

SUMMARY - AUSTRALIA

1. In 2003 there were: 179 donors (9.0 donors per million population [dpmp]) with 325 kidneys, 128 livers (136 recipients), 68 hearts, 59 double and eleven single lungs, 25 pancreas and six pancreas islets transplanted into recipients. In addition there were 139 corneas, 38 heart valves and 13 bone donations which were sent to the tissue bank.
2. The highest donor rate was in the Australian Capital Territory (ACT) (15 dpmp) and South Australia (14 dpmp) and the lowest in New South Wales (seven dpmp) and the Northern Territory (five dpmp).
3. The mean age of donors in was 42.7 years, median 45.5 years with an age range of 0.96 - 85.3 years.
4. The major cause of death was cerebrovascular accident (CVA) in 48%. Road trauma caused 26% of all donor deaths.
5. Fifty eight percent of donors with a known occupation were classified as student, blue collar, tradesperson and professional worker. An additional 14% were retired. The majority of donors were Caucasoid and their religion was recorded as Christian.
6. Authority for organ donation was sought in 54% of cases by the Intensive Care Unit Clinician, the Donor Coordinator in 36% and volunteered by the family in 8% of cases. Coronial inquiries were required in 49% of all donors.
7. The donation of more than one organ occurred in 82% of donors. The average number of organs transplanted from each donor was 3.5.
8. The consent rates for specific organs were: kidneys 99%, livers 98%, hearts 97%, lungs 97% and pancreas 94%.
9. In 2003, from donors where organs had been retrieved, 97% of kidneys, 95% of livers, 93% of hearts, 98% of lungs and 66% of pancreas (25 pancreas and six pancreas islets) were actually transplanted.
10. Eight livers were sent from Australia to New Zealand in 2003.

SUMMARY - NEW ZEALAND

1. In 2003 there were: 40 donors (9.9 dpmp), which resulted in 67 kidneys, 31 livers (34 recipients) 25 hearts, 14 double and nine single lungs and six pancreas being transplanted into recipients. In addition 37 corneas, nine heart valves and two bone donations were sent to the tissue bank.
2. The mean age of donors was 38.0 years and median 39.7 years, with an age range of 13.0 - 75.1 years.
3. The major cause of death was cerebrovascular accident in 53% of donors, followed by road trauma in 26%.
4. Sixty three percent of donors with a known occupation were classified as students, blue collar workers, tradespersons and primary industry workers. Only one donor was retired. The majority of donors were Caucasoid. The religion was unknown for 93% of donors.
5. Authority for organ donation was sought in 65% of cases by the Intensive Care Clinician and volunteered by the family in 11 (28%) of cases. Coronial inquiries were required in 55% of all donors.
6. The donation of more than one organ occurred in 93% of donors. The average number of organs transplanted per donor was 3.8.
7. The consent rate for specific organs were 100% of kidneys, 100% livers, 100% hearts, 100% lungs and 100% pancreas.
8. In 2003, from donors where organs had been retrieved, 92% of kidneys, 91% of livers, 100% of hearts, 100% of lungs and 100% of pancreas were actually transplanted.
9. New Zealand has provided 16 kidneys, 188 livers, 17 hearts and 56 lungs to the Australian Transplant Programs since 1989.
10. Five livers, three hearts and 13 lungs were sent from New Zealand to Australia in 2003.

ORGAN DONORS IN AUSTRALIA AND NEW ZEALAND

Figure 1

Number of Donors 1999 - 2003 **					
	1999	2000	2001	2002	2003
Queensland	20 (6)	37 (10)	48 (13)	44 (12)	40 (11)
New South Wales + *	48 (8+)(7*)	55 (9+)(8*)	47 (7+)(7*)	55 (8+)(8*)	46 (7+)(7*)
ACT + *	2 (4+)(6*)	5 (10+)(16*)	7 (14+)(22*)	6 (12+)(19*)	8 (15+)(25*)
Victoria	42 (9)	44 (9)	40 (8)	47 (10)	42 (9)
Tasmania	6 (13)	1 (2)	3 (6)	6 (13)	2 (4)
South Australia	30 (20)	30 (20)	25 (17)	31 (20)	22 (14)
Northern Territory	3 (16)	2 (10)	2 (10)	2 (10)	1 (5)
Western Australia	13 (7)	22 (12)	13 (7)	15 (8)	18 (9)
Australia	164 (9)	196 (10)	185 (10)	206 (10)	179 (9)
New Zealand	39 (10)	41 (11)	37 (10)	38 (10)	40 (10)

() Donors Per Million of Population

+ NSW population excludes residents of the NSW Southern Area Health Service (included in ACT population)

* NSW population includes residents of the NSW Southern Area Health Service (excluded from ACT population)

Medical services in the ACT service the NSW Southern Area Health Region

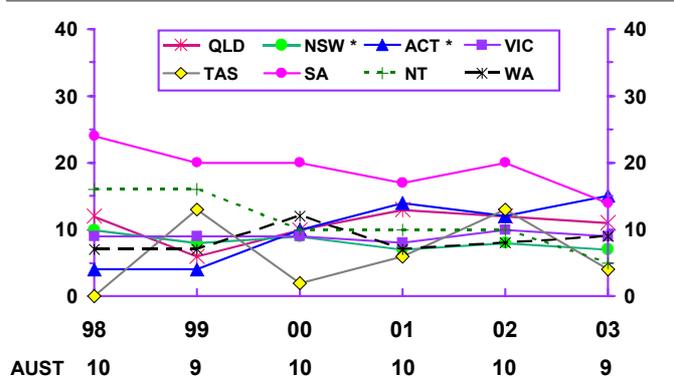
Population data - June 2003 ABS 3101.0

Refer to Appendix for the number of donors by State and Hospital and population

** This figure relates to the number of donors for whom the retrieval operation commenced for the purpose of transplantation. This includes donors who may have been deemed medically unsuitable at the time of surgery or after removal of organs.

Figure 2

Number of Donors in Australia 1998 - 2003 Per Million Population



* NSW population excludes residents of the NSW Southern Area Health Service
 * ACT population includes residents of the NSW Southern Area Health Service

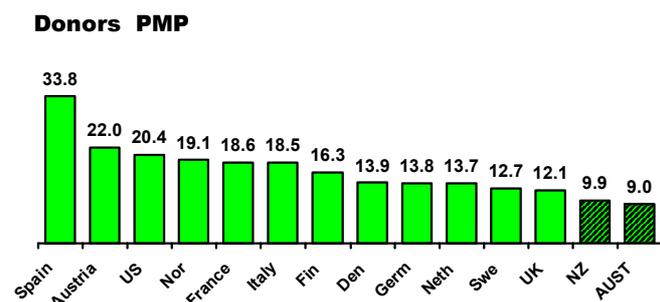
Donor figures for 2003 include three donors who went to the operating theatre but organs were not retrieved.

One Queensland donor had a malignancy, one Victorian donor had disease of the kidneys and liver and one Western Australian donor had positive serology, with no suitable recipients.

In 2003 there was a range between the States of four donors per million population (dpmp) in Tasmania to 15 dpmp in the Australian Capital Territory (ACT); population adjusted to include the NSW Southern Area Health Region and 25 dpmp unadjusted.

Figure 3

International Donor Statistics 2003



Sources: http://www.scandiaintransplant.org/tx_newsletter2003.htm
<http://www.msc.es/profesional/trasplantes/estadisticas/>
<http://tpm.org/registry/>

Figure 3 shows the number of donors per million population (pmp) of Australia and New Zealand compared to other Countries. Note that the international definition of an organ donor is used for these comparisons (i.e. at least one organ is transplanted from that donor). This definition differs to that used in Figure 1 above.

DONORS PER THOUSAND DEATHS

Historically the comparison of organ donation rates between states and countries has been based upon donors per million population (dpmp).

However, using the number of deaths and therefore the ability of a deceased person to be a donor as the

denominator may be a more reasonable way of comparing donation rates (fig 4 and 5).

Australian data on deaths for 2003 are not available until August of 2004. New Zealand data include 2003.

Figure 4

Donors per Million Population and Donors per Thousand Deaths ()
Australian States - Australia and New Zealand 1996 - 2002

Year	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	AUST.	N.Z.
1996	10 (1.6)	10 (1.4)	12 (4.8)	11 (1.5)	2 (0.3)	17 (2.2)	17 (3.9)	7 (1.1)	11 (1.5)	10 (1.3)
1997	11 (1.7)	11 (1.4)	8 (3.0)	9 (1.3)	11 (1.3)	17 (2.2)	21 (4.5)	4 (0.7)	10 (1.5)	11 (1.5)
1998	12 (1.8)	10 (1.4)	4 (1.6)	9 (1.2)	0 (0.0)	24 (3.0)	16 (3.6)	7 (1.2)	10 (1.5)	12 (1.8)
1999	6 (0.9)	8 (1.0)	4 (1.5)	9 (1.3)	13 (1.6)	20 (2.7)	16 (3.5)	7 (1.2)	9 (1.3)	10 (1.4)
2000	10 (1.7)	9 (1.2)	10 (3.9)	9 (1.4)	2 (0.3)	20 (2.5)	10 (2.2)	12 (2.1)	10 (1.5)	11 (1.5)
2001	13 (2.1)	7 (1.1)	14 (4.9)	8 (1.2)	6 (0.8)	17 (2.1)	10 (2.3)	7 (1.2)	10 (1.4)	10 (1.3)
2002	12 (1.9)	8 (1.2)	12 (4.6)	10 (1.4)	13 (1.5)	20 (2.7)	10 (2.4)	8 (1.3)	10 (1.6)	10 (1.3)
2003	-	-	-	-	-	-	-	-	-	10 (1.4)

The number of actual donors is compared to the number of deaths that are aged less than 65 years (fig 5). The age of less than 65 years was selected as being representative of the majority of the potential donor pool.

Figure 5

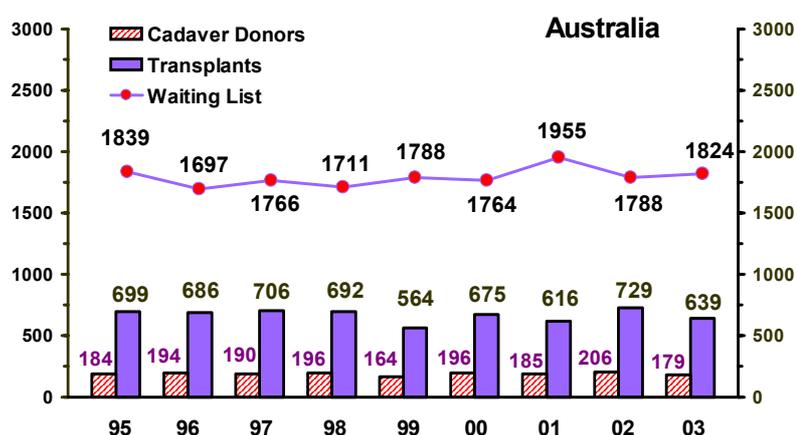
Donors per Thousand Deaths Aged less than 65 years 1997- 2002
() represents % of total deaths aged less than 65 years

Year	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
1997	6.7 (25%)	6.6 (22%)	10.8 (28%)	6.0 (21%)	6.3 (21%)	11.4 (19%)	7.0 (64%)	3.0 (25%)	6.6 (22%)	6.3 (24%)
1998	7.3 (25%)	6.5 (22%)	5.5 (22%)	6.1 (21%)	0.0 (21%)	15.2 (20%)	5.2 (67%)	4.9 (25%)	6.9 (22%)	7.2 (24%)
1999	3.7 (24%)	4.9 (22%)	5.5 (27%)	5.7 (22%)	7.6 (21%)	13.9 (19%)	5.8 (62%)	4.9 (25%)	5.7 (23%)	6.0 (23%)
2000	7.1 (23%)	5.6 (21%)	15.1 (26%)	6.8 (20%)	1.3 (21%)	13.1 (19%)	3.4 (65%)	8.4 (25%)	7.1 (22%)	6.6 (22%)
2001	8.7 (24%)	5.1 (21%)	17.2 (29%)	6.3 (20%)	3.8 (21%)	11.4 (19%)	3.7 (62%)	5.0 (24%)	6.7 (22%)	5.9 (22%)
2002	8.7 (22%)	6.1 (20%)	20.9 (22%)	7.7 (19%)	7.8 (20%)	15.0 (18%)	3.8 (63%)	6.1 (22%)	7.9 (20%)	6.0 (22%)

Figure 6

Number of Cadaveric Donors and Solid Organ Transplants and Patients on the Waiting List 1995 - 2003

Figure 6 shows the number of donors, transplants, and patients on the waiting list from 1995 to 2003.



