TRANSPLANTATION

Renal Transplants Performed in 1997

Australia

(Figure 210,211).

The 502 operations performed in 1997 is a small increase over the last few years (a rise of 6% over 1996). This represents a transplant rate of 27 per million of population (26 per million in 1996 and 24 per million in 1995). (Figure 213). The improvement in the transplant rate over the last three years has been due to an increase in the proportion of living donor transplants (29% in 1997, 24% in 1996, 21% in 1995).

The proportion of patients receiving dialysis who were transplanted in 1997 was 7.7% compared to 7.8% in 1996. (Figure 212). For dialysing patients in the 15-59 year age group, the percentage was 12.6% in 1997 and 1996. (Figure 212).

Of the kidneys transplanted, 88% were for primary recipients. This percentage has remained relatively constant over the last decade, varying between 82% and 88%.

New Zealand

(Figure 210,211).

The number of operations (112) performed in 1997 represents a transplant rate of 30 per million (an increase of 17% from 1996). (Figure 213).

The percentage of living donors was the same at 28% of all operations. These figures are very similar to those seen in Australia for that year.

The number of operations represents 8.8% of all dialysed patients and 11% of dialysed patients in the age group 15-59 years. (Figure 212). Of the grafts performed in 1997, 90% were to primary recipients.

Figure 210 **Australia and New Zealand**

Summary of Renal Transplantation

Transplants		Australia 1963 - 1997		New Zealand 1965 - 1997	
		Performed	Functioning ★	Performed	Functioning ★
Cadaver	First	8082	3277	1484	563
	Second	1306	465	312	80
	Third	198	65	59	17
	Fourth	28	13	6	2
	Fifth	2	2	0	0
Living Donor	First	1123	746	306	198
	Second	115	75	30	18
	Third	15	10	3	3
	Fourth	2	2	0	0
	Fifth	1	1	0	0
Total		**10872**	**4656**	**2200**	**881**

★ Lost to follow up not included

Figure 211 **Australia and New Zealand**

Number of Renal Transplant Operations
( ) 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 (34)**	61	13	3	2	**79 (16)**
1980	287	63	9	0	0	**359 (36)**	57	13	4	0	**74 (18)**
1981	306	58	9	1	0	**374 (35)**	51	8	1	0	**60 (10)**
1982	321	72	6	0	0	**399 (53)**	48	17	0	0	**65 (8)**
1983	272	63	10	2	0	**347 (48)**	69	25	4	0	**98 (11)**
1984	362	72	10	1	0	**445 (48)**	63	11	0	0	**74 (16)**
1985	318	79	17	1	0	**415 (36)**	60	25	3	0	**88 (6)**
1986	366	63	7	2	0	**438 (32)**	79	19	6	1	**105 (13)**
1987	309	58	21	3	0	**391 (39)**	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	385	70	11	3	0	**469 (77)**	62	10	4	1	**77 (13)**
1992	403	57	13	3	0	**476 (69)**	105	5	5	0	**115 (17)**
1993	383	63	6	4	1	**457 (64)**	69	13	2	0	**84 (20)**
1994	384	41	12	2	1	**440 (103)**	70	11	1	1	**83 (20)**
1995	370	60	11	0	0	**441 (93)**	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	**502 (144)**	101	10	1	0	**112 (31)**

Figure 212

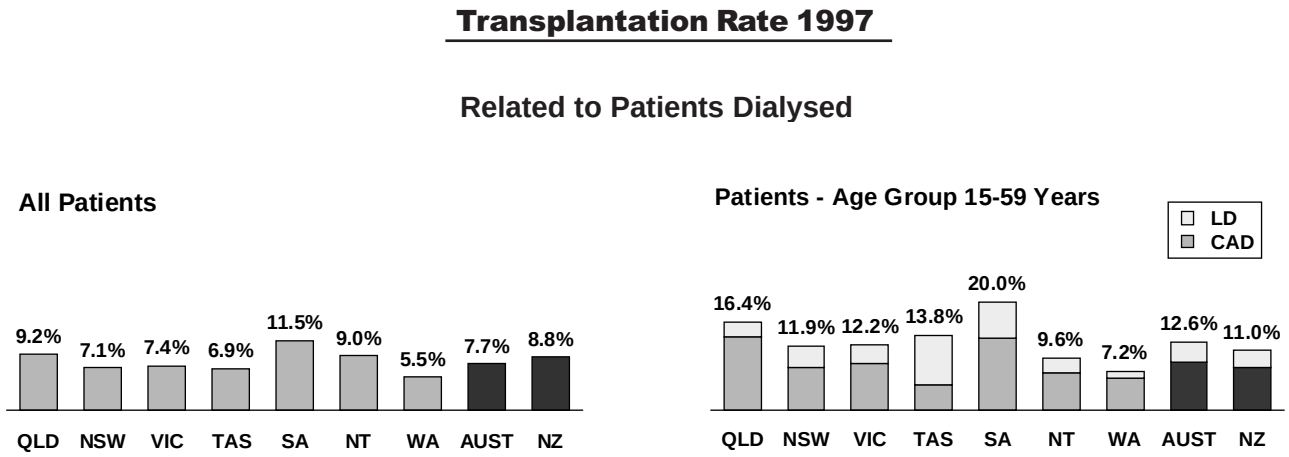
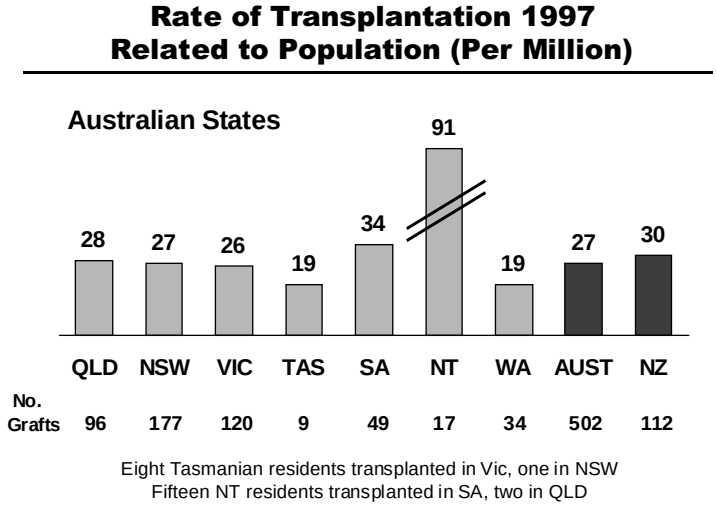


Figure 213



Eight Tasmanian residents transplanted in Vic, one in NSW
Fifteen NT residents transplanted in SA, two in QLD

Age of Recipients

Australia

(Figure 214).

The median age of transplanted recipients in 1997 was 42 years compared to 41 years for 1996. Forty six percent of recipients fell into the 35-54 year age group. Twenty two percent of recipients in 1997 were over 54 years of age compared to 20% in 1996 and 1995.

The transplantation rate per million for each age group and as a percentage of dialysed patients for each age group is shown in Figure 215 and 216. These figures do not differ significantly to 1996.

New Zealand

(Figure 214).

The median age of transplant recipients in 1997 was 46 years compared with 40 years in 1996. Recipients aged between 35 and 54 years comprised 46% of the total. Twenty three percent of recipients in 1997 were over 54 years of age. Range 9-70 years.

Graft Number and Age of Patients Transplanted 1-Jan-97 to 31-Dec-97

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											
Cadaver	1	0	4	17	40	71	83	80	18	0	**313**
	2	0	2	0	12	16	5	4	0	0	**39**
	3	0	0	1	0	2	3	0	0	0	**6**
Living Donor	1	8	6	23	38	28	19	9	0	0	**131**
	2	0	3	1	2	5	1	0	0	0	**12**
	4	0	0	0	1	0	0	0	0	0	**1**
Total		**8**	**15**	**42**	**93**	**122**	**111**	**93**	**18**	**0**	**502**
New Zealand											
Cadaver	1	0	1	2	12	11	25	16	5	0	**72**
	2	0	1	1	1	1	2	1	1	0	**8**
	3	0	0	0	0	1	0	0	0	0	**1**
Living Donor	1	0	3	6	7	5	5	3	0	0	**29**
	2	0	0	0	0	2	0	0	0	0	**2**
Total		**0**	**5**	**9**	**20**	**20**	**32**	**20**	**6**	**0**	**112**

Figure 215

Transplant Operations (Per Million) 1997

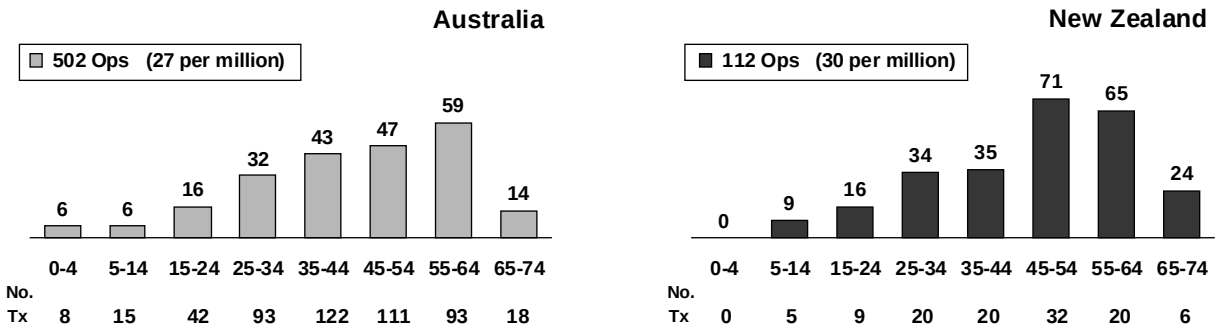
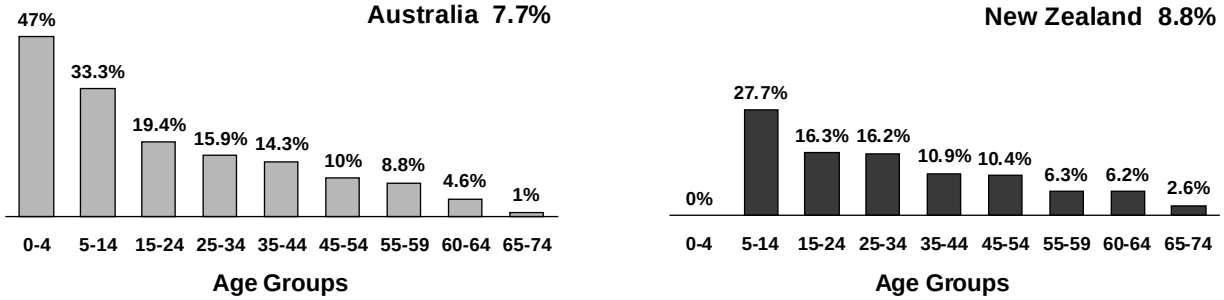


Figure 216

Transplantation Rate 1997

Related to Patients Dialysed



Race of Transplant Recipients

Australia
(Figure 217, 219).

In the 15-59 year age group in 1997, 14.2% of dialysed Caucasoid patients were transplanted. This figure has remained stable over the last four years. For Australian Aboriginals, the corresponding transplant rate for 1997 was 4.3%. This represents a doubling of the 1996 figure and a reversal of the downward trend seen over a number of years.

New Zealand
(Figure 218, 219).

In the 15-59 year age group, 1997 has seen a continuation of the rapid increase in number of Maori and Pacific Islanders being accepted onto dialysis programs. The proportion of Maori and Pacific Islanders in this age group who have received a renal transplant in 1997 was 3.2% and 2.2% respectively, compared to 19.8% for Caucasoid dialysis patients.

