

## CHAPTER 8

### TRANSPLANTATION

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## TRANSPLANTS PERFORMED IN 2008

Figure 8.1

Number of Renal Transplant Operations  
Total (Live 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)

### AUSTRALIA

The 813 transplant operations performed in 2008 represents an increase of 32% compared to 2007 (615 operations) (Figure 8.1). This represents a transplant rate of 38 per million population per year, compared to 29 per million in 2007. There was an increase of 31% for live donors from last year, (354 from 271)(Figure 8.2).

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)

Live donor transplants accounted for 44% (354 grafts) in 2008, the same as 2007 (271 grafts) and 43% (273 grafts) in 2006. This proportion has remained steady for the past three years.

Primary recipients (those receiving a first transplant) received 87% of all kidneys transplanted in 2008, similar to 2007 and 2006.

### NEW ZEALAND

The number of transplant operations (122) performed in 2008 represents a transplant rate of 29 per million population per year the same as in 2007 (Figure 8.1).

The percentage of live donors increased from 47% to 57% of all operations in 2008 (Figure 8.3).

Of the grafts performed in 2008, 91% were to primary recipients, the same as in 2007, (89% in 2006).

Figure 8.2

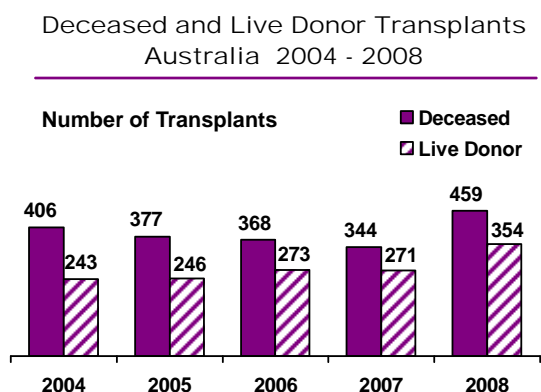
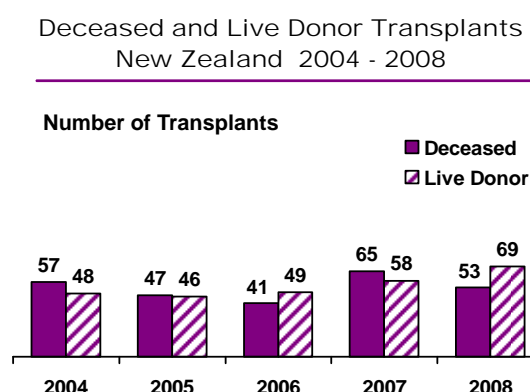


Figure 8.3

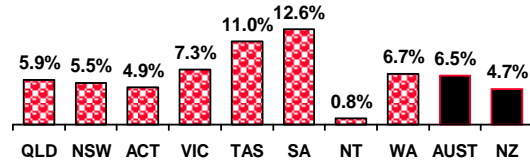


## TRANSPLANT RATE OF PATIENTS DIALYSED

Figure 8.4

Ratio of Transplantation 2008 Related to Patients Dialysed\*

**All Patients**

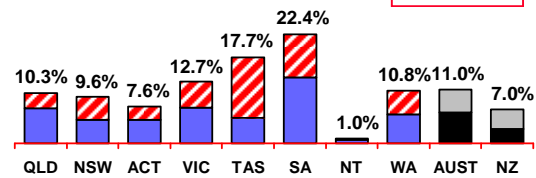


In Australia the proportion of patients receiving dialysis in 2008, who were transplanted that year was 6.5%, an increase from 5.2% in 2007 and 5.7% in 2006. A further 100 patients with ESKD received pre-emptive transplantation (transplantation as the first RRT modality); thus transplantation was the mode of RRT for 813 of 12,378 (6.5%) of patients who would have otherwise been managed with dialysis in 2008.

Figure 8.5

Ratio of Transplantation 2008 Related to Patients Dialysed\*

**Patients - Age Group 15-64 Years**



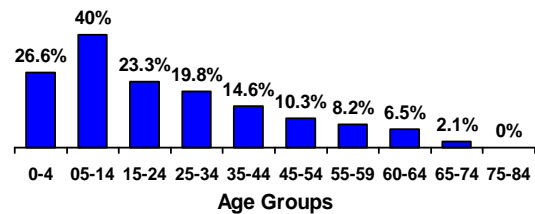
Of all patients in the 15-64 year age group who received dialysis treatment during 2008, 11.0% (724 patients) were transplanted in 2008, compared to 8.8% (556 patients) in 2007.

In New Zealand, 4.7% of all dialysed patients were transplanted in 2008, compared to 4.9% in 2007. A further 24 patients with ESKD received pre-emptive transplantation, thus transplantation was the mode of RRT for 122 of 2,588 (4.7%) of patients.

Figure 8.6

Ratio of Transplantation 2008 Related to Patients Dialysed\*

**Australia 6.5%**



In the 15-64 year age group 7.0% of those on dialysis (112 patients) were transplanted in 2008, compared to 6.7% (111 patients) in 2007 and 5.0% (80 patients) in 2006 (Figures 8.4 and 8.5).

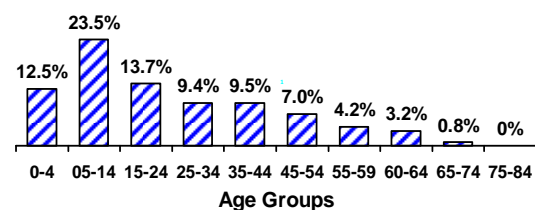
The rate of transplantation in Australia was the highest in the age group 5-14 years (40%) and 0-4 years of age (26.6%) and continued to decline with increasing age (Figure 8.6).

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 8.7).

Figure 8.7

Ratio of Transplantation 2008 Related to Patients Dialysed\*

**New Zealand 4.7%**



\* Preemptive transplant patients included



## AGE OF RECIPIENTS TRANSPLANTED IN 2008

Figure 8.8

Graft Number and Age of Patients Transplanted 2008

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	1	9	10	43	95	102	97	34	0	391
	2	0	0	4	6	11	11	18	1	0	51
	3	0	0	1	0	5	4	3	0	0	13
	5	0	0	0	0	1	3	0	0	0	4
Live Donor	1	3	12	27	48	51	77	71	28	0	317
	2	0	1	4	6	9	8	5	0	0	33
	3	0	0	0	1	2	0	0	0	0	3
	4	0	0	0	0	0	0	1	0	0	1
<b>Total</b>		<b>4</b>	<b>22</b>	<b>46</b>	<b>104</b>	<b>174</b>	<b>205</b>	<b>195</b>	<b>63</b>	<b>0</b>	<b>813</b>
<b>New Zealand</b>											
Deceased	1	0	1	1	5	8	13	12	5	0	45
	2	0	0	0	1	0	4	2	0	0	7
	3	0	0	0	0	0	1	0	0	0	1
Live Donor	1	1	3	11	7	15	17	12	0	0	66
	2	0	0	0	0	3	0	0	0	0	3
<b>Total</b>		<b>1</b>	<b>4</b>	<b>12</b>	<b>13</b>	<b>26</b>	<b>35</b>	<b>26</b>	<b>5</b>	<b>0</b>	<b>122</b>

### AUSTRALIA

The median age of transplant recipients in 2008 was 48.5 years, compared to 47.0 years in 2007. The age range was 1.7 to 74.6 years (Figures 8.8 and 8.9).

Forty seven percent of recipients were in the 35-54 year age group. Thirty two percent of recipients in 2008 were over 54 years of age, compared to 29% in 2007.

The transplantation rate per million for each age group and as a percentage of dialysed patients for each age group is shown in Figures 8.6 and 8.9.

### NEW ZEALAND

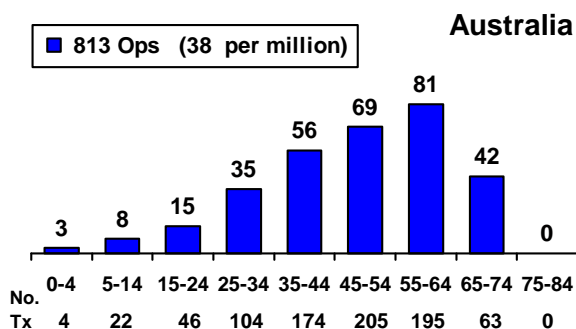
The median age of transplant recipients in 2008 was 46.1 years similar to 47.1 years in 2007. The age range was 1.8 to 72.8 years (Figures 8.8 and 8.10).

Recipients aged between 35 and 54 years comprised 50% of the total. Twenty five percent of recipients were over 54 years of age in 2008.

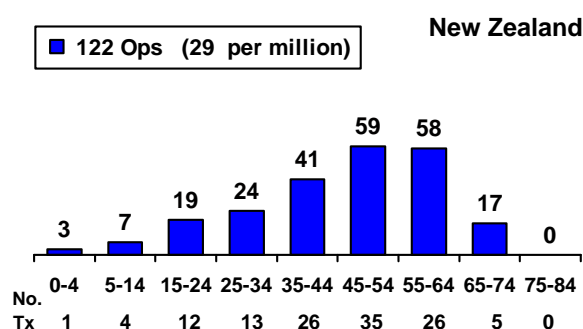
Figure 8.9

Figure 8.10

Transplant Operations (Per Million) 2008



Transplant Operations (Per Million) 2008



## ETHNICITY OF TRANSPLANT RECIPIENTS

## AUSTRALIA

Figures 8.11 and 8.13.

For the 15-59 year age group in 2008, 15.4% of dialysed Caucasoid patients were transplanted and 13.6% of Asians.

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 8.11		Australia								
Transplantation Rate - Age Group 15-59 years 2000 - 2008										
Year	Caucasoid			Aboriginal and Torres St. Islanders			All Patients			
	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate	
2000	2864	388	13.5%	541	17	3.1%	3882	441	11.3%	
2001	2943	391	13.2%	600	20	3.3%	4049	457	11.2%	
2002	2971	443	14.9%	636	16	2.5%	4144	511	12.3%	
2003	3013	362	12.0%	682	12	1.7%	4267	421	9.8%	
2004	3096	442	14.2%	746	25	3.3%	4453	528	11.8%	
2005	3192	417	13.4%	803	19	2.3%	4630	499	10.8%	
2006	3318	438	13.2%	852	25	2.9%	4856	527	10.8%	
2007	3331	427	12.8%	907	17	1.9%	4978	507	10.2%	
2008	3364	521	15.4%	991	26	2.6%	5150	632	12.2%	

## NEW ZEALAND

Figures 8.12.

Amongst the 15-59 year age group, the proportion of Maori and Pacific People who received a renal transplant in 2008 was substantially lower than other groups.

Figure 8.12		New Zealand										
Transplantation Rate - Age Group 15-59 years 2000 - 2008												
Year	Caucasoid			Maori			Pacific People			All Patients		
	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate
2000	401	68	17.0%	330	10	3.0%	184	4	2.1%	976	86	8.8%
2001	414	64	15.4%	360	13	3.6%	213	5	2.3%	1054	92	8.7%
2002	431	60	13.9%	383	11	2.8%	225	14	6.2%	1106	89	8.0%
2003	430	57	13.2%	407	15	3.6%	228	12	5.2%	1138	92	8.1%
2004	439	57	12.9%	422	9	2.1%	228	11	4.8%	1169	86	7.3%
2005	457	65	14.2%	425	3	0.7%	243	3	1.2%	1197	74	6.1%
2006	461	57	12.3%	468	8	1.7%	255	3	1.2%	1273	73	5.7%
2007	474	70	14.7%	483	15	3.1%	276	5	1.8%	1332	98	7.3%
2008	473	78	16.4%	489	10	2.0%	287	7	2.4%	1442	101	7.0%

## AUSTRALIA AND NEW ZEALAND

Figure 8.13 shows this data another way.

In Australia in 2008, 4% of transplant recipients were of Aboriginal/TSI ethnicity.

In New Zealand, 10% of transplant recipients were Maoris and 8% were Pacific People.