DONOR POSTCODES

The Registry commenced the collection of donor residential postcodes in 1998.

In the last three years (2001-2003) there have been nine donors from overseas.

In 2003, Queensland had two donors from overseas, two from Victoria and one from New South Wales; New South Wales had four from Queensland and one from overseas; Victoria had one each from South Australia and Tasmania; South Australia had two from overseas and the ACT had one from Victoria.

DONOR PROFILE

Age and Gender Distribution

In Australia in 2003 there were 9% (16 donors) 65 years or older. This was slightly more than in 2002 (14 donors), but similar in 2001. The oldest donor was 85.3 years (fig 7).

The mean age for donors in Australia increased to 42.7 years in 2003 from 38.7 years in 2002. The mean age for Australian mainland States ranged from 38.3 years in Western Australia to 50.2 years in the ACT. The Northern Territory had one donor aged 56.9 years (fig 8).

The median age for Australia increased from 40.8 in 2002 to 45.5 in 2003. The age range was between 11.5 months and 85.3 years.

In New Zealand in 2003 the mean age decreased to 38 years from 40.3 years in 2002 and the median age to 39.7 years from 42.6 years previously. Two donors (5%) were aged 65 years or older. The age range was 13 to 75.1 years.

The gender distribution by Australian States and New Zealand is shown in Figure 9.

Figures 10 and 11 show donors according to age and gender in Australia and New Zealand for the years 2001-2003.

Figure 7

Age of Male and Female Donors 1998 - 2003

	Year	Mean (years)			Median (years)			Range in Years
		All	Female	Male	All	Female	Male	
Aust.	1998	40.4	43.8	37.7	43.2	46.2	37.2	0.94 - 73.7
	1999	39.3	43.2	36.4	42.5	47.5	36.2	0.21 - 77.1
	2000	41.1	42.6	40.0	44.1	45.1	43.0	0.4 - 77.9
	2001	40.0	43.1	38.3	42.9	47.3	39.9	6.4 - 77.4
	2002	38.7	39.4	38.3	40.8	42.1	40.2	0.01- 78.8
	2003	42.7	46.4	40.1	45.5	48.4	42.5	0.96 - 85.3
N.Z.	1998	38.0	45.0	34.5	35.9	50.1	32.5	2.8 - 69.7
	1999	42.7	45.5	39.3	49.0	50.4	40.3	3.1 - 73.2
	2000	39.7	38.3	40.9	42.7	42.7	43.9	5.5 - 68.5
	2001	41.1	44.7	37.7	42.6	48.1	35.2	16.6 - 68.9
	2002	40.3	38.5	42.1	42.6	42.0	45.8	7.7 - 66.7
	2003	38.0	35.6	39.4	39.71	40.3	39.0	13.0 - 75.1

Figure 8

Australian States Mean Age of Donors 1998 - 2003

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
1998	35.7	42.7	42.1	43.4	0	40.3	44.7	33.9
1999	40.0	42.4	49.9	40.1	35.8	35.4	24.3	36.5
2000	40.3	40.5	30.3	45.1	63.1	39.0	44.3	39.7
2001	40.3	40.8	35.1	41.4	30.8	43.0	33.4	31.5
2002	34.8	40.8	32.1	44.0	42.7	38.3	49.8	26.5
2003	40.7	42.7	50.2	46.0	14.1	43.1	56.9	38.3

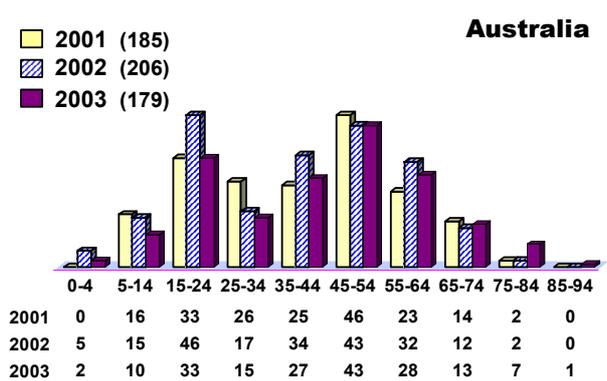
Figure 9

Gender of Donors 1989 - 2003

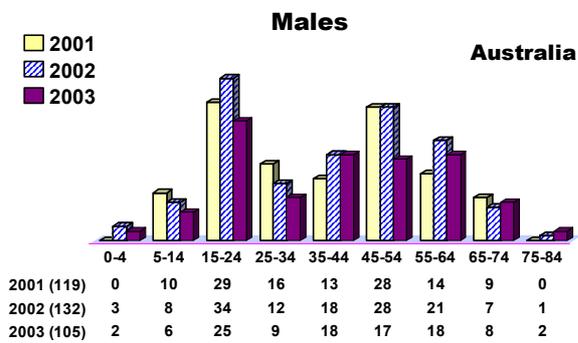
	Female	Male	Total
Queensland	210 (35%)	394 (65%)	604
New South Wales	389 (41%)	554 (59%)	943
ACT	24 (36%)	43 (64%)	67
Victoria	283 (43%)	376 (57%)	659
Tasmania	14 (28%)	36 (72%)	50
South Australia	152 (41%)	221 (59%)	373
Northern Territory	4 (13%)	26 (87%)	30
Western Australia	97 (42%)	134 (58%)	231
Australia	1173 (40%)	1784 (60%)	2957
New Zealand 1993-2003	184 (43%)	239 (57%)	423

Figure 10

Age Group of Cadaver Donors



Age and Gender Distribution of Donors



Age and Gender Distribution of Donors

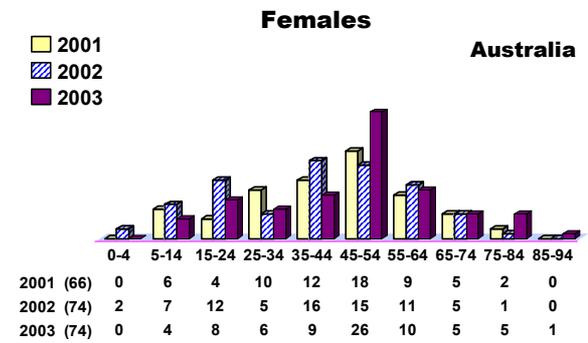
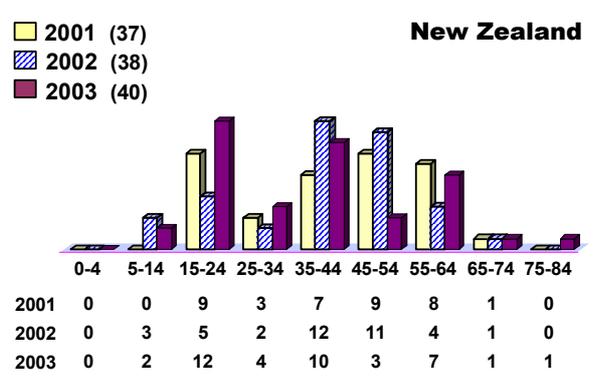
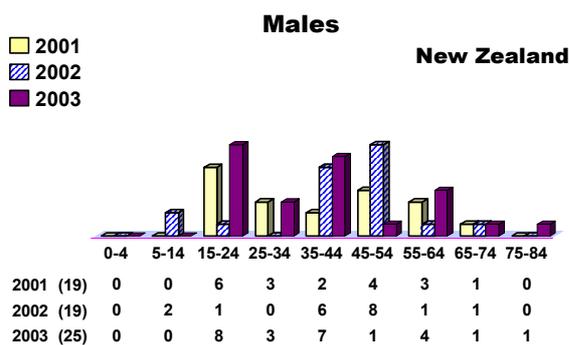


Figure 11

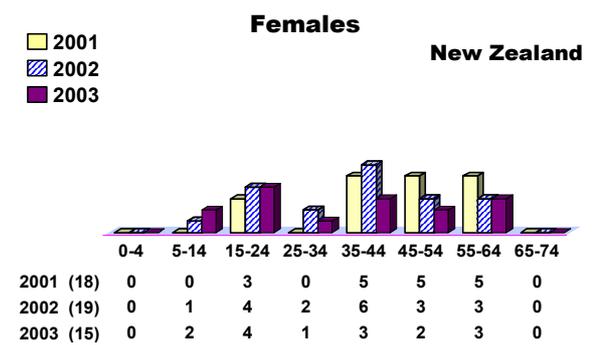
Age Group of Cadaver Donors



Age and Gender Distribution of Donors



Age and Gender Distribution of Donors



CAUSE OF DEATH - ALL DONORS

Figure 12

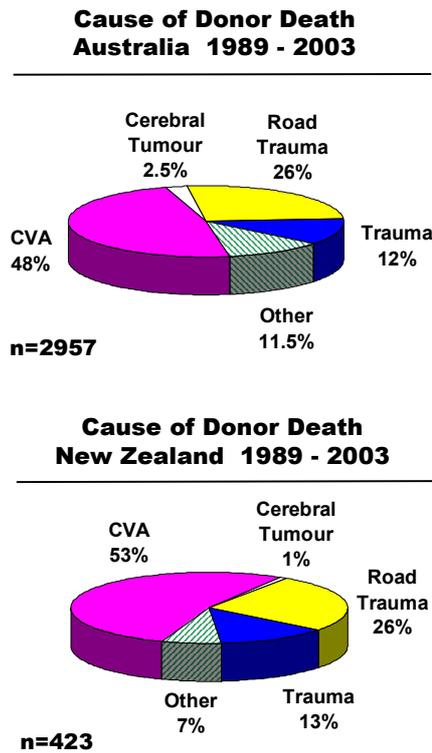


Figure 12 shows the cause of death for all organ donors in Australia since 1989 and for New Zealand since 1993.

The primary cause of death was cerebrovascular accident (CVA), (48% of all Australian donors and 53% of all New Zealand donors).

Figure 13 shows detailed cause of death by gender for 2003.

Figure 14 shows that CVA is the main cause of death in donors 55 years and older, 73% in Australia and 89% in New Zealand, whereas in the 15-34 year age group, trauma accounted for 67% of all deaths in Australia and 56% in New Zealand in 2003.

Figures 18-20 show the occupation, ethnic origin and religious denomination of donors in Australia and New Zealand for 1999-2003.