Figure 217 **Australia**

Transplantation Rate - Age Group 15-59 years 1984 - 1997

Year	Caucasoid			Aboriginal			All Patients		
	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate
1984	1892	370	19.5%	38	6	15.7%	2011	394	19.5%
1985	1849	335	18.1%	59	10	16.9%	2011	363	18.0%
1986	1886	354	18.7%	68	13	19.1%	2069	391	18.8%
1987	1880	318	16.9%	88	15	17.0%	2101	346	16.4%
1988	1908	358	18.7%	93	19	20.4%	2173	407	18.7%
1989	1897	367	19.3%	124	18	14.5%	2214	422	19.0%
1990	1918	317	16.5%	147	18	12.2%	2265	373	16.4%
1991	1959	362	18.4%	161	12	7.4%	2328	401	17.2%
1992	2002	348	17.3%	185	17	9.1%	2446	402	16.4%
1993	2074	328	15.8%	224	10	4.4%	2575	375	14.5%
1994	2226	333	14.9%	273	12	4.3%	2806	369	13.1%
1995	2322	316	13.6%	322	13	4.0%	3000	365	12.1%
1996	2456	357	14.5%	360	8	2.2%	3198	402	12.5%
1997	2528	359	14.2%	413	18	4.3%	3362	426	12.6%

Figure 218 **New Zealand**

Transplantation Rate - Age Group 15-59 years 1984 -1997

Year	Caucasoid			Maori			Pacific Islander			All Patients		
	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate	Dialysed	Tx	Rate
1984	261	49	18.7%	111	11	9.9%	17	3	17.6%	393	64	16.2%
1985	284	62	21.8%	120	14	11.6%	26	4	15.3%	438	82	18.7%
1986	295	61	20.6%	123	26	21.1%	35	5	14.2%	460	94	20.4%
1987	299	53	17.7%	128	13	10.1%	33	5	15.1%	466	72	15.4%
1988	299	53	17.7%	134	13	9.7%	44	7	15.9%	488	74	15.1%
1989	309	48	15.5%	151	12	7.9%	53	9	16.9%	527	72	13.6%
1990	318	68	21.3%	156	9	5.7%	62	8	12.9%	553	89	16.0%
1991	314	44	14.0%	188	15	7.9%	61	5	8.1%	579	67	11.5%
1992	336	80	23.8%	203	11	5.4%	64	3	4.7%	626	104	16.6%
1993	318	53	16.6%	211	4	1.8%	88	3	3.4%	642	63	9.8%
1994	317	52	16.4%	228	11	4.8%	96	5	5.2%	673	71	10.5%
1995	332	54	16.3%	241	11	4.5%	113	6	5.3%	727	78	10.7%
1996	347	58	16.7%	261	7	2.6%	129	7	5.4%	783	79	10.1%
1997	368	73	19.8%	279	9	3.2%	134	3	2.2%	825	91	11.0%

Australian State Transplantation Activity 1997

The population related rate of transplantation for each State is shown in Figure 220 and 221. Those transplants performed in Tasmania and Northern Territory patients have been included in figures for Victoria and South Australia respectively.

For the fourth consecutive year, South Australia/ Northern Territory has the highest transplant rate which gradually increased from 35 per million to 38 per million. The rate in Western Australia remains the lowest in the nation.

The population related transplant rate has been calculated for each State and the Northern Territory and is shown in Figure 213. In addition, the rates as a percentage of all patients and the 15-59 year age group are shown in Figure 212. There has been a significant increase in the number of Northern Territory residents transplanted compared to previous years (17 per million in 1996 compared to 91 per million in 1997). This increase has been seen for cadaveric and living donor transplants. There has been a fall in all rates for Tasmania in 1997.

Figure 219

New Transplanted Patients 1997 Related to Race and Age Group

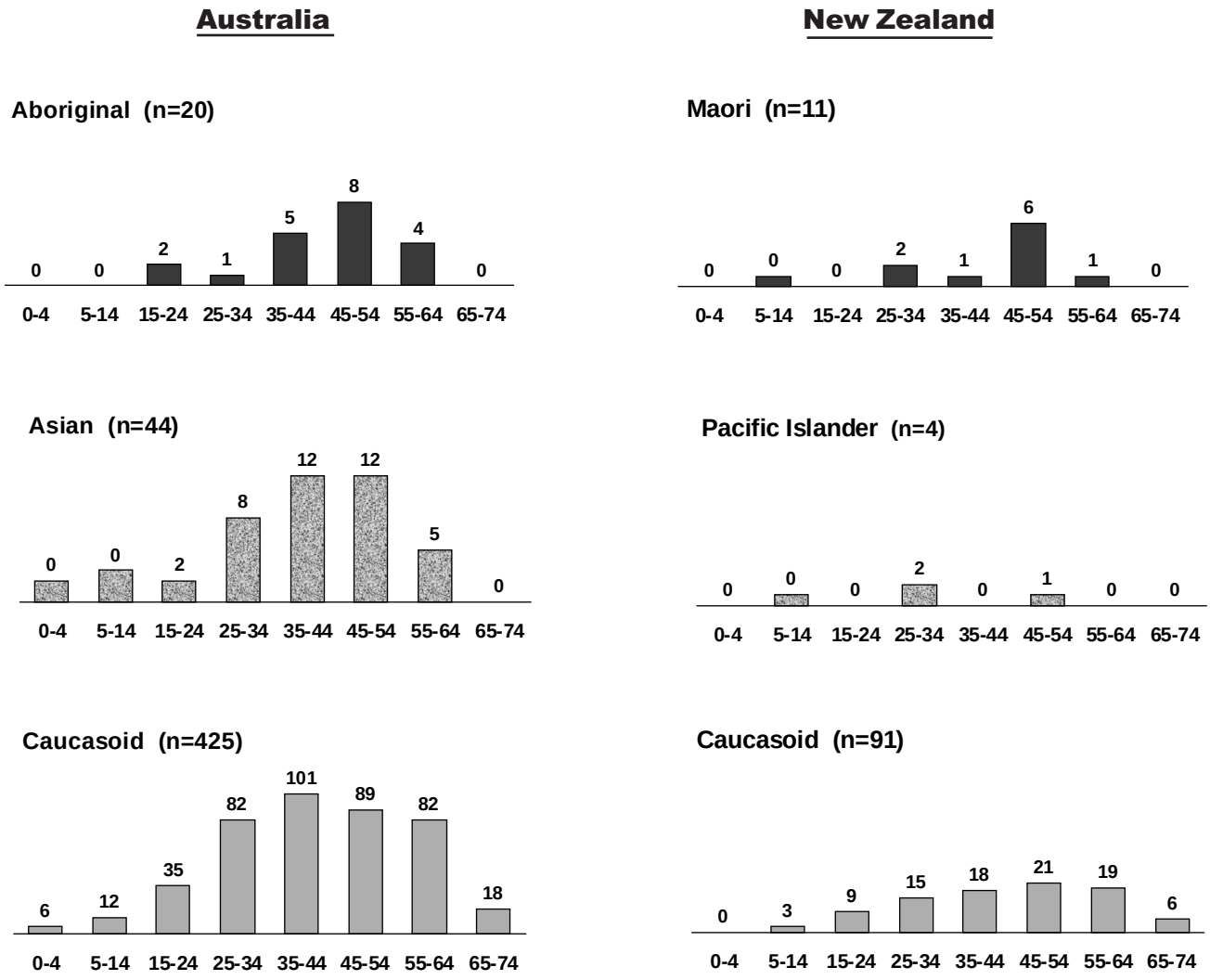


Figure 220

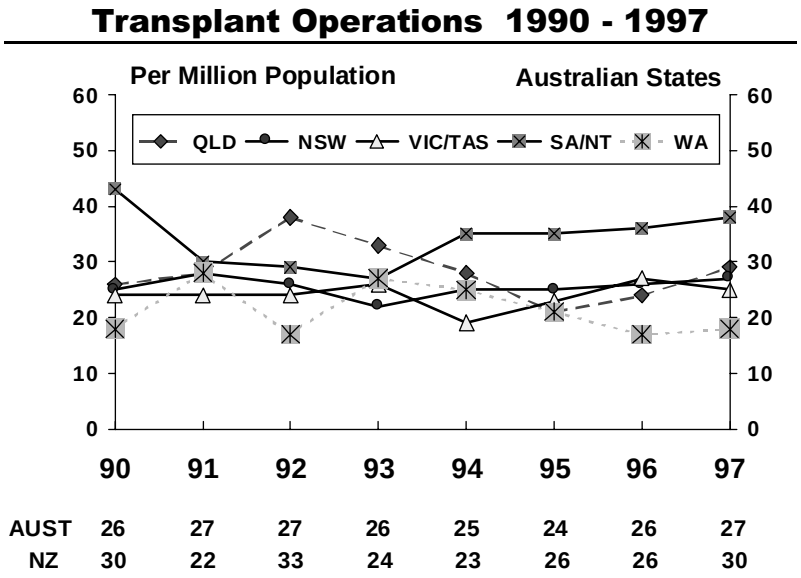
Australia

Transplants in each State 1990 - 1997
Number of Operations (Per Million Population)

State	1990	1991	1992	1993	1994	1995	1996	1997
Queensland	77 (26)	84 (28)	114 (38)	102 (33)	88 (28)	69 (21)	80 (24)	98 (29)
New South Wales/ACT	153 (25)	174 (28)	166 (26)	136 (22)	158 (25)	161 (25)	171 (26)	179 (27)
Victoria/Tasmania ★	116 (24)	116 (24)	120 (24)	129 (26)	94 (19)	116 (23)	134 (27)	128 (25)
South Australia/NT ★	68 (43)	49 (30)	47 (29)	44 (27)	57 (35)	58 (35)	60 (36)	64 (38)
Western Australia	29 (18)	46 (28)	29 (17)	46 (27)	43 (25)	37 (21)	30 (17)	33 (18)
Australia	**443 (26)**	**469 (27)**	**476 (27)**	**457 (26)**	**440 (25)**	**441 (24)**	**475 (26)**	**502 (27)**

★ For calculation of population related totals, the populations of these States were amalgamated

Figure 221



Transplant Survival - Primary Cadaveric Grafts

Australia

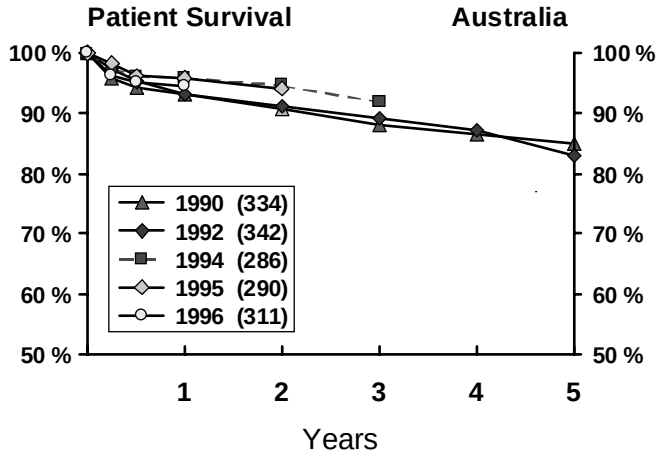
The patient and graft survivals for primary cadaveric grafts for each year since 1983 are shown in Figure 223. Graphical representation of some years is shown in Figure 222. For grafts performed in 1996, the 12 month patient and graft survival was 95% and 89% respectively. These figures are comparable to those for the years 1994 and 1995. A similar level of survival appears to have been achieved for the six month survival for 1997 grafts.

The five year graft survival for transplants performed in primary recipients in 1992 is 72% with 83% of recipients still being alive at five years. This survival rate has been constant for grafts performed in the years 1989-92 and represents an annual graft failure rate after the first year of approximately 3%.

The annual patient death rate for this period was 2%.

