Second	71	43
	Third	6	4
	Total	**915**	**590**
Total		**3,515**	**1,403**

* Lost to follow up not included

Figure 8.31

Functioning Transplants 2000 - 2009
Transplanting Region, Australia and New Zealand
(Number Per Million Population)

Year	QLD	NSW/ACT *	VIC/Tas *	SA/NT *	WA	Australia	NZ
2000	1004 (282)	1790 (263)	1387 (266)	643 (378)	468 (250)	**5292 (276)**	**1023 (265)**
2001	1063 (293)	1823 (264)	1455 (276)	669 (391)	496 (261)	**5506 (284)**	**1063 (274)**
2002	1109 (299)	1905 (274)	1538 (289)	702 (409)	528 (274)	**5782 (294)**	**1116 (283)**
2003	1150 (303)	2006 (286)	1580 (293)	736 (426)	530 (271)	**6002 (302)**	**1168 (290)**
2004	1184 (305)	2104 (298)	1650 (302)	790 (456)	562 (284)	**6290 (313)**	**1221 (299)**
2005	1218 (307)	2175 (306)	1721 (312)	810 (464)	617 (307)	**6541 (322)**	**1239 (300)**
2006	1255 (307)	2268 (317)	1830 (326)	846 (476)	657 (319)	**6856 (331)**	**1247 (298)**
2007	1312 (314)	2312 (320)	1925 (338)	881 (490)	678 (322)	**7108 (338)**	**1284 (304)**
2008	1372 (321)	2418 (331)	2056 (355)	933 (512)	717 (331)	**7496 (351)**	**1350 (316)**
2009	1454 (330)	2529 (339)	2205 (372)	965 (522)	749 (335)	**7902 (361)**	**1403 (325)**

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

Figure 8.32

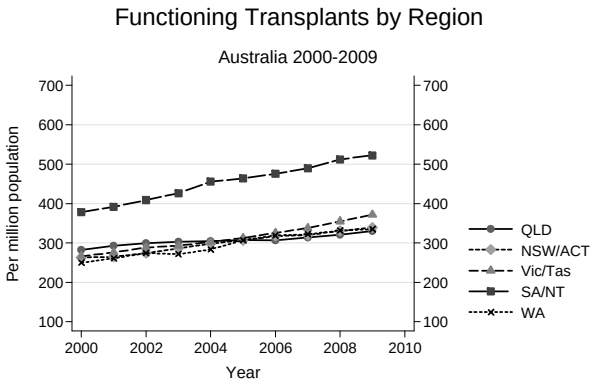


Figure 8.33

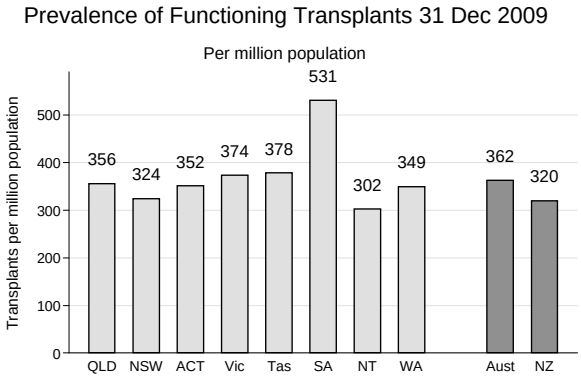


Figure 8.34

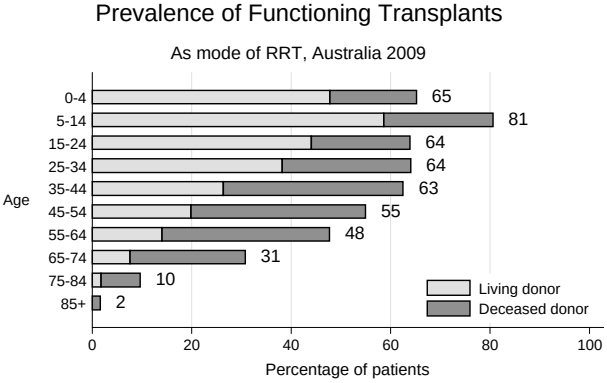


Figure 8.35

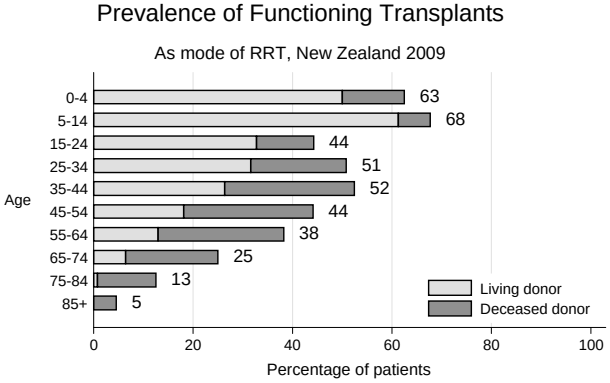


Figure 8.36

Age of All Functioning Transplant Patients
Resident Country at Transplant 31-Dec-2009

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	
Australia		**15**	**121**	**255**	**681**	**1424**	**1998**	**2041**	**1130**	**231**	**6**	**7,902**
Deceased Donor	1	3	30	68	224	681	1076	1274	788	176	5	4,325
	2	1	3	9	47	108	162	147	56	11	1	545
	3	-	-	2	4	29	31	17	7	-	-	90
	4	-	-	-	-	5	7	2	-	1	-	15
	5	-	-	-	-	-	1	-	-	-	-	1
	Total	**4**	**33**	**79**	**275**	**823**	**1277**	**1440**	**851**	**188**	**6**	**4,976**
Living Donor	1	11	85	165	368	524	643	549	269	41	-	2,655
	2	-	3	10	36	63	62	44	10	2	-	230
	3	-	-	1	1	12	14	7	-	-	-	35
	4	-	-	-	1	2	2	1	-	-	-	6
	Total	11	88	176	406	601	721	601	279	43	-	2,926
New Zealand		**5**	**21**	**54**	**127**	**243**	**366**	**380**	**175**	**31**	**1**	**1,403**
Deceased Donor	1	1	2	13	44	97	181	224	123	29	1	715
	2	-	-	1	4	18	30	23	5	-	-	81
	3	-	-	-	-	6	5	4	2	-	-	17
	Total	**1**	**2**	**14**	**48**	**121**	**216**	**251**	**130**	**29**	**1**	**813**
Living Donor	1	4	19	39	72	103	135	124	45	2	-	543
	2	-	-	1	7	18	12	5	-	-	-	43
	3	-	-	-	-	1	3	-	-	-	-	4
	Total	**4**	**19**	**40**	**79**	**122**	**150**	**129**	**45**	**2**	**-**	**590**