Figure 13

Cause of Donor Death 2003

Causes of Death		Australia			New Zealand		
		Male	Female	Total	Male	Female	Total
CVA	Cerebral Infarct	5	3	8	1	2	3
	Intracranial Haemorrhage	21	10	31	5	3	8
	Subarachnoid Haemorrhage	18	37	55	3	6	9
Road Trauma	Cyclist	1	0	1	0	0	0
	Motor Bike Accident	6	0	6	1	1	2
	Motor Vehicle Accident	15	5	20	4	1	5
	Pedestrian	4	1	5	2	0	2
	Other Road Accident	5	0	5	0	0	0
Other Trauma	Fall	11	3	14	4	0	4
	Felony / Crime - Assault	1	0	1	1	0	1
	Gunshot	6	0	6	2	0	2
	Other Trauma	1	2	3	0	0	0
Hypoxia Anoxia	Asthma	0	2	2	1	0	1
	Carbon Monoxide	1	0	1	0	1	1
	Cardiac Arrest	4	5	9	0	0	0
	Drowning	0	2	2	0	0	0
	Hanging	1	1	2	0	0	0
	Respiratory Arrest	1	1	2	0	0	0
	Seizure	0	1	1	0	0	0
	Strychnine Poisoning	1	0	1	0	0	0
Other	Cerebral Oedema	0	1	1	0	0	0
	Haemangioblastoma (benign)	0	0	0	1	0	1
	Meningioma (benign)	0	0	0	0	1	1
	Meningitis (meningococcal)	1	0	1	0	0	0
	Meningitis (pneumococcal)	2	0	2	0	0	0
Total	105	74	179	25	15	40	

Figure 14

Cause of Donor Death Related to Age Group 2003										
	Australia					New Zealand				
	Age Groups				Total	Age Groups				Total
	0-14	15-34	35-54	55 on		0-14	15-34	35-54	55 on	
CVA	1	6	51	36	94	1	5	6	8	20
Trauma (road)	4	26	3	4	37	1	6	2	0	9
Trauma (non-road)	3	6	11	4	24	0	3	3	1	7
Other	4	10	5	5	24	0	2	2	0	4
Total	12	48	70	49	179	2	16	13	9	40

Figure 15

Australian States Cause of Donor Death Related to Age Group 2003						
		Age Groups				Total
		0-14	15-34	35-54	55 on	
Queensland	CVA	0	2	13	4	19
	Trauma (road)	1	9	1	2	13
	Trauma (non-road)	0	1	4	1	6
	Other	0	2	0	0	2
	Total	1	14	18	7	40
NSW	CVA	0	2	10	12	24
	Trauma (road)	1	10	1	0	12
	Trauma (non-road)	0	1	2	1	4
	Other	1	2	2	1	6
	Total	2	15	15	14	46
ACT	CVA	0	0	1	3	4
	Trauma (road)	0	1	1	0	2
	Trauma (non-road)	0	0	0	1	1
	Other	1	0	0	0	1
	Total	1	1	2	4	8
Victoria	CVA	0	2	17	9	28
	Trauma (road)	1	0	0	0	1
	Trauma (non-road)	1	1	1	1	4
	Other	2	2	2	3	9
	Total	4	5	20	13	42
Tasmania	CVA	0	0	0	0	0
	Trauma (road)	0	1	0	0	1
	Trauma (non-road)	1	0	0	0	1
	Other	0	0	0	0	0
	Total	1	1	0	0	2
South Australia	CVA	1	0	5	5	11
	Trauma (road)	1	2	0	1	4
	Trauma (non-road)	0	1	1	0	2
	Other	0	3	1	1	5
	Total	2	6	7	7	22
Northern Territory	CVA	0	0	0	1	1
	Trauma (road)	0	0	0	0	0
	Trauma (non-road)	0	0	0	0	0
	Other	0	0	0	0	0
	Total	0	0	0	1	1
Western Australia	CVA	0	0	5	2	7
	Trauma (road)	0	3	0	1	4
	Trauma (non-road)	1	2	3	0	6
	Other	0	1	0	0	1
	Total	1	6	8	3	18

Figure 16

Cause of Donor Death 1989 - 2003

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z. *
CVA	43%	51%	48%	54%	48%	45%	27%	45%	48%	53%
Trauma (road)	30%	24%	19%	23%	26%	24%	37%	36%	26%	26%
Trauma (non-road)	16%	12%	15%	8%	20%	12%	20%	9.5%	12%	13%
Other	11%	13%	18%	15%	6%	19%	16%	9.5%	14%	8%

* N.Z. 1993 -2003

Figure 17

Cause of Donor Death 1998 - 2003

		1998	1999	2000	2001	2002	2003
Queensland	CVA	20	12	17	25	21	19
	Trauma (road)	9	5	9	12	12	13
	Trauma (non-road)	5	1	5	6	6	6
	Other	6	2	6	5	5	2
	Total	40	20	37	48	44	40
NSW	CVA	32	25	27	24	31	24
	Trauma (road)	15	8	12	7	8	12
	Trauma (non-road)	8	9	9	3	6	4
	Other	8	6	7	13	10	6
	Total	63	48	55	47	55	46
ACT	CVA	2	1	2	3	3	4
	Trauma (road)	0	0	2	2	1	2
	Trauma (non-road)	0	1	1	0	0	1
	Other	0	0	0	2	2	1
	Total	2	2	5	7	6	8
Victoria	CVA	23	29	27	22	30	28
	Trauma (road)	6	7	8	7	10	1
	Trauma (non-road)	2	1	2	1	1	4
	Other	9	5	7	10	6	9
	Total	40	42	44	40	47	42
Tasmania	CVA	0	4	1	2	4	0
	Trauma (road)	0	2	0	0	1	1
	Trauma (non-road)	0	0	0	1	1	1
	Other	0	0	0	0	0	0
	Total	0	6	1	3	6	2
South Australia	CVA	17	13	14	12	13	11
	Trauma (road)	6	7	5	7	8	4
	Trauma (non-road)	2	3	4	2	1	2
	Other	10	7	7	4	9	5
	Total	35	30	30	25	31	22
Northern Territory	CVA	1	0	1	1	1	1
	Trauma (road)	0	2	1	1	0	0
	Trauma (non-road)	1	0	0	0	1	0
	Other	1	1	0	0	0	0
	Total	3	3	2	2	2	1
Western Australia	CVA	6	4	13	6	4	7
	Trauma (road)	5	6	4	5	6	4
	Trauma (non-road)	1	3	1	1	3	6
	Other	1	0	4	1	2	1
	Total	13	13	22	13	15	18
New Zealand	CVA	22	24	24	22	21	20
	Trauma (road)	11	8	6	9	8	9
	Trauma (non-road)	6	4	5	4	5	7
	Hypoxia-Anoxia	1	3	4	0	4	2
	Cerebral Tumour	2	0	0	0	0	2
	Other	4	0	2	2	0	0
	Total	46	39	41	37	38	40

Figure 18

Occupation of Donors 1999 - 2003

	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Blue collar	28	39	38	35	40	1	3	1	4	4
Home duties	21	17	11	8	7	5	3	5	2	0
Invalid pensioner	5	4	6	9	3	0	0	0	3	2
Management	3	4	0	6	1	1	1	2	1	0
Other	1	2	3	3	0	0	0	0	0	1
Pre-school	7	4	0	5	2	1	0	0	0	0
Primary industry	4	7	3	3	2	3	3	2	1	3
Professional	13	9	9	18	11	3	0	4	4	1
Retired	13	23	16	17	22	3	2	0	1	1
Small business owner	0	2	1	2	3	0	1	0	0	2
Student	25	21	27	34	20	4	7	3	5	5
Tradesperson	6	8	13	17	17	3	2	0	3	3
Unemployed	3	6	11	7	6	0	1	0	1	0
Unknown	25	40	24	34	27	11	14	15	7	16
White collar	10	10	23	8	18	4	4	5	6	2
Total	164	196	185	206	179	39	41	37	38	40

Figure 19

Ethnic Origin of Donors 1999 - 2003

	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Aboriginal	0	1	2	0	1	0	0	0	0	0
Afrikaans	0	0	0	0	1	0	0	0	0	0
Arab	0	0	0	0	0	0	0	0	0	0
Caucasoid	154	184	172	197	170	36	38	34	33	39
Greek	(3)	(0)	(1)	(4)	(0)	0	0	0	0	0
Italian	(3)	(3)	(0)	(1)	(4)	0	0	0	0	0
Chinese	3	2	2	2	0	0	0	2	0	0
Columbian	0	0	0	0	1	0	0	0	0	0
Eurasian	0	0	0	0	1	0	0	0	0	0
Filipino	0	2	1	1	0	1	0	0	0	0
Indian	0	2	2	2	1	0	0	0	1	0
Japanese	1	1	0	0	0	0	0	0	0	0
Korean	0	1	0	0	0	0	0	0	0	0
Malay	0	0	2	0	0	0	0	0	0	0
Maori	1	0	1	0	3	2	3	1	3	0
Mauritian	0	0	1	0	0	0	0	0	0	0
Pacific Islander	2	1	0	1	1	0	0	0	1	1
Sri Lankan	1	1	2	1	0	0	0	0	0	0
Vietnamese	2	1	0	2	1	0	0	0	0	0
Total	164	196	185	206	179	39	41	37	38	40

Figure 20

Religious Denomination of Donors 1999 - 2003

	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Buddhist	3	2	1	1	1	0	0	0	0	0
Christian	87	110	89	87	75	11	9	2	5	3
Jehovahs Witness	0	1	0	1	0	0	0	0	0	0
Druid	0	0	0	1	0	0	0	0	0	0
Hindu	0	1	0	0	0	0	0	0	1	0
Muslim	1	0	0	0	2	0	0	0	0	0
Ratna	0	0	0	0	0	0	1	0	0	0
Shinto	0	1	0	0	0	0	0	0	0	0
No religion	20	20	20	24	20	2	2	4	0	0
Unknown	53	61	75	92	81	26	29	31	32	37
Total	164	196	185	206	179	39	41	37	38	40

INTENDED DONORS

An intended donor is a person for whom consent has been given or volunteered, but for various reasons the donor does not proceed to the operating theatre.

(These numbers are **not** included in the donor numbers in Figure 1).

Figure 21										
Intended Donors 1999 - 2003										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
1999	1	4	0	0	0	0	0	0	5	1
2000	0	1	0	0	0	0	1	0	2	1
2001	1	6	1	0	0	2	0	0	10	0
2002	0	3	0	1	0	3	0	1	8	0
2003	0	2	0	3	0	0	0	1	6	0

Figure 22		
Reasons Why Donation Did Not Proceed 1998 - 2003		
Year	Australia	New Zealand
1998	Hepatitis C antibody positive (two) Hepatitis B surface antigen and core antibody positive History of melanoma Reassessment of medical history, then deemed medically unfit	Hepatitis C antibody positive Coroner withdrew permission
1999	Cardiac Arrest Hepatitis C antibody positive Hepatitis B surface antigen and core antibody positive Hepatitis B core antibody positive and other risk factors Infection detected in operating room	Permission withdrawn
2000	Late decline of offer by Transplant Unit Malignant cerebral tumour detected	Unstable donor
2001	Cardiac Arrest Hepatitis C antibody positive (3) HTLV1 positive Disease of organ Rapid rise in creatinine Coronial refusal Hepatitis B core antibody Later withdrawal by Transplant Unit	
2002	Hepatitis C antibody positive Coronial refusal (2) Cardiac arrest in operating theatre Potential non-heart beating donor - criteria not met Surgical team not available High risk behaviour Risk factors Creutzfeldt-Jacob Disease	
2003	Cardiac Arrest Coronial refusal Hepatitis B surface antigen and core antibody positive Hepatitis C positive - No suitable recipients High risk behaviour Hypotension and cardiac arrest	

HEART-BEATING DONORS

The majority of organs are donated by heart-beating brain dead patients.

After a heart-beating donor is certified brain dead, they remain on the ventilator and the removal of organs may occur many hours later.

A non-heart-beating donor is defined as a patient who is certified dead using the criterion of irreversible cessation of circulation. The kidneys are

removed as soon as possible after the heart stops beating to minimize warm ischaemic injury.

There was one non-heart-beating donor in Australia in 2003 from New South Wales (fig 23). After the irreversible cessation of circulation and death was certified, a catheter was inserted into the aorta and kidney perfusion commenced whilst in the Intensive Care Unit.

Figure 23

Heart-Beating Donors 1999 - 2003

	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Yes	163	195	183	204	178	39	41	37	38	40
No	1	1	2	2	1	0	0	0	0	0
Total	164	196	185	206	179	39	41	37	38	40

CARDIOPULMONARY RESUSCITATION

Cardiopulmonary resuscitation is recorded for events leading up to the admission and hospital stay for the patient, prior to organ donation (fig 24 and 25).