Figure 8.13		New Transplanted Patients 2004 - 2008 Related to Ethnicity				
Race	2004	2005	2006	2007	2008	
<b>Australia</b>	(650)	(623)	(641)	(615)	(813)	
Caucasoid	551 (85%)	527 (85%)	537 (84%)	524 (85%)	675 (83%)	
Aboriginal/Torres St. Islanders	26 (4%)	22 (4%)	27 (4%)	18 (3%)	31 (4%)	
Asian	57 (9%)	58 (9%)	59 (9%)	56 (9%)	83 (10%)	
Other	16 (2%)	16 (2%)	18 (3%)	17 (3%)	24 (3%)	
<b>New Zealand</b>	(105)	(93)	(90)	(123)	(122)	
Caucasoid	72 (69%)	83 (89%)	65 (72%)	91 (74%)	93 (76%)	
Maori	12 (11%)	3 (3%)	10 (11%)	17 (14%)	12 (10%)	
Pacific People	12 (11%)	4 (4%)	7 (8%)	6 (5%)	10 (8%)	
Asian	6 (6%)	3 (4%)	8 (9%)	9 (7%)	7 (6%)	
Other	3 (3%)	-	-	-	-	



## AUSTRALIAN REGIONAL TRANSPLANTATION ACTIVITY 2008

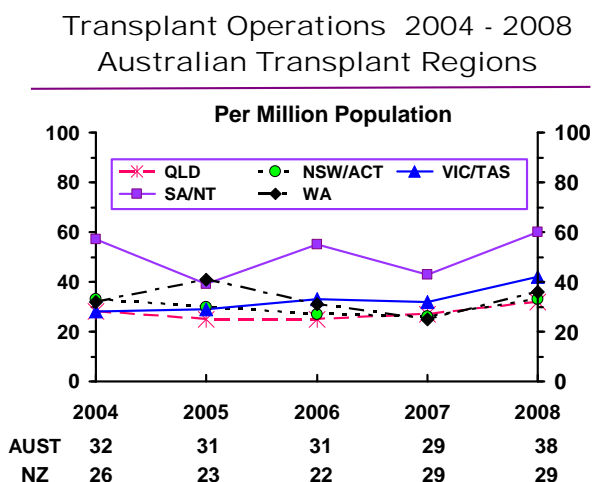
Figure 8.14

Transplants in each Region 2004 - 2008  
Number of Operations  
(per Million Population per year)

State	2004	2005	2006	2007	2008
Queensland	108 (28)	99 (25)	101 (25)	114 (27)	136 (32)
New South Wales / ACT *	230 (33)	212 (30)	195 (27)	187 (26)	243 (33)
Victoria / Tasmania *	151 (28)	162 (29)	185 (33)	183 (32)	246 (42)
South Australia / NT *	98 (57)	68 (39)	96 (55)	78 (43)	110 (60)
Western Australia	63 (32)	82 (41)	64 (31)	53 (25)	78 (36)
<b>Australia</b>	<b>650 (32)</b>	<b>623 (31)</b>	<b>641 (31)</b>	<b>615 (29)</b>	<b>813 (38)</b>

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

Figure 8.15

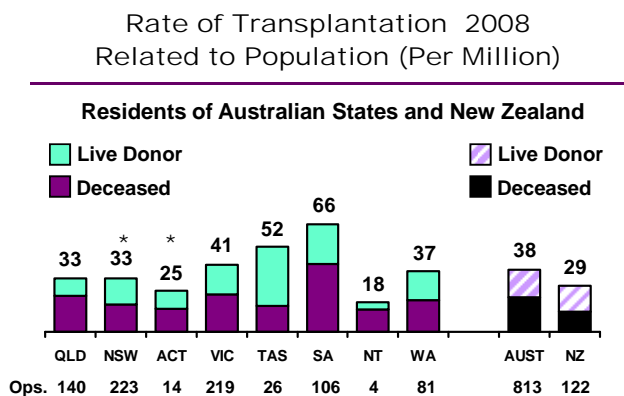


The rate of transplantation for each transplant region is shown in Figures 8.14 and 8.15.

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 had the highest transplant rate (60 per million), followed by (42 per million) in the Victoria/Tasmania region in 2008.

Figure 8.16



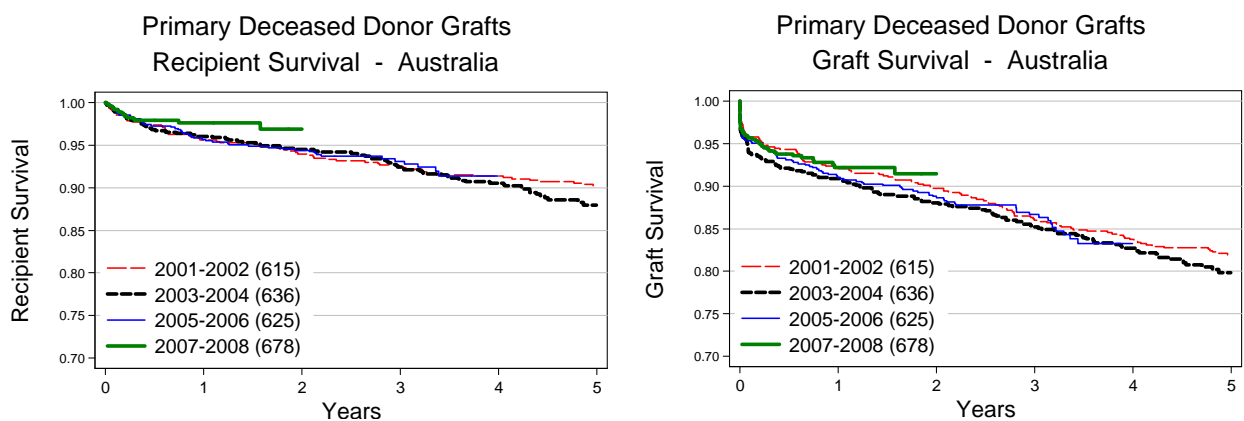
\* NSW population excludes residents of the Southern Area Health Service  
\* ACT population includes residents of the Southern Area Health Service Medical services in the ACT service the Southern Area Region

## TRANSPLANT 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 8.17. The figures now include graft losses or deaths on the day of transplant. After initial improvement, 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 8.18.

Figure 8.17					
Primary Deceased Donor - Australia Recipient and Graft Survival 1991 - 2008 % [95% Confidence Interval]					
Year of Transplant	No. of Patients	Survival			
		1 month	6 months	1 year	5 years
<b>Recipient Survival</b>					
1991-1992	655	99 [98, 99]	95 [93, 96]	93 [91, 95]	84 [81, 87]
1993-1994	609	99 [97, 99]	96 [94, 97]	95 [93, 97]	85 [82, 88]
1995-1996	601	99 [98,100]	96 [94, 97]	95 [93, 97]	88 [85, 90]
1997-1998	606	99 [97, 99]	97 [95, 98]	96 [94, 97]	87 [84, 89]
1999-2000	559	99 [98,100]	97 [96, 98]	96 [94, 97]	87 [84, 90]
2001-2002	615	99 [98,100]	97 [96, 98]	96 [94, 97]	90 [88, 92]
2003-2004	636	99 [98,100]	97 [95, 98]	96 [94, 97]	88 [85, 90]
2005-2006	625	99 [98,100]	97 [96, 98]	96 [94, 97]	-
2007-2008	678	99 [98,100]	98 [96, 99]	98 [96, 99]	-
<b>Graft Survival</b>					
1991-1992	655	91 [89, 93]	87 [84, 89]	85 [82, 87]	72 [68,75]
1993-1994	609	93 [91, 95]	89 [86, 91]	88 [85, 90]	73 [69,76]
1995-1996	601	95 [92, 96]	90 [88, 92]	89 [86, 91]	78 [74, 81]
1997-1998	606	95 [93, 97]	92 [90, 94]	90 [88, 92]	77 [74, 80]
1999-2000	559	96 [95, 98]	93 [91, 95]	92 [89, 94]	80 [76, 83]
2001-2002	615	96 [94, 97]	94 [92, 96]	92 [90, 94]	82 [79, 85]
2003-2004	636	94 [92, 96]	92 [90, 94]	91 [88, 93]	79 [76, 83]
2005-2006	625	95 [93, 97]	93 [91, 95]	91 [89, 93]	-
2007-2008	678	96 [94, 97]	94 [91, 95]	92 [90, 94]	-

Figure 8.18



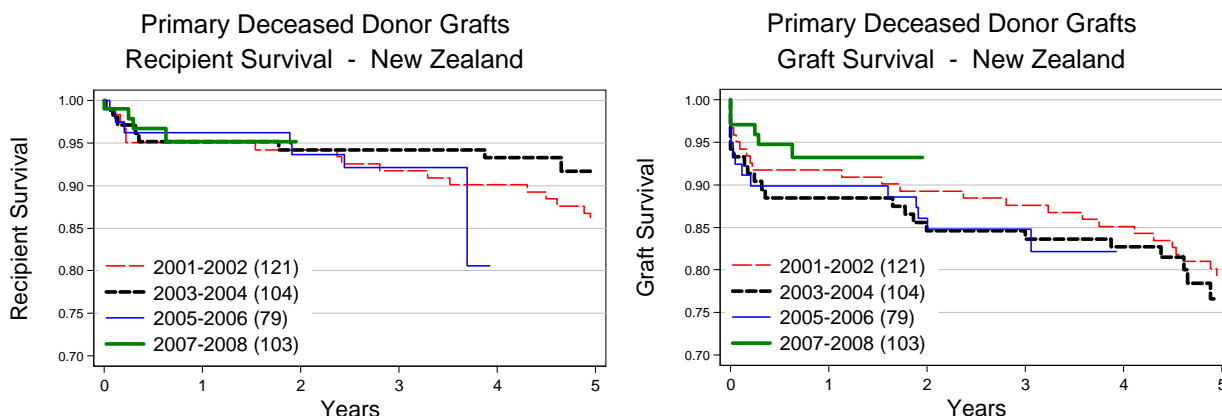


## TRANSPLANT SURVIVAL - PRIMARY DECEASED DONOR GRAFTS NEW ZEALAND

Graft and patient survival for primary deceased donor grafts performed in New Zealand, calculated by the Kaplan-Meier method, is shown in Figure 8.19. The figures now include graft losses or deaths on the day of transplant. 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. Tables illustrating this are shown in Figure 8.19. Figure 8.20 presents these as Kaplan-Meier curves.

Figure 8.19					
Primary Deceased Donor - New Zealand Recipient and Graft Survival 1991 - 2008 % [95% Confidence Interval]					
Year of Transplant	No. of Patients	Survival			
		1 month	6 months	1 year	5 years
<b>Recipient Survival</b>					
1991-1992	140	99 [95, 100]	96 [91, 98]	94 [88, 97]	81 [74, 87]
1993-1994	103	96 [90, 99]	88 [80, 93]	85 [77, 91]	78 [68, 85]
1995-1996	126	98 [94, 100]	94 [89, 97]	93 [87, 96]	86 [78, 91]
1997-1998	139	99 [94, 100]	94 [88, 97]	94 [88, 97]	84 [77, 89]
1999-2000	122	97 [92, 99]	95 [89, 98]	93 [87, 98]	82 [74, 88]
2001-2002	121	99 [94, 100]	95 [89, 98]	95 [89, 98]	86 [78, 91]
2003-2004	104	99 [93, 100]	95 [89, 98]	95 [89, 98]	92 [84, 96]
2005-2006	79	99 [91, 100]	96 [89, 99]	96 [89, 99]	-
2007-2008	103	99 [93, 100]	97 [90, 99]	95 [87, 98]	-
<b>Graft Survival</b>					
1991-1992	140	90 [84, 94]	83 [76, 88]	81 [73, 86]	69 [61, 76]
1993-1994	103	83 [74, 89]	78 [68, 85]	74 [64, 81]	59 [49, 68]
1995-1996	126	91 [85, 95]	88 [81, 93]	84 [76, 89]	72 [64, 79]
1997-1998	139	93 [87, 96]	87 [80, 92]	86 [79, 90]	73 [65, 80]
1999-2000	122	89 [82, 94]	87 [79, 92]	84 [76, 89]	79 [71, 86]
2001-2002	121	95 [89, 98]	92 [85, 95]	92 [85, 95]	77 [66, 84]
2003-2004	104	93 [86, 97]	88 [81, 93]	88 [81, 93]	-
2005-2006	79	92 [84, 97]	90 [81, 95]	90 [81, 95]	-
2007-2008	103	97 [91, 99]	95 [88, 98]	93 [85, 97]	-