Figure 8.37

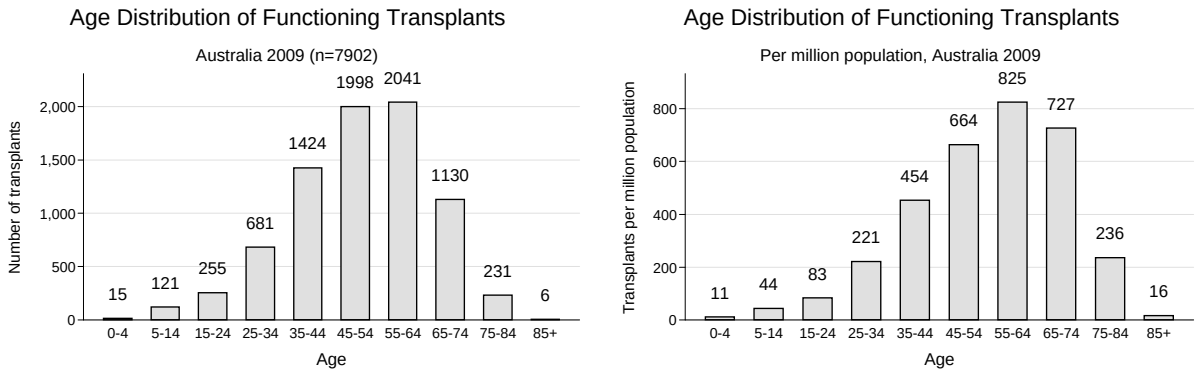


Figure 8.38

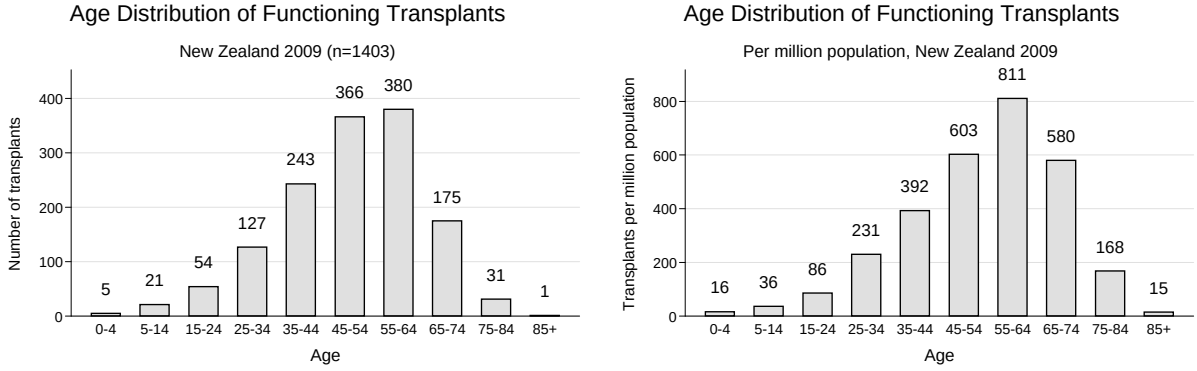


Figure 8.39

Functioning Transplant Patients - Resident Country at Transplant
Related to Ethnicity and Age Group 31-Dec-2009

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		**15**	**121**	**255**	**681**	**1424**	**1998**	**2041**	**1130**	**231**	**6**	**7,902**
Female	Caucasoid	4	38	90	222	469	652	649	424	113	4	2,665
	Aboriginal/TSI	-	1	2	5	21	27	12	3	-	-	71
	Asian	-	7	6	21	46	97	83	24	5	-	289
	Other	-	4	4	13	17	19	17	8	1	-	83
	Total	**4**	**50**	**102**	**261**	**553**	**795**	**761**	**459**	**119**	**4**	**3,108**
Male	Caucasoid	9	64	131	365	784	1,064	1,130	618	106	2	4,273
	Aboriginal/TSI	-	3	3	7	15	28	24	9	-	-	89
	Asian	2	4	14	35	57	85	95	36	3	-	331
	Other	-	-	5	13	15	26	31	8	3	-	101
	Total	**11**	**71**	**153**	**420**	**871**	**1,203**	**1,280**	**671**	**112**	**2**	**4,794**
New Zealand		**5**	**21**	**54**	**127**	**243**	**366**	**380**	**175**	**31**	**1**	**1,403**
Female	Caucasoid	2	6	23	41	75	115	127	54	17	1	461
	Maori	1	2	4	7	12	14	9	7	2	-	58
	Pacific People	-	1	-	10	10	10	7	1	1	-	40
	Asian	-	1	-	4	6	16	11	1	-	-	39
	Total	**3**	**10**	**27**	**62**	**103**	**155**	**154**	**63**	**20**	**1**	**598**
Male	Caucasoid	1	10	20	50	118	168	174	80	10	-	631
	Maori	1	-	4	3	9	21	17	13	1	-	69
	Pacific People	-	1	1	6	6	7	17	9	-	-	47
	Asian	-	-	2	6	4	14	16	10	-	-	52
	Other	-	-	-	-	3	1	2	-	-	-	6
	Total	**2**	**11**	**27**	**65**	**140**	**211**	**226**	**112**	**11**	**-**	**805**

Figure 8.40

Number and Duration of Functioning Grafts

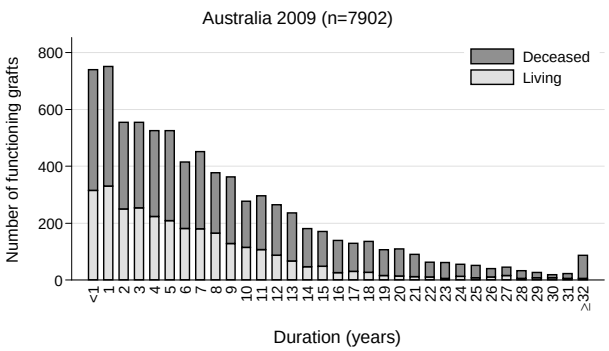
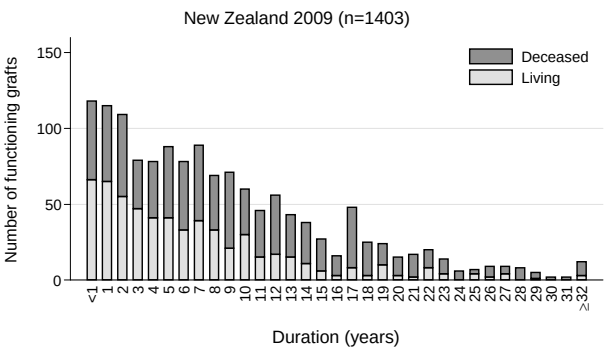


Figure 8.41

Number and Duration of Functioning Grafts



RATES OF GRAFT LOSS

The rates of graft failure and death in Australia in 2009 were 2.7% and 1.6% per patient year respectively; in total 4.4% of grafts at risk were lost. The rates of both graft failure and death with function decreased in 2009, from 2.9% and 2.1% respectively, in 2008 (Figure 8.42).

In 2009, the rates of graft failure in New Zealand increased from 2.1% to 2.3% and death with function increased from 1.8% to 2.3%; in total 4.6% of grafts at risk were lost. (Figure 8.42).

The causes of graft failure from 2000 to 2009 are shown in Figure 8.43.

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 8.44.

Among the causes of death with functioning graft, cardiac disease and malignancy were predominant.

Figure 8.42

Graft Loss Rate 2000 - 2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Australia	**(5,622)**	**(5,834)**	**(6,111)**	**(6,325)**	**(6,652)**	**(6,913)**	**(7,182)**	**(7,471)**	**(7,921)**	**(8,268)**
Death with Function	3.0%	2.6%	2.3%	2.2%	2.1%	2.3%	2.0%	2.2%	2.1%	1.6%
Graft Failure	2.7%	2.8%	2.9%	2.7%	3.1%	2.8%	2.5%	2.5%	2.9%	2.7%
All Losses	5.7%	5.4%	5.2%	4.9%	5.3%	5.1%	4.4%	4.7%	5.1%	4.4%
New Zealand	**(1,089)**	**(1,133)**	**(1,180)**	**(1,227)**	**(1,273)**	**(1,314)**	**(1,329)**	**(1,370)**	**(1,406)**	**(1,471)**
Death with Function	2.6%	2.2%	2.7%	2.2%	2.2%	2.3%	2.6%	3.2%	1.8%	2.3%
Graft Failure	3.5%	3.8%	2.7%	2.5%	1.8%	3.3%	3.5%	2.9%	2.1%	2.3%
All Losses	6.1%	6.0%	5.4%	4.7%	4.0%	5.6%	6.0%	6.1%	3.9%	4.6%