Figure 24

Cardiopulmonary Resuscitation 1999 - 2003

	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Yes	34	44	44	48	39	10	6	4	10	6
No	129	152	140	157	140	29	35	33	28	34
Unknown	1	0	1	1	0	0	0	0	0	0
Total	164	196	185	206	179	39	41	37	38	40

Figure 25

Australian States Cardiopulmonary Resuscitation 2003 (2002)

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Yes	5 (7)	14 (17)	3 (2)	9 (11)	0 (1)	7 (9)	0 (0)	1 (1)
No	35 (36)	32 (38)	5 (4)	33 (36)	2 (5)	15 (22)	1 (2)	17 (14)
Unknown	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (1)
Total	40 (44)	46 (55)	8 (6)	42 (47)	2 (6)	22 (31)	1 (2)	18 (15)

VIROLOGY SCREENING

Figure 26

Cytomegalovirus (CMV) Status of Donors 1999 - 2003										
	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Positive	111	128	132	131	111	23	24	19	18	26
Negative	53	68	53	75	68	14	17	18	20	14
Not done	0	0	0	0	0	2	0	0	0	0
Total	164	196	185	206	179	39	41	37	38	40

EPSTEIN-BARR VIRUS (EBV) STATUS OF DONORS

Australia

In 2003, 85% (152) of donors were tested, with 63% of those tested recording a positive result.

Not all Australian States require organ donors to be tested for EBV.

New Zealand

In 2003, 83% (33) donors were tested, with 73% positive. Only five donors were tested in 2002 and all were positive while only one donor was tested in 2001.

HEPATITIS B SURFACE ANTIGEN

Since 1993, all donors in Australia and New Zealand have been negative for Hepatitis B surface antigen.

HEPATITIS B CORE ANTIBODY

The Registry commenced collection of Hepatitis B core antibody results in 1998.

A positive result was recorded for 3% (6) of Australian donors and 8% (3) of New Zealand donors in 2003.

From the six Australian donors there were eight kidneys, five livers and one double lung transplanted. From the three New Zealand donors, three kidneys, three hearts, one liver and one double lung were transplanted.

HEPATITIS C ANTIBODY

There were two positive Hepatitis C donors in Australia in 2003 and none in New Zealand.

These two donors were also Hepatitis B core antibody positive. One liver was transplanted and organs from the other donor were declined by transplanting units.

MEDICAL CONDITION OF DONORS

Information related to diabetes, hypertension and smoking has been collected since 1993. Cancer data collection commenced on 1st January 2002.

DIABETES

There was one Type 1 (insulin dependent) and four Type 2 diabetic donors in Australia in 2003. There were none in New Zealand.

A malignancy was discovered at donor operation and only the corneas were donated from the Type 1 diabetic donor.

The four Type 2 diabetic donors provided eight kidneys and one liver.

HYPERTENSION

A past history of hypertension was recorded in 21% (37 donors) in Australia and 12.5% (5 donors) in New Zealand in 2003 (fig 27 and 28).

These donors provided Australia with 59 kidneys, 22 livers, eight hearts, one heart/lung, five double and three single lungs and four pancreas islets for transplantation.

In New Zealand, five kidneys, two livers and two hearts were transplanted.

SMOKING

In 2003, 46% (82) of Australian donors were recorded as current smokers and 16% (29) as former smokers, while in

New Zealand, 43% (17) were reported as current and 5% (2) as former.

CANCER IN DONOR

Australia (nine donors)

- * two renal cell carcinoma of the (L) kidney
- * one oncocytoma of the (L) kidney
- * one melanoma of the skin
- * one adenocarcinoma of the colon
- * one adenocarcinoma of the cervix
- * one disseminated - primary unknown
- * one unknown type of the thyroid
- * one unknown type of the cervix

Ten kidneys, six livers, one heart/lung and four cornea were transplanted from these donors.

Four cornea and one heart valve were stored.

New Zealand (two donors)

- * one adenocarcinoma of the colon
- * one papillary renal cell of the (L) kidney

One heart only was transplanted.

Figure 27

		Donor Diabetes, Hypertension, Smoking and Cancer 1999 - 2003				
		1999	2000	2001	2002	2003
Australia		(n=164)	(n=196)	(n=185)	(n=206)	(n=179)
	Diabetes Type 1	1 (<1%)	2 (1%)	4 (2%)	2 (1%)	1 (<1%)
	Diabetes Type 2	3 (2%)	3 (1.5%)	7 (4%)	5 (2%)	4 (2%)
	Hypertension	24 (15%)	42 (21%)	31 (17%)	28 (14%)	37 (21%)
	Unknown	2 (1%)	4 (2%)	5 (3%)	3 (1.5%)	3 (2%)
	Smoking					
	Current	54 (33%)	73 (37%)	71 (38%)	89 (43%)	82 (46%)
	Former	17 (10%)	26 (13%)	21 (11%)	30 (15%)	29 (16%)
	Unknown	10 (6%)	2 (1%)	3 (2%)	5 (2%)	1 (<1%)
	Cancer *				5 (2%)	9 (5%)
New Zealand		(n=39)	(n=41)	(n=37)	(n=38)	(n=40)
	Diabetes Type 1	0 (0%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)
	Diabetes Type 2	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Hypertension	8 (21%)	3 (7%)	3 (8%)	6 (16%)	5 (12.5%)
	Unknown	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Smoking					
	Current	14 (36%)	19 (46%)	10 (27%)	16 (42%)	17 (43%)
	Former	1 (2.5%)	2 (5%)	4 (11%)	2 (5%)	2 (5%)
	Unknown	2 (5%)	0 (0%)	1 (3%)	1 (3%)	0 (0%)
	Cancer *				1 (3%)	2 (2%)

* Cancer data collected from 1st January 2002

Figure 28

Medical Condition of Donors by Australian States 2003 (2002)								
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Diabetes Type 1	1 (0)	0 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Diabetes Type 2	0 (3)	2 (1)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (0)
Hypertension	3 (5)	11 (9)	3 (0)	10 (7)	0 (1)	4 (5)	0 (0)	6 (1)
Smoking Current	20 (13)	24 (19)	2 (3)	16 (23)	1 (1)	8 (18)	1 (1)	10 (6)
Cancer *	2 (2)	2 (2)	0 (0)	4 (0)	0 (1)	1 (0)	0 (0)	0 (0)

* Cancer data collected from 1st January 2003

DONOR WEIGHT

The allocation of heart, lungs and livers are based on the matching of recipient and donor weight.

In 2003 there were six donors in Australia and no donors in New Zealand who weighed less than 40 kilograms (fig 29).

Figure 29

Donor Weight 1999 - 2003											
	Years	Kilograms									Total
		0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90 +	
Australia	1999	7	4	3	2	10	27	49	40	22	164
	2000	3	4	2	6	23	34	51	41	32	196
	2001	0	5	3	6	18	27	47	43	36	185
	2002	5	3	4	4	17	40	51	41	41	206
	2003	2	2	2	7	12	27	43	46	38	179
New Zealand	1999	0	4	0	0	2	11	8	9	4	38
	2000	1	0	0	0	2	11	16	8	3	41
	2001	0	0	0	0	2	10	8	9	7	36
	2002	0	0	3	1	2	8	7	8	9	38
	2003	0	0	0	2	5	4	7	14	8	40

BLOOD GROUP OF DONORS

The distribution of blood groups in the general population

	Australia	New Zealand
O	49%	46%
A	39%	40%
B	9%	10%
AB	3%	4%

** Reference: Australian Red Cross and Auckland Regional Blood Centre

Figure 30

Blood Group of Donors 1999 - 2003							
		1999	2000	2001	2002	2003	
Australia	O	93 (57%)	90 (46%)	89 (48%)	99 (48%)	95 (53%)	
	A	50 (30%)	89 (45%)	66 (36%)	85 (41%)	63 (35%)	
	B	17 (10%)	12 (6%)	23 (12%)	18 (9%)	17 (9%)	
	AB	4 (3%)	5 (3%)	7 (4%)	4 (2%)	4 (2%)	
	Total	164	196	185	206	179	
New Zealand	O	15 (39%)	19 (46%)	23 (62%)	14 (37%)	16 (40%)	
	A	18 (46%)	20 (49%)	9 (24%)	21 (55%)	21 (53%)	
	B	4 (10%)	2 (5%)	4 (11%)	3 (8%)	3 (7%)	
	AB	2 (5%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)	
	Total	39	41	37	38	40	

DONOR INTENTION

Figures 31 and 32 show whether the donor had recorded an intention to donate through a signed driver's licence.

In 2003, 23% of Australian and 25% of New Zealand organ donors had a signed driver's licence.

Figure 33 shows the number of donors enrolled in the Australian Organ Donation Registry, which commenced in 2000.

Figure 31

Driver's Licence Status 1999 - 2003										
Intention Known	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Yes	34 (21%)	67 (34%)	48 (26%)	62 (30%)	42 (23%)	6 (15%)	9 (22%)	9 (24%)	10 (26%)	10 (25%)
No	55	59	38	40	40	3	0	0	1	0
Student / Not Applicable	23	21	23	34	16	4	5	1	4	2
Unknown	52	49	76	70	81	26	27	27	23	28
Total	164	196	185	206	179	39	41	37	38	40

Figure 32

Australian States 2003 (2002) Driver's Licence Status								
Intention Known	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Yes	23 (16)	10 (15)	0 (2)	1 (8)	0 (2)	6 (16)	0 (1)	2 (2)
No	3 (2)	2 (2)	0 (0)	20 (21)	0 (1)	6 (8)	1 (0)	8 (6)
Student / Not Applicable	1 (11)	2 (6)	2 (2)	5 (7)	1 (0)	3 (3)	0 (0)	2 (5)
Unknown	13 (15)	32 (32)	6 (2)	16 (11)	1 (3)	7 (4)	0 (1)	6 (2)
Total	40 (44)	46 (55)	8 (6)	42 (47)	2 (6)	22 (31)	1 (2)	18 (15)

Figure 33

Donors for 2003 (2002) Enrolled in the Australian Organ Donor Registry									
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Total
Yes	3 (0)	0 (1)	1 (0)	5 (5)	1 (2)	6 (11)	0 (0)	6 (3)	22 (22)
Not Registered	7 (13)	1 (3)	1 (0)	29 (27)	0 (2)	9 (16)	1 (1)	11 (7)	59 (69)
Not accessed	30 (31)	45 (51)	6 (6)	8 (15)	1 (2)	7 (4)	0 (1)	1 (5)	98 (115)
Total	40 (44)	46 (55)	8 (6)	42 (47)	2 (6)	22 (31)	1 (2)	18 (15)	179 (206)

AUTHORITY SOUGHT FOR ORGAN DONATION

The predominant role in requesting authority for organ donation in 2003 was the Intensive Care Clinicians and Registrars, (54%) in Australia and (65%) in New Zealand (fig 34).

Authority sought by the Donor Coordinators in Australian States in 2003 was Victoria 55%, South Australia 50%, Queensland 38%, Western Australia 33% and New South Wales 20%.

The Northern Territory had one donor where authority was sought by the Coordinator. In Australia, the overall total was 36% (fig 35).

In 2003, 8% of families volunteered authority for organ donation in Australia, compared to 10% in 2002 and 24% in 2001.

Twenty eight percent volunteered in New Zealand in 2003.

Figure 34

Authority to Donate 1999 - 2003										
	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
ICU Clinician/Registrar	101	112	106	118	97	33	35	31	25	26
Renal Physician/Registrar	0	0	0	0	0	2	1	4	0	0
Emergency Consultant/Registrar	1	0	1	2	0	1	0	0	0	1
Donor Coordinator	30	44	31	62	65	1	0	0	0	0
Volunteered	30	37	44	21	14	2	2	0	9	11
Nursing Staff	2	3	2	2	2	0	0	1	4	1
Social Worker	0	0	0	0	1	0	0	0	0	0
Others	0	0	1	1	0	0	3	1	0	0
Total	164	196	185	206	179	39	41	37	38	40

Figure 35

Authority to Donate 2003 (2002)								
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
ICU Clinician/Registrar	18 (11)	34 (39)	7 (4)	16 (35)	2 (5)	10 (18)	0 (1)	10 (5)
Donor Coordinator	15 (27)	9 (10)	0 (2)	23 (8)	0 (1)	11 (8)	1 (0)	6 (6)
Volunteered	6 (4)	3 (5)	1 (0)	2 (2)	0 (0)	0 (5)	0 (1)	2 (4)
Nursing Staff	1 (2)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Other	0 (0)	0 (1)	0 (0)	0 (2)	0 (0)	1 (0)	0 (0)	0 (0)
Total	40 (44)	46 (55)	8 (6)	42 (47)	2 (6)	22 (31)	1 (2)	18 (15)

DIRECT CONTACT WITH DONOR COORDINATOR

There were four families (2%) in Australia with which the Donor Coordinator had no contact, compared to 20 families (50%) in New Zealand in 2003.