Figure 8.20



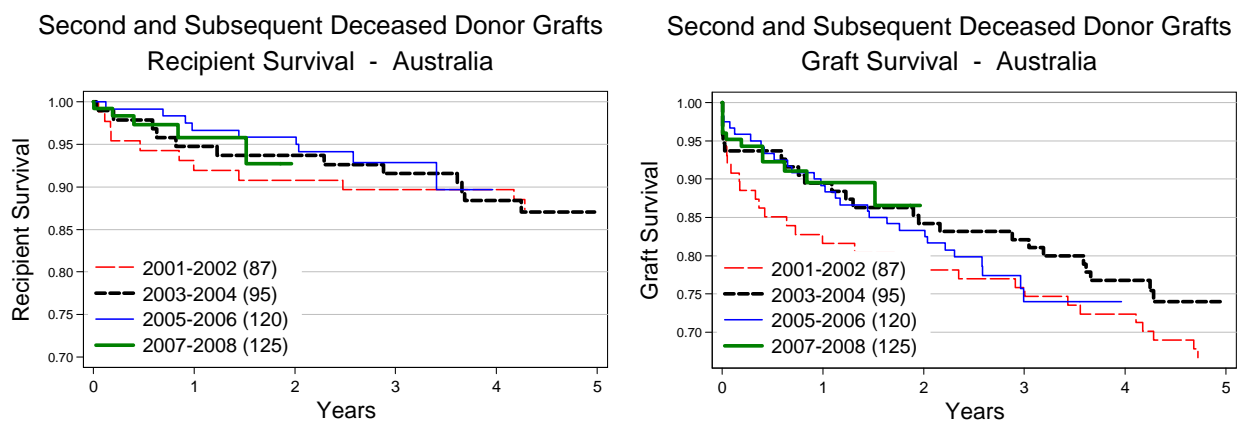


## TRANSPLANT SURVIVAL - AUSTRALIA SECOND AND SUBSEQUENT DECEASED DONOR GRAFTS

Patient and graft survival for second or subsequent deceased donor grafts in Australia, calculated by the Kaplan-Meier method, is shown in (Figure 8.21). The figures now include graft losses or deaths on the day of transplant. Kaplan-Meier graphs illustrating this are shown in Figure 8.22.

Figure 8.21					
Second and Subsequent Deceased Donor - Australia					
Recipient and Graft Survival 1991 - 2008					
% [95% Confidence Interval]					
Year of Transplant	No. of Patients	Survival			
		1 month	6 months	1 year	5 years
<b>Recipient Survival</b>					
1991-1992	144	100 [-, -]	97 [92, 99]	95 [90, 98]	85 [78, 90]
1993-1994	121	98 [94,100]	98 [93, 99]	94 [88, 97]	86 [78, 91]
1995-1996	107	99 [94,100]	97 [92, 99]	97 [92, 99]	86 [78, 91]
1997-1998	109	100 [-, -]	97 [92, 99]	95 [89, 98]	86 [78, 91]
1999-2000	77	99 [91,100]	96 [88, 99]	95 [87, 98]	86 [76, 92]
2001-2002	87	99 [92,100]	94 [87, 98]	92 [84, 96]	87 [78, 93]
2003-2004	95	99 [93,100]	98 [92, 99]	95 [88, 98]	87 [78, 92]
2005-2006	120	100 [-,-]	99 [94,100]	97 [91, 99]	-
2007-2008	125	99 [94,100]	98 [92, 99]	96 [89, 98]	-
<b>Graft Survival</b>					
1991-1992	144	84 [77, 89]	79 [72, 85]	78 [70, 84]	63 [55, 70]
1993-1994	121	87 [79, 92]	85 [77, 90]	83 [76, 89]	70 [61, 78]
1995-1996	107	83 [75, 89]	78 [68, 84]	77 [67, 84]	61 [51, 69]
1997-1998	109	93 [86, 96]	89 [81, 94]	84 [76, 90]	73 [64, 81]
1999-2000	77	92 [83, 96]	88 [79, 94]	87 [77, 93]	68 [56, 77]
2001-2002	87	92 [84, 96]	85 [76, 91]	82 [72, 88]	67 [56, 76]
2003-2004	95	94 [86, 97]	94 [86, 97]	89 [81, 94]	74 [64, 82]
2005-2006	120	97 [91, 99]	93 [87, 97]	89 [82, 94]	-
2007-2008	125	95 [90, 98]	92 [86, 96]	90 [82, 94]	-

Figure 8.22





## LIVE DONOR TRANSPLANTS

Figure 8.23

Live Donor Operations as a Proportion (%) of Annual Transplantation  
Australia 2003 - 2008

Recipient Age Groups	Year of Transplantation					
	2003	2004	2005	2006	2007	2008
00-04 years	78%	100%	50%	100%	89%	75%
05-14 years	50%	59%	52%	55%	56%	59%
15-24 years	62%	64%	70%	71%	65%	67%
25-34 years	44%	40%	48%	48%	57%	53%
35-44 years	38%	39%	42%	37%	39%	36%
45-54 years	34%	35%	34%	37%	42%	41%
55-64 years	33%	28%	31%	40%	35%	39%
65-74 years	37%	31%	19%	41%	45%	44%
75-84 years	100%	0%	100%	0%	0%	0%
<b>All Recipients</b>	<b>40%</b>	<b>38%</b>	<b>39%</b>	<b>43%</b>	<b>44%</b>	<b>44%</b>

### AUSTRALIA

There were 354 live donor (LD) kidney transplants performed in 2008 in Australia, representing 44% of all transplant operations. This proportion is the same for 2008 as 2007 (Figures 8.2 and 8.23).

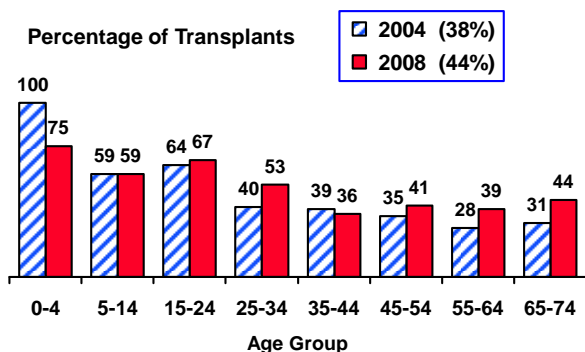
The overall number of live donor transplants (354) was the highest ever recorded.

Figure 8.24 shows the age-related proportion of live donor transplants for the years 2004 and 2008. The overall proportion of live donors increased in five age groups, the 15-24, 25-34, 45-54, 55-64 and the 65-74 year age group. There were 17 live donor recipients, 45% of all transplants in the 65-74 year age group.

The proportion of live donor transplants for each State and New Zealand for recipients aged 25-44 years is shown for the years 2001-2004 and 2005-2008 in Figure 8.25. There has been an increase in this age group for both countries for the years 2001-2004 and 2005-2008, the highest in New Zealand in 2008 (57%).

Figure 8.24

Percentage Live Donor Grafts - Australia Stratified by Age Group 2004/2008

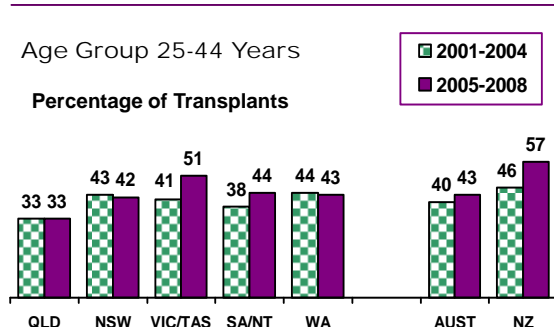


The proportion of genetically unrelated donors was 50% (177 donors) in 2008 compared to 38% (103 donors) in 2007, shown in Figure 8.27. This was an increase of 72% (74 donors) from last year. Sixty two percent of live unrelated donors were spouses or partners. The first paired kidney exchange donors were transplanted in 2007 in Western Australia and there were a further five in 2008. There were eight non directed donors in 2008.

The number of related donors increased 5% (177 donors) from 168 donors in 2007 (Figure 8.30).

Figure 8.25

Percentage Live Donor Grafts Regions: Australia and New Zealand



### NEW ZEALAND

The rate of live donor transplantation increased by 19% (69 donors) in New Zealand in 2008, the highest ever recorded, as shown in Figure 8.29.

The genetically unrelated donor number increased 41% (31 donors) compared to 22 donors in 2007.

Fifty seven percent of grafts were from a live donor (47% in 2007 and 54% in 2006). Unrelated donors represented 45% of all live donors in 2008, shown in Figure 8.28. Spouses and friends each accounted for 32% of all unrelated donors. There were eight non-directed donors in 2008 (one in 2007) (Figure 8.30).

Figure 8.26

Age of Live Donors in Australia 2000 - 2008

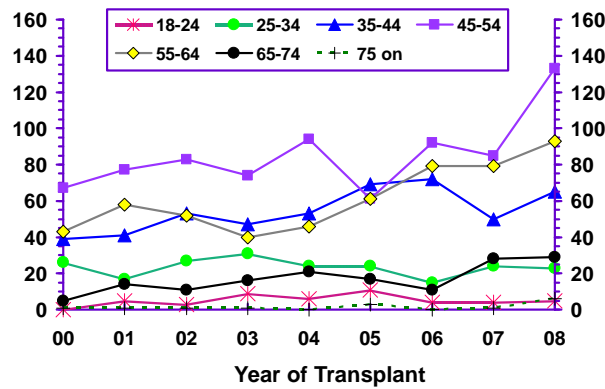


Figure 8.27

Source of Live Donor Kidney Australia 2000 - 2008

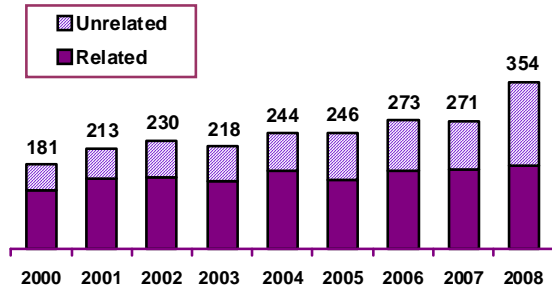
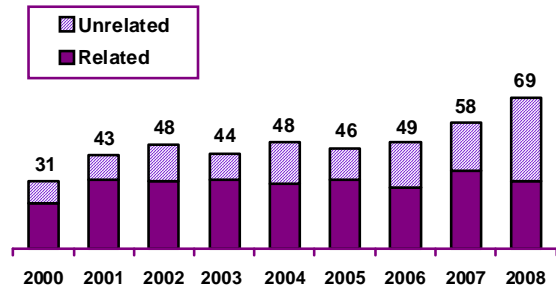


Figure 8.28

Source of Live Donor Kidney New Zealand 2000 - 2008



### TIMING OF LIVE DONOR TRANSPLANTS

The timing of live donor transplants is shown in Figure 8.29.

The proportion of all primary live donor transplants performed “pre-emptively” in Australia was 30%, compared to 26% in 2007. Forty five percent had received dialysis treatment for twelve months or longer prior to a first live donor graft.

The proportion of pre-emptive primary live donor transplants in New Zealand was 30% in 2008, compared to 43% in 2007. Forty five percent were waiting for twelve months or longer post dialysis.