Figure 8.43

Year of Graft Loss Due to Death or Failure 2000 - 2009

Loss	Cause of Failure	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Australia												
Death with Function		169	152	138	142	143	162	142	162	169	135	1,514
Failed	Rejection - Acute	9	7	8	3	5	3	7	11	10	17	80
	Rejection - Chronic Allograft (CAN)	91	111	108	113	143	134	105	131	172	147	1,255
	Rejection - Hyperacute	1	-	-	-	-	-	1	-	2	-	4
	Vascular	7	12	16	15	18	13	14	8	14	17	134
	Technical Problems	4	2	3	3	2	4	5	2	4	3	32
	Glomerulonephritis	15	8	15	12	13	16	23	15	9	15	141
	Non Compliance	7	7	11	10	8	6	3	8	6	12	78
	Other	18	15	16	13	19	15	19	14	16	14	159
Total		**321**	**314**	**315**	**311**	**351**	**353**	**319**	**351**	**402**	**360**	**3,397**
New Zealand												
Death with Function		28	25	32	27	28	30	34	44	26	34	308
Failed	Rejection - Acute	-	1	1	1	-	2	2	1	1	1	10
	Rejection - Chronic Allograft (CAN)	20	31	22	16	15	24	31	21	20	28	228
	Rejection - Hyperacute	-	-	-	-	1	-	-	-	-	-	1
	Vascular	8	1	1	1	-	4	-	3	1	2	21
	Technical Problems	-	2	1	2	-	2	3	1	-	-	11
	Glomerulonephritis	3	2	1	4	2	3	6	4	5	-	30
	Non Compliance	5	2	3	3	1	1	1	6	1	1	24
	Other	2	4	3	4	4	8	3	4	1	2	35
Total		**66**	**68**	**64**	**58**	**51**	**74**	**80**	**84**	**55**	**68**	**668**

Figure 8.44

Graft Losses 2005 - 2009

Cause of Loss	Australia			New Zealand		
	Graft Function			Graft Function		
	<1 year	>= 1 year	Any Time	<1 year	>= 1 year	Any Time
Death with functioning Graft						
Cardiac	24 (40%)	218 (31%)	242 (31%)	5 (42%)	49 (31%)	54 (32%)
Vascular	3 (5%)	75 (11%)	78 (10%)	1 (8%)	3 (2%)	4 (2%)
Infection	21 (35%)	99 (14%)	120 (16%)	2 (17%)	22 (14%)	24 (14%)
Social	1 (2%)	31 (4%)	32 (4%)	2 (17%)	3 (2%)	5 (3%)
Malignancy	7 (12%)	223 (31%)	230 (30%)	2 (17%)	69 (44%)	71 (42%)
Miscellaneous	4 (7%)	64 (9%)	68 (9%)	-	10 (6%)	10 (6%)
Total	**60 (100%)**	**710 (100%)**	**770 (100%)**	**12 (100%)**	**156 (100%)**	**168 (100%)**
Graft Failure						
Rejection - Acute	28 (19%)	20 (2%)	48 (5%)	2 (9%)	5 (3%)	7 (4%)
Rejection - Chronic Allograft (CAN)	9 (6%)	680 (78%)	689 (68%)	1 (5%)	123 (72%)	124 (64%)
Rejection - Hyperacute	3 (2%)	-	3 (<1%)	-	-	-
Vascular	52 (36%)	14 (2%)	66 (7%)	8 (36%)	2 (1%)	10 (5%)
Technical Problems	14 (10%)	4 (<1%)	18 (2%)	6 (27%)	-	6 (3%)
Glomerulonephritis	9 (6%)	69 (8%)	78 (8%)	1 (5%)	17 (10%)	18 (9%)
Non Compliance	1 (1%)	34 (4%)	35 (3%)	-	10 (6%)	10 (5%)
Other	29 (20%)	49 (6%)	78 (8%)	4 (18%)	14 (8%)	18 (9%)
Total	**145 (100%)**	**870 (100%)**	**1,015 (100%)**	**22 (100%)**	**171 (100%)**	**193 (100%)**

IMMUNOSUPPRESSION

AUSTRALIA

In Australia in 2009 Tacrolimus was used initially in 82% of patients and Cyclosporine in 16% of primary deceased donor grafts. The proportion of patients initially using Tacrolimus has increased since 2002, as shown in Figure 8.45. The number of patients still taking Prednisolone two years after transplantation has increased since 2002 and is now 94%, for patients transplanted in 2007.

Caution is necessary in the interpretation of small changes in clinical practice with immunosuppressive therapy. A number of large research trials are undertaken in Australia. The drug protocol used in those studies can potentially skew the number of patients taking specific drugs in any given year.

Figure 8.45 Australia

Immunosuppressive Therapy - Primary Deceased Donor Graft 2002 - 2009

	Year	Aza	CyA	Tacrol	MMF	MPA	Sirol	Everolimus	Pred	Number of Deceased Donor Grafts
Initial treatment	2002	9 (3%)	239 (73%)	80 (25%)	272 (83%)	15 (5%)	7 (2%)	23 (7%)	318 (98%)	326
	2003	8 (3%)	187 (68%)	77 (28%)	190 (69%)	52 (19%)	10 (4%)	0 (0%)	258 (94%)	274
	2004	6 (2%)	212 (59%)	136 (38%)	309 (85%)	25 (7%)	10 (3%)	1 (<1%)	360 (99%)	362
	2005	9 (3%)	131 (41%)	172 (54%)	299 (94%)	4 (1%)	17 (5%)	0 (0%)	308 (97%)	319
	2006	0 (0%)	155 (51%)	139 (45%)	260 (85%)	24 (8%)	3 (1%)	19 (6%)	296 (97%)	306
	2007	2 (1%)	139 (48%)	140 (49%)	244 (85%)	36 (13%)	0 (0%)	5 (2%)	285 (99%)	287
	2008	2 (1%)	137 (35%)	240 (61%)	364 (93%)	22 (6%)	0 (0%)	0 (0%)	389 (99%)	391
	2009	4 (1%)	62 (16%)	310 (82%)	356 (95%)	13 (3%)	0 (0%)	2 (1%)	374 (99%)	376
Treatment at 12 months	2002	24 (8%)	160 (52%)	124 (41%)	240 (79%)	11 (4%)	14 (5%)	19 (6%)	279 (91%)	305
	2003	22 (9%)	124 (50%)	104 (42%)	161 (64%)	45 (18%)	15 (6%)	0 (0%)	222 (89%)	250
	2004	23 (7%)	129 (39%)	162 (49%)	236 (72%)	46 (14%)	31 (9%)	1 (<1%)	304 (93%)	328
	2005	23 (8%)	84 (29%)	172 (59%)	229 (79%)	21 (7%)	29 (10%)	3 (1%)	262 (90%)	291
	2006	12 (4%)	94 (34%)	145 (52%)	216 (78%)	27 (10%)	21 (8%)	20 (7%)	259 (93%)	278
	2007	13 (5%)	87 (33%)	148 (56%)	189 (71%)	51 (19%)	12 (5%)	14 (5%)	252 (95%)	265
	2008	17 (5%)	83 (23%)	247 (69%)	283 (79%)	37 (10%)	11 (3%)	8 (2%)	341 (96%)	357
Treatment at 24 months	2002	22 (7%)	150 (51%)	119 (40%)	232 (79%)	14 (5%)	20 (7%)	19 (6%)	250 (85%)	295
	2003	19 (8%)	104 (43%)	103 (43%)	165 (69%)	40 (17%)	19 (8%)	0 (0%)	206 (86%)	240
	2004	30 (9%)	116 (36%)	154 (48%)	219 (68%)	45 (14%)	41 (13%)	5 (2%)	283 (88%)	320
	2005	23 (8%)	77 (27%)	156 (55%)	220 (78%)	23 (8%)	45 (16%)	5 (2%)	237 (84%)	282
	2006	15 (6%)	81 (30%)	144 (43%)	207 (76%)	31 (11%)	23 (8%)	25 (9%)	248 (92%)	271
	2007	12 (5%)	80 (31%)	151 (58%)	181 (70%)	54 (21%)	14 (5%)	13 (5%)	243 (94%)	259

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

IMMUNOSUPPRESSION

NEW ZEALAND

In New Zealand in 2009, 78% of new primary deceased donor transplant recipients received Cyclosporine and 20% received Tacrolimus (Figure 8.46). This constitutes a fall in the use of Tacrolimus compared with 2008. No transplant recipients commenced Azathioprine at the time of transplantation.