Figure 36

Direct Contact with Donor Coordinator 2003										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
Face to Face	38 (95%)	42 (91%)	8 (100%)	37 (88%)	0 (0%)	22 (100%)	1 (100%)	16 (89%)	164 (92%)	18 (45%)
Telephone	2 (5%)	0 (0%)	0 (0%)	5 (12%)	2 (100%)	0 (0%)	0 (0%)	2 (11%)	11 (6%)	2 (5%)
None	0 (0%)	4 (9%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (2%)	20 (50%)
Total	40	46	8	42	2	22	1	18	179	40

CORONER'S CASES

In Australia, 49% of donors in 2003 were subject to Coronial inquiry compared to 45% in 2002.

In New Zealand it was 55% for 2003, compared to 47% in 2002.

Figure 37

Coroner's Cases 1999 - 2003										
	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Yes	76	93	87	93	88	18	13	17	18	22
No	88	103	98	113	91	21	28	20	20	18
Total	164	196	185	206	179	39	41	37	38	40

Figure 38

Australian States Coroner's Cases 2003 (2002)								
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Yes	22 (19)	26 (23)	5 (4)	12 (18)	2 (3)	10 (16)	0 (1)	11 (9)
No	18 (25)	20 (32)	3 (2)	30 (29)	0 (3)	12 (15)	1 (1)	7 (6)
Total	40 (44)	46 (55)	8 (6)	42 (47)	2 (6)	22 (31)	1 (2)	18 (15)

SUMMARY - ORGANS REQUESTED, CONSENT GIVEN, RETRIEVED AND TRANSPLANTED

The information relating to the request for organ donation refers only to those patients who become organ donors. If consent was sought and refused, the Registry has no record of these potential donors.

The difference between a request and a consent is a known objection by the donor or family refusal for the specific organ. Reasons for not requesting

organs, not retrieving and not transplanting are documented for all of the specific organs.

For further details see Appendix I for Australia and Appendix II for New Zealand.

Figure 39 shows the outcome of organs requested in 2003 (2002).

Figure 39

Outcome Following Request for Organ Donation 2003 (2002)						
		Kidneys	Liver	Heart	Lungs	Pancreas
Australia	Requested	358 (402)	175 (201)	156 (183)	316 (352)	143 (152)
	Consent Given	356 (402)	171 (199)	151 (178)	306 (338)	134 (139)
	Retrieved	340 (380)	135 (156)	73 (85)	132 (173)	47 (47)
	Transplanted	325 (372)	*128 (*148)	68 (80)	129 (165)	+31 (+26)
New Zealand	Requested	78 (76)	39 (38)	35 (32)	64 (62)	33 (22)
	Consent Given	78 (76)	39 (38)	35 (32)	64 (62)	33 (22)
	Retrieved	74 (70)	34 (31)	25 (9)	37 (24)	6 (2)
	Transplanted	67 (69)	*34 (*30)	25 (9)	37 (21)	6 (2)

* Split Liver Australia (8) 2003, (9) 2002 NZ (3) 2003, (1) 2002
Kidneys and lungs are counted as separate organs
+ includes (6) 2003, (1) 2002 pancreas islet transplants

ORGANS REQUESTED

The requests for specific organs in 2003 from Australian organ donors were: kidneys 100%, liver 98%, heart 87%, lungs 88% and pancreas 80%.

From the 40 New Zealand donors in 2003, the requests for specific organs were: kidneys 98%, liver 98%, heart 88%, lungs 80% and pancreas 83%.

MULTIPLE ORGAN RETRIEVAL

There were 31 donors (18%) in 2003 in Australia who had a single organ retrieved. Kidney only donation occurred in 26 cases.

New Zealand had three single organ donors in 2003, donating two hearts and one liver.

Figure 40

Trend to Multiple Organ Retrieval 1999 - 2003

No. of Organs	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Single	17%	21%	19%	19%	18%	21%	7%	19%	13.5%	7%
Two	30%	29%	32%	24%	27%	44%	42%	31%	43%	28%
Three	27%	24%	21%	25%	20%	23%	34%	22%	30%	25%
Four	23%	20%	19%	24%	26%	10%	15%	25%	13.5%	35%
Five	3%	6%	9%	8%	9%	2%	2%	3%	0%	5%

Figure 41

State by State Comparison of Multiple Organ Retrieval 2003

No. of Organs	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
Single	1 (3%)	13 (28%)	4 (50%)	7 (17%)	0 (0%)	4 (18%)	1 (100%)	1 (6%)	31 (18%)	3 (7%)
Two	11 (28%)	8 (17%)	2 (25%)	14 (34%)	0 (0%)	10 (45%)	0 (0%)	3 (18%)	48 (27%)	11 (28%)
Three	12 (31%)	10 (22%)	0 (0%)	4 (10%)	1 (50%)	5 (23%)	0 (0%)	4 (23%)	36 (20%)	10 (25%)
Four	13 (33%)	8 (17%)	0 (0%)	15 (37%)	0 (0%)	3 (14%)	0 (0%)	7 (41%)	46 (26%)	14 (35%)
Five	2 (5%)	7 (15%)	2 (25%)	1 (2%)	1 (50%)	0 (0%)	0 (0%)	2 (12%)	15 (9%)	2 (5%)
Total	39	46	8	41	2	22	1	17	176	40

NB: 2 kidneys = 1 organ, 2 lungs = 1 organ
On occasions when only one kidney is retrieved, this is also defined as one organ.

Figure 42

Organs Transplanted by Donor State in Australia and New Zealand 2003

Donor State	Kidneys	Liver	(L) Liver	(R) Liver	Heart	Lungs	(L) Lung	(R) Lung	Pancreas	Islets	Total
Queensland	77	31	3	2	23	16	1	2	5	0	160
New South Wales	84	26	6	6	10	17	1	0	13	4	167
ACT	16	3	0	0	3	2	0	0	1	1	26
Victoria	72	29	0	0	13	12	3	1	5	0	135
Tasmania	3	2	0	0	2	1	0	0	1	0	9
South Australia	28	13	0	0	6	6	0	0	0	1	64
Northern Territory	2	0	0	0	0	0	0	0	0	0	2
Western Australia	33	15	0	0	11	5	1	2	0	0	67
Australia	325	119	9	8	68	59	6	5	25	6	630
New Zealand	67	27	4	3	25	14	5	4	6	0	155

ORGAN RECIPIENTS TRANSPLANTED

Australia had 3.5 and New Zealand 3.8 organ recipients per donor used for transplantation in 2003.

The number of recipients transplanted is used for this calculation, rather than the number of organs.

Tasmania had the highest number of organs transplanted, 4.5 per donor, followed by Queensland 4.0, Western Australia 3.7, New South Wales 3.6, Victoria and the ACT 3.2, South Australia 2.9 and the Northern Territory 2.0.

These figures exclude tissue transplantation.

Figure 43

Organ Recipients Transplanted per Donor 2003										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
No. Organs Transplanted	160	167	26	135	9	64	2	67	630	155
No. of Donors	40	46	8	42	2	22	1	18	179	40
Average per Donor	4.0	3.6	3.2	3.2	4.5	2.9	2	3.7	3.5	3.8
Double lungs = 1 organ (1 recipient) Two kidneys = 2 organs										

Waiting times for organ transplants are presented in Figures 44 and 45. This illustrative data is provided by the National Organ Matching Service.

The data is complete for kidney, pancreas and islet transplants, however may not be complete for liver heart and lung patients.

Figure 44

Waiting List by Transplant Centres January 2004						
	Kidney	Liver	Heart	Lung	Pancreas	Islets
Patients awaiting a transplant at 31 December 2003	1488	110	65	124	29	8
Patients who died while on the waiting list during 2003	45	10	6	13	0	0
Data provided by the National Organ Matching Service (NOMS) Further information about waiting times is available from the National Organ Matching Services (NOMS)						

Figure 45

Average Waiting Time in Years, for Patients Transplanted with Cadaver Donor Organs in 2003					
Organ	Blood Group				All
	A	AB	B	O	
* Kidney	3.4	1.9	4.2	3.9	3.7
Heart	1.2	5.1	1.0	1.1	1.3
Liver	0.6	0.8	0.7	1.7	1.1
Pancreas	2.0	1.1	2.0	2.1	1.9
Lung	0.6	2.7	1.0	1.3	1.0
Islets			1.3	1.4	1.4
* Kidney - years calculated from dialysis for matching date to transplant date					
Other organs - years calculated from program entry date to transplant date					
Source of Data - National Organ Matching Service (NOMS)					

EXCHANGE OF ORGANS

The number of organs that were sent and received between Australian States and New Zealand in 2003 and 2002 is shown in Figure 47.

A balance is maintained between Australian regions for the allocation of kidneys. For this purpose Victoria/Tasmania, South Australia/Northern Territory and New South Wales/Australian Capital Territory (ACT)

are considered Regions.

This is achieved by the National Organ Matching System (NOMS) in which all Australian States participate.

There is no monitoring of State balance for the allocation of other organs.

Figure 46

Exchange of Organs Between States and New Zealand 2003 (2002)								
	Exchange	Kidneys	Liver +	Heart	Lungs *	Pancreas	Islets	Total
Queensland	Sent	11 (10)	12 (10)	9 (7)	22 (22)	5 (2)	0 (0)	59 (51)
	Received	7 (4)	8 (11)	4 (6)	5 (18)	0 (0)	0 (0)	24 (39)
New South Wales	Sent	12 (10)	4 (4)	2 (6)	4 (9)	0 (0)	0 (0)	22 (29)
	Received	36 (34)	14 (25)	7 (10)	29 (28)	7 (8)	2 (0)	95 (105)
ACT	Sent	16 (9)	3 (6)	3 (4)	4 (8)	1 (1)	1 (0)	28 (28)
Victoria	Sent	8 (5)	8 (14)	0 (4)	2 (2)	1 (0)	0 (0)	19 (25)
	Received	13 (12)	9 (16)	14 (21)	38 (44)	1 (1)	0 (0)	75 (94)
Tasmania	Sent	3 (12)	2 (6)	2 (3)	2 (6)	1 (2)	0 (0)	10 (29)
South Australia	Sent	6 (10)	8 (14)	6 (11)	12 (18)	0 (4)	1 (0)	33 (57)
	Received	10 (9)	3 (2)	0 (0)	0 (0)	0 (0)	0 (0)	13 (11)
Northern Territory	Sent	2 (4)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	2 (5)
Western Australia	Sent	10 (3)	4 (6)	2 (2)	13 (17)	0 (0)	0 (0)	29 (28)
	Received	2 (4)	4 (1)	2 (1)	0 (0)	0 (0)	0 (0)	8 (6)
New Zealand	Sent	0 (0)	5 (5)	3 (2)	13 (8)	0 (0)	0 (0)	21 (15)
	Received	0 (0)	8 (11)	0 (1)	0 (0)	0 (0)	0 (0)	8 (12)

*Total number of lungs (not recipients)
+ Number of recipients of livers

Figure 47

Summary of Organs Transplanted in Australia from New Zealand Donors 1989 - 2003					
Year	Kidneys	Liver +	Heart	Lungs *	Total
1989	0	1	0	0	1
1990	0	7	0	0	7
1991	0	11	0	0	11
1992	3	24	0	0	27
1993	0	16	0	0	16
1994	4	21	0	2	27
1995	0	21	5	9	35
1996	1	23	1	4	29
1997	2	22	2	2	28
1998	4	16	3	8	31
1999	2	7	1	2	12
2000	0	7	0	4	11
2001	0	2	0	4	6
2002	0	5	2	8	15
2003	0	5	3	13	21
Total	16	188	17	56	277

* Total number of lungs (not recipients)
+ Number of recipients of livers

New Zealand organs are sent to Australia when there are no compatible recipients in New Zealand.