Figure 8.29

		2004	2005	2006	2007	2008
<b>Timing of Live Donor Transplantation for Primary Grafts in Relation to Date of Dialysis Start by Year of Transplant 2004 - 2008</b>						
<b>Aust</b>	Pre-dialysis	52 (24%)	72 (33%)	65 (27%)	62 (26%)	94 (30%)
	< 1 month post dialysis	8 (4%)	5 (2%)	7 (3%)	7 (3%)	5 (2%)
	1-11.9 months post dialysis	62 (28%)	59 (27%)	66 (27%)	55 (23%)	76 (24%)
	≥ 12 months post dialysis	99 (45%)	84 (38%)	105 (43%)	116 (48%)	142 (45%)
<b>NZ</b>	Pre-dialysis	10 (21%)	10 (22%)	9 (21%)	23 (43%)	20 (30%)
	< 1 month post dialysis	2 (4%)	2 (4%)	-	1 (2%)	2 (3%)
	1-11.9 months post dialysis	12 (25%)	12 (27%)	12 (28%)	8 (15%)	14 (21%)
	≥ 12 months post dialysis	24 (50%)	21 (47%)	22 (51%)	22 (41%)	30 (45%)



Figure 8.30

Source of Live Donor Kidneys 2004 - 2008  
(x = identical twin) (+ = non identical twin)

Source	Australia					New Zealand				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
Total Live Donors	244	246	273	271	354	48	46	49	58	69
<b>Related</b>	<b>(166)</b>	<b>(146)</b>	<b>(164)</b>	<b>(168)</b>	<b>(177)</b>	<b>(30)</b>	<b>(32)</b>	<b>(28)</b>	<b>(36)</b>	<b>(38)</b>
Mother	44	39	40	60	46	4	7	5	5	7
Father	24	30	35	37	41	5	3	3	5	9
Brother	39	31	25	21	35	6	7	6 (1x)	5	5
Sister	32 (1+)	26 (1+)	35 (1+)	29 (1+)	32 (1+)	9	9 (1x)	6	11	8
Offspring	14	8	15	10	9	3	4	7	7	3
Grandfather	4	1	2	-	-	-	-	-	-	-
Grandmother	-	1	1	-	2	-	-	-	-	-
Cousin	4	5	4	7	5	1	1	1	2	2
Nephew	1	1	-	-	-	-	-	-	1	-
Niece	-	2	1	1	-	-	-	-	-	1
Uncle	3	1	1	2	1	1	-	-	-	2
Aunt	1	1	5	1	6	1	1	-	-	1
<b>Unrelated</b>	<b>(78)</b>	<b>(100)</b>	<b>(109)</b>	<b>(103)</b>	<b>(177)</b>	<b>(18)</b>	<b>(14)</b>	<b>(21)</b>	<b>(22)</b>	<b>(31)</b>
Wife	28	37	53	40	64	6	-	5	8	5
Husband	12	24	17	14	35	3	1	-	5	5
Mother-in-Law	-	1	1	1	-	-	-	-	-	-
Father-in-Law / Adoptive Father	-	3	-	-	2	-	-	-	-	-
Son-in-Law / Adoptive Son	1	2	-	-	2	-	-	-	-	-
Stepdaughter	-	-	-	-	1	-	-	-	-	-
Stepfather	1	2	2	1	2	-	-	-	1	1
Stepmother	-	-	-	-	1	-	-	-	-	-
Sister-in-Law	4	3	2	2	4	-	-	1	-	1
Brother-in-Law	1	-	2	3	1	-	1	-	-	1
Partner	3	7	6	6	11	-	1	1	1	-
Fiance / Fiancee	1	-	1	-	-	1	-	-	-	-
Friend	19	14	16	15	27	5	7	10	6	10
Stepsister / Stepson	-	-	1	-	1	-	-	-	-	-
Non-Directed	2	3	2	1	6	3	3	4	1	8
Pathological	6	4	4	16	13	-	-	-	-	-
Paired Kidney Exchange	-	-	-	2	5	-	-	-	-	-
Other	-	-	2	2	2	-	1	-	-	-

Figure 8.31

Gender of Live Donor Kidneys 2005 - 2008

Source and State/ Country of Transplant	2005			2006			2007			2008		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Related</b>												
Queensland	50%	50%	22	50%	50%	22	41%	59%	22	35%	65%	17
New South Wales/ACT	55%	45%	53	54%	46%	55	42%	58%	59	58%	42%	62
Victoria/Tasmania	37%	63%	46	37%	63%	49	39%	61%	61	39%	61%	56
South Australia/NT	42%	58%	12	42%	58%	19	42%	58%	19	50%	50%	24
Western Australia	54%	46%	13	47%	53%	19	57%	43%	7	39%	61%	18
<b>Australia</b>	<b>47%</b>	<b>53%</b>	<b>146</b>	<b>46%</b>	<b>54%</b>	<b>164</b>	<b>42%</b>	<b>58%</b>	<b>168</b>	<b>47%</b>	<b>53%</b>	<b>177</b>
<b>New Zealand</b>	<b>46%</b>	<b>54%</b>	<b>33</b>	<b>46%</b>	<b>54%</b>	<b>28</b>	<b>42%</b>	<b>58%</b>	<b>36</b>	<b>47%</b>	<b>53%</b>	<b>38</b>
<b>Unrelated</b>												
Queensland	41%	59%	22	32%	68%	19	46%	54%	22	33%	67%	27
New South Wales/ACT	48%	52%	29	34%	66%	35	42%	58%	31	31%	69%	52
Victoria/Tasmania	46%	54%	22	27%	73%	37	34%	66%	29	52%	48%	60
South Australia/NT	50%	50%	12	14%	86%	7	14%	86%	7	29%	71%	17
Western Australia	33%	67%	15	54%	46%	11	36%	64%	14	33%	67%	21
<b>Australia</b>	<b>44%</b>	<b>56%</b>	<b>100</b>	<b>32%</b>	<b>68%</b>	<b>109</b>	<b>38%</b>	<b>62%</b>	<b>103</b>	<b>38%</b>	<b>62%</b>	<b>177</b>
<b>New Zealand</b>	<b>31%</b>	<b>69%</b>	<b>13</b>	<b>19%</b>	<b>81%</b>	<b>21</b>	<b>46%</b>	<b>54%</b>	<b>22</b>	<b>39%</b>	<b>61%</b>	<b>31</b>

## TRANSPLANT SURVIVAL - PRIMARY LIVE DONOR 1991-2007

For primary live donor graft recipients, excellent early survival rates have been evident since 1991 (Figure 8.32).

Parallel improvement in graft survival is also evident. This is reassuring given the increased rates of live donor transplantation and corresponding increase in performing less ideal live donor transplants (particularly from older donors and unrelated donor transplants) (Figures 8.8 and 8.23).

Current patient and graft survival for primary live donor recipients in Australia and New Zealand are similar.

Figure 8.32		Australia			
Year of Transplant	No. of Patients	% [95% Confidence Interval]			
		Survival			
		1 month	6 months	1 year	5 years
<b>Recipient Survival</b>					
1991-1992	135	99 [95,100]	99 [94,100]	99 [94,100]	86 [79, 91]
1993-1994	160	100 [-, -]	99 [95,100]	98 [94, 99]	94 [89, 97]
1995-1996	186	100 [-, -]	98 [95, 99]	97 [94, 99]	95 [90, 97]
1997-1998	284	100 [-, -]	99 [96, 99]	98 [96, 99]	96 [93, 98]
1999-2000	320	98 [97,100]	98 [96, 99]	98 [96, 99]	94 [91, 96]
2001-2002	410	100 [98,100]	99 [97,100]	99 [97, 99]	95 [92, 97]
2003-2004	419	100 [98,100]	99 [97,100]	99 [97,100]	94 [90, 96]
2005-2006	463	100 [98,100]	100 [98,100]	99 [98,100]	-
2007-2008	557	100 [97-100]	99 [97, 99]	98 [97, 99]	-
<b>Graft Survival</b>					
1991-1992	135	96 [90, 98]	93 [88, 96]	92 [86, 95]	76 [68, 83]
1993-1994	160	97 [93, 99]	96 [91, 98]	95 [90, 97]	85 [78, 90]
1995-1996	186	93 [88, 96]	91 [86, 94]	90 [84, 93]	84 [78, 89]
1997-1998	284	98 [96, 99]	97 [94, 98]	96 [94, 98]	87 [83, 91]
1999-2000	320	97 [94, 98]	95 [92, 97]	94 [91, 96]	86 [82, 90]
2001-2002	410	98 [96, 99]	96 [94, 98]	96 [93, 97]	88 [85, 91]
2003-2004	419	99 [97,100]	98 [96, 99]	97 [95, 98]	87 [83, 90]
2005-2006	463	98 [97, 99]	98 [96, 99]	97 [95, 98]	-
2007-2008	557	98 [96, 99]	97 [95, 98]	97 [95, 98]	-

Figure 8.33		New Zealand			
Year of Transplant	No. of Patients	% [95% Confidence Interval]			
		Survival			
		1 month	6 months	1 year	5 years
<b>Recipient Survival</b>					
1991-1992	27	100 [-, -]	96 [76, 99]	96 [76, 99]	96 [76, 99]
1993-1994	35	100 [-, -]	100 [-, -]	97 [81,100]	88 [72, 95]
1995-1996	46	100 [-, -]	100 [-, -]	100 [-, -]	91 [78, 97]
1997-1998	57	100 [-, -]	100 [-, -]	100 [-, -]	89 [78, 95]
1999-2000	66	100 [-, -]	100 [-, -]	100 [-, -]	95 [86, 98]
2001-2002	83	100 [-, -]	99 [92,100]	99 [92,100]	94 [86, 97]
2003-2004	88	99 [92,100]	99 [92,100]	98 [91, 99]	93 [85, 97]
2005-2006	88	100 [-, -]	98 [91, 99]	97 [90, 99]	-
2007-2008	120	99 [94,100]	99 [94,100]	99 [94,100]	-
<b>Graft Survival</b>					
1991-1992	27	96 [76, 99]	93 [74, 98]	93 [74, 98]	81 [61, 92]
1993-1994	35	91 [76, 97]	89 [72, 96]	89 [72, 96]	74 [56, 86]
1995-1996	46	98 [86,100]	98 [86,100]	98 [86,100]	76 [61, 86]
1997-1998	57	96 [87, 99]	96 [87, 99]	95 [85, 98]	72 [58, 82]
1999-2000	66	95 [87, 99]	94 [85, 98]	94 [85, 98]	82 [70, 89]
2001-2002	83	100 [-, -]	99 [92,100]	99 [92,100]	88 [79, 93]
2003-2004	88	97 [90, 99]	95 [88, 98]	95 [88, 98]	86 [77, 92]
2005-2006	88	99 [92,100]	97 [90, 99]	95 [88, 98]	-
2007-2008	120	97 [92, 99]	96 [91, 99]	96 [91, 99]	-



Figure 8.34

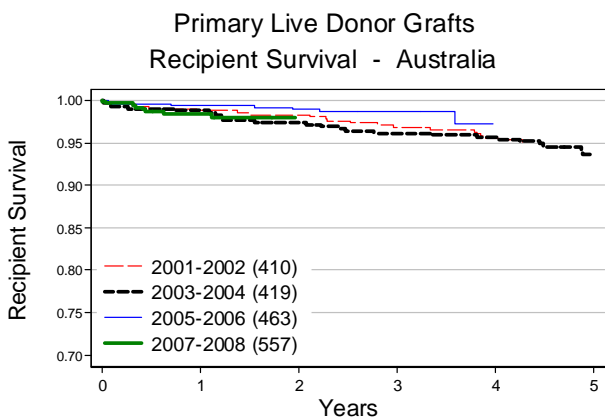


Figure 8.35

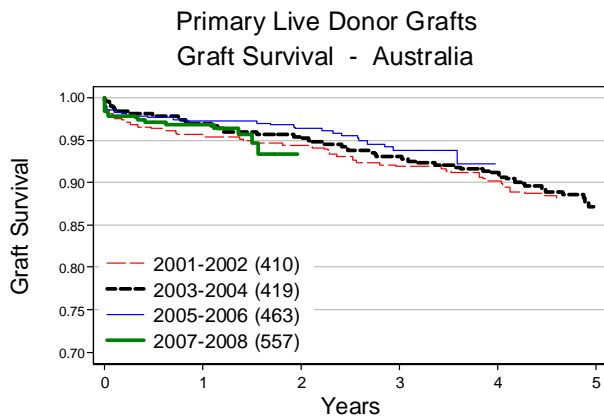


Figure 8.36

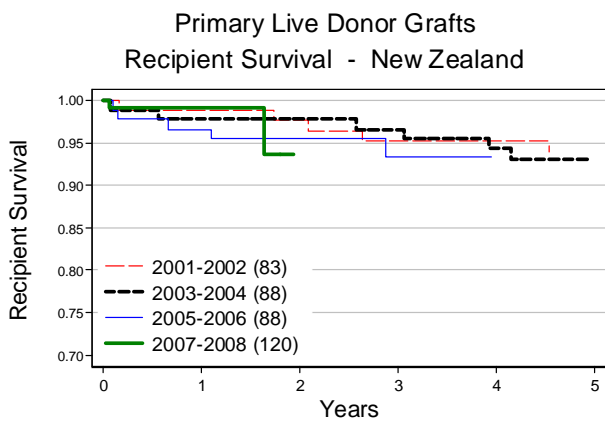
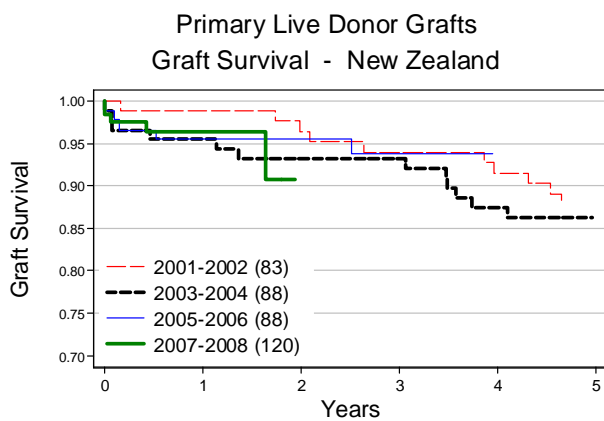


Figure 8.37



## FUNCTIONING TRANSPLANTS AT 31<sup>ST</sup> DECEMBER 2008 TRANSPLANT OPERATIONS 1963 - 2008

### AUSTRALIA

There have been 17,415 transplant operations performed on 14,939 patients since 1963. Of these, 7,516 grafts were functioning at 31<sup>st</sup> December 2008 (352 per million population). Fifteen percent of operations and 13% of functioning grafts were regrafts. Live donor transplants accounted for 22% of operations and 36% of functioning grafts (Figure 8.38). The number of operations performed by each hospital during this period is shown in Appendix I at the end of this Report.