There are very few patients in New Zealand receiving TOR-inhibitors (Sirolimus or Everolimus). There has been a dramatic increase in the use of Mycophenolate preparations two years after transplantation. Whereas only 7% of the 2003 cohort remained on Mycophenolate two years post transplant, 82% of the 2007 cohort were still taking Mycophenolate preparations two years later.

Caution is necessary in the interpretation of differences in practice between Australia and New Zealand. The funding of different pharmaceutical agents is quite different in the two countries.

Figure 8.46 New Zealand

Immunosuppressive Therapy - Primary Deceased Donor Graft 2002 - 2009

	Year	Aza	CyA	Tacrol	MMF	MPA	Sirol	Everolimus	Pred	Number of Deceased Donor Grafts
Initial treatment	2002	0 (0%)	57 (97%)	2 (3%)	59 (100%)	0 (0%)	0 (0%)	0 (0%)	59 (100%)	59
	2003	0 (0%)	47 (87%)	7 (13%)	46 (85%)	3 (6%)	0 (0%)	0 (0%)	52 (96%)	54
	2004	0 (0%)	47 (94%)	3 (6%)	49 (98%)	0 (0%)	0 (0%)	0 (0%)	50 (100%)	50
	2005	0 (0%)	32 (76%)	8 (19%)	41 (98%)	0 (0%)	0 (0%)	0 (0%)	41 (98%)	42
	2006	0 (0%)	26 (68%)	11 (30%)	34 (92%)	0 (0%)	0 (0%)	3 (8%)	37 (100%)	37
	2007	0 (0%)	43 (74%)	15 (26%)	57 (98%)	0 (0%)	0 (0%)	1 (2%)	58 (100%)	58
	2008	0 (0%)	30 (67%)	15 (33%)	42 (93%)	3 (7%)	0 (0%)	0 (0%)	45 (100%)	45
	2009	0 (0%)	39 (78%)	10 (20%)	49 (98%)	0 (0%)	0 (0%)	0 (0%)	49 (98%))	50
Treatment at 12 months	2002	18 (33%)	41 (76%)	13 (24%)	31 (57%)	0 (0%)	0 (0%)	0 (0%)	53 (98%)	54
	2003	15 (33%)	24 (53%)	21 (47%)	22 (49%)	3 (7%)	1 (2%)	0 (0%)	42 (93%)	45
	2004	9 (19%)	30 (64%)	17 (36%)	37 (79%)	0 (0%)	0 (0%)	0 (0%)	45 (96%)	47
	2005	2 (5%)	21 (55%)	16 (42%)	33 (87%)	1 (3%)	2 (5%)	1 (3%)	35 (92%)	38
	2006	0 (0%)	18 (53%)	15 (45%)	29 (88%)	0 (0%)	0 (0%)	3 (9%)	32 (97%)	33
	2007	3 (6%)	31 (60%)	20 (38%)	43 (83%)	0 (0%)	2 (4%)	1 (2%)	48 (92%)	52
	2008	2 (5%)	21 (48%)	23 (52%)	39 (89%)	1 (2%)	0 (0%)	0 (0%)	41 (93%)	44
Treatment at 24 months	2002	49 (92%)	39 (74%)	14 (26%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	48 (91%)	53
	2003	34 (79%)	22 (51%)	21 (49%)	3 (7%)	2 (5%)	1 (2%)	0 (0%)	40 (93%)	43
	2004	12 (27%)	27 (60%)	18 (40%)	30 (67%)	0 (0%)	0 (0%)	0 (0%)	41 (91%)	45
	2005	2 (6%)	18 (50%)	17 (47%)	30 (83%)	1 (3%)	2 (6%)	1 (3%)	29 (81%)	36
	2006	0 (0%)	16 (50%)	16 (50%)	28 (88%)	0 (0%)	0 (0%)	2 (6%)	30 (94%)	32
	2007	3 (6%)	29 (58%)	20 (40%)	41 (82%)	0 (0%)	2 (4%)	1 (2%)	45 (90%)	50

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

The use of mono and polyclonal antibody agents for induction immunosuppression has changed through time and use and differs among centres and between Australia and New Zealand. The changes in use of these agents in recent years are reported here. Readers should note that differences between Australia and New Zealand are likely to reflect case mix and also drug availability. For this Report induction therapy is defined as treatment given pre-transplant or up to two weeks post transplant in the absence of rejection.

Figure 8.47 shows the use of induction agents over the last five years.

In Australia in 2009 10% of recipients received an alternative agent either in addition to, or instead of Basiliximab and Daclizumab. There has been a small recent increase in the use of Intravenous Immunoglobulin and Rituximab, and a larger increase in the use of T cell depleting polyclonal Ab, probably reflecting an increase in desensitisation regimens and ABO incompatible transplants. In addition to the agents listed in Figure 8.47, there were four Australian recipients who received Eculizumab for induction in 2009.

In New Zealand, agents other than the interleukin 2 receptor antagonists Basiliximab and Daclizumab are very uncommon. Since 2005 there has been a steady growth in induction immunosuppression using interleukin 2 receptor antagonists, although in 2009 the use of such agents fell from 61% to 52% of recipients.

Figure 8.47

Antibody Use for Induction Immunosuppression
Australia and New Zealand 2005 - 2009

Number of Kidney Transplant Recipients
Receiving Each Agent by Year
(% Total New Transplants)

	2005	2006	2007	2008	2009
Australia					
T cell depleting polyclonal Ab	24 (3.9)	30 (4.7)	17 (2.8)	22 (2.7)	40 (5.2)
Anti-CD25	365 (58.6)	507 (79.1)	532 (86.5)	739 (90.9)	711 (92.1)
Rituximab	-	7 (1.1)	7 (1.1)	21 (2.6)	14 (1.8)
Intravenous Immunoglobulin	1 (0.2)	9 (1.4)	14 (2.3)	25 (3.1)	23 (3.0)
Muromonab-CD3	3 (0.5)	-	2 (0.3)	-	1 (0.1)
Total New Transplants	**623**	**641**	**615**	**813**	**772**
New Zealand					
T cell depleting polyclonal Ab	-	-	-	-	-
Anti-CD25	7 (7.5)	18 (20.0)	47 (38.2)	74 (60.7)	63 (52.1)
Rituximab	-	-	-	1 (0.8)	2 (1.7)
Intravenous Immunoglobulin	-	-	-	-	-
Muromonab-CD3	1 (1.1)	-	-	-	-
Total New Transplants	**93**	**90**	**123**	**122**	**121**

USE OF ANTIBODY THERAPY FOR TREATMENT OF REJECTION

AUSTRALIA AND NEW ZEALAND

Figure 8.48 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 use has not changed over recent years in New Zealand, and is used more there than in Australia. In Australia, use of Muromonab-CD3 has fallen, but use of Rituximab and, most dramatically, Intravenous Immunoglobulin has increased recently.

Figure 8.48

Antibody Use as Treatment for Acute Rejection
Australia and New Zealand 2005 - 2009

Number of Kidney Transplant Recipients
Receiving Each Agent by Year
(% Total New Transplants)

	2005	2006	2007	2008	2009
Australia					
T cell depleting polyclonal Ab	22 (3.5)	13 (2.0)	14 (2.3)	19 (2.3)	26 (3.4)
Anti-CD25	1 (0.2)	-	-	1 (0.1)	1 (0.1)
Rituximab	9 (1.4)	11 (1.7)	16 (2.6)	24 (3.0)	25 (3.2)
Intravenous Immunoglobulin	21 (3.4)	42 (6.6)	70 (11.4)	89 (10.9)	102 (13.2)
Muromonab-CD3	18 (2.9)	11 (1.7)	9 (1.5)	10 (1.2)	12 (1.6)
Total New Transplants	**623**	**641**	**615**	**813**	**772**
Total Transplants at Risk	**6,913**	**7,182**	**7,471**	**7,921**	**8,268**
New Zealand					
T cell depleting polyclonal Ab	2 (2.2)	-	2 (1.6)	3 (2.5)	3 (2.4)
Anti-CD25	1 (1.1)	1 (1.1)	1 (0.8)	1 (0.8)	-
Rituximab	-	-	-	-	3 (2.5)
Intravenous Immunoglobulin	-	3 (3.3)	3 (2.4)	2 (1.6)	7 (5.8)
Muromonab-CD3	8 (8.6)	10 (11.1)	10 (8.1)	10 (8.2)	8 (6.6)
Total New Transplants	**93**	**90**	**123**	**122**	**121**
Total Transplants at Risk	**1,314**	**1,329**	**1,370**	**1,406**	**1,471**

REJECTION RATES

AUSTRALIA AND NEW ZEALAND

Figure 4.89 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 do not appear to have fallen in either living or deceased donors.