Figure 222

Primary Cadaver Patient Survival 1990 - 1996
Related to Year of Transplant



Primary Cadaver Graft Survival 1990 - 1996
Related to Year of Transplant

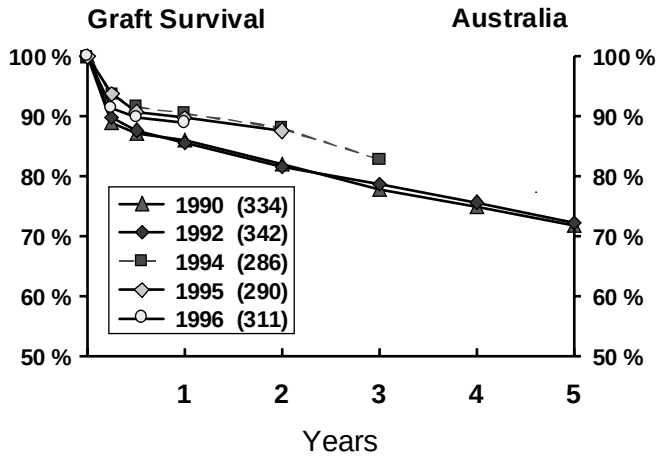


Figure 223 **Australia**

Primary Cadaver Patient and Graft Survival 1983 - 1997

Year of Transplant		Survival											
		1 month		3 months		6 months		1 year		3 years		5 years	
Patient Survival													
1983	n=231	97 ± 1.1	225	96 ± 1.3	221	94 ± 1.6	216	91 ± 1.9	209	86 ± 2.3	197	81 ± 2.6	185
1984	n=321	98 ± 0.7	316	95 ± 1.2	305	94 ± 1.4	301	91 ± 1.6	292	84 ± 2.0	271	77 ± 2.4	247
1985	n=289	99 ± 0.7	285	96 ± 1.2	276	94 ± 1.4	271	92 ± 1.6	265	87 ± 2.0	250	79 ± 2.4	228
1986	n=337	99 ± 0.6	333	96 ± 1.1	322	93 ± 1.4	315	92 ± 1.5	311	88 ± 1.8	297	80 ± 2.2	270
1987	n=273	98 ± 0.9	267	93 ± 1.5	254	92 ± 1.6	252	90 ± 1.8	247	88 ± 2.0	239	82 ± 2.3	225
1988	n=353	98 ± 0.7	347	97 ± 1.0	341	95 ± 1.2	334	93 ± 1.4	327	87 ± 1.8	307	82 ± 2.1	288
1989	n=390	99 ± 0.4	388	97 ± 0.8	380	96 ± 1.0	373	94 ± 1.2	368	90 ± 1.5	350	85 ± 1.8	330
1990	n=334	99 ± 0.7	329	96 ± 1.1	320	94 ± 1.3	315	93 ± 1.4	311	88 ± 1.8	294	85 ± 2.0	284
1991	n=313	99 ± 0.6	309	95 ± 1.2	298	95 ± 1.3	296	93 ± 1.4	292	89 ± 1.8	278	85 ± 2.0	267
1992	n=342	99 ± 0.5	339	97 ± 0.9	333	95 ± 1.1	326	93 ± 1.4	319	89 ± 1.7	305	83 ± 2.0	284
1993	n=323	98 ± 0.7	318	98 ± 0.9	315	96 ± 1.1	309	95 ± 1.2	307	92 ± 1.5	298	-	
1994	n=286	99 ± 0.6	283	98 ± 0.9	279	96 ± 1.1	274	96 ± 1.2	273	92 ± 1.6	261	-	
1995	n=290	100 ± 0.3	289	98 ± 0.8	285	96 ± 1.1	279	96 ± 1.2	278	-		-	
1996	n=311	99 ± 0.6	307	96 ± 1.1	299	95 ± 1.2	296	95 ± 1.3	294	-		-	
1997	n=313	98 ± 0.7	308	98 ± 0.8	304	97 ± 1.1	211	-		-		-	
Graft Survival													
1983	n=231	87 ± 2.2	200	81 ± 2.6	186	77 ± 2.8	179	74 ± 2.9	170	64 ± 3.2	148	58 ± 3.3	132
1984	n=321	86 ± 1.9	277	79 ± 2.3	254	76 ± 2.4	243	72 ± 2.5	230	60 ± 2.7	194	54 ± 2.8	173
1985	n=289	89 ± 1.9	256	83 ± 2.2	241	82 ± 2.3	237	79 ± 2.4	227	70 ± 2.7	200	62 ± 2.9	179
1986	n=337	91 ± 1.6	307	86 ± 1.9	290	83 ± 2.0	280	81 ± 2.1	273	74 ± 2.4	250	65 ± 2.6	220
1987	n=273	91 ± 1.8	248	87 ± 2.0	238	85 ± 2.2	232	83 ± 2.3	226	77 ± 2.5	211	70 ± 2.8	191
1988	n=353	91 ± 1.5	321	87 ± 1.8	308	85 ± 1.9	301	82 ± 2.0	291	76 ± 2.3	268	67 ± 2.5	237
1989	n=390	94 ± 1.2	366	91 ± 1.5	355	87 ± 1.7	341	85 ± 1.8	333	77 ± 2.1	301	72 ± 2.3	280
1990	n=334	92 ± 1.5	308	89 ± 1.7	297	87 ± 1.8	291	86 ± 1.9	287	78 ± 2.3	260	72 ± 2.5	240
1991	n=313	91 ± 1.6	286	88 ± 1.9	275	86 ± 2.0	269	84 ± 2.1	262	76 ± 2.4	239	72 ± 2.6	224
1992	n=342	91 ± 1.5	312	90 ± 1.6	307	88 ± 1.8	300	86 ± 1.9	293	79 ± 2.2	269	72 ± 2.4	247
1993	n=323	92 ± 1.5	296	89 ± 1.7	288	87 ± 1.9	281	85 ± 2.0	276	81 ± 2.2	260	-	
1994	n=286	95 ± 1.3	271	94 ± 1.4	268	92 ± 1.6	261	91 ± 1.7	258	83 ± 2.2	235	-	
1995	n=290	96 ± 1.2	277	94 ± 1.4	272	91 ± 1.7	263	90 ± 1.8	260	-		-	
1996	n=311	94 ± 1.4	291	91 ± 1.6	284	90 ± 1.7	279	89 ± 1.8	276	-		-	
1997	n=313	94 ± 1.4	293	92 ± 1.3	286	90 ± 1.7	197	-		-		-	

% Survival ± S.E. / Number at Risk

n = Number of Patients

Transplant Survival - Primary Cadaveric Grafts

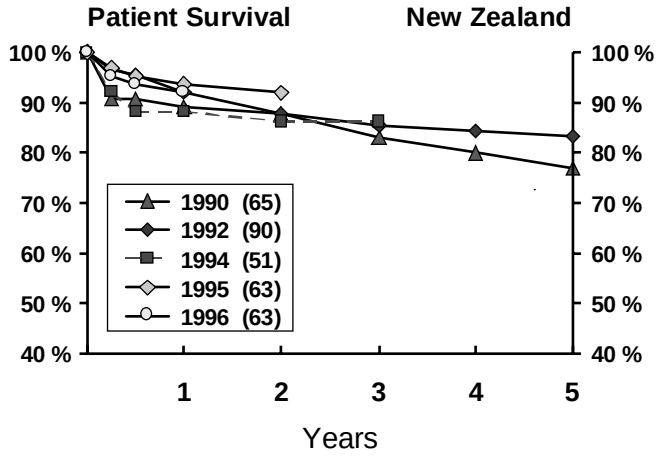
New Zealand

For recipients of primary cadaveric grafts performed in 1996, the 12 month patient and graft survivals were 92% and 84% respectively (comparable to 1995). (Figure 224).

The five year patient and graft survivals for primary cadaveric grafts performed in 1992 were 83% and 73% respectively.

Figure 224

Primary Cadaver Patient Survival 1990 - 1996
Related to Year of Transplant



Primary Cadaver Graft Survival 1990 - 1996
Related to Year of Transplant

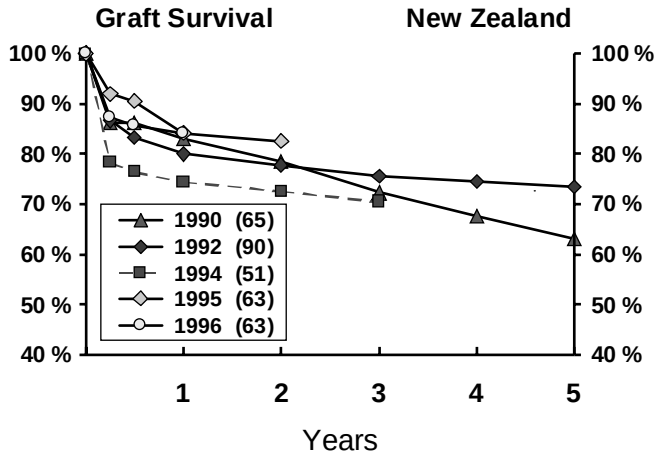


Figure 225 **New Zealand**

Primary Cadaver Patient and Graft Survival 1983 - 1997

Year of Transplant		Survival											
		1 month		3 months		6 months		1 year		3 years		5 years	
Patient Survival													
1983	n=59	100 ± 0.0	59	98 ± 1.7	58	95 ± 2.9	56	93 ± 3.3	55	92 ± 3.6	54	85 ± 4.7	50
1984	n=48	100 ± 0.0	48	98 ± 2.1	47	98 ± 2.1	47	94 ± 3.5	45	81 ± 5.6	39	63 ± 7.0	30
1985	n=56	100 ± 0.0	56	89 ± 4.1	50	88 ± 4.4	49	86 ± 4.7	48	77 ± 5.6	43	70 ± 6.1	39
1986	n=66	95 ± 2.6	63	95 ± 2.6	63	94 ± 2.9	61	91 ± 3.6	59	80 ± 5.0	52	68 ± 5.8	44
1987	n=40	98 ± 2.5	39	95 ± 3.5	38	95 ± 3.5	38	93 ± 4.2	37	88 ± 5.2	35	78 ± 6.6	31
1988	n=53	100 ± 0.0	53	96 ± 2.6	51	96 ± 2.6	51	93 ± 3.2	50	87 ± 4.7	46	81 ± 5.4	42
1989	n=59	100 ± 0.0	59	95 ± 2.9	56	93 ± 3.3	55	88 ± 4.2	52	76 ± 5.5	45	66 ± 6.2	39
1990	n=65	94 ± 3.0	61	91 ± 3.6	59	91 ± 3.6	59	89 ± 3.8	58	83 ± 4.7	54	77 ± 5.2	50
1991	n=50	100 ± 0.0	50	96 ± 2.8	48	96 ± 2.8	48	96 ± 2.8	48	88 ± 4.6	44	78 ± 5.9	39
1992	n=90	99 ± 1.1	89	97 ± 1.9	87	96 ± 2.2	86	92 ± 2.8	83	86 ± 3.7	77	83 ± 3.9	75
1993	n=53	96 ± 2.6	51	91 ± 4.0	48	89 ± 4.4	47	83 ± 5.2	44	81 ± 5.4	43	-	
1994	n=51	96 ± 2.7	49	92 ± 3.8	47	88 ± 4.5	45	88 ± 4.5	45	86 ± 4.8	44	-	
1995	n=63	98 ± 1.6	62	97 ± 2.2	61	95 ± 2.7	60	94 ± 3.1	59	-		-	
1996	n=63	98 ± 1.6	62	95 ± 2.7	60	94 ± 3.1	59	92 ± 3.4	58	-		-	
1997	n=72	99 ± 1.4	71	96 ± 2.4	69	96 ± 2.4	53	-		-		-	
Graft Survival													
1983	n=59	81 ± 5.1	48	73 ± 5.8	43	69 ± 6.0	41	68 ± 4.9	40	58 ± 6.4	34	51 ± 6.5	30
1984	n=48	73 ± 6.4	35	67 ± 6.8	32	60 ± 7.1	29	54 ± 7.2	26	46 ± 7.2	22	33 ± 6.8	16
1985	n=56	79 ± 5.5	55	68 ± 6.2	38	63 ± 6.5	35	61 ± 6.5	34	52 ± 6.7	29	43 ± 6.6	24
1986	n=66	85 ± 4.4	56	85 ± 4.4	56	83 ± 4.6	55	79 ± 5.0	52	67 ± 5.8	44	58 ± 6.1	38
1987	n=40	85 ± 5.7	34	83 ± 6.0	33	80 ± 6.3	32	80 ± 6.3	32	73 ± 7.1	29	68 ± 7.4	27
1988	n=53	87 ± 4.7	46	79 ± 5.6	42	77 ± 5.8	41	75 ± 5.9	40	68 ± 6.4	36	58 ± 6.8	30
1989	n=59	92 ± 3.6	54	80 ± 5.2	47	76 ± 5.5	45	69 ± 6.0	41	61 ± 6.4	36	54 ± 6.5	32
1990	n=65	92 ± 3.3	60	86 ± 4.3	56	86 ± 4.3	56	83 ± 4.7	54	72 ± 5.5	47	63 ± 6.0	41
1991	n=50	88 ± 4.6	44	84 ± 5.2	42	82 ± 5.4	41	82 ± 5.4	41	74 ± 6.2	37	62 ± 6.9	31
1992	n=90	91 ± 3.0	82	87 ± 3.6	78	83 ± 3.9	75	80 ± 4.2	72	76 ± 4.5	68	73 ± 4.7	66
1993	n=53	85 ± 4.9	45	81 ± 5.4	43	79 ± 5.6	42	74 ± 6.1	39	68 ± 6.4	36	-	
1994	n=51	80 ± 5.6	41	78 ± 5.8	40	76 ± 5.9	39	75 ± 6.1	38	71 ± 6.4	36	-	
1995	n=63	94 ± 3.1	59	92 ± 3.4	58	90 ± 3.7	57	84 ± 4.6	53	-		-	
1996	n=63	89 ± 4.0	56	87 ± 4.2	55	86 ± 4.4	54	84 ± 4.6	53	-		-	
1997	n=72	90 ± 3.5	65	88 ± 3.9	63	88 ± 3.9	50	-		-		-	

% Survival ± S.E. / Number at Risk

n = Number of Patients

AUSTRALIAN TRANSPLANT SURVIVAL - SUBSEQUENT CADAVERIC GRAFTS

Patient and graft survivals for second or subsequent cadaveric grafts are examined for the three year cohorts 1995-97; 1992-94; 1989-91; 1986-88 and 1983-85. (Figure226,227).