The number of functioning grafts at the end of 2008 represents a 6% increase over the previous year. The annual rate of increase has remained steady (Figure 8.40 and 8.41). Eighty eight percent of the functioning grafts were primary and 64% were from deceased donors. The number of functioning grafts from live donors increased by 10% from 2007 to 2008, returning to the 10% increases each year over the past years.

The prevalence of functioning grafts in each State is shown in Figures 8.40 and 8.41. South Australia/Northern Territory has the highest prevalence of functioning renal transplants (512 per million). The lowest prevalence was in Queensland (323 per million). Patients with functioning grafts numbered in excess of those dialysis dependent in South Australia only (Appendix I).

The age relationship of functioning transplants as a proportion of patients on renal replacement therapy is shown in Figure 8.46. The proportion depending on live donor grafts is greater in the younger age groups (Figures 8.43 and 8.44).

The modal age group for transplant dependent patients was 55-64 years and the mean and median ages were 50.5 and 51.8 years respectively (Figures 8.45 and 8.46). The modal age group for live donor recipients was 45-54 years and 46% of recipients dependent on live donor grafts were less than 45 years of age.

### NEW ZEALAND

There have been 3,394 operations performed on 2,858 patients since 1965 with 1,351 grafts (316 per million) still functioning at 31<sup>st</sup> December 2008 (Figure 8.39). Sixteen percent of operations and 10% of functioning grafts were regrafts. Kidneys from live donors accounted for 25% of operations and 40% 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 8.45. The majority were male (57%) and the racial distribution was Caucasoid 78%, Maori 9%, Pacific People 6% and Asian 7% (Figure 8.48).

The majority (71%) of functioning grafts were in the 35-64 year age group and the mean and median ages were 49.8 and 51.2 years respectively. The modal age group for live donors was 45-54 years (Figure 8.45).

The 1,351 grafts functioning at the end of 2008 represent 40% of all kidneys transplanted since 1965. The longest surviving graft has reached 38 years and 5 months as at 31<sup>st</sup> December 2008. There have been 110 grafts functioning for 20 or more years and fifteen for 30 or more years (Figure 8.50).

Figure 8.38

Summary of Renal Transplantation Australia 1963 - 2008			
		Performed	Functioning*
<b>Deceased Donor</b>	First	11,488	4,174
	Second	1,767	526
	Third	286	88
	Fourth	45	17
	Fifth	4	1
	<b>Total</b>	<b>13,590</b>	<b>4,806</b>
<b>Live Donor</b>	First	3,451	2,454
	Second	320	218
	Third	45	32
	Fourth	8	6
	Fifth	1	-
	<b>Total</b>	<b>3,825</b>	<b>2,710</b>
<b>Total</b>		<b>17,415</b>	<b>7,516</b>
* Lost to follow up not included			

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 8.48).

The 7,516 grafts functioning at the end of 2008 represent 43% of all kidneys transplanted since 1963. Thirty four percent of grafts were functioning ten or more years and 9% for 20 or more years. There are 120 recipients with grafts functioning 30 years or longer. The longest graft had functioned for 41 years at 31<sup>st</sup> December, 2008.

Figure 8.39

Summary of Renal Transplantation New Zealand 1965 - 2008			
		Performed	Functioning*
<b>Deceased Donor</b>	First	2,079	706
	Second	386	83
	Third	74	17
	Fourth	7	-
	<b>Total</b>	<b>2,546</b>	<b>806</b>
<b>Live Donor</b>	First	779	504
	Second	63	37
	Third	6	4
	<b>Total</b>	<b>848</b>	<b>545</b>
<b>Total</b>		<b>3,394</b>	<b>1,351</b>
* Lost to follow up not included			



Figure 8.40

**Functioning Transplants 1998 - 2008**  
Transplanting Region, Australia and New Zealand  
(Number Per Million Population)

Year	QLD	NSW/ACT *	VIC/Tas *	SA/NT *	WA	Australia	NZ
1998	943 (274)	1699 (256)	1296 (254)	583 (347)	396 (217)	4917 (263)	936 (245)
1999	957 (273)	1737 (258)	1338 (259)	623 (369)	432 (234)	5087 (269)	983 (256)
2000	1004 (282)	1786 (262)	1388 (266)	643 (378)	468 (250)	5289 (276)	1023 (265)
2001	1063 (293)	1819 (264)	1456 (276)	669 (391)	496 (261)	5503 (283)	1063 (274)
2002	1108 (299)	1902 (273)	1538 (289)	701 (408)	528 (274)	5777 (294)	1116 (283)
2003	1148 (302)	2003 (286)	1580 (293)	735 (426)	530 (271)	5996 (302)	1168 (290)
2004	1183 (305)	2100 (298)	1650 (302)	789 (455)	562 (284)	6284 (312)	1221 (299)
2005	1219 (308)	2172 (306)	1721 (312)	809 (464)	617 (307)	6538 (322)	1239 (300)
2006	1256 (307)	2266 (317)	1829 (326)	845 (475)	657 (319)	6853 (330)	1247 (298)
2007	1314 (314)	2310 (320)	1925 (338)	880 (489)	678 (322)	7107 (338)	1284 (304)
2008	1381 (323)	2424 (332)	2062 (356)	932 (512)	717 (331)	7516 (352)	1351 (316)

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

Figure 8.41

Functioning Transplants by Region  
Australia 2003 - 2008

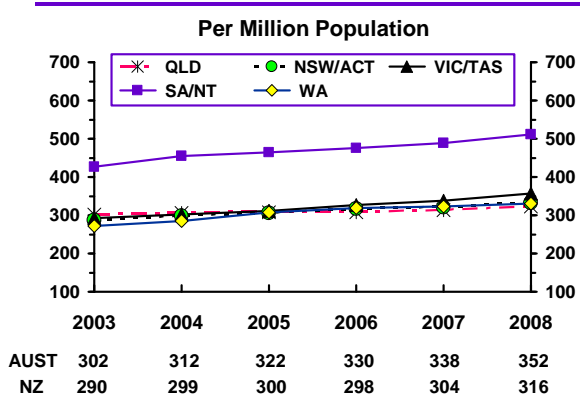


Figure 8.42

Prevalence of Functioning Transplants  
(Per Million Population) 31-Dec-2008

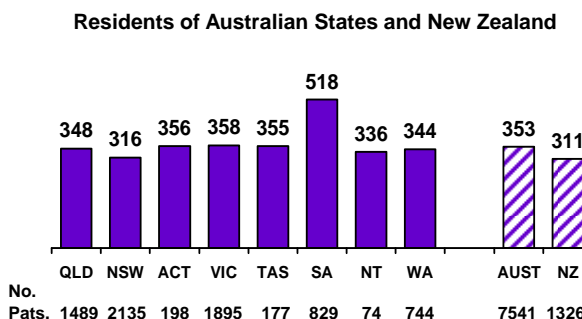


Figure 8.43

Prevalence of Functioning Transplants  
As Mode of RRT by Age Group Australia 2008

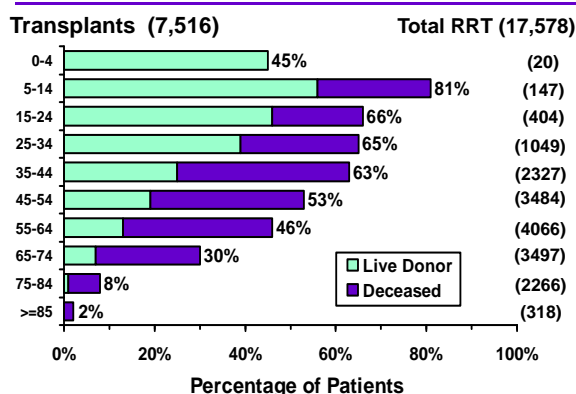


Figure 8.44

Prevalence of Functioning Transplants  
As Mode of RRT by Age Group New Zealand 2008

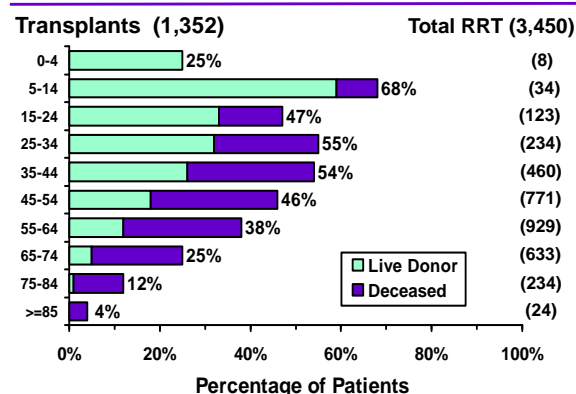




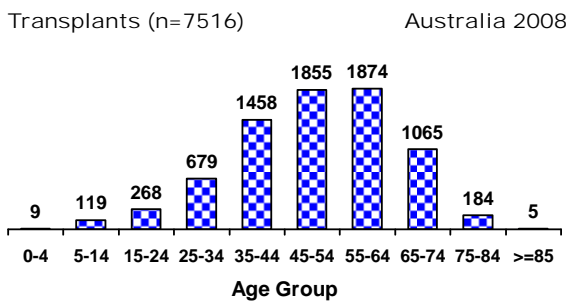
Figure 8.45

Age of All Functioning Transplant Patients  
Resident Country at Transplant 31-Dec-2008

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>9</b>	<b>119</b>	<b>268</b>	<b>679</b>	<b>1458</b>	<b>1855</b>	<b>1874</b>	<b>1065</b>	<b>184</b>	<b>5</b>	<b>7516</b>
Deceased Donor	1	-	34	74	220	728	1010	1197	769	137	5	4174
	2	-	3	6	50	116	142	144	53	12	-	526
	3	-	-	2	6	29	29	17	5	-	-	88
	4	-	-	-	-	6	9	1	-	1	-	17
	5	-	-	-	-	-	1	-	-	-	-	1
<b>Total</b>		<b>-</b>	<b>37</b>	<b>82</b>	<b>276</b>	<b>879</b>	<b>1191</b>	<b>1359</b>	<b>827</b>	<b>150</b>	<b>5</b>	<b>4806</b>
Live Donor	1	9	79	170	370	509	587	468	230	32	-	2454
	2	-	3	15	30	58	63	39	8	2	-	218
	3	-	-	1	2	10	12	7	-	-	-	32
	4	-	-	-	1	2	2	1	-	-	-	6
	<b>Total</b>		<b>9</b>	<b>82</b>	<b>186</b>	<b>403</b>	<b>579</b>	<b>664</b>	<b>515</b>	<b>238</b>	<b>34</b>	<b>0</b>
<b>New Zealand</b>		<b>2</b>	<b>23</b>	<b>58</b>	<b>128</b>	<b>250</b>	<b>354</b>	<b>350</b>	<b>157</b>	<b>28</b>	<b>1</b>	<b>1351</b>
Deceased Donor	1	-	3	16	47	101	181	212	119	26	1	706
	2	-	-	1	6	21	28	25	2	-	-	83
	3	-	-	-	-	6	8	1	2	-	-	17
<b>Total</b>		<b>-</b>	<b>3</b>	<b>17</b>	<b>53</b>	<b>128</b>	<b>217</b>	<b>238</b>	<b>123</b>	<b>26</b>	<b>1</b>	<b>806</b>
Live Donor	1	2	20	41	71	101	123	110	34	2	-	504
	2	-	-	-	4	20	11	2	-	-	-	37
	3	-	-	-	-	1	3	-	-	-	-	4
	<b>Total</b>		<b>2</b>	<b>20</b>	<b>41</b>	<b>75</b>	<b>122</b>	<b>137</b>	<b>112</b>	<b>34</b>	<b>2</b>	<b>-</b>