Figure 8.49 Australia and New Zealand

Rejection Rates at Six Months Post Transplant

Donor Source	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Living Donor										
First graft	37.8%	26.1%	27.5%	27.7%	21.6%	19.6%	19.6%	21.1%	17.0%	15.2%
Second and subsequent grafts	47.4%	27.8%	13.0%	33.3%	34.8%	18.5%	33.3%	34.3%	30.0%	16.2%
Deceased Donor										
First graft	32.6%	25.1%	22.9%	26.8%	22.8%	18.6%	16.3%	17.7%	22.0%	19.5%
Second and subsequent grafts	37.3%	25.0%	24.1%	25.0%	27.5%	31.7%	36.4%	32.8%	30.3%	32.4%

SHORT TERM SURVIVAL - PRIMARY DECEASED DONOR GRAFTS

AUSTRALIA

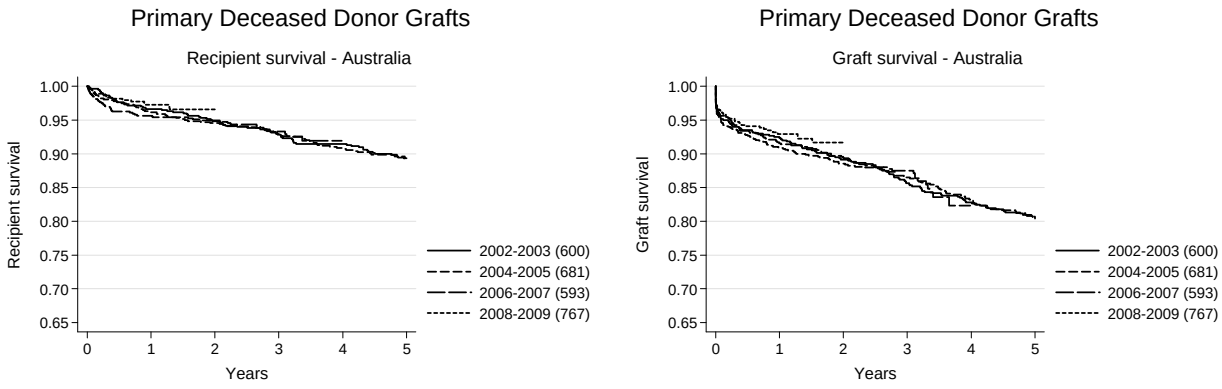
Graft and patient survival for primary deceased donor grafts performed in Australia, calculated by the Kaplan-Meier method, is shown in Figure 8.50. The figures include graft losses or deaths on the day of transplant, and graft survival is not censored for death. Unadjusted one year patient and graft survival for primary deceased donor grafts in Australia have stabilised in the past ten years. Kaplan-Meier graphs illustrating this are shown in Figure 8.51.

Figure 8.50

Primary Deceased Donor - Australia
Recipient and Graft Survival 1990 - 2009
% [95% Confidence Interval]

Year of Transplant	Survival			
	1 month	6 months	1 year	5 years
Recipient Survival				
1990-1991 (n=647)	99 [97, 99]	94 [92, 96]	93 [91, 95]	85 [82, 88]
1992-1993 (n=665)	99 [98, 99]	95 [94, 97]	94 [92, 96]	85 [82, 87]
1994-1995 (n=576)	99 [98,100]	96 [94, 97]	96 [94, 97]	86 [83, 88]
1996-1997 (n=624)	99 [97, 99]	96 [94, 97]	95 [93, 97]	86 [83, 89]
1998-1999 (n=541)	99 [98,100]	97 [95, 98]	95 [93, 96]	86 [83, 89]
2000-2001 (n=600)	99 [98,100]	97 [96, 98]	95 [93, 97]	89 [87, 92]
2002-2003 (n=600)	100 [99,100]	98 [96, 99]	97 [95, 98]	89 [87, 92]
2004-2005 (n=681)	99 [98,100]	98 [96, 99]	96 [94, 97]	89 [87, 92]
2006-2007 (n=593)	99 [97, 99]	96 [94, 98]	96 [94, 97]	-
2008-2009 (n=767)	99 [99,100]	98 [97, 99]	97 [96, 98]	-
Graft Survival				
1990-1991 (n=647)	92 [89, 94]	87 [84, 89]	85 [82, 87]	72 [68, 75]
1992-1993 (n=665)	91 [89, 93]	87 [85, 90]	86 [83, 88]	73 [69, 76]
1994-1995 (n=576)	95 [93, 97]	91 [89, 93]	90 [87, 92]	74 [70, 78]
1996-1997 (n=624)	94 [91, 95]	90 [87, 92]	89 [86, 91]	78 [74, 81]
1998-1999 (n=541)	96 [94, 97]	93 [90, 95]	91 [88, 93]	77 [73, 80]
2000-2001 (n=600)	97 [95, 98]	94 [92, 96]	92 [90, 94]	82 [79, 85]
2002-2003 (n=600)	95 [93, 97]	94 [91, 95]	93 [90, 94]	81 [77, 84]
2004-2005 (n=681)	95 [93, 97]	93 [91, 95]	91 [88, 93]	80 [77, 83]
2006-2007 (n=593)	96 [94, 97]	93 [91, 95]	92 [89, 94]	-
2008-2009 (n=767)	96 [95, 97]	94 [92, 96]	93 [91, 95]	-

Figure 8.51



SHORT TERM SURVIVAL - PRIMARY DECEASED DONOR GRAFTS

NEW ZEALAND

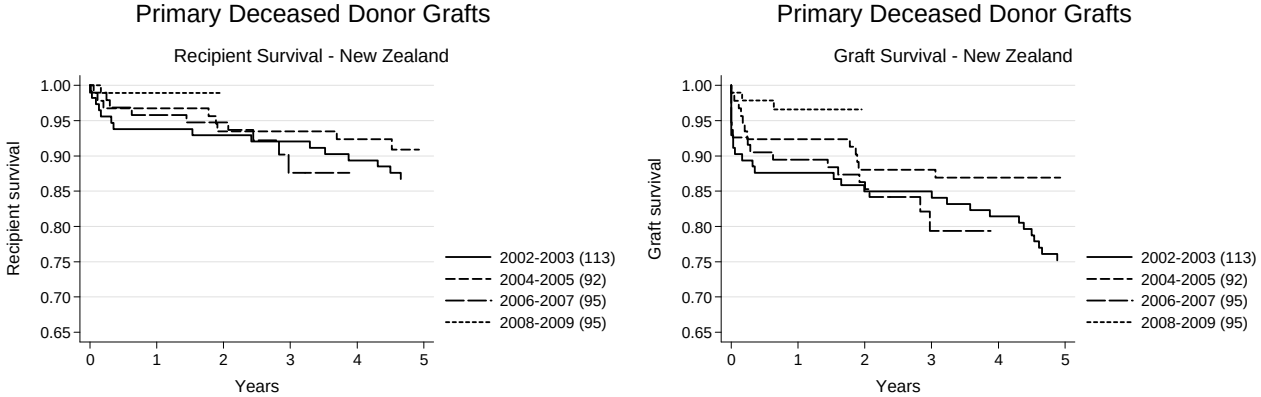
Graft and patient survival for primary deceased donor grafts performed in New Zealand, calculated by the Kaplan-Meier method, is shown in Figure 8.52. Like Australia, the improvement in unadjusted one year patient and graft survival have stabilised in the past ten years, although there is greater random variation due to smaller overall numbers. Figure 8.53 presents these data as Kaplan-Meier curves.