Liver transplantation commenced in New Zealand in February 1998, prior to this time, all livers were sent to Australia.

KIDNEY DONATION

Figure 48 shows the number of Australian and New Zealand patients waiting for a kidney transplant and the number of cadaveric transplants performed for each year from 1999-2003.

Figure 48

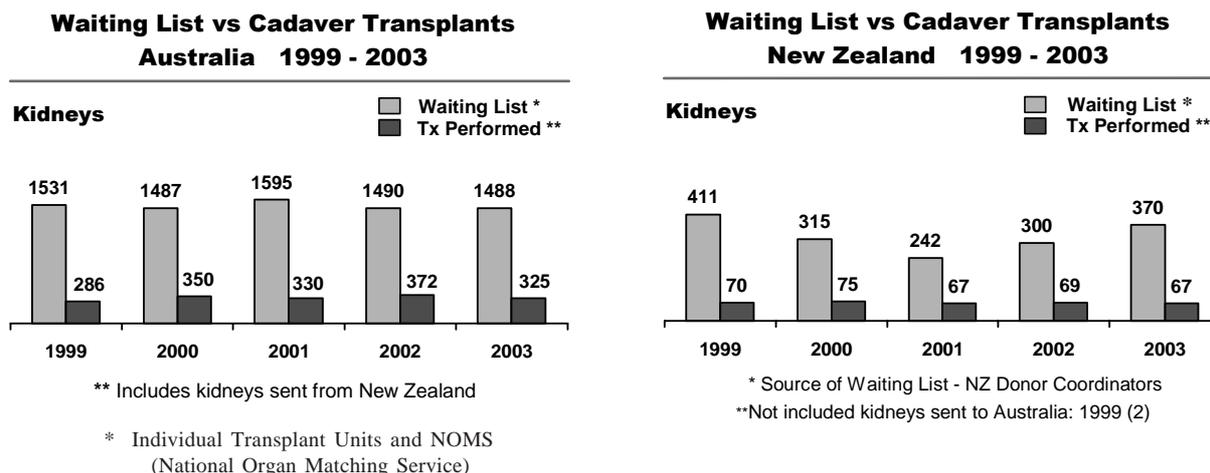
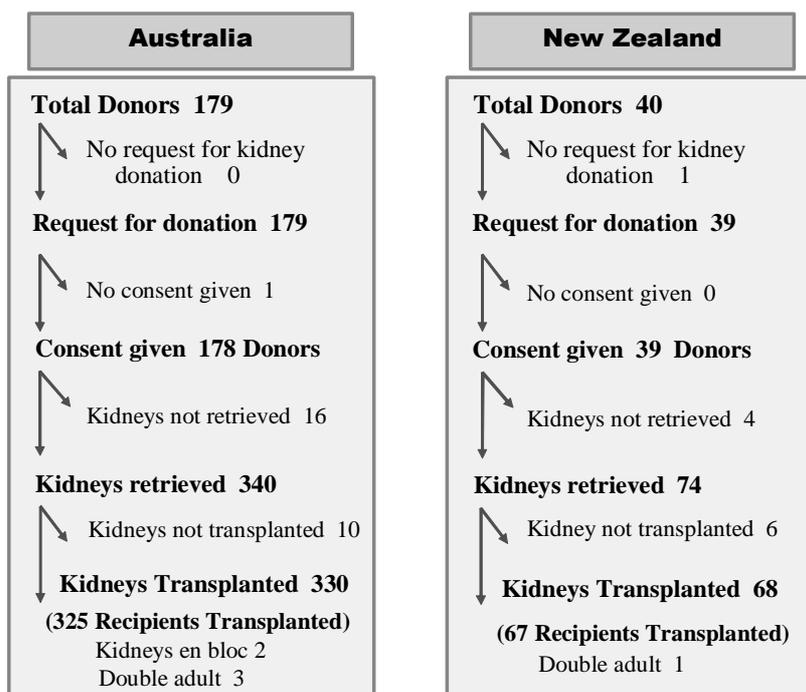


Figure 49

Outcome of Request for Kidney Donation 2003

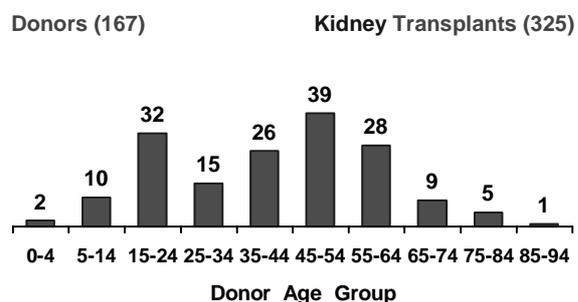
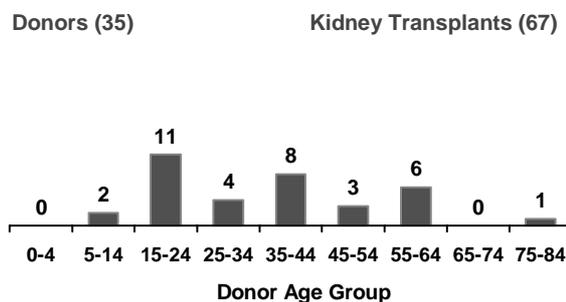
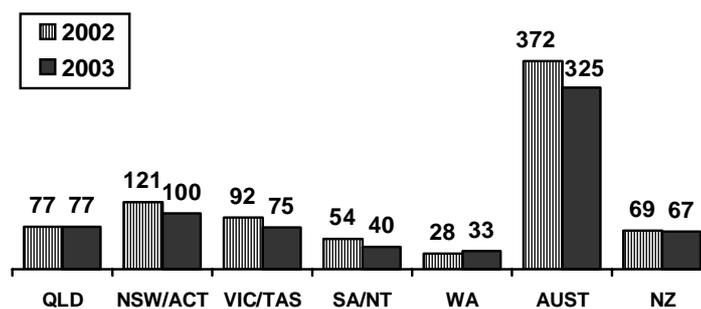


Refer to Appendices for reasons kidneys were not requested, not retrieved and not transplanted

Figure 50

Age of Donors Providing Transplanted Kidneys 1999 - 2003												
	Year	Age Groups										Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
Australia	1999	4 (3)	11 (2)	24	22	17	32	29	9 (1x)	2 (1x)	0	150
	2000	2 (3)	10	30	24	28	42	34 (1x)	11	1	0	182
	2001	0 (0)	16	32	25	22	44	19	11	1 (x)	0	170
	2002	3 (2)	14 (2)	44	17	31	42	30	11 (1x)	1	0	193
	2003	2 (2)	10	32 (1*)	15	26	39	28	9 (2x)	5	1	167
New Zealand	1999	0	3 (1)	3	4	4	14	5	4	0	0	37
	2000	0	2	9	4	6	12	6	1	0	0	40
	2001	0	0	9	2	7	7	8	1	0	0	34
	2002	0	3	5	2	11	10	3	1	0	0	35
	2003	0	2	11	4	8	3	6	0	1 (1x)	0	35

() En-Bloc Kidneys * Horseshoe Kidney (Adult) x Double Adult

Figure 51**Age of Donors Providing Transplanted Kidneys - Australia 2003****Age of Donors Providing Transplanted Kidneys - New Zealand 2003****Figure 52****Cadaver Kidney Transplants by Transplant State Australia and New Zealand 2002 - 2003**

KIDNEY PERFUSION METHODS

Where kidneys were perfused with only one solution, Ross (40%), University of Wisconsin (UW) (33%) and HTK (27%) were the solutions used in Australia 2003, whereas only UW was used in New Zealand.

UW was used as the second perfusion solution in 86% and Ross in 12% of cases in Australia (fig 54).

Figure 53

Kidney Perfusion with Only One Solution 1999 - 2003

	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Ross	38	26	26	14	12	10	2	4	2	0
UW	12	8	4	4	10	66	78	64	66	72
Collins	0	0	2	0	0	0	0	0	0	0
HTK	0	0	0	0	8	0	0	0	0	0
Baxter's Fluid	0	0	0	0	0	0	2	0	0	0
Total	50	34	32	18	30	76	82	68	68	72

Figure 54

Second Perfusion Solution - Kidneys 1999 - 2003

	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Ross	43	7	52	54	37	0	0	0	0	0
UW	195	313	256	296	267	2	0	0	2	1
Collins	10	16	4	8	6	0	0	0	0	0
Hartmans	2	0	0	4	0	0	0	0	0	0
Total	250	336	312	362	310	2	0	0	2	1

REASONS KIDNEYS WERE UNUSABLE

Data for biopsy of the donor kidney at the time of retrieval in Australia and New Zealand has been collected since 2000.

In 2003, 15% (26) of donors had a biopsy in Australia and 22% (8) of donors in New Zealand.

Since 2000, there have been 13% (93) biopsies from 726 kidney donors in Australia and 26% (39) from 148 kidney donors in New Zealand.

The reasons for kidneys that were unusable and the donor age are shown in Figures 55 and 56.

Figure 55		Reasons Kidneys were Unusable 1999 - 2003				
		1999	2000	2001	2002	2003
Australia	Renal disease in donor	3	10	8	2	5
	Cancer in donor	0	2	0	0	2
	Anatomical	1	0	1	0	10
	Surgical	2	2	3	1	1
	Trauma	1	2	0	0	2
	High Creatinine and Urea	2	0	0	0	0
	Courier Failure	0	0	1	0	0
	Total	9	16	13	3	10
New Zealand	Renal Disease in Donor	3	6	1	1	3
	Cancer in Donor	0	0	0	0	2
	Surgical	0	1	0	0	1
	Trauma	1	0	0	0	0
	Donor Unstable	1	0	0	0	0
	Total	5	7	1	1	6

Figure 56		Donor Age of Unusable Kidneys 1999 - 2003								
		Age Groups								Total
Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74		
Australia	1999	0	0	0	0	2	2	2	1	7
	2000	0	0	1	0	1	1	5	2	10
	2001	0	0	1	0	1	2	5	1	10
	2002	0	0	0	0	1	0	0	2	3
	2003	0	0	3	0	0	2	1	4	10
New Zealand	1999	1	0	0	0	1	1	0	0	3
	2000	0	1	0	1	1	0	3	0	6
	2001	0	0	0	0	0	0	0	1	1
	2002	0	0	0	0	0	0	1	0	1
	2003	0	1	2	0	0	0	1	2	6

DONOR KIDNEY FUNCTION

Terminal Levels of Serum Creatinine and Urea

In 2003, 13% of Australian donors had a terminal serum creatinine concentration of $\geq 125 \mu\text{mol/L}$ and 14% had a terminal serum urea concentration of $\geq 9 \text{ mmol/L}$.

New Zealand had 9% of donors with a terminal serum creatinine concentration of $\geq 125 \mu\text{mol/L}$ and 9% with terminal serum urea concentration of $\geq 9 \text{ mmol/L}$.