Figure 8.46

Age Distribution of Functioning Transplants Resident Country at Transplant



Age Distribution of Functioning Transplants Resident Country at Transplant

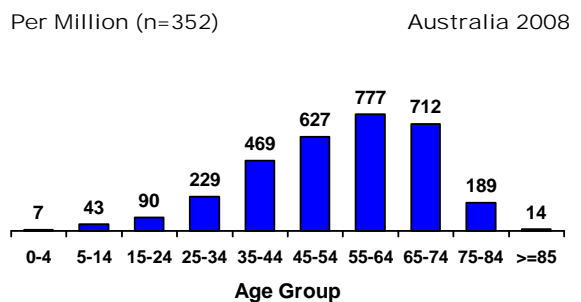
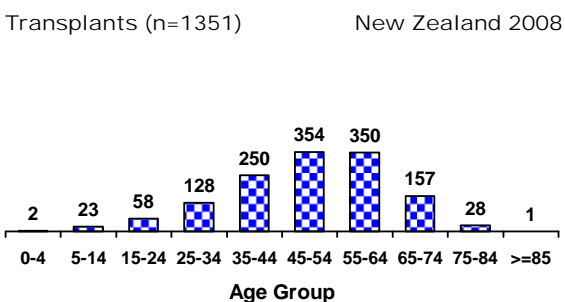


Figure 8.47

Age Distribution of Functioning Transplants Resident Country at Transplant



Age Distribution of Functioning Transplants Resident Country at Transplant

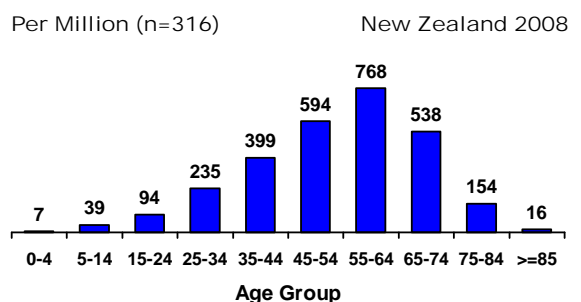




Figure 8.48

Functioning Transplant Patients - Resident Country at Transplant  
Related to Ethnicity and Age Group 31-Dec-2008

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	
<b>Australia</b>		<b>9</b>	<b>119</b>	<b>268</b>	<b>679</b>	<b>1458</b>	<b>1855</b>	<b>1874</b>	<b>1065</b>	<b>184</b>	<b>5</b>	<b>7516</b>
<b>Female</b>	Caucasoid	3	32	97	224	487	597	594	406	96	2	2538
	Aboriginal/TSI	-	-	3	5	22	25	15	2	-	-	72
	Asian	-	8	7	23	45	86	69	25	3	-	266
	Other	-	3	7	11	10	18	16	7	1	-	82
	<b>Total</b>	<b>3</b>	<b>43</b>	<b>114</b>	<b>263</b>	<b>573</b>	<b>726</b>	<b>694</b>	<b>440</b>	<b>100</b>	<b>2</b>	<b>2958</b>
<b>Male</b>	Caucasoid	6	68	137	366	794	987	1054	572	80	3	4067
	Aboriginal/TSI	-	4	1	6	18	27	23	8	-	-	87
	Asian	-	4	12	30	56	92	79	34	2	-	309
	Other	-	-	4	14	17	23	24	11	2	-	95
	<b>Total</b>	<b>6</b>	<b>76</b>	<b>154</b>	<b>416</b>	<b>885</b>	<b>1129</b>	<b>1180</b>	<b>625</b>	<b>84</b>	<b>3</b>	<b>4558</b>
<b>New Zealand</b>		<b>2</b>	<b>23</b>	<b>58</b>	<b>128</b>	<b>250</b>	<b>354</b>	<b>350</b>	<b>157</b>	<b>28</b>	<b>1</b>	<b>1351</b>
<b>Female</b>	Caucasoid	2	8	24	40	74	111	117	56	15	1	448
	Maori	-	-	4	6	12	11	9	6	3	-	51
	Pacific People	-	1	2	9	9	13	5	1	1	-	41
	Asian	-	1	1	4	7	15	8	1	-	-	37
	<b>Total</b>	<b>2</b>	<b>10</b>	<b>31</b>	<b>59</b>	<b>102</b>	<b>150</b>	<b>139</b>	<b>64</b>	<b>19</b>	<b>1</b>	<b>577</b>
<b>Male</b>	Caucasoid	-	10	21	51	130	159	164	61	8	-	604
	Maori	-	1	3	5	5	21	17	12	1	-	65
	Pacific People	-	2	-	6	6	9	14	8	-	-	45
	Asian	-	-	3	7	4	14	14	12	-	-	54
	<b>Total</b>	<b>-</b>	<b>13</b>	<b>27</b>	<b>69</b>	<b>148</b>	<b>204</b>	<b>211</b>	<b>93</b>	<b>9</b>	<b>-</b>	<b>774</b>

Figure 8.49

Number and Duration of Functioning Grafts  
Australia 31-Dec-2008

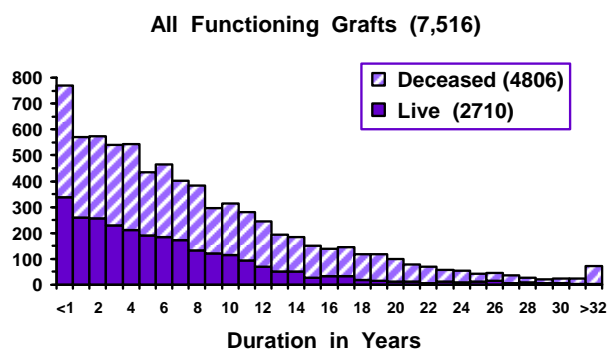
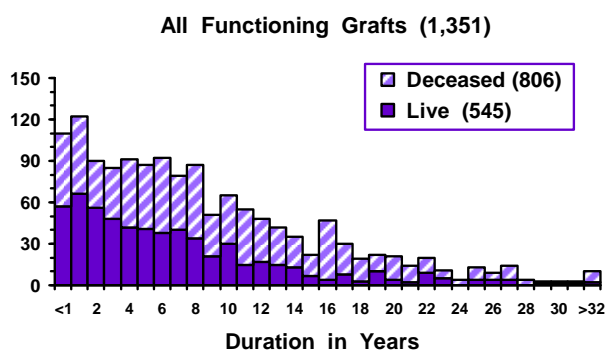


Figure 8.50

Number and Duration of Functioning Grafts  
New Zealand 31-Dec-2008



## RATES OF GRAFT LOSS

The rates of graft failure and death in Australia in 2008 were 1.9% and 3.0% respectively; 4.9% of those at risk. Death with function decreased in 2008 but graft failure increased from previous years (Figure 8.51).

In 2008, the rates of graft failure in New Zealand decreased from 3.2% to 1.7% and death with function decreased from 3.0% to 2.1% ; 3.8% of those at risk (Figure 8.51).

The cause of graft failure from 1998 to 2008 is shown in Figure 8.52.

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

The importance of chronic allograft nephropathy, recurrence of primary disease and death with function as causes of graft loss after one year is evident in Figure 8.53.

Among the causes of death with functioning graft, malignancy was the most common cause.

Figure 8.51							
Graft Loss Rate 2002 - 2008							
	2002	2003	2004	2005	2006	2007	2008
<b>Australia</b>	(6107)	(6320)	(6646)	(6907)	(7179)	(7468)	(7920)
Death with Function	2.2%	2.2%	2.1%	2.3%	1.9%	2.1%	1.9%
Graft Failure	2.9%	2.7%	3.1%	2.7%	2.5%	2.5%	3.0%
All Losses	5.1%	4.9%	5.2%	5.0%	4.4%	4.6%	4.9%
<b>New Zealand</b>	(1180)	(1227)	(1273)	(1314)	(1329)	(1370)	(1406)
Death with Function	2.7%	2.2%	2.1%	2.3%	2.5%	3.0%	2.1%
Graft Failure	2.7%	2.5%	1.8%	3.3%	3.5%	3.2%	1.7%
All Losses	5.4%	4.7%	4.0%	5.6%	6.0%	6.2%	3.8%

Figure 8.52													
Year of Graft Loss Due to Death or Failure 1998 - 2008													
Loss	Cause of Failure	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
<b>Australia</b>													
	Death with Function	123	117	169	152	138	142	143	160	142	160	158	<b>1604</b>
<b>Failed</b>	Rejection - Acute	11	7	9	7	8	3	5	3	7	11	10	<b>81</b>
	Rejection - Chronic Allograft Nephropathy	105	109	91	111	108	113	143	134	105	131	171	<b>1321</b>
	Rejection - Hyperacute	-	2	1	-	-	-	-	-	1	-	2	<b>6</b>
	Vascular	9	16	7	12	16	15	18	13	14	8	14	<b>142</b>
	Technical Problems	-	3	4	2	3	3	2	4	5	2	4	<b>32</b>
	Recurrence Primary Disease	10	10	15	8	15	12	13	16	23	15	9	<b>146</b>
	Non Compliance	6	5	7	7	11	10	8	6	3	8	6	<b>77</b>
	Other	15	14	18	15	16	13	19	15	19	15	18	<b>177</b>
<b>Total</b>		<b>279</b>	<b>281</b>	<b>321</b>	<b>314</b>	<b>315</b>	<b>311</b>	<b>351</b>	<b>351</b>	<b>319</b>	<b>350</b>	<b>392</b>	<b>3586</b>
<b>New Zealand</b>													
	Death with Function	25	23	28	25	32	27	28	30	34	44	24	<b>320</b>
<b>Failed</b>	Rejection - Acute	1	4	-	1	1	1	-	2	2	1	1	<b>14</b>
	Rejection - Chronic Allograft Nephropathy	19	24	20	31	22	16	15	24	31	21	20	<b>243</b>
	Rejection - Hyperacute	-	-	-	-	-	-	1	-	-	-	-	<b>1</b>
	Vascular	-	6	8	1	1	1	-	4	-	3	1	<b>25</b>
	Technical Problems	-	2	-	2	1	2	-	2	3	1	-	<b>13</b>
	Recurrence Primary Disease	3	4	3	2	1	4	2	3	6	4	5	<b>37</b>
	Non Compliance	3	-	5	2	3	3	1	1	1	6	1	<b>26</b>
	Other	3	1	2	4	3	4	4	8	3	5	2	<b>39</b>
<b>Total</b>		<b>54</b>	<b>64</b>	<b>66</b>	<b>68</b>	<b>64</b>	<b>58</b>	<b>51</b>	<b>74</b>	<b>80</b>	<b>85</b>	<b>54</b>	<b>718</b>



Figure 8.53

Graft Failures 2004 - 2008

Cause of Failure	Australia			New Zealand		
	Graft Function			Graft Function		
	<1 year	>= 1 year	Anytime	<1 year	>= 1 year	Anytime
<b>Death with functioning Graft</b>						
Cardiac	29 (34.7%)	239 (28.9%)	268 (29.6%)	2 (15.4%)	46 (26.4%)	48 (25.7%)
Vascular	5 (6.5%)	81 (9.8%)	86 (9.5%)	2 (15.4%)	14 (8.0%)	16 (8.6%)
Infection	30 (39.0%)	116 (14.0%)	146 (16.1%)	4 (30.8%)	26 (14.9%)	30 (16.0%)
Social	1 (1.3%)	26 (3.1%)	27 (3.0%)	1 (7.7%)	5 (2.9%)	6 (3.2%)
Malignancy	7 (9.1%)	280 (33.8%)	287 (34.7%)	2 (15.4%)	73 (42.0%)	75 (40.1%)
Miscellaneous	5 (6.5%)	86 (10.4%)	91 (11.0%)	2 (15.4%)	10 (5.7%)	12 (6.4%)
<b>Total</b>	<b>77 (100%)</b>	<b>828 (100%)</b>	<b>905 (100%)</b>	<b>13 (100%)</b>	<b>174 (100%)</b>	<b>187 (100%)</b>
<b>Graft Failure</b>						
Rejection - Acute	30 (16.8%)	9 (0.9%)	39 (3.3%)	3 (9.1%)	4 (2.2%)	7 (3.3%)
Rejection - Chronic Allograft	11 (6.1%)	786 (79.4%)	797 (68.2%)	-	127 (69.8%)	127 (59.1%)
Rejection - Hyperacute	3 (1.7%)	-	3 (0.3%)	1 (3.0%)	-	1 (0.05%)
Vascular Rejection	72 (40.2%)	10 (1.0%)	82 (7.0%)	8 (24.2%)	1 (0.5%)	9 (4.2%)
Technical Problems	18 (10.1%)	2 (0.2%)	20 (1.7%)	8 (24.2%)	-	8 (3.7%)
Recurrence of Primary Disease	7 (3.9%)	81 (8.2%)	88 (7.5%)	1 (3.0%)	23 (12.6%)	24 (11.2%)
Non Compliance	-	41 (4.1%)	41 (3.5%)	-	13 (7.1%)	13 (6.0%)
Other	38 (21.2%)	61 (6.2%)	99 (8.5%)	12 (36.4%)	14 (7.7%)	26 (12.1%)
<b>Total</b>	<b>179 (100%)</b>	<b>990 (100%)</b>	<b>1169 (100%)</b>	<b>33 (100%)</b>	<b>182 (100%)</b>	<b>215 (100%)</b>

## IMMUNOSUPPRESSION

## AUSTRALIA

In Australia in 2008 Cyclosporine was used initially in 35% of patients and Tacrolimus in 61%. The proportion of patients initially using Tacrolimus has increased since 2003, as shown in Figure 8.54.