Figure 8.52

Primary Deceased Donor - New Zealand
Recipient and Graft Survival 1990 - 2009
% [95% Confidence Interval]

Year of Transplant	Survival			
	1 month	6 months	1 year	5 years
Recipient Survival				
1990-1991 (n=115)	97 [91, 99]	93 [87, 96]	92 [86, 96]	77 [69, 84]
1992-1993 (n=142)	98 [94, 99]	93 [87, 96]	89 [82, 93]	79 [71, 85]
1994-1995 (n=114)	97 [92, 99]	92 [85, 96]	91 [84, 95]	88 [80, 93]
1996-1997 (n=135)	99 [94,100]	95 [89, 97]	94 [89, 97]	84 [76, 89]
1998-1999 (n=126)	96 [91, 98]	91 [85, 95]	90 [83, 94]	79 [71, 85]
2000-2001 (n=125)	100 [-, -]	96 [91, 98]	96 [91, 98]	86 [79, 91]
2002-2003 (n=113)	98 [93,100]	94 [87, 97]	94 [87, 97]	87 [79, 92]
2004-2005 (n=92)	99 [93,100]	97 [90, 99]	97 [90, 99]	91 [83, 95]
2006-2007 (n=95)	99 [93,100]	97 [91, 99]	96 [89, 98]	-
2008-2009 (n=95)	100 [-, -]	99 [92,100]	99 92,100]	-
Graft Survival				
1990-1991 (n=115)	90 [83, 95]	84 [76, 90]	83 [74, 88]	63 [53, 71]
1992-1993 (n=142)	89 [82, 93]	82 [74, 87]	77 [70, 83]	67 [59, 74]
1994-1995 (n=114)	88 [80, 93]	84 [76, 90]	80 [71, 86]	69 [60, 77]
1996-1997 (n=135)	90 [83, 94]	87 [80, 91]	84 [77, 90]	72 [63, 79]
1998-1999 (n=126)	91 [85, 95]	86 [78, 91]	83 [75, 88]	69 [60, 76]
2000-2001 (n=125)	94 [89, 97]	90 [84, 94]	90 [84, 94]	78 [70, 85]
2002-2003 (n=113)	90 [83, 94]	88 [80, 92]	88 [80, 92]	75 [66, 82]
2004-2005 (n=92)	98 [92, 99]	92 [85, 96]	92 [85, 96]	87 [78, 92]
2006-2007 (n=95)	93 [85, 96]	91 [83, 95]	89 [81, 94]	-
2008-2009 (n=95)	99 [93,100]	98 [92, 99]	97 [90, 99]	-

Figure 8.53



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 8.54

Graft and Patient Survival of Primary Grafts
Deceased Donors - Australia and New Zealand

	Graft Survival					Patient Survival				
Time Period	**1 year**	**5 yrs**	**10 yrs**	**15 yrs**	**20 yrs**	**1 year**	**5 yrs**	**10 yrs**	**15 yrs**	**20 yrs**
1970-1974 (n=1149)	58.2%	41.9%	30.3%	22.8%	14.6%	77.0%	57.4%	44.4%	34.2%	25.1%
1975-1979 (n=1463)	51.7%	36.0%	25.6%	17.7%	12.6%	81.0%	63.6%	49.4%	35.5%	26.2%
1980-1984 (n=1595)	63.3%	45.4%	32.1%	23.0%	16.2%	91.4%	75.1%	59.4%	45.9%	34.7%
1985-1989 (n=1916)	80.8%	65.8%	47.2%	32.9%	21.4%	92.1%	80.3%	64.5%	51.2%	39.6%
1990-1994 (n=1906)	85.0%	70.9%	50.7%	34.7%	-	93.4%	83.9%	67.8%	53.3%	-
1995-1999 (n=1779)	88.6%	76.2%	58.6%	-	-	94.7%	86.0%	72.5%	-	-
2000-2004 (n=1850)	91.6%	80.9%	-	-	-	96.0%	89.1%	-	-	-
2005-2009 (n=1911)	92.1%	-	-	-	-	96.5%	-	-	-	-

Figure 8.55

SHORT TERM SURVIVAL - SECOND AND SUBSEQUENT DECEASED DONOR GRAFTS

AUSTRALIA AND NEW ZEALAND

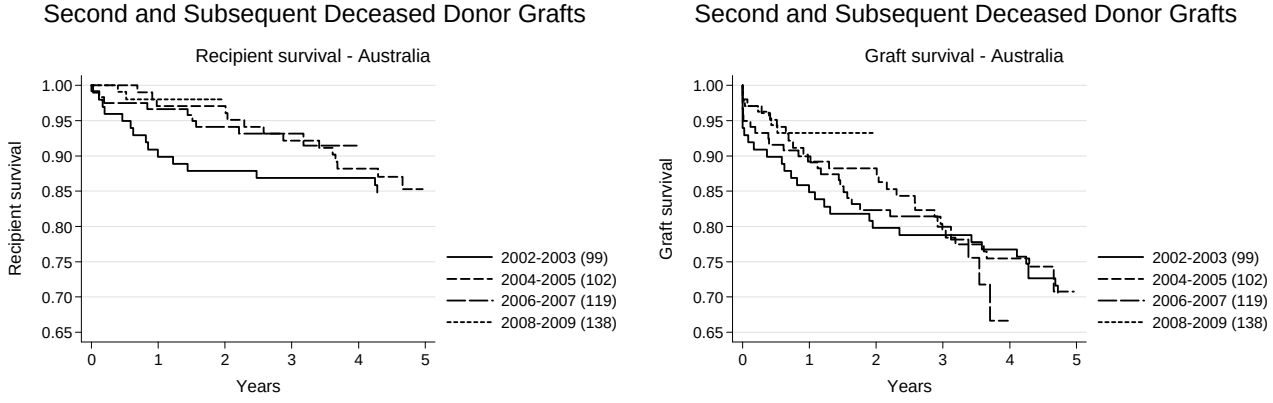
Patient and graft survival for second or subsequent deceased donor grafts in Australia, calculated by the Kaplan-Meier method, is shown in Figures 8.56 and 8.57.

Figure 8.56

Second and Subsequent Deceased Donor - Australia
Recipient and Graft Survival 1990 - 2009
% [95% Confidence Interval]

Year of Transplant	Survival			
	1 month	6 months	1 year	5 years
Recipient Survival				
1990-1991 (n=129)	98 [94,100]	95 [89, 97]	93 [87, 96]	84 [76, 89]
1992-1993 (n=135)	99 [95,100]	96 [91, 98]	95 [89, 97]	84 [76, 89]
1994-1995 (n=109)	98 [93,100]	97 [92, 99]	95 [89, 98]	87 [79, 92]
1996-1997 (n=94)	100 [-, -]	98 [92, 99]	98 [92, 99]	86 [77, 92]
1998-1999 (n=103)	100 [-, -]	97 [91, 99]	94 [87, 97]	84 [76, 90]
2000-2001 (n=78)	97 [90, 99]	95 [87, 98]	95 [87, 98]	90 [81, 95]
2002-2003 (n=99)	99 [93,100]	95 [88, 98]	90 [82, 94]	85 [76, 91]
2004-2005 (n=102)	100 [-,-]	100 [-,-]	97 [91, 99]	84 [76, 91]
2006-2007 (n=119)	99 [94,100]	97 [92, 99]	97 [91, 99]	-
2008-2009 (n=138)	100 [-,-]	99 [94,100]	98 [92, 99]	-
Graft Survival				
1990-1991 (n=129)	84 [77, 90]	81 [73, 86]	79 [71, 85]	63 [54, 70]
1992-1993 (n=135)	83 [75, 88]	79 [71, 85]	78 [70, 84]	65 [57, 73]
1994-1995 (n=109)	86 [78, 91]	83 [74, 89]	81 [72, 87]	67 [57, 75]
1996-1997 (n=94)	90 [82, 95]	87 [79, 93]	86 [77, 92]	69 [59, 77]
1998-1999 (n=103)	93 [86, 97]	88 [80, 93]	83 [75, 89]	68 [56, 76]
2000-2001 (n=78)	90 [81, 95]	83 [73, 90]	82 [72, 89]	67 [55, 76]
2002-2003 (n=99)	93 [86, 97]	90 [82, 94]	85 [76, 91]	71 [61, 79]
2004-2005 (n=102)	97 [91, 99]	95 [89, 98]	89 [81, 94]	71 [60, 79]
2006-2007 (n=119)	95 [89, 98]	92 [85, 95]	90 [83, 94]	-
2008-2009 (n=138)	97 [92, 99]	94 [88, 97]	93 [87, 97]	-

Figure 8.57



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 8.58 and 8.59. 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 8.54-8.55).