Figure 226 **Australia**

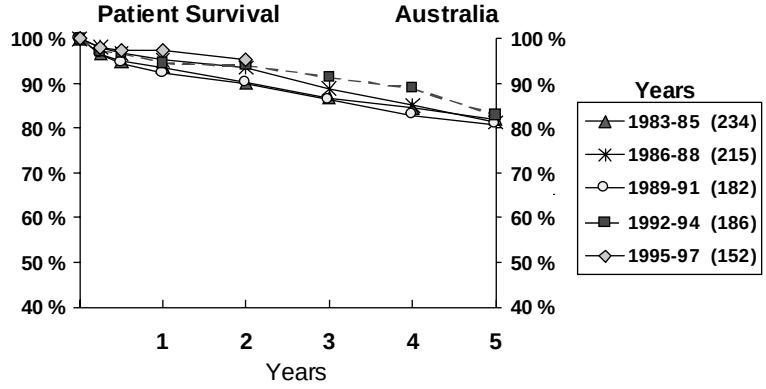
Second and Subsequent Cadaver Patient and Graft Survival 1983 - 1997

Year of Transplant		Survival											
		1 month		3 months		6 months		1 year		3 years		5 years	
Patient Survival													
1983-85	n=234	99 ± 0.6	232	97 ± 1.2	226	95 ± 1.4	222	94 ± 1.6	218	87 ± 2.2	202	82 ± 2.5	191
1986-88	n=215	100 ± 0.0	215	98 ± 0.9	211	97 ± 1.2	208	95 ± 1.4	205	89 ± 2.1	190	81 ± 2.7	174
1989-91	n=182	99 ± 0.8	180	97 ± 1.3	176	95 ± 1.7	172	92 ± 2.0	168	86 ± 2.6	157	81 ± 2.9	147
1992-94	n=186	99 ± 0.8	182	97 ± 1.2	181	97 ± 1.3	180	95 ± 1.7	176	91 ± 2.1	170	83 ± 3.1	69
1995-97	n=152	99 ± 0.7	151	98 ± 1.1	149	97 ± 1.3	135	97 ± 1.3	114	95 ± 2.0	16	-	
Graft Survival													
1983-85	n=234	75 ± 2.8	176	70 ± 3.0	164	65 ± 3.1	153	63 ± 3.2	147	52 ± 3.3	122	48 ± 3.3	113
1986-88	n=215	85 ± 2.5	182	80 ± 2.8	171	77 ± 2.9	166	74 ± 3.0	160	63 ± 3.3	135	55 ± 3.4	118
1989-91	n=182	85 ± 2.7	154	83 ± 2.8	151	80 ± 3.0	145	77 ± 3.1	141	68 ± 3.5	123	60 ± 3.6	109
1992-94	n=186	86 ± 2.5	160	83 ± 2.7	155	83 ± 2.7	154	81 ± 2.9	151	75 ± 3.2	140	66 ± 3.7	55
1995-97	n=152	86 ± 2.8	131	83 ± 3.1	126	82 ± 3.1	113	81 ± 3.2	92	74 ± 4.3	11	-	

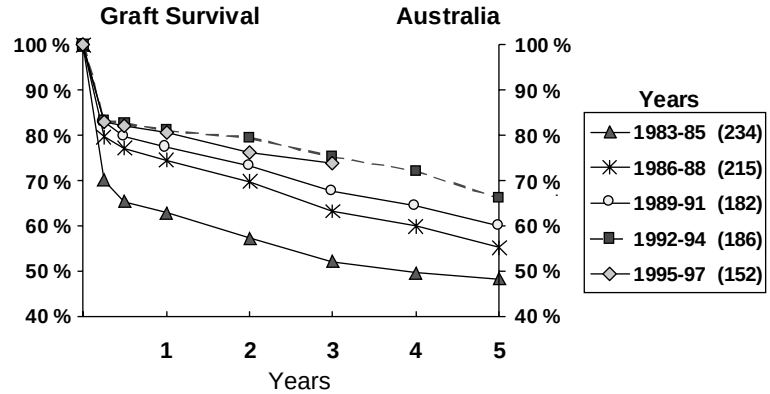
% Survival ± S.E. / Number at Risk
n = Number of Patients

Figure 227

Second and Subsequent Cadaver Patient Survival Related to Years of Transplant 1983 - 1997



Second and Subsequent Cadaver Graft Survival Related to Years of Transplant 1983 - 1997



LIVING DONOR TRANSPLANTS

Australia

The year 1997 saw the largest number and proportion of living donor transplants being performed in Australia representing 29% of all transplant operations.

A marked increase in the number of living donor transplants occurred in 1994 and there has been a further increase in 1997. (Figure 228, 229). From 1996 to 1997, there has been an 30% increase in the number of living related donor grafts. The number of unrelated donors is the same in 1997 as 1996. All but one of the living unrelated donors were spouses in 1997. Four of the spousal donors were aged 55 years or more. Fifty two percent of the living donors in 1996 and 42% in 1997 were female. (Figure 233).

Figure 230 shows the age-related proportion of living donor transplants for the years 1993 and 1997. The overall proportion of living donor transplants doubled between these years. The increase in proportion of living donors increased in all age groups except the 65-74 year group. There were no living donor grafts in this group in 1997 compared to 18% of grafts in 1996.

The proportion of living donor transplants for each State and New Zealand for recipients aged 25-44 years is shown in Figure 231 for the years 1990-93 and 1994-97. There have been increases in all regions.

New Zealand

Twenty eight percent of grafts were from a living donor (27% in 1996 and 26% in 1995). There has been a marked increase in the number of living unrelated donor transplants in 1997. Fifty five percent of living donors were female. (Figure 234). As in Australia there has been a significant increase in the proportion of living donors for recipients aged 25-44 years comparing 1990-93 and 1994-97. (Figure 231).

Timing of Living Donor Transplants

The timing of living donor transplants is shown in Figure 232. New Zealand has over this period had a higher proportion of living transplants performed before dialysis commencement. In Australia, this has been an increasing practice over the last few years.

Figure 228 **Australia**

Living Donor Operations as Proportion (%) of Annual Transplantation

Recipient Age Groups	Year of Transplantation							
	1990	1991	1992	1993	1994	1995	1996	1997
00-04 years	33%	100%	43%	60%	67%	83%	50%	100%
05-14 years	47%	50%	73%	55%	73%	65%	50%	60%
15-24 years	32%	34%	31%	22%	44%	36%	36%	57%
25-34 years	15%	22%	15%	23%	24%	26%	32%	44%
35-44 years	13%	12%	19%	13%	24%	21%	27%	27%
45-54 years	6%	10%	4%	7%	17%	12%	12%	18%
55-64 years	4%	4%	2%	5%	13%	5%	13%	10%
65-74 years	0%	0%	0%	5%	8%	0%	18%	0%
All Recipients	**13%**	**16%**	**14%**	**14%**	**23%**	**21%**	**24%**	**29%**

Figure 229

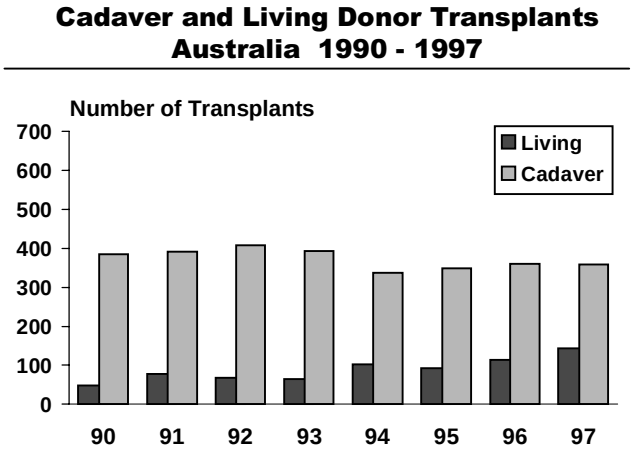


Figure 230

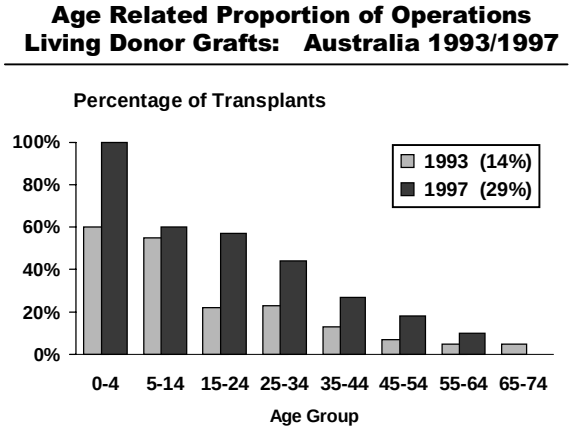


Figure 231

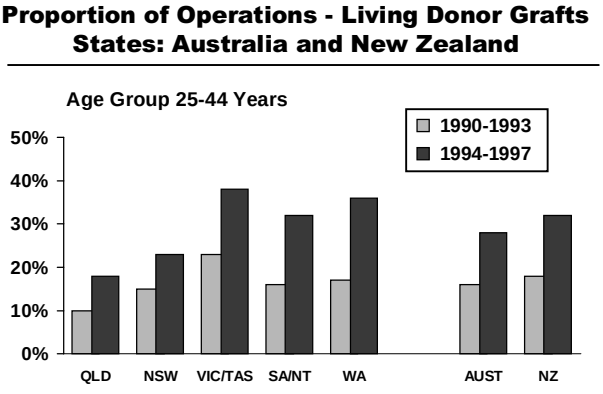


Figure 232

Australia and New Zealand

Timing of Living Donor Transplantation in Relation to Date of Dialysis Start by Year 1990 - 1997

	1990	1991	1992	1993	1994	1995	1996	1997
Australia								
Pre-dialysis	6%	17%	13%	12%	11%	14%	16%	19%
<! month post dialysis	6%	4%	13%	10%	4%	1%	6%	5%
1-5.9 months post dialysis	28%	28%	30%	28%	30%	26%	15%	21%
6-11.9 months post dialysis	19%	31%	16%	18%	20%	21%	15%	15%
>12 months post dialysis	42%	21%	28%	32%	35%	38%	48%	40%
New Zealand								
Pre-dialysis	24%	25%	20%	25%	21%	10%	32%	21%
<! month post dialysis	19%	0%	0%	6%	0%	10%	4%	0%
1-5.9 months post dialysis	5%	25%	20%	13%	11%	14%	12%	17%
6-11.9 months post dialysis	14%	8%	20%	19%	26%	14%	8%	10%
>12 months post dialysis	38%	42%	40%	38%	42%	52%	44%	52%