The number of patients still taking prednisolone two years after transplantation has increased since 2000 and is now 82%, for patients transplanted in 2006.

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 8.54		Australia								
Immunosuppressive Therapy - Primary Deceased Donor Graft 2001 - 2008										
	Year	Aza	CyA	Tacrol	MMF	Sirol	Everolimus	Pred	MPA	Number of Deceased Donor Grafts
Initial treatment	2001	16 (6%)	215 (74%)	65 (22%)	221 (76%)	33 (11%)	2 (<1%)	277 (96%)	0 (0%)	289
	2002	9 (3%)	239 (73%)	80 (25%)	272 (83%)	7 (2%)	23 (7%)	318 (98%)	15 (5%)	326
	2003	8 (3%)	187 (68%)	77 (28%)	190 (69%)	10 (4%)	0 (0%)	258 (94%)	52 (19%)	274
	2004	6 (2%)	212 (59%)	136 (38%)	309 (85%)	10 (3%)	0 (0%)	360 (99%)	25 (7%)	362
	2005	9 (3%)	131 (41%)	172 (54%)	299 (94%)	17 (5%)	0 (0%)	308 (97%)	4 (1%)	319
	2006	0 (0%)	155 (51%)	139 (45%)	260 (85%)	3 (1%)	19 (6%)	296 (97%)	24 (8%)	306
	2007	2 (1%)	139 (48%)	140 (49%)	244 (85%)	0 (0%)	5 (2%)	285 (99%)	36 (13%)	287
	2008	2 (1%)	136 (35%)	240 (61%)	364 (93%)	0 (0%)	0 (0%)	389 (99%)	22 (6%)	391
Treatment at 12 months	2001	23 (9%)	150 (57%)	102 (39%)	205 (78%)	26 (10%)	1 (<1%)	225 (86%)	1 (<1%)	262
	2002	24 (8%)	160 (52%)	124 (41%)	240 (79%)	14 (5%)	19 (6%)	279 (91%)	11 (4%)	305
	2003	22 (9%)	124 (50%)	104 (42%)	161 (64%)	15 (6%)	0 (0%)	222 (89%)	45 (18%)	250
	2004	23 (7%)	129 (39%)	162 (49%)	236 (72%)	30 (9%)	0 (0%)	304 (93%)	46 (14%)	328
	2005	23 (8%)	84 (29%)	172 (59%)	229 (79%)	29 (10%)	3 (1%)	262 (90%)	21 (7%)	291
	2006	12 (4%)	94 (34%)	145 (52%)	216 (78%)	21 (8%)	20 (7%)	259 (93%)	26 (9%)	278
	2007	13 (5%)	86 (33%)	144 (55%)	188 (71%)	11 (4%)	14 (5%)	249 (94%)	47 (18%)	264
Treatment at 24 months	2001	31 (12%)	143 (56%)	99 (39%)	190 (74%)	23 (9%)	1 (<1%)	205 (80%)	1 (<1%)	257
	2002	22 (7%)	150 (51%)	119 (40%)	232 (79%)	20 (7%)	19 (6%)	250 (85%)	14 (5%)	295
	2003	19 (8%)	104 (43%)	103 (43%)	165 (69%)	19 (8%)	0 (0%)	206 (85%)	40 (17%)	240
	2004	30 (9%)	116 (36%)	154 (48%)	219 (68%)	41 (13%)	4 (1%)	282 (88%)	45 (14%)	320
	2005	23 (8%)	77 (27%)	156 (55%)	220 (78%)	45 (16%)	5 (2%)	237 (84%)	23 (8%)	282
	2006	15 (6%)	81 (30%)	144 (53%)	207 (76%)	23 (8%)	25 (9%)	248 (92%)	30 (11%)	271

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



## IMMUNOSUPPRESSION NEW ZEALAND

In New Zealand in 2008, 67% of new transplant patients received Cyclosporine and 33% received Tacrolimus. As shown in Figure 8.55, this constitutes a steady increase in the use of Tacrolimus since 2002. No transplants commenced Azathioprine at 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, 88% of the 2006 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 8.55		New Zealand								
Immunosuppressive Therapy - Primary Deceased Donor Graft 2001 - 2008										
	Year	Aza	CyA	Tacrol	MMF	Sirol	Everolimus	Pred	MPA	Number of Deceased Donor Grafts
Initial treatment	2001	0 (0%)	59 (95%)	3 (5%)	62 (100%)	0 (0%)	0 (0%)	62 (100%)	0 (0%)	62
	2002	0 (0%)	57 (97%)	2 (3%)	59 (100%)	0 (0%)	0 (0%)	59 (100%)	0 (0%)	59
	2003	0 (0%)	47 (87%)	7 (13%)	46 (85%)	0 (0%)	0 (0%)	52 (96%)	3 (6%)	54
	2004	0 (0%)	47 (94%)	3 (6%)	49 (91%)	0 (0%)	0 (0%)	50 (100%)	0 (0%)	50
	2005	0 (0%)	32 (76%)	8 (19%)	41 (98%)	0 (0%)	0 (0%)	41 (98%)	0 (0%)	42
	2006	0 (0%)	26 (70%)	11 (30%)	34 (92%)	0 (0%)	3 (8%)	37 (100%)	0 (0%)	37
	2007	0 (0%)	43 (74%)	15 (26%)	57 (98%)	0 (0%)	1 (2%)	58 (100%)	0 (0%)	58
	2008	0 (0%)	30 (67%)	15 (33%)	42 (93%)	0 (0%)	0 (0%)	45 (100%)	3 (7%)	45
Treatment at 12 months	2001	27 (47%)	45 (79%)	12 (21%)	27 (47%)	0 (0%)	0 (0%)	56 (98%)	0 (0%)	57
	2002	18 (33%)	41 (76%)	13 (24%)	31 (57%)	0 (0%)	0 (0%)	53 (98%)	0 (0%)	54
	2003	15 (33%)	24 (53%)	21 (47%)	22 (49%)	1 (2%)	0 (0%)	42 (93%)	3 (7%)	45
	2004	9 (19%)	30 (64%)	17 (36%)	37 (79%)	0 (0%)	0 (0%)	45 (96%)	0 (0%)	47
	2005	2 (5%)	21 (55%)	16 (42%)	33 (87%)	2 (5%)	1 (3%)	35 (92%)	1 (3%)	38
	2006	0 (0%)	18 (55%)	15 (45%)	29 (88%)	0 (0%)	3 (9%)	32 (97%)	0 (0%)	33
	2007	3 (6%)	31 (60%)	19 (37%)	42 (81%)	2 (4%)	1 (2%)	47 (90%)	0 (0%)	52
Treatment at 24 months	2002	49 (92%)	39 (74%)	14 (26%)	1 (2%)	0 (0%)	0 (0%)	48 (91%)	0 (0%)	53
	2003	34 (79%)	22 (51%)	21 (49%)	3 (7%)	1 (2%)	0 (0%)	40 (93%)	2 (5%)	43
	2004	12 (27%)	27 (60%)	18 (40%)	30 (67%)	0 (0%)	0 (0%)	41 (91%)	0 (0%)	45
	2005	1 (3%)	18 (50%)	17 (47%)	30 (83%)	2 (6%)	1 (3%)	29 (81%)	1 (3%)	36
	2006	0 (0%)	16 (50%)	16 (50%)	28 (88%)	0 (0%)	2 (6%)	30 (94%)	0 (0%)	32

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

## USE OF ANTIBODY THERAPY FOR INDUCTION IMMUNOSUPPRESSION AND TREATMENT OF REJECTION IN KIDNEY TRANSPLANT RECIPIENTS AUSTRALIA AND NEW ZEALAND

The use of mono and polyclonal antibody agents for induction immunosuppression and treatment of acute rejection 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.

Figure 8.56 shows the use of induction agents through time since 2000. In New Zealand, agents other than the interleukin 2 receptor antagonists basiliximab and daclizumab are very uncommon. Since 2006 there has been a steady growth in induction immunosuppression using basiliximab, and in 2008, 60.8% of new kidney transplant recipients in New Zealand received an interleukin 2 receptor antagonist at the time of transplantation.

In Australia, between 5-10% of recipients receive an alternative agent either in addition to, or instead of basiliximab and daclizumab. There has been a small recent increase in the use of immunoglobulin and rituximab, probably reflecting an increase in ABO incompatible transplants. In addition to the agents listed in Figure 8.56, there were two Australian recipients who received alemtuzumab in 2007.

Figure 8.56									
Antibody Use for Induction Immunosuppression Australia and New Zealand 2000 - 2008									
Number of Kidney Transplant Recipients Receiving Each Agent by Year (% Total New Transplants)									
	2000	2001	2002	2003	2004	2005	2006	2007	2008
<b>Australia</b>									
Antithymocyte Globulin	25 (4.7)	21 (3.9)	26 (4.3)	25 (4.6)	46 (7.1)	24 (3.9)	33 (5.1)	18 (2.9)	21 (2.6)
Basiliximab/Daclizumab	72 (13.6)	126 (23.6)	294 (48.7)	331 (61.0)	416 (64.0)	411 (66.0)	518 (80.8)	538 (87.5)	753 (92.6)
Muromonab CD3	7 (1.3)	3 (0.6)	6 (1.0)	3 (0.6)	3 (0.5)	3 (0.5)	-	4 (0.7)	-
Intravenous Immunoglobulin	-	-	-	-	2 (0.3)	1 (0.2)	9 (1.9)	21 (3.4)	25 (3.1)
Rituximab	-	-	-	1 (0.2)	2 (0.3)	2 (0.3)	8 (1.2)	10 (1.6)	18 (2.2)
<b>Total New Transplants</b>	<b>531</b>	<b>541</b>	<b>604</b>	<b>543</b>	<b>650</b>	<b>623</b>	<b>641</b>	<b>615</b>	<b>813</b>
<b>New Zealand</b>									
Antithymocyte Globulin	-	-	1 (0.9)	1 (0.9)	1 (1.0)	2 (2.2)	-	-	-
Basiliximab/Daclizumab	3 (2.8)	8 (7.3)	4 (3.4)	19 (17.1)	1 (1.0)	4 (4.3)	21 (23.3)	51 (41.5)	74 (60.7)
Muromonab CD3	2 (1.9)	-	-	-	-	1	-	-	-
Intravenous Immunoglobulin	-	-	-	-	-	-	-	-	-
Rituximab	-	-	-	-	1 (1.0)	-	-	-	1 (0.8)
<b>Total New Transplants</b>	<b>106</b>	<b>110</b>	<b>117</b>	<b>111</b>	<b>105</b>	<b>93</b>	<b>90</b>	<b>123</b>	<b>122</b>

## USE OF ANTIBODY THERAPY FOR INDUCTION IMMUNOSUPPRESSION AND TREATMENT OF REJECTION IN KIDNEY TRANSPLANT RECIPIENTS AUSTRALIA AND NEW ZEALAND

Figure 8.57 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 number of prevalent transplant recipients 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 intravenous immunoglobulin and rituximab has increased recently.