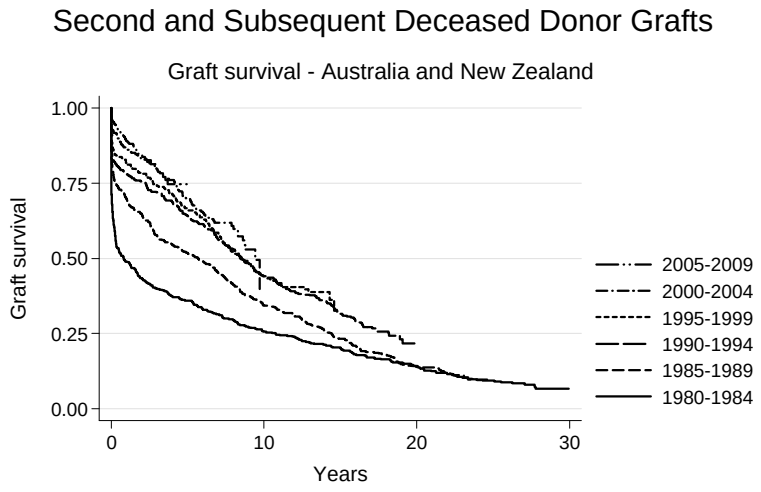
Figure 8.58

Graft and Patient Survival of Second and Subsequent Grafts
Deceased Donors
Australia and New Zealand

	Graft Survival					Patient Survival				
Time Period	1 year	5 yrs	10 yrs	15 yrs	20 yrs	1 year	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974 (n=158)	58.9%	37.3%	27.2%	21.5%	14.6%	79.1%	55.7%	42.4%	33.5%	26.6%
1975-1979 (n=284)	44.0%	28.2%	20.4%	15.0%	8.1%	78.2%	57.4%	44.7%	31.3%	20.0%
1980-1984 (n=417)	48.9%	36.0%	25.6%	20.3%	14.2%	90.6%	74.8%	59.0%	46.8%	37.1%
1985-1989 (n=458)	70.1%	51.7%	34.4%	23.2%	13.9%	93.7%	79.2%	62.8%	47.3%	35.1%
1990-1994 (n=374)	78.3%	64.2%	44.1%	31.5%	-	93.0%	82.6%	67.9%	54.2%	-
1995-1999 (n=297)	81.8%	66.3%	44.0%	-	-	96.0%	86.2%	73.4%	-	-
2000-2004 (n=268)	86.6%	70.1%	-	-	-	93.7%	86.2%	-	-	-
2005-2009 (n=343)	89.2%	-	-	-	-	96.0%	-	-	-	-

Note: These survival figures are calculated using the Kaplan-Meier method rather than actuarial methods or simply a proportion of transplants performed.

Figure 8.59



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 8.60 Australia

Year of Transplant	Primary Living Donor Grafts 1990 - 2009 Recipient and Graft Survival % [95% Confidence Interval]			
	1 month	6 months	1 year	5 years
Recipient Survival				
1990-1991 (n=126)	99 [95,100]	96 [91, 98]	95 [90, 98]	81 [72, 87]
1992-1993 (n=124)	100 [- , -]	99 [94,100]	98 [94,100]	92 [85, 96]
1994-1995 (n=179)	100 [- , -]	98 [94, 99]	97 [93, 98]	94 [89, 97]
1996-1997 (n=239)	100 [- , -]	99 [97,100]	99 [96,100]	96 [92, 98]
1998-1999 (n=305)	100 [- , -]	99 [97,100]	99 [97,100]	96 [93, 97]
2000-2001 (n=364)	99 [98,100]	99 [97, 99]	99 [97, 99]	95 [92, 97]
2002-2003 (n=409)	100 [98,100]	99 [97, 99]	98 [96, 99]	93 [90, 95]
2004-2005 (n=441)	100 [98,100]	100 [98,100]	99 [98,100]	97 [95, 98]
2006-2007 (n=483)	100 [99,100]	99 [98,100]	99 [97, 99]	-
2008-2009 (n=614)	100 [98,100]	99 [97, 99]	99 [97, 99]	-
Graft Survival				
1990-1991 (n=126)	94 [89, 97]	90 [83, 94]	88 [81, 93]	74 [65, 81]
1992-1993 (n=124)	97 [92, 99]	96 [91, 98]	94 [88, 97]	83 [75, 88]
1994-1995 (n=179)	94 [90, 97]	92 [86, 95]	90 [85, 94]	83 [76, 87]
1996-1997 (n=239)	96 [92, 98]	95 [91, 97]	94 [90, 96]	87 [81, 90]
1998-1999 (n=305)	98 [96, 99]	97 [94, 98]	96 [94, 98]	87 [82, 90]
2000-2001 (n=364)	98 [95, 99]	96 [93, 97]	95 [93, 97]	88 [84, 91]
2002-2003 (n=409)	98 [96, 99]	96 [94, 98]	95 [93, 97]	88 [84, 91]
2004-2005 (n=441)	100 [98,100]	98 [96, 99]	98 [96, 99]	89 [86, 91]
2006-2007 (n=483)	99 [97, 99]	98 [96, 99]	97 [95, 98]	-
2008-2009 (n=614)	98 [96, 99]	96 [95, 98]	96 [94, 97]	-

Figure 8.61 New Zealand

Year of Transplant	Primary Living Donor Grafts 1990 - 2009 Recipient and Graft Survival % [95% Confidence Interval]			
	1 month	6 months	1 year	5 years
Recipient Survival				
1990-1991 (n=33)	100 [- , -]	100 [- , -]	100 [- , -]	97 [80,100]
1992-1993 (n=31)	100 [- , -]	97 [79,100]	97 [79,100]	94 [77, 98]
1994-1995 (n=40)	100 [- , -]	100 [- , -]	98 [84,100]	92 [78, 97]
1996-1997 (n=54)	100 [- , -]	100 [- , -]	100 [- , -]	87 [75, 94]
1998-1999 (n=66)	100 [- , -]	100 [- , -]	100 [- , -]	92 [83, 97]
2000-2001 (n=67)	100 [- , -]	100 [- , -]	100 [- , -]	95 [87, 99]
2002-2003 (n=84)	100 [- , -]	99 [92,100]	99 [92,100]	95 [88, 98]
2004-2005 (n=93)	99 [93,100]	98 [92, 99]	96 [89, 98]	89 [81, 94]
2006-2007 (n=97)	100 [- , -]	99 [93,100]	99 [93,100]	-
2008-2009 (n=125)	99 [94,100]	98 [94,100]	97 [91, 99]	-
Graft Survival				
1990-1991 (n=33)	97 [80,100]	97 [80,100]	94 [78, 98]	82 [64, 91]
1992-1993 (n=31)	100 [- , -]	97 [79,100]	97 [79,100]	84 [66, 93]
1994-1995 (n=40)	93 [79, 98]	90 [76, 96]	90 [76, 96]	75 [58, 86]
1996-1997 (n=54)	96 [86, 99]	96 [86, 99]	96 [86, 99]	74 [60, 84]
1998-1999 (n=66)	97 [88, 99]	95 [87, 99]	94 [85, 98]	74 [62, 83]
2000-2001 (n=67)	97 [89, 99]	97 [89, 99]	97 [89, 99]	83 [72, 90]
2002-2003 (n=84)	100 [- , -]	99 [92,100]	99 [92,100]	90 [82, 95]
2004-2005 (n=93)	96 [89, 98]	94 [86, 97]	92 [85, 96)	87 [78, 92]
2006-2007 (n=97)	100 [- , -]	98 [92, 99]	98 [92, 99]	-
2008-2009 (n=125)	98 [94,100]	98 [93, 99]	96 [90, 99]	-