Figure 233 — Australia

Source of Living Donor Kidney 1990 - 1997

	1990	1991	1992	1993	1994	1995	1996	1997
Total Living Donors	**59**	**77**	**69**	**64**	**103**	**93**	**115**	**144**
Related	**(57)**	**(72)**	**(68)**	**(60)**	**(94)**	**(87)**	**(96)**	**(125)**
Mother	17	21	25	19	27	34	26	39
Father	10	14	10	9	14	16	24	22
Brother	9	14	12	17	19	8	17	29+
Sister	15x+	17	14x	7	28	15	18x	23+
Offspring	3	3	2	5	4	6	6	3
Grandfather	0	1	0	0	0	1	0	1
Grandmother	0	0	0	1	0	2	2	0
Cousin	1	1	3	0	1	2	1	4
Nephew	0	0	2	1	0	0	0	0
Niece	0	0	0	0	0	1	0	1
Uncle	0	0	0	1	1	2	1	1
Aunt	2	1	0	0	0	0	1	2
Unrelated	**(2)**	**(5)**	**(1)**	**(4)**	**(9)**	**(6)**	**(19)**	**(19)**
Wife	0	2	1	1	2	1	10	10
Husband	2	2	0	2	4	3	3	8
Mother in Law	0	0	0	1	0	0	0	0
Stepmother	0	0	0	0	1	1	0	0
Adoptive Mother	0	1	0	0	0	0	1	0
Sister in Law	0	0	0	0	0	1	2	0
Partner	0	0	0	0	0	0	2	0
Uncle	0	0	0	0	0	0	1	0
Unrelated	0	0	0	0	2	0	0	1

+ Twin (non identical) x Twin (identical)

Figure 234 — New Zealand

Source of Living Donor Kidney 1990 - 1997

	1990	1991	1992	1993	1994	1995	1996	1997
Total Living Donors	**23**	**13**	**17**	**20**	**20**	**24**	**26**	**31**
Related	**(22)**	**(12)**	**(17)**	**(19)**	**(20)**	**(23)**	**(25)**	**(23)**
Mother	6	4	2	6	9	3	11	6
Father	5	1	4	3	5	4	5	6
Brother	5	3	2	6	2	5	3	3
Sister	4	2	7x	2	3	8x	5	5
Offspring	1	2	2	1	1	3	0	3
Uncle	0	0	0	1	0	0	0	0
Aunt	0	0	0	0	0	0	1	0
Nephew	1	0	0	0	0	0	0	0
Unrelated	**(1)**	**(1)**	**(0)**	**(1)**	**(0)**	**(1)**	**(1)**	**(8)**
Wife	0	1	0	0	0	1	0	4
Husband	0	0	0	0	0	0	1	1
Mother in Law	1	0	0	0	0	0	0	1
Sister in Law	0	0	0	1	0	0	0	1
Unrelated	0	0	0	0	0	0	0	1

x Twin (identical)

FUNCTIONING TRANSPLANTS AT 31-Dec-97

Transplant Operations 1963 - 1997

Australia

There have been 10872 operations performed on 9205 patients since 1963. Of these, 4656 were functioning at 31st December 1997, which represents 251 patients per million of population. (Figure 210). Fifteen percent of operations and 14% of functioning grafts were regrafts. Living donor transplants accounted for 12% of operations and 18% of functioning grafts. The number of operations performed by each hospital during this period is shown in Appendix II.

The number of functioning grafts at the end of 1997 represents a 6% increase over the previous year, an annual rate of increase which has remained steady. (Figure 235, 236). Eighty six percent of the functioning grafts were primary and 81% were from cadaveric donors. The number of functioning grafts from living donors increased by 15% from 723 to 834 patients.

The prevalence of functioning grafts in each State is shown in Figure 235 and 237. South Australia/ Northern Territory has the highest prevalence of functioning renal transplants at 324 per million.

The lowest prevalence was recorded in Western Australia (209 per million) which represents a decrease.

Patients with functioning grafts were in excess of those dependent on dialysis in South Australia and Queensland, once again reflecting the higher transplant rate in these regions over the last few years. (Figure 238).

The age dependence on a functioning transplant as a proportion of patients on renal replacement therapy is shown in Figure 240. The proportion drops with age and the proportion of patients depending on living donor grafts is greater in the younger age groups, particularly those aged 5-14 years. (Figure 239).

The modal age group for transplant dependent patients was 45-54 years and the mean and median ages were 47.1 and 48.2 years respectively. (Figure 239, 241). The modal age group for living donor recipients was 35-44 years and 73% of recipients dependent on living donor grafts were less than 45 years of age.

The racial distribution of recipients with functioning grafts was Caucasoid 91%, Asian 5%, Aboriginal 2% and Others 2%. (Figure 243).

The 4656 grafts functioning at the end of 1997 represent 43% of all kidneys transplanted since 1963. Twenty four percent of grafts were functioning more than 10 years, 5% more than 20 years and now there are six recipients with grafts functioning 30 years or longer. Eighteen percent of functioning grafts were from living donors. (Figure 242).

New Zealand

There have been 2200 operations performed on 1790 patients since 1965 with 881 grafts (235 per million) still functioning at 31st December 1997. (Figure 235, 236). This represents a 7% increase from the previous year. Nineteen percent of operations and 14% of functioning grafts were regrafts. Kidneys from living donors accounted for 15% of operations and 25% of functioning grafts. The number of operations performed by individual hospitals is shown in Appendix III.

For the seventh consecutive year, the number of transplant patients was less than those dependent on dialysis. The age related dependence on a transplant and the living or cadaveric donor source are shown in Figure 240.

The majority were male (58%) and the racial distribution was Caucasoid 75%, Maori 10%, Pacific Islander 5%, Asian 3% and Other 2%. (Figure 243).

The majority (67%) of functioning grafts were in the 25-54 year age group. The modal age group for living donors was 25-34 years. (Figure 239).

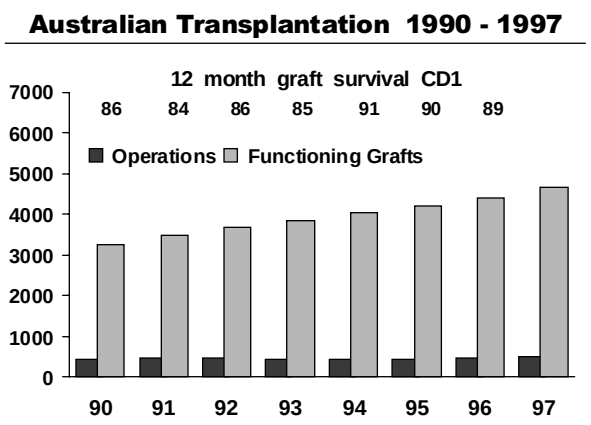
The 881 grafts functioning at the end of 1997 represent 40% of all kidneys transplanted since 1965. The longest surviving grafts have reached 30 years. Thirty six grafts have been functioning for more than 20 years. Twenty five percent of functioning grafts were from living donors. (Figure 242).

Functioning Transplants
By Transplanting State, Australia and New Zealand 1990 - 1997
( ) Per Million Population

Year	Qld	NSW/ACT	Vic./Tas ★	SA/NT ★	WA	Aust.	N.Z.
1990	561 (193)	1171 (192)	870 (180)	386 (242)	273 (167)	**3261 (191)**	**576 (168)**
1991	609 (205)	1254 (202)	926 (189)	408 (252)	287 (172)	**3484 (201)**	**604 (175)**
1992	691 (227)	1314 (210)	964 (195)	427 (262)	291 (175)	**3687 (210)**	**673 (193)**
1993	741 (238)	1346 (213)	1028 (208)	423 (260)	315 (188)	**3853 (218)**	**704 (200)**
1994	785 (246)	1409 (222)	1051 (212)	458 (279)	341 (200)	**4044 (227)**	**730 (204)**
1995	807 (246)	1470 (229)	1092 (219)	477 (289)	357 (206)	**4204 (233)**	**782 (215)**
1996	840 (250)	1540 (237)	1153 (230)	515 (311)	362 (205)	**4410 (241)**	**822 (220)**
1997	894 (263)	1628 (247)	1219 (240)	540 (324)	375 (209)	**4656 (251)**	**881 (235)**

★ For calculation of Population Related totals, the populations of these States were amalgamated.
Patients lost to follow up are not included.
Vic./Tas. includes patients transplanted in Tasmania prior to 1975 (one only functioning transplant since 1990).

Figure 236



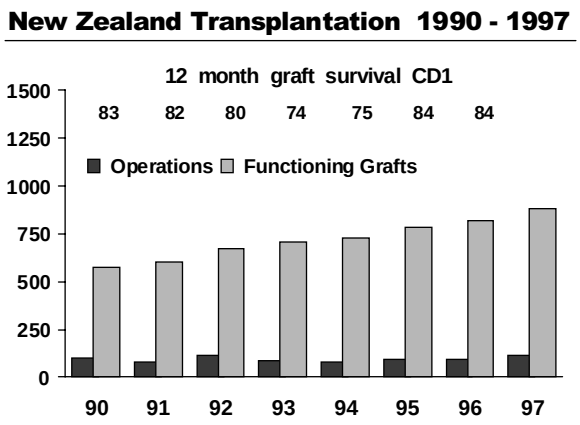


Figure 237

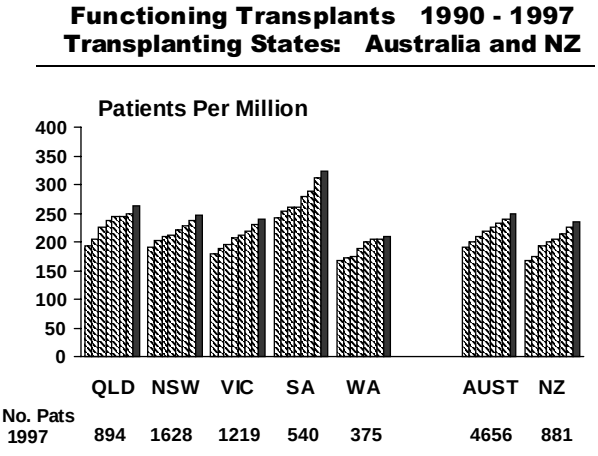


Figure 238

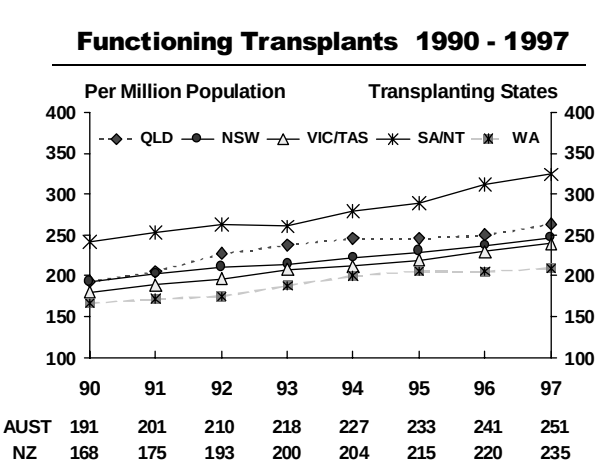


Figure 239

Australia and New Zealand

Age of All Functioning Transplant Patients (31-Dec-97)

Donor Source	Graft No.	Age Groups 00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	Total
Australia		**12**	**86**	**238**	**676**	**952**	**1141**	**1029**	**483**	**39**	**4656**
Cadaver	1	2	31	93	368	604	857	863	420	39	**3277**
	2	0	4	15	77	117	129	86	37	0	**465**
	3	0	0	4	15	16	20	8	2	0	**65**
	4	0	0	0	2	6	3	2	0	0	**13**
	5	0	0	0	0	1	1	0	0	0	**2**
Total		**2**	**35**	**112**	**462**	**744**	**1010**	**959**	**459**	**39**	**3822**
Living Donor	1	10	45	118	190	181	112	68	22	0	**746**
	2	0	6	8	20	23	15	1	2	0	**75**
	3	0	0	0	3	2	4	1	0	0	**10**
	4	0	0	0	1	1	0	0	0	0	**2**
	5	0	0	0	0	1	0	0	0	0	**1**
Total		**10**	**51**	**126**	**214**	**208**	**131**	**70**	**24**	**0**	**834**
New Zealand		**1**	**19**	**44**	**156**	**216**	**215**	**152**	**67**	**11**	**881**
Cadaver	1	0	5	11	64	127	159	126	61	10	**563**
	2	0	1	0	23	27	21	5	3	0	**80**
	3	0	0	0	4	7	5	1	0	0	**17**
	4	0	0	0	0	0	2	0	0	0	**2**
Total		**0**	**6**	**11**	**91**	**161**	**187**	**132**	**64**	**10**	**662**
Living Donor	1	1	13	32	58	47	24	19	3	1	**198**
	2	0	0	1	6	6	4	1	0	0	**18**
	3	0	0	0	1	2	0	0	0	0	**3**
Total		**1**	**13**	**33**	**65**	**55**	**28**	**20**	**3**	**1**	**219**