Use of mono and polyclonal antibody agents has also been reported for other reasons. In Australia and New Zealand since 2000, twelve people received one of these agents because of post transplant infection (primarily BK virus and CMV disease), 18 people received an agent because of recurrent or de-novo disease in their transplant, five received them for other reasons (primarily because of the need to cease other maintenance immunosuppression), and four received rituximab for PTLD. Because of small numbers these are not reported further here.

Figure 8.57

Antibody Use as Treatment for Acute Rejection Australia and New Zealand 2000 - 2008									
Number of Kidney Transplant Recipients Receiving Each Agent by Year (% Total New Transplants)									
	2000	2001	2002	2003	2004	2005	2006	2007	2008
<b>Australia</b>									
Antithymocyte Globulin	13 (2.4)	7 (1.3)	17 (2.8)	19 (3.5)	19 (2.9)	27 (4.3)	14 (2.2)	15 (2.4)	19 (2.3)
Basiliximab/Daclizumab	1 (0.2)	-	3 (0.5)	-	4 (0.6)	2 (0.3)	-	-	1 (0.1)
Muromonab CD3	61 (11.5)	39 (7.2)	36 (6.0)	37 (6.8)	30 (4.6)	19 (1.9)	12 (1.9)	10 (1.6)	10 (1.2)
Intravenous Immunoglobulin	-	-	-	2 (0.4)	27 (4.2)	28 (4.5)	46 (7.2)	94 (15.3)	111 (13.7)
Rituximab	-	-	-	-	11 (1.7)	9 (1.4)	14 (2.2)	15 (2.4)	27 (3.3)
<b>Total New Transplants</b>	<b>531</b>	<b>541</b>	<b>604</b>	<b>543</b>	<b>650</b>	<b>623</b>	<b>641</b>	<b>615</b>	<b>813</b>
<b>Total Prevalent Transplants</b>	<b>5676</b>	<b>5896</b>	<b>6182</b>	<b>6401</b>	<b>6749</b>	<b>7014</b>	<b>7300</b>	<b>7600</b>	<b>8068</b>
<b>New Zealand</b>									
Antithymocyte Globulin	4 (3.8)	7 (6.4)	1 (0.9)	5 (4.5)	7 (6.7)	2 (2.2)	-	6 (4.9)	3 (2.5)
Basiliximab/Daclizumab	1 (0.9)	1 (0.9)	1 (0.9)	1 (0.9)	-	1 (1.1)	1 (1.1)	1 (0.8)	1 (0.8)
Muromonab CD3	14 (13.2)	8 (7.3)	10 (8.5)	13 (11.7)	18 (17.1)	10 (10.8)	11 (12.2)	10 (8.1)	10 (8.2)
Intravenous Immunoglobulin	-	-	-	-	-	-	3 (3.3)	3 (2.4)	2 (1.6)
Rituximab	-	-	-	-	-	-	-	-	-
<b>Total New Transplants</b>	<b>106</b>	<b>110</b>	<b>117</b>	<b>111</b>	<b>105</b>	<b>93</b>	<b>90</b>	<b>123</b>	<b>122</b>
<b>Total Prevalent Transplants</b>	<b>1084</b>	<b>1128</b>	<b>1174</b>	<b>1225</b>	<b>1267</b>	<b>1317</b>	<b>1339</b>	<b>1387</b>	<b>1409</b>



## LONG TERM GRAFT AND PATIENT SURVIVAL 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 cyclosporine into routine clinical practice in Australia. Since that time there have been lesser but consistent improvements in graft survival.

Figure 8.58

Graft and Patient Survival of Primary Grafts Deceased Donors - Australia and New Zealand										
Time Period	Graft Survival					Patient Survival				
	1 yr	5 yrs	10 yrs	15 yrs	20 yrs	1 yr	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974	58.2%	41.9%	30.3%	22.8%	14.6%	77.0%	57.4%	44.4%	34.2%	25.1%
1975-1979	51.7%	36.0%	25.6%	17.7%	12.6%	81.0%	63.6%	49.4%	35.5%	26.2%
1980-1984	63.3%	45.4%	32.1%	23.0%	16.2%	91.4%	75.1%	59.4%	45.9%	34.7%
1985-1989	80.8%	65.8%	47.2%	32.8%	21.3%	92.1%	80.3%	64.5%	51.2%	39.7%
1990-1994	85.0%	70.9%	50.7%	33.8%	-	93.4%	83.9%	67.8%	53.4%	-
1995-1999	88.6%	76.2%	58.6%	-	-	94.7%	86.0%	72.6%	-	-
2000-2004	91.6%	80.8%	-	-	-	96.0%	89.0%	-	-	-
2005-2008	91.6%	-	-	-	-	96.4%	-	-	-	-

Figure 8.59

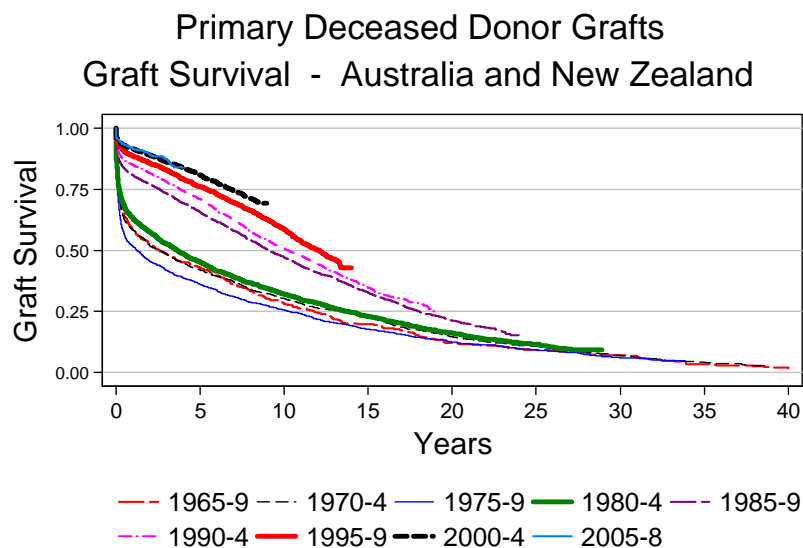




Figure 8.60

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

Time Period	Graft Survival					Patient Survival				
	1 yr	5 yrs	10 yrs	15 yrs	20 yrs	1 yr	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974	58.9%	37.3%	27.2%	21.5%	14.6%	79.1%	55.7%	42.4%	33.5%	26.6%
1975-1979	44.0%	28.2%	20.4%	15.0%	8.1%	78.2%	57.4%	44.7%	31.3%	20.0%
1980-1984	48.9%	36.0%	25.6%	20.3%	14.2%	90.6%	74.8%	59.0%	46.8%	37.0%
1985-1989	70.1%	51.7%	34.4%	23.2%	13.8%	93.7%	79.2%	62.8%	47.2%	35.0%
1990-1994	78.3%	64.2%	44.1%	31.3%	-	93.0%	82.6%	67.9%	54.2%	-
1995-1999	81.8%	66.6%	44.6%	-	-	96.0%	86.2%	73.8%	-	-
2000-2004	86.6%	71.1%	-	-	-	93.7%	87.1%	-	-	-
2005-2008	88.2%	-	-	-	-	96.1%	-	-	-	-

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

Figure 8.61

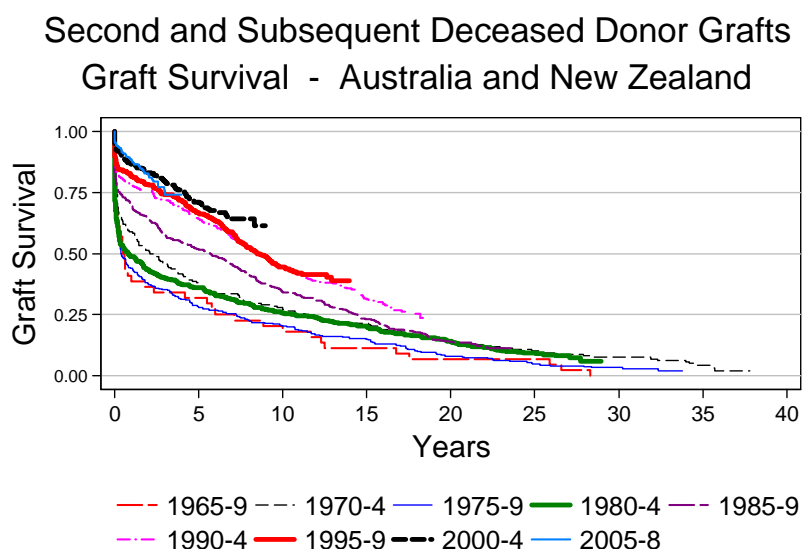


Figure 8.62

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

Time Period	Graft Survival					Patient Survival				
	1 yr	5 yrs	10 yrs	15 yrs	20 yrs	1 yr	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974	85.7%	76.2%	61.5%	46.2%	20.5%	90.5%	81.0%	61.9%	52.4%	42.9%
1975-1979	81.2%	63.3%	49.8%	41.2%	31.0%	90.6%	78.5%	71.0%	61.7%	52.1%
1980-1984	82.8%	71.2%	59.4%	46.4%	36.4%	96.3%	85.4%	74.9%	64.8%	55.8%
1985-1989	90.8%	74.8%	60.5%	45.1%	35.7%	95.2%	87.8%	79.9%	71.1%	62.9%
1990-1994	91.8%	79.6%	65.3%	48.7%	-	97.2%	89.2%	84.0%	74.2%	-
1995-1999	94.5%	84.1%	68.8%	-	-	98.6%	94.7%	86.7%	-	-
2000-2004	95.9%	87.5%	-	-	-	98.5%	94.1%	-	-	-
2005-2008	96.8%	-	-	-	-	98.7%	-	-	-	-

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

Figure 8.63

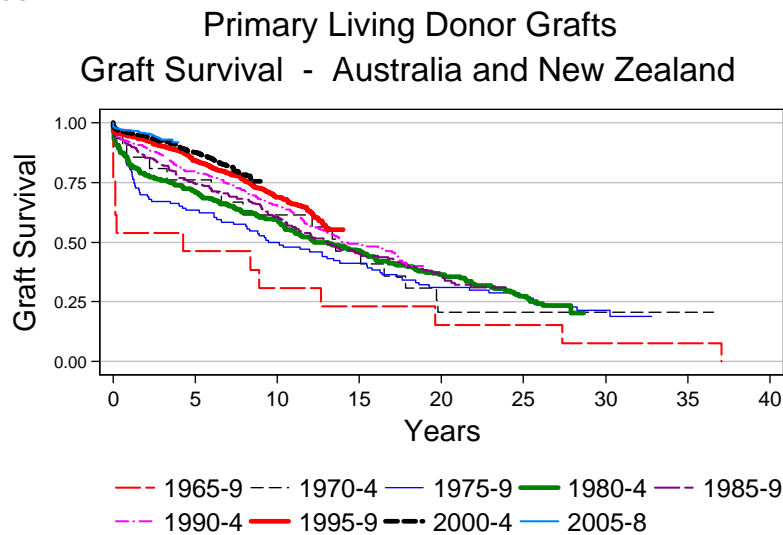


Figure 8.64

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

Time Period	Graft Survival					Patient Survival				
	1 yr	5 yrs	10 yrs	15 yrs	20 yrs	1 yr	5 yrs	10 yrs	15 yrs	20 yrs
1970-1974	100.0%	100.0%	-	-	-	100.0%	100.0%	-	-	-
1975-1979	72.7%	45.4%	36.4%	36.4%	27.3%	100.0%	100.0%	81.8%	72.7%	63.6%
1980-1984	78.6%	64.3%	59.5%	50.0%	40.5%	97.6%	81.0%	78.6%	71.4%	51.9%
1985-1989	87.0%	74.2%	58.1%	45.2%	29.0%	96.8%	83.9%	71.0%	64.5%	47.5%
1990-1994	100.0%	86.8%	40.7%	35.3%	-	100.0%	94.7%	73.1%	67.7%	-
1995-1999	93.2%	82.4%	70.2%	-	-	98.6%	98.6%	89.2%	-	-
2000-2004	93.5%	86.8%	-	-	-	98.1%	95.3%	-	-	-
2005-2008	96.3%	-	-	-	-	99.3%	-	-	-	-