Figure 8.62

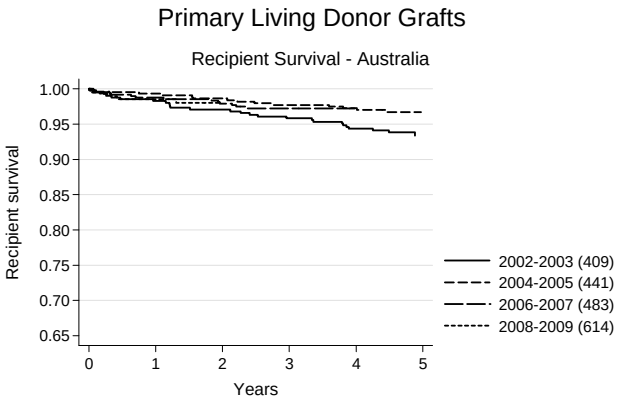


Figure 8.63

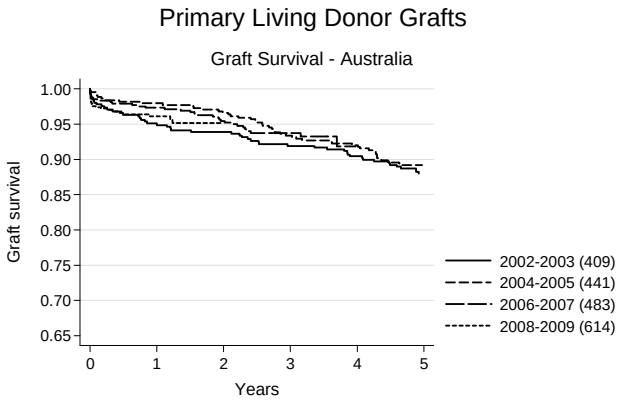


Figure 8.64

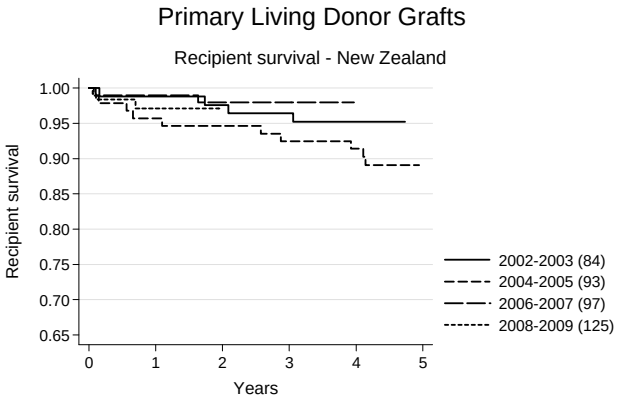
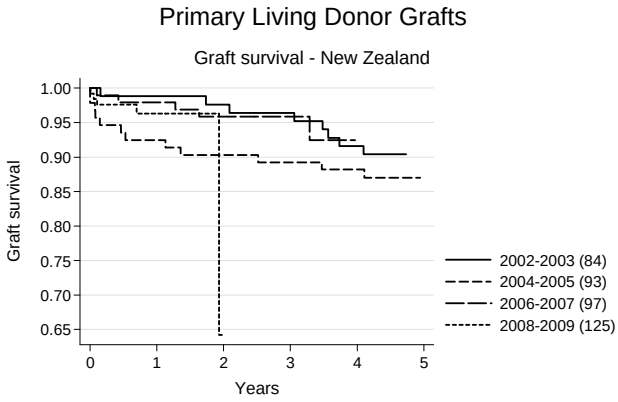


Figure 8.65



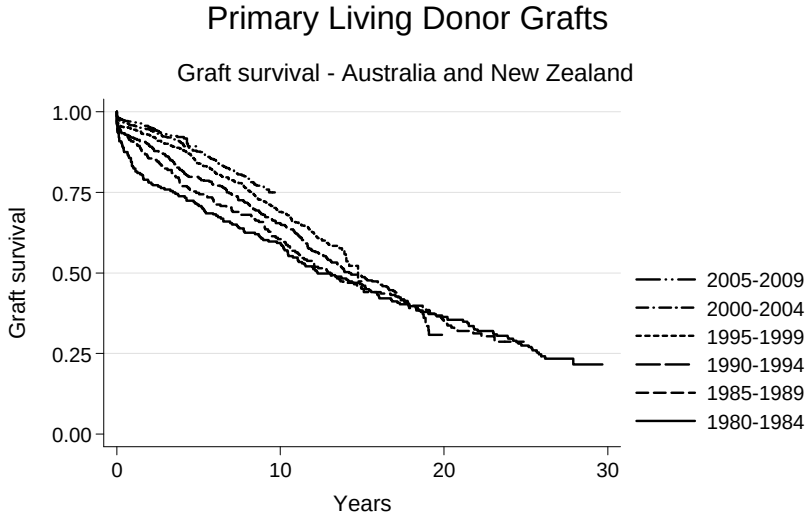
LONG TERM SURVIVAL - PRIMARY LIVING DONOR GRAFTS
AUSTRALIA AND NEW ZEALAND

Figure 8.66

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

	Graft Survival					Patient Survival				
Time Period	1 year	5 yrs	10 yrs	15 yrs	20 yrs	1 year	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974 (n=21)	85.7%	76.2%	61.5%	46.2%	20.5%	90.5%	81.0%	61.9%	52.4%	42.9%
1975-1979 (n=107)	81.2%	63.3%	49.%	41.2%	31.1%	90.7%	78.5%	71.0%	61.7%	52.2%
1980-1984 (n=241)	82.8%	71.2%	59.3%	46.5%	36.4%	96.3%	85.4%	74.9%	64.8%	55.8%
1985-1989 (n=230)	90.8%	74.8%	60.5%	45.1%	35.1%	95.2%	87.8%	79.9%	71.1%	62.9%
1990-1994 (n=431)	91.8%	79.6%	65.3%	48.8%	-	97.2%	89.2%	84.0%	74.4%	-
1995-1999 (n=766)	94.5%	84.1%	69.0%	-	-	98.6%	94.7%	86.6%	-	-
2000-2004 (n=1193)	95.9%	87.7%	-	-	-	98.5%	94.3%	-	-	-
2005-2009 (n=1584)	96.8%	-	-	-	-	98.6%	-	-	-	-

Figure 8.67



LONG TERM SURVIVAL - SECOND AND SUBSEQUENT LIVING DONOR GRAFTS

AUSTRALIA AND NEW ZEALAND

Figure 8.68

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

	Graft Survival					Patient Survival				
Time Period	**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)	72.7%	45.4%	36.4%	36.4%	27.3%	100.0%	100.0%	81.8%	72.7%	63.6%
1980-1984 (n=42)	78.6%	64.3%	59.5%	50.0%	40.5%	97.6%	81.0%	78.6%	71.4%	51.9%
1985-1989 (n=31)	87.1%	74.2%	58.1%	45.2%	29.0%	96.8%	83.9%	71.0%	64.5%	47.5%
1990-1994 (n=38)	100.0%	86.8%	41.2%	35.7%	-	100.0%	94.7%	73.3%	67.9%	-
1995-1999 (n=73)	93.2%	83.6%	69.9%	-	-	98.6%	98.6%	89.0%	-	-
2000-2004 (n=107)	93.5%	85.9%	-	-	-	98.1%	95.3%	-	-	-
2005-2009 (n=175)	95.9%	-	-	-	-	98.8%	-	-	-	-

Figure 8.69