Figure 240

Age Group Dependence on Functioning Transplants 1997

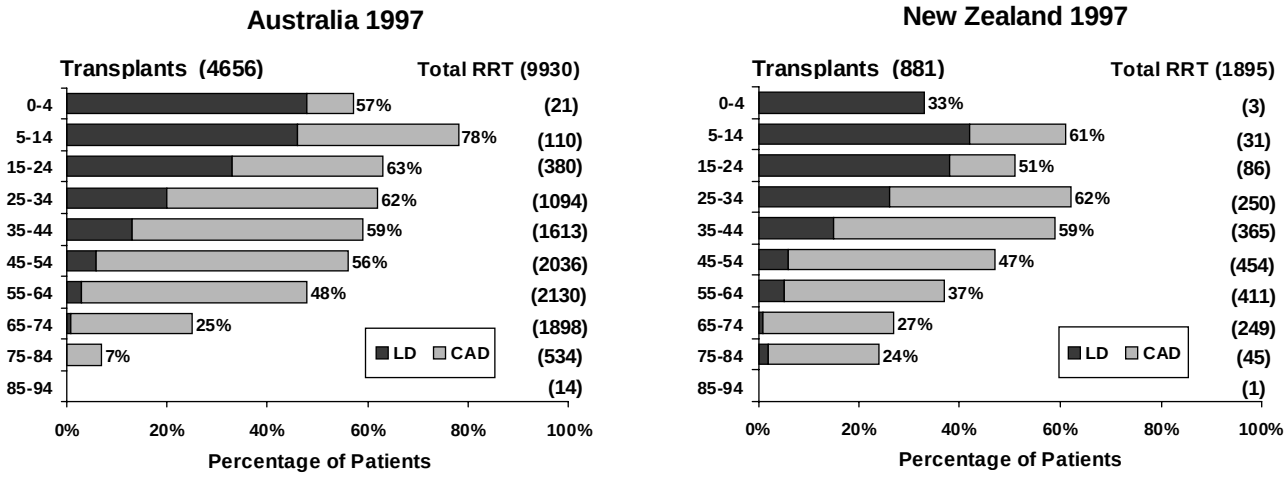
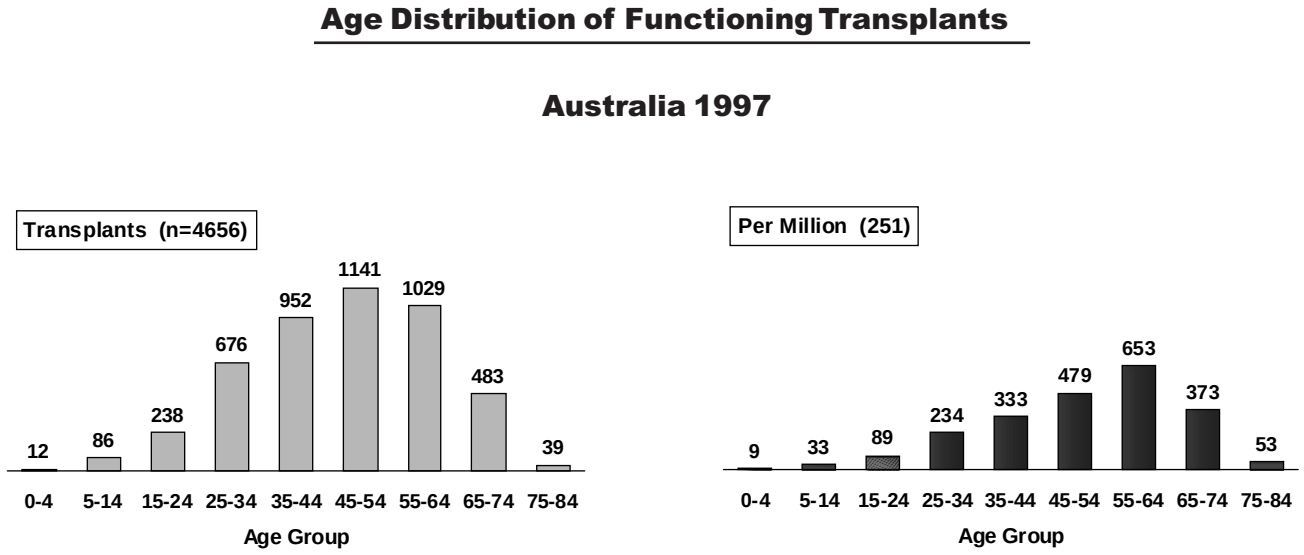


Figure 241



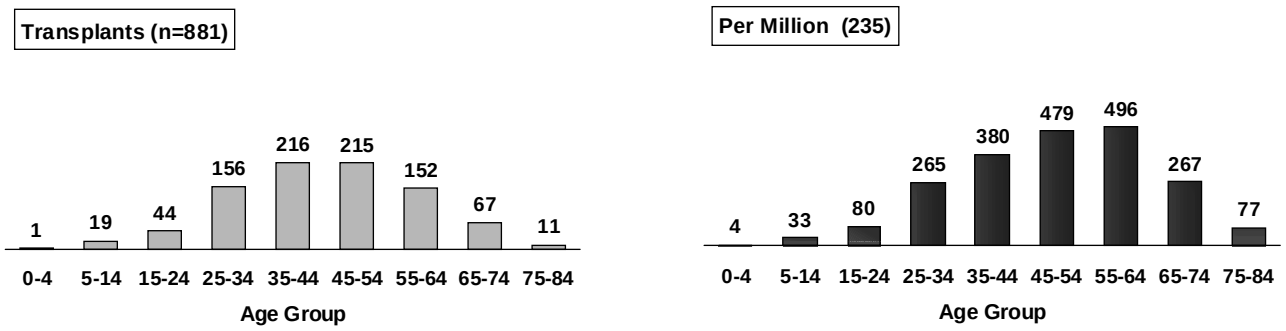


Figure 242

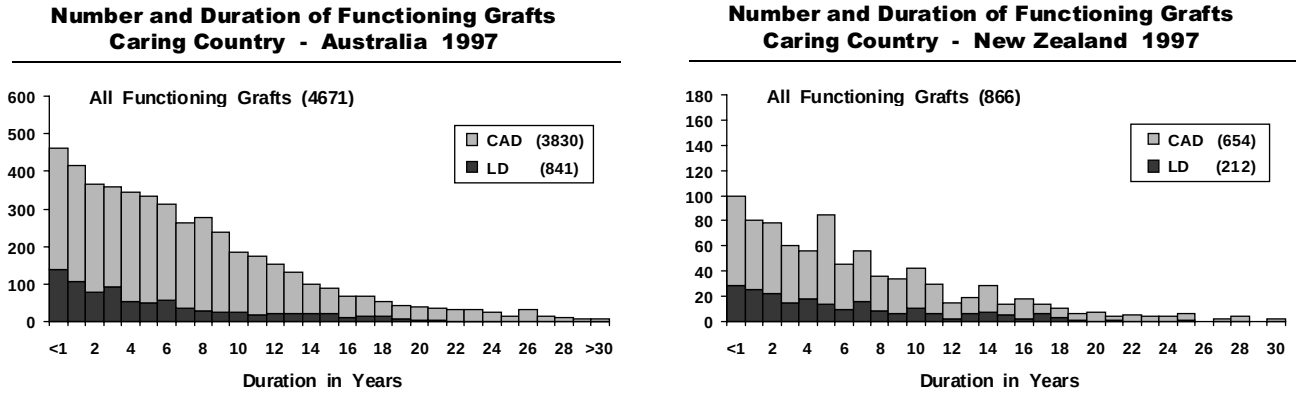
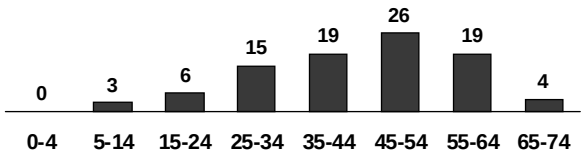


Figure 243

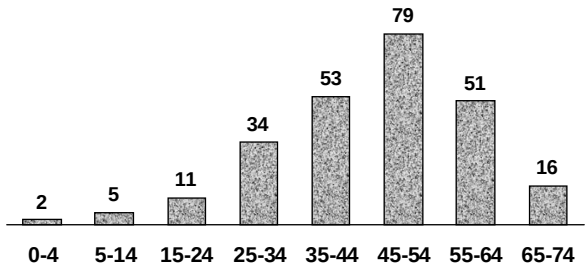
Functioning Transplant Patients 1997
Related to Race and Age Group

Australia

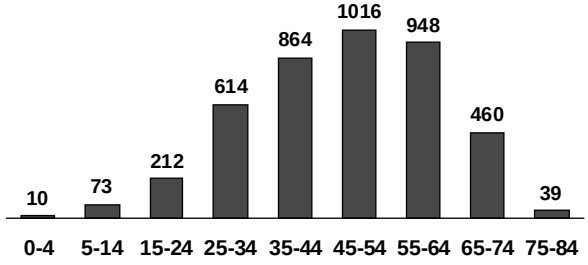
Aboriginal (n=92)



Asian (n=251)

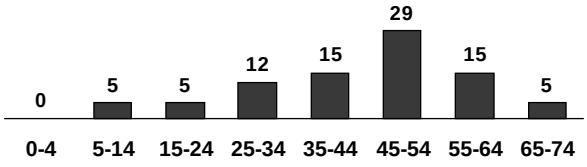


Caucasoid (n=4236)

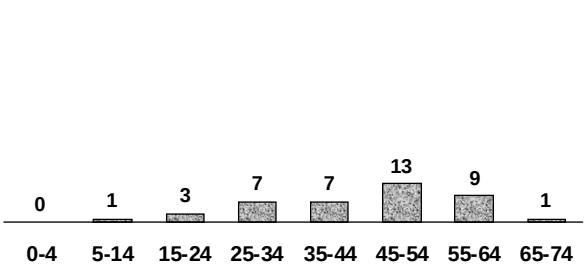


New Zealand

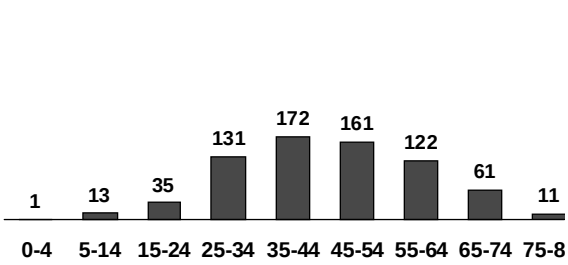
Maori (n=86)



Pacific Islander (n=41)



Caucasoid (n=659)



FACTORS AFFECTING GRAFT OUTCOME

Graft Survival According to Recipient Sensitization

The presence of anti-HLA antibodies in the serum is a well recognized risk factor for graft survival. For the years 1989 to 1997, the survival of primary cadaveric grafts performed in Australia has been examined according to the degree of recipient sensitization.

Figure 244 shows the results for peak panel reactive antibody.There is no difference in survival for levels of peak PRA <20% and 20-49%. For levels of 50-79% and >80%, there is significantly worse graft survival. For each of these two levels of peak sensitization, the relatively inferior graft survival is seen at 12 months, but increases with increasing time post-transplant, suggesting a contribution to chronic allograft loss.

Primary cadaveric graft survival according to sensitization at the time of transplantation is shown in Figure 245. The number of recipients with current PRA of ≥80% is small. For highly sensitized recipients (current PRA ≥50%) the results are similar to those for peak PRA, with significantly inferior results increasing with time post-transplant.

Primary transplant recipients with a high peak PRA who develop a lower level prior to transplantation, number 262 in this period of study. Graft survival in this group is not significantly better than that for recipients with a persistently high PRA in both peak and current sera. (Figure 246).