Figure 57

Terminal Serum Creatinine Levels 1999 - 2003

Creatinine ($\mu\text{mol/l}$)	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
00-99	67%	77%	74%	76%	75%	76%	79%	78%	80%	82%
100-124	16%	11%	17%	12%	12%	19%	15%	16%	7%	9%
125-149	6%	3%	1%	4%	3%	0%	0%	3%	13%	3%
150-174	5%	4%	2%	3%	4%	5%	3%	0%	0%	6%
175-199	3%	1%	2%	1%	1%	0%	3%	0%	0%	0%
200-224	<1%	0%	1%	2%	1%	0%	0%	0%	0%	0%
225-249	0%	<1%	<1%	<1%	1%	0%	0%	0%	0%	0%
> 250	3%	3%	2%	<1%	3%	0%	0%	3%	0%	0%

Figure 58

Terminal Serum Urea Levels 1999 - 2003

Urea (mmol/l)	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
00-04	49%	54%	51%	57%	49%	54%	54%	59%	50%	52%
05-08	42%	34%	38%	33%	37%	35%	44%	38%	43%	34%
09-12	5%	7%	9%	5%	11%	11%	2%	3%	7%	3%
13-16	1%	3%	2%	2%	1%	0%	0%	0%	0%	3%
> 16	3%	2%	<1%	2%	2%	0%	0%	0%	0%	3%

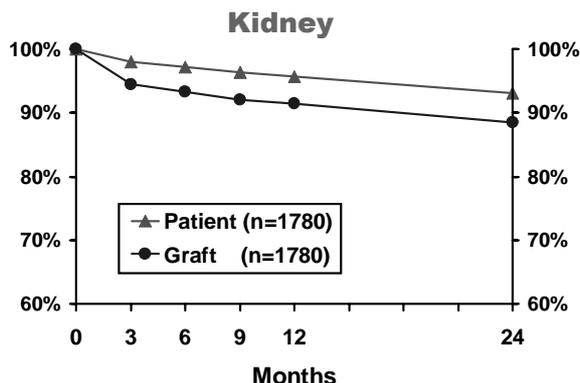
KIDNEY TRANSPLANT OUTCOME

Figure 59 shows the patient and graft outcome for kidney transplants performed over the preceding five years in Australia and New Zealand.

This data has been provided by the ANZDATA (Australia and New Zealand Dialysis and Transplant) Registry and further information on kidney transplant outcome is available from their website - www.anzdata.org.au

Figure 59

Primary Cadaver Patient and Graft Survival Australia 1997 - 2002



Primary Cadaver Patient and Graft Survival New Zealand 1997 - 2002

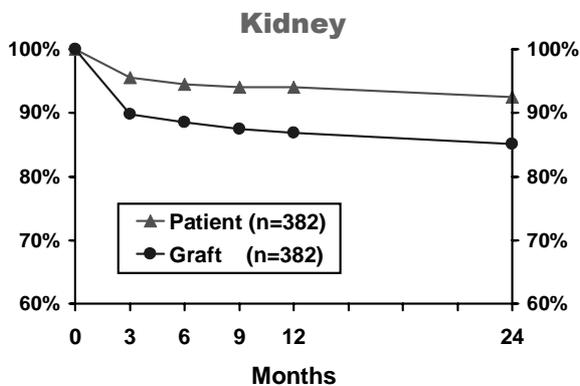
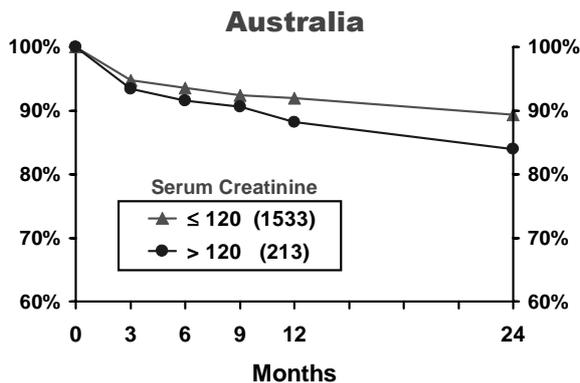


Figure 60

Primary Cadaver Kidney Graft Survival Terminal Serum Creatinine 1997 - 2002



LIVER DONATION

There were 170 liver transplants performed in 2003, 133 in Australia and 37 in New Zealand.

Eight livers were donated from Australia and transplanted into New Zealand recipients and five livers donated from New Zealand were transplanted into Australian recipients.

There were 128 Australian donors, who provided 136 recipients with transplanted livers and 31 New Zealand donors provided livers for 34 recipients.

Twenty two transplants were performed using the “split” liver technique [transplanting one liver into two recipients]

- * 10 Royal Prince Alfred Hospital, NSW
- * 3 New Children’s, NSW
- * 4 Princess Alexandra Hospital, Qld
- * 2 Royal Children’s, Victoria
- * 3 Auckland Hospital, New Zealand

Figure 61

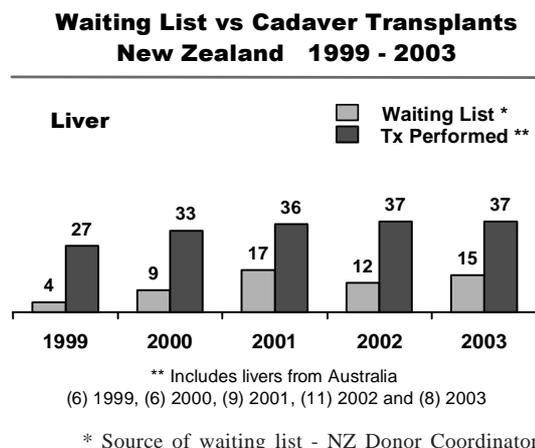
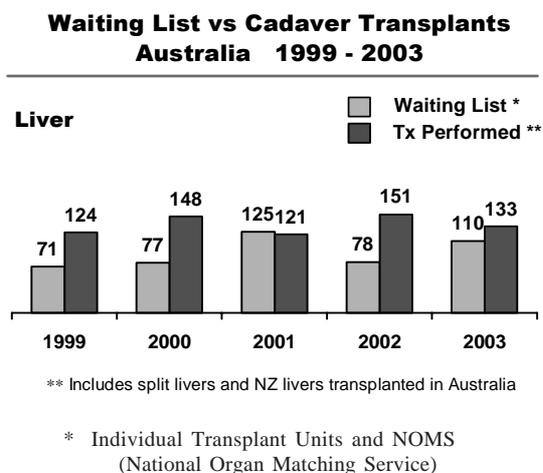
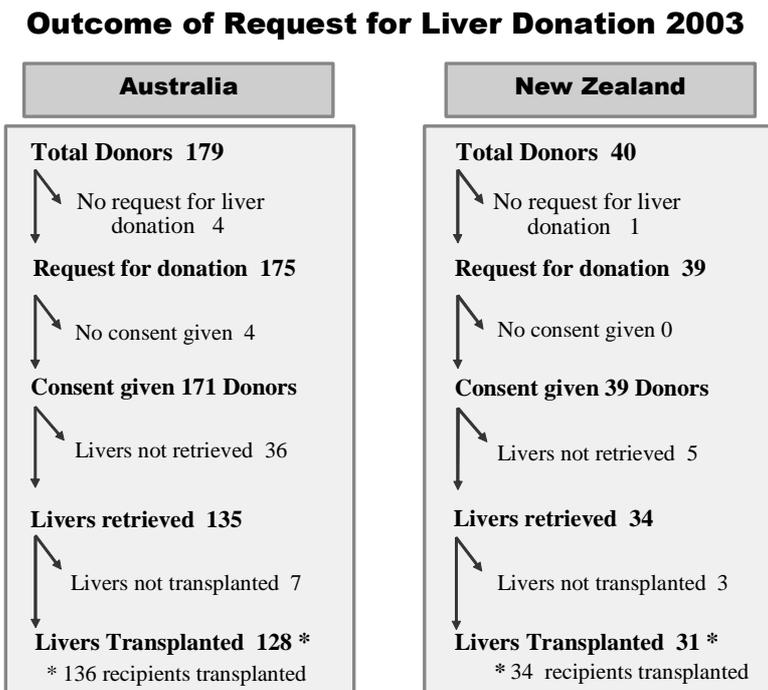


Figure 62



* Includes split livers and number of recipients

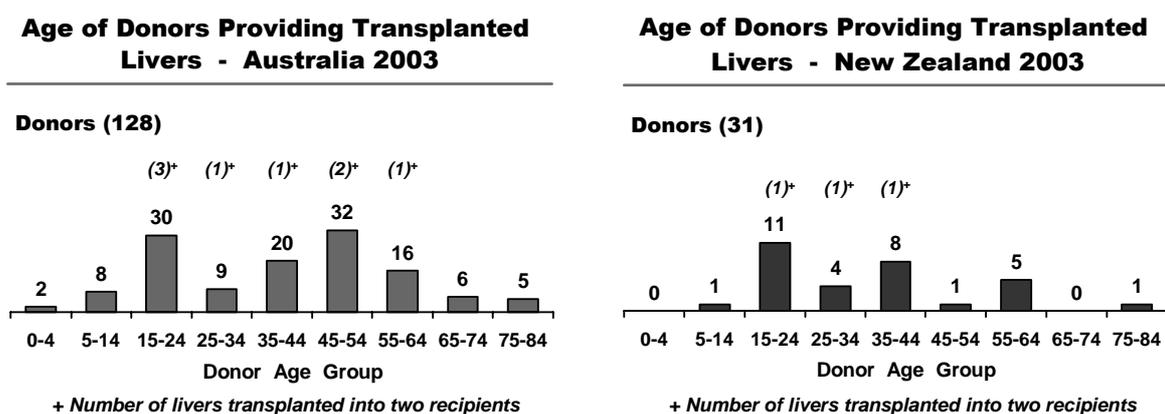
Recipients transplanted, refers to outcome of livers donated in Australia or New Zealand

Refer to Appendices for reasons livers were not requested, not retrieved and not transplanted

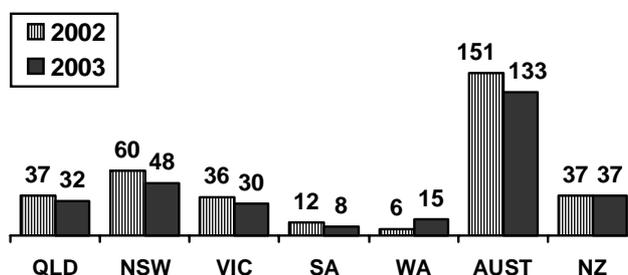
Figure 63

Age of Donors Providing Transplanted Livers 1999 - 2003											
	Year	Age Groups								Total	
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74		75-84
Australia	1999	6	10 (+)	22 (+)	16 (+)	16 (2+)	22 (2+)*	20	4	0	116
	2000	2	7	26 (+)	22	25 (+)	31 (2+)	21	7 (+)	1	142
	2001	0	14	29 (*)	18 (*)	14 (3*)	28 (+)	15	8	1	127
	2002	5	11 (*) (2+)	39 (3+)	14 (+)	28	27 (*) (3+)	17	6	1	148
	2003	2	8	30 (3+)	9 (+)	20 (+)	32 (2+)	16 (+)	6	5 (*)	128
New Zealand	1999	0	2	2	4	4	10	3	3	0	28
	2000	0	1	8	4	5	11	4	1	0	34
	2001	0	0	7	2	6	8	5	1	0	29
	2002	0	3 (*)	5 (+ *)	2	9	7	3	1	0	30
	2003	0	1	11 (+)	4 (+ *)	8 (+)	1	5	0	1	31

+ One liver transplanted into two recipients
* One liver split and used for one patient only

Figure 64**Figure 65**

**Liver Transplants by Transplant State
Australia and New Zealand 2002 - 2003**



PERFUSION OF LIVERS

Australia

University of Wisconsin (UW) solution was used as the final perfusion for 96% of all livers. The initial flush solution was either Ross, Hartman's or HTK Solution. There were four livers only perfused with UW.

New Zealand

University of Wisconsin solution only was used for 33 of the 34 livers retrieved. One liver had an initial flush with Ross Solution.

Figure 66

Regional Outcome of Requests for Liver Donation 1989-2003										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	604	943	67	659	50	373	30	231	2957	423
Requested	594	855	64	586	44	326	25	200	2694	366
Consented	584	834	60	565	41	316	25	191	2616	363
Retrieved	447	566	45	388	34	228	16	133	1857	299
Transplanted *	469	565	46	343	32	219	15	130	1819	288

* Refers to number of recipients - use of split livers
 ** New Zealand 1993 - 2003

REASONS LIVERS WERE UNUSABLE AFTER RETRIEVAL

The liver is only retrieved when a compatible recipient has been identified. Figure 67 shows reasons the liver was not able to be transplanted into the identified recipient.

The use of the liver (and other organs) for research purposes requires specific permission from the most senior available next of kin.