Figure 244

Primary Cadaver Graft Survival 1989 - 1997
According to Peak Sensitization(Death Censored)

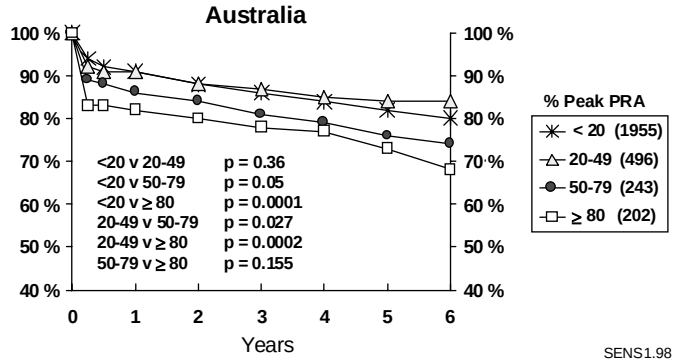


Figure 245

Primary Cadaver Graft Survival 1989 - 1997
According to Sensitization at Transplantation
(Death Censored)

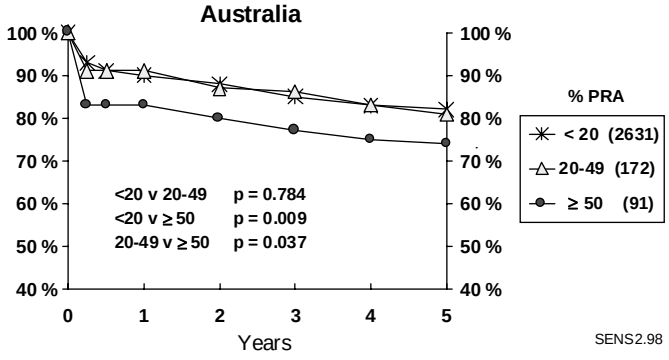
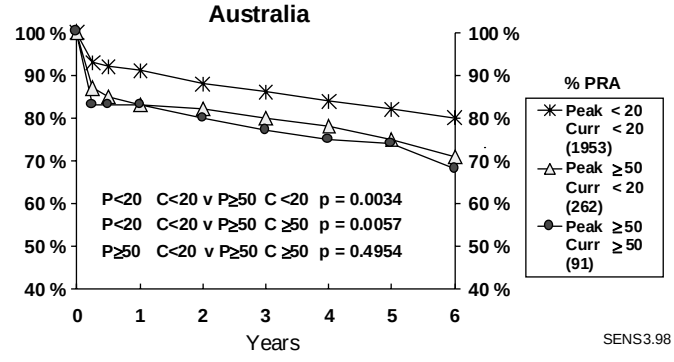


Figure 246

Primary Cadaver Graft Survival 1989 - 1997
According to Sensitization: Peak and Time of Transplantation (Patient Death Censored)



For recipients of second or subsequent grafts, peak PRA of more than 50% is associated with a significantly worse survival which is seen in the first few months. (Figure 247).

Second or subsequent graft survival according to sensitization at the time of transplantation is shown in Figure 248. As opposed to peak PRA, levels of 20-49% are associated with significantly worse results compared to levels of <20%. The results for regrafts according to both peak and current PRA is shown in Figure 249.

Figure 247

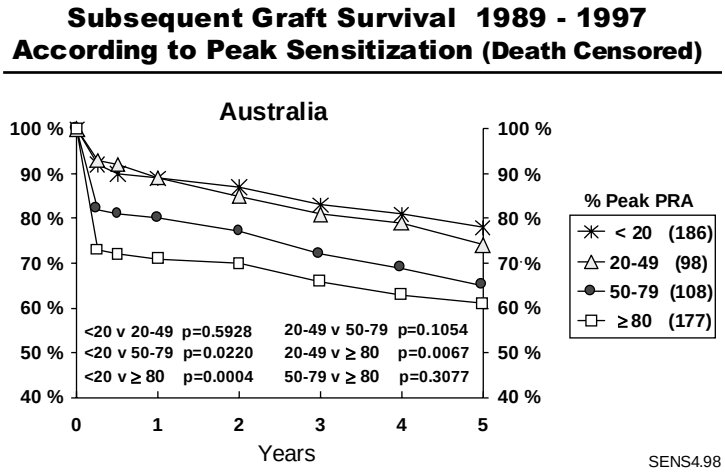


Figure 248

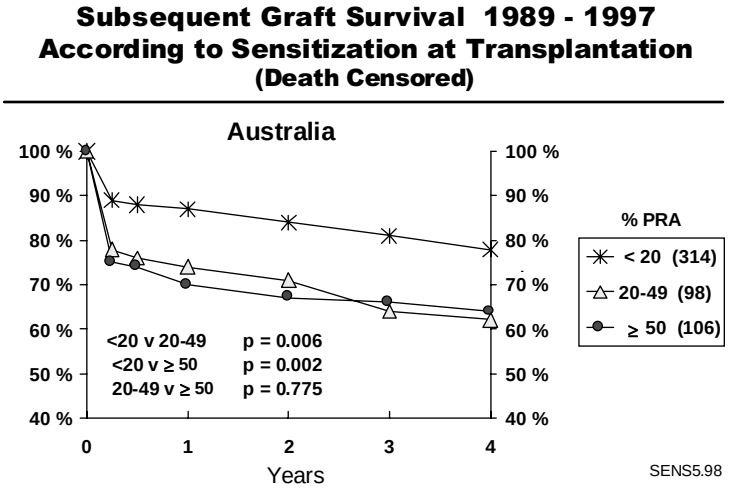
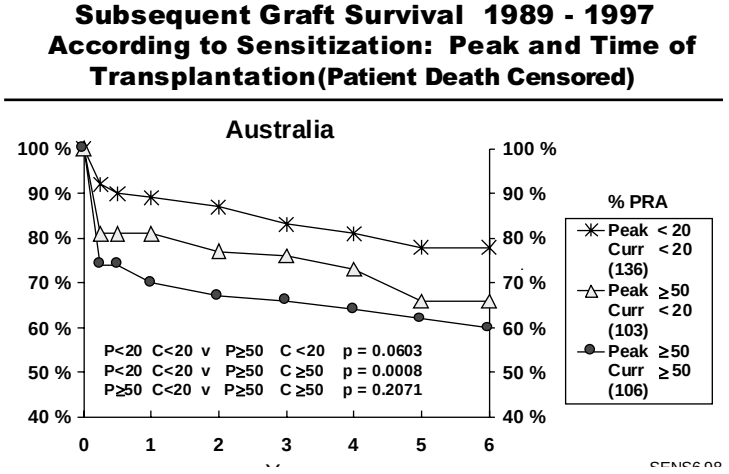


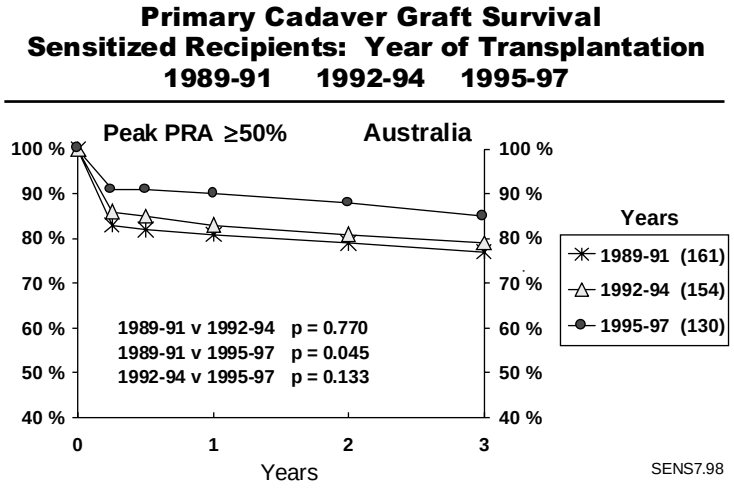
Figure 249



Graft Survival of Sensitized Recipients According to Years of Transplant

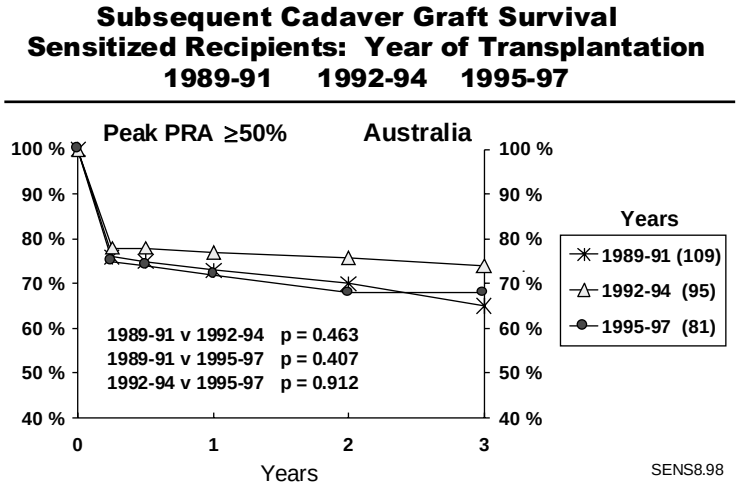
The survival of primary cadaveric grafts (patient death censored) in recipients with a peak panel reactive antibody ≥50% for three time periods, 1989-91; 1992-94 and 1985-97, is shown in Figure 250. There has been a progressive improvement in survival which is most pronounced in the most recent time period. Such analysis of survival according to panel reactive antibody ≥50 at the time of transplantation is not meaningful because of small numbers.

Figure 250



Similar analysis of second or subsequent cadaveric grafts is shown in Figure 251. No improvement has been seen over the last nine years for recipients with a peak panel reactive antibody ≥50%. Numbers are too small to perform a similar analysis for PRA ≥50% at the time of transplantation.

Figure 251



For recipients with a peak panel reactive antibody ≥50% the effect of mismatching for HLA –DR, HLA –A and B and HLA –DR, -A and -B on primary cadaveric graft survival is shown in Figures 252 to 254 respectively . A significant effect of matching is seen for a combination of HLA –DR and HLA –A,B.

Similar analyses for subsequent cadaveric grafts is shown in Figures 255 to 257. The highly sensitized regraft patients do poorly with a dramatic loss in the first three months.

Figure 252

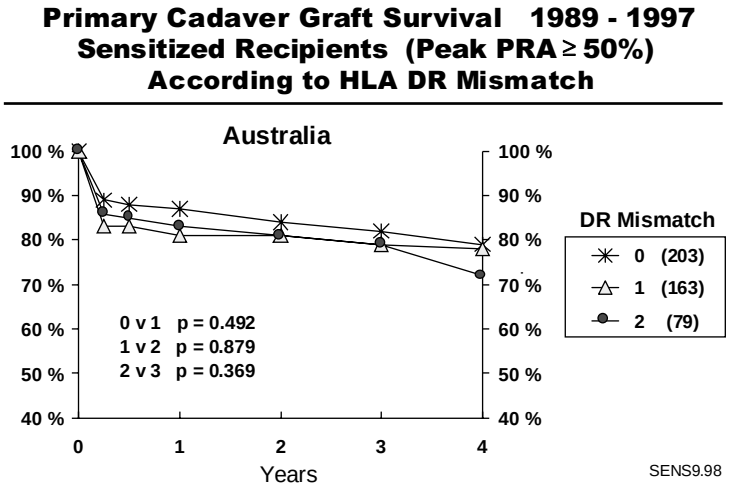


Figure 253

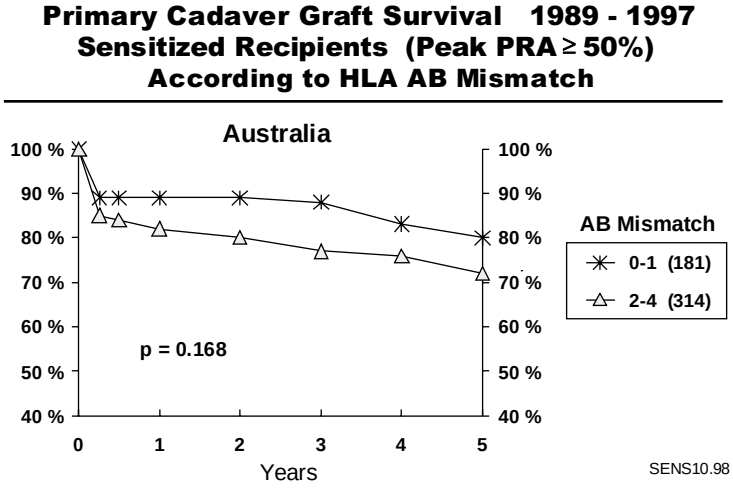


Figure 254

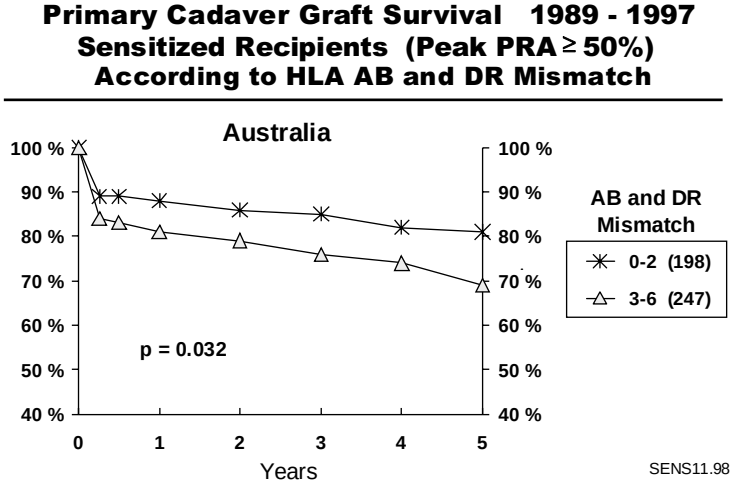


Figure 255

Subsequent Graft Survival 1989 - 1997
Sensitized Recipients (Peak PRA ≥ 50%)
According to HLA DR Mismatch

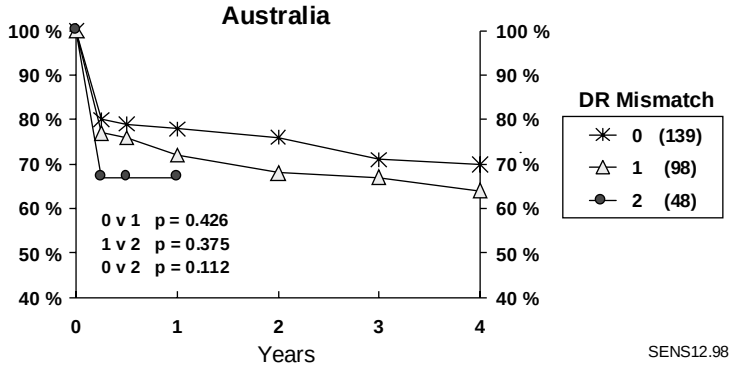


Figure 256

Subsequent Graft Survival 1989 - 1997
Sensitized Recipients (Peak PRA ≥ 50%)
According to HLA AB Mismatch

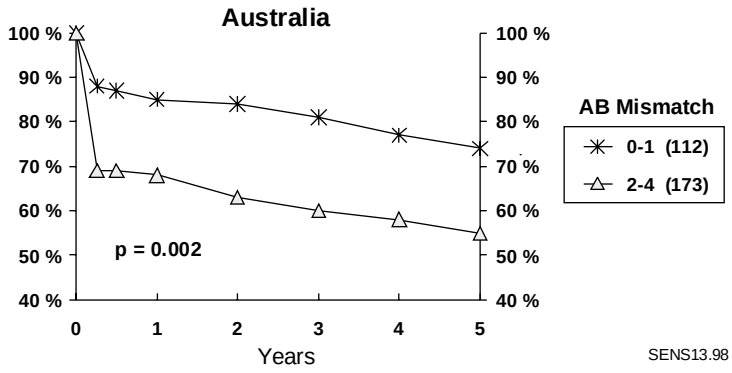
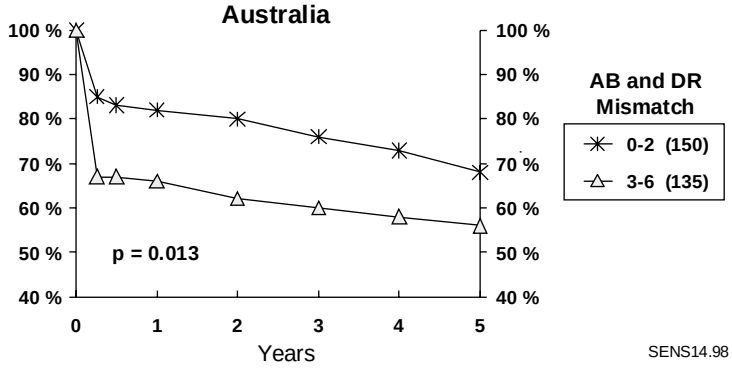


Figure 257

Subsequent Graft Survival 1989 - 1997
Sensitized Recipients (Peak PRA ≥ 50%)
According to HLA AB and DR Mismatch



IMMUNOSUPPRESSIVE THERAPY

Primary Cadaveric Grafts

Australia

The trends in immunosuppressive therapy for primary cadaveric transplants at the time of transplantation and at 1, 3, 6 and 12 months, are shown for the years 1993 to 1997 in Figure 258.

From 1993 to 1996, the majority of patients initially received triple therapy with cyclosporin A, prednisolone and azathioprine. In 1997, the proportion of patients receiving triple therapy with cyclosporin A, prednisolone and mycophenolate mofetil increased to almost equal that with azathioprine. In addition, a small percentage of patients received this regimen in 1993 as part of a multicentre clinical trial. The use of tacrolimus as initial therapy has been largely limited to a single centre trial in 1995. The number of recipients treated with initial regimens not containing prednisolone is small.

Therapy up to six months indicates a trend towards more potent immunosuppression presumably as a result of the need to control rejection. In 1997 this is shown as a drift from patients receiving triple therapy with azathioprine to triple therapy with mycophenolate mofetil. In addition, there is a small increase in patients on tacrolimus and a decrease in those on steroid-free regimens.

New Zealand

In New Zealand, virtually all the primary cadaver graft recipients were treated initially with cyclosporin A , prednisolone and azathioprine triple therapy for all years 1993-1997.

Subsequent Cadaveric Grafts

For second cadaver grafts in Australia in 1997, approximately 70% received mycophenolate mofetil based triple therapy as initial treatment.

Figure 258 **Australia**

Immunosuppressive Therapy - Primary Cadaver Graft 1993 - 1997

Year	Cya+ Aza+Pred	Cya+ MMF+Pred	Cya+Aza	Cya+MMF	Tacrolimus Combination	Other	Total
Initial Treatment							
1993	237 (74%)	51 (16%)	16 (5%)	0	0	18 (6%)	**322**
1994	236 (83%)	0	38 (13%)	0	3 (1%)	7 (2%)	**285**
1995	227 (78%)	0	13 (4%)	0	22 (7%)	27 (9%)	**289**
1996	241 (78%)	6 (2%)	23 (7%)	2 (1%)	0	38 (12%)	**310**
1997	125 (40%)	112 (36%)	2 (1%)	14 (4%)	1 (<1%)	58 (19%)	**312**
Treatment at 1 month							
1993	222 (75%)	46 (15%)	7 (2%)	0	0	22 (7%)	**297**
1994	228 (84%)	0	21 (8%)	0	3 (1%)	21 (8%)	**273**
1995	225 (81%)	1 (<1%)	3 (1%)	0	24 (9%)	25 (9%)	**279**
1996	217 (72%)	20 (7%)	11 (4%)	2 (1%)	6 (2%)	47 (16%)	**303**
1997	99 (33%)	124 (42%)	0	9 (3%)	7 (2%)	58 (20%)	**297**
Treatment at 3 months							
1993	223 (80%)	45 (16%)	5 (2%)	0	0	6 (2%)	**279**
1994	234 (88%)	0	12 (4%)	0	4 (2%)	17 (6%)	**267**
1995	221 (81%)	3 (1%)	2 (1%)	0	23 (8%)	23 (8%)	**272**
1996	212 (74%)	25 (9%)	7 (2%)	1 (<1%)	12 (4%)	28 (10%)	**285**
1997	86 (30%)	130 (45%)	2 (1%)	5 (2%)	6 (2%)	58 (20%)	**287**
Treatment at 6 months							
1993	211 (75%)	44 (16%)	12 (4%)	0	0	16 (6%)	**283**
1994	222 (84%)	0	18 (7%)	0	4 (2%)	19 (7%)	**263**
1995	205 (77%)	3 (1%)	11 (4%)	0	21 (8%)	25 (9%)	**265**
1996	200 (71%)	25 (9%)	13 (5%)	1 (<1%)	11 (4%)	32 (11%)	**282**
1997	73 (35%)	83 (40%)	2 (1%)	5 (2%)	4 (2%)	40 (19%)	**207**
Treatment at 12 months							
1993	180 (65%)	33 (12%)	38 (14%)	5 (2%)	0	22 (8%)	**278**
1994	193 (75%)	0	42 (16%)	0	3 (1%)	20 (8%)	**258**
1995	175 (67%)	2 (<1%)	36 (14%)	0	19 (7%)	28 (11%)	**260**
1996	163 (59%)	27 (10%)	37 (13%)	6 (2%)	13 (5%)	31 (11%)	**277**
1997	34 (51%)	8 (12%)	6 (9%)	2 (2%)	2 (3%)	14 (21%)	**66**

Rejection Episodes According to Immunosuppression

For primary cadaveric grafts performed in Australia from 1-Apr-97 to 31-Mar-98, 87 patients received triple therapy using azathioprine (Aza-Cya-Pred) and 137 received triple therapy using mycophenolate mofetil (MMF-Cya-Pred) as the initial immunosuppressive regimen. The incidence of the diagnosis of rejection (clinical or histological) in the first month was 28% and 31% in the two groups respectively (p0=0.623, Pearson Chi-square). (Figure 259). The incidence of these patients with rejection in the first month which was proven by biopsy was 25% and 26% respectively.

Vascular rejection was found in 45% of the biopsies showing rejection in the Aza-Cya-Pred group compared to 28% in the MMF-Cya-Pred group (p=0.169, Pearson Chi-square).

Rejection in the first month requiring antibody therapy was seen in 14% of recipients receiving Aza-Cya-Pred as initial immunosuppression compared with 8% of the MMF-Cya-Pred group (p=0.05, Pearson Chi-square). (Figure 260).

In New Zealand, the incidence of rejection in the first month in first cadaveric recipients receiving triple therapy was 37%. Only 54% of rejection episodes were biopsy confirmed.

Figure 259 **Australia**

Rejection Occurring in the First Month According to Initial Immunosuppression

Immunosuppression	No. of Pts.	Rejection 1st Month Biopsy Peformed	
		No	Yes
Aza-Cya-Pred	87	3%	25%
MMF-Cya-Pred	137	5%	26%
Total	**224**	**4%**	**26%**

Figure 260 **Australia**

Antibody Treatment for Rejection in the First Month According to Initial Immunosuppression Primary Cadaveric Grafts 1-Apr-97 to 31-Mar-98

Immunosuppression	No. of Pts.	Rejection in the First Month Antibody Treatment	
		No	Yes
Aza-Cya-Pred	87	14%	14%
MMF-Cya-Pred	137	23%	8%
Total	**224**	**19%**	**10%**

Graft Function According to Immunosuppression

The serum creatinine at three and six months post-transplantation has been analysed according to immunosuppression at the time of transplantation for primary cadaver grafts performed in the years 1993-1997. For 986 recipients with functioning grafts at three months who received Aza-Cya-Pred initially, the mean serum creatinine was 145 µmol/L (95% confidence interval 140-149). This was not statistically different to a similar group of 155 receiving MMF-Cya-Pred initially in which the mean serum creatinine was 138 µmol/L (95% confidence interval 129-147) (p=0.292, t test).

At six months, 951 of the Aza-Cya-Pred group had a mean serum creatinine of 144 µmol/L (95% confidence interval 140-148) compared to 130 µmol/L (95% confidence interval 122-139) in the MMF-Cya-Pred group (p=0.031, t test).