Figure 67

Reasons Livers were Unusable 2000 - 2003		2000	2001	2002	2003
Australia	Biopsy - Fatty	3	4	3	3
	Disease	0	0	1	1
	Anatomical	0	1	1	0
	Research	0	1	2	2
	Cancer in Donor	1	0	0	0
	Recipient Issue	0	0	1	1
	Total	4	6	8	7
New Zealand	Biopsy - Fatty	2	1	0	2
	Cancer in Donor	0	0	0	1
	Recipient Issue	0	0	1	0
	Total	2	1	1	3

Figure 68

Donor Age of Unusable Livers 2000 - 2003		Age Groups								Total
Year		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	
Australia	2000	0	0	0	0	1	1	2	0	4
	2001	0	1	1	0	1	2	1	0	6
	2002	0	0	1	0	1	3	3	0	8
	2003	0	0	0	1	2	0	1	2	7
New Zealand	2000	0	0	0	0	1	0	1	0	2
	2001	0	0	0	0	0	0	0	1	1
	2002	0	0	0	0	1	0	0	0	1
	2003	0	0	0	0	0	2	0	1	3

DONOR LIVER FUNCTION

The results of the serum tests for liver function for 136 Australian and 34 New Zealand donors in 2003, who had livers retrieved, is shown below.

Sixty nine percent of Australian and 35% of New Zealand donors had all five tests performed. Figure 69 shows the number of donors whose liver function was above the normal range.

Figure 69

Number of Donors with Liver Function Tests above Normal Range

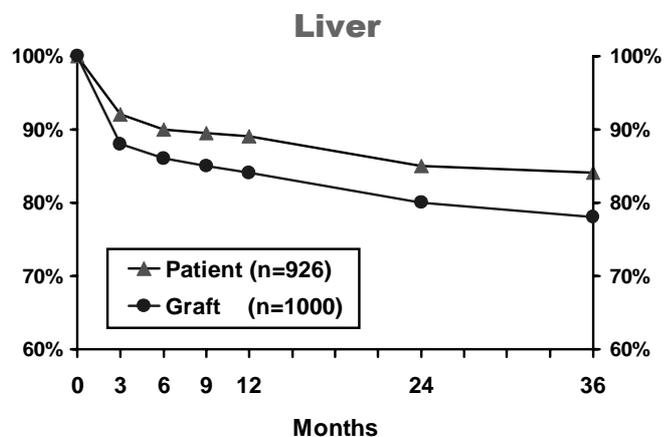
Liver Function Tests	Australia			New Zealand		
	Donors with value recorded *	Above Normal	Maximum recorded 1989-2003	Donors with value recorded *	Above Normal	Maximum recorded 1993-2003
Alanine Transaminase ALT > 40 u/L	135	48 (36%)	1194 (293)x	28	9 (32%)	393 (241)
Aspartate Transaminase AST > 40 u/L	96	50 (52%)	1008 (354)	28	16 (57%)	461 (461)
Gamma Glutamol Transferase GGT > 60 u/L	130	29 (22%)	750 (309)	20	3 (15%)	226 (226)
Alkaline Phosphatase > 116 u/L	133	10 (8%)	317 (237)	33	1 (3%)	264 (142)
Total Bilirubin > 20 umol/L	135	14 (10%)	114 (67)	31	1 (5%)	57 (21)

* Not all donors have all tests
x (2003) Maximum

LIVER TRANSPLANT OUTCOME

Figure 70

Cadaver Patient and Graft Survival Australia 1997 - 2002



Further information on liver transplant outcome is available from the Australia and New Zealand Liver Transplant Registry Report Website: www.cs.nsw.gov.au/gastro/livertransplant/

CARDIO-THORACIC ORGAN DONATION

In 2003 Australia performed 71 heart transplants, five heart/lung, 63 double and 16 single lung transplants.

New Zealand performed 22 heart transplants, ten double lung and four single lung transplants.

Eighty six percent (73 Australian heart donors) and 92% (23 New Zealand heart donors) had a normal ECG.

Sixty six percent (48 Australian heart donors) and 92% (23 New Zealand heart donors) had an echocardiogram in 2003.

Figure 71

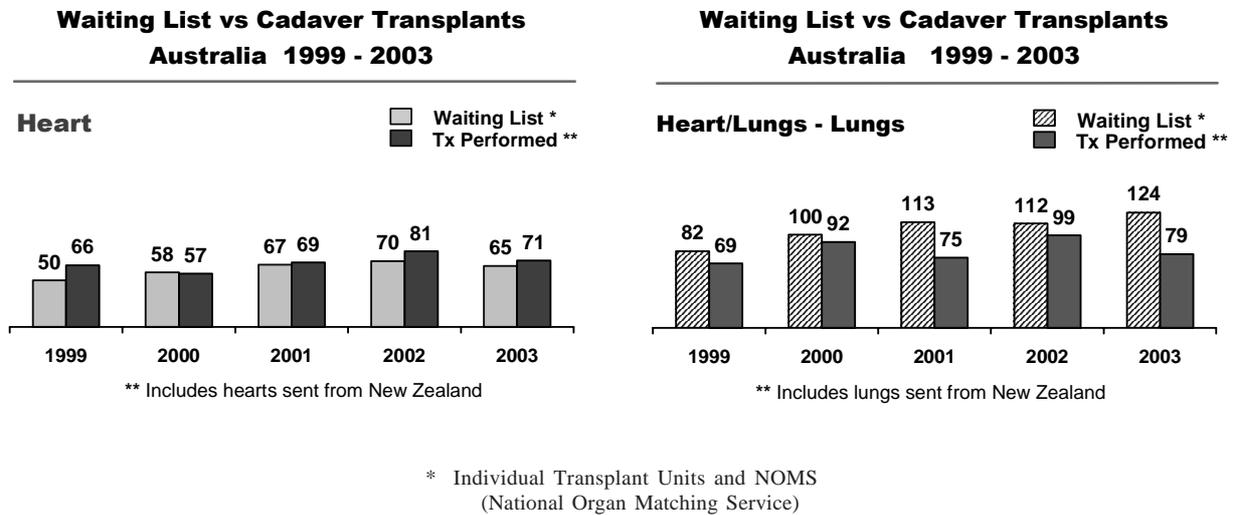


Figure 72

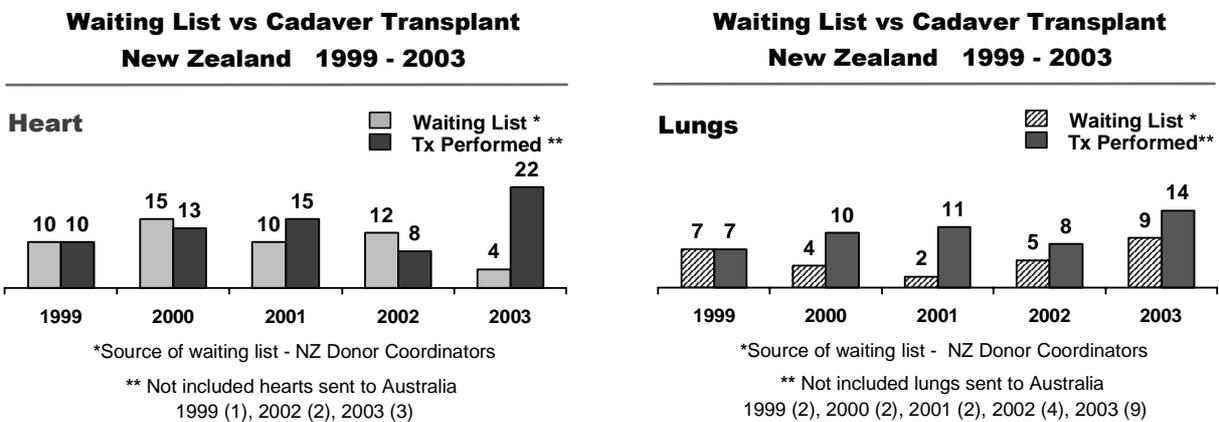
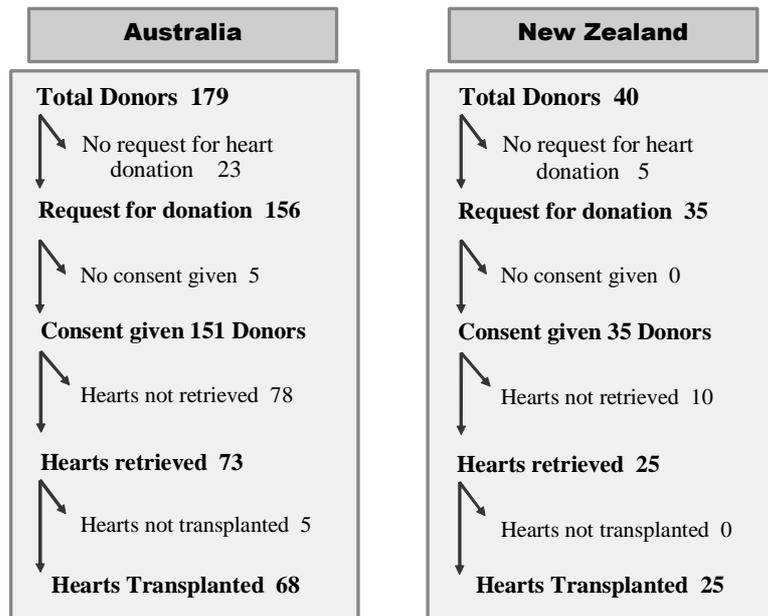


Figure 73

Outcome of Request for Heart Donation 2003



Refer to Appendices for reasons hearts were not requested, not retrieved and not transplanted.

Figure 74

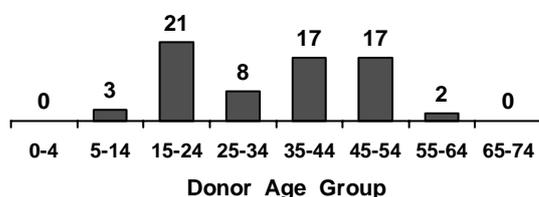
Age of Donors Providing Transplanted Hearts 1999 - 2003

	Year	Age Groups								Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	
Australia	1999	1	4	20	10	8	17	7	0	67
	2000	0	1	17	15	11	12	3	0	59
	2001	0	5	22	10	12	18	2	0	69
	2002	1	8	29	10	15	14	3	0	80
	2003	0	3	21	8	17	17	2	0	68
New Zealand	1999	0	0	1	3	1	6	0	0	11
	2000	0	0	4	4	2	3	0	0	13
	2001	0	0	5	2	3	3	2	0	15
	2002	0	1	1	0	4	2	1	0	9
	2003	0	2	8	3	6	3	3	0	25

Figure 75

Age of Donors Providing Transplanted Hearts - Australia 2003

Donors (68)



Age of Donors Providing Transplanted Hearts - New Zealand 2003

Donors (25)

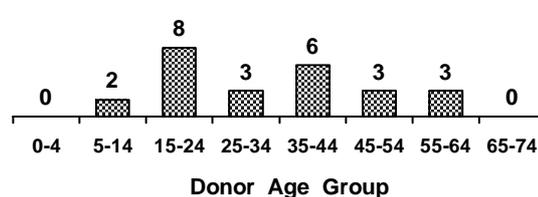
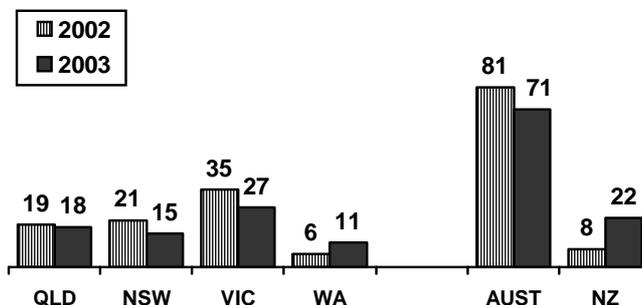


Figure 76

Heart Transplants by Transplant State Australia and New Zealand 2002 - 2003

**Figure 77**

Heart and Lung Transplant Recipients By Transplant Country 1999 - 2003

		Heart/Lung	1999	2000	2001	2002	2003
Australia	Heart		66	57	67	73	66
	Heart/lung		2	2	2	8	5
	Double lung		42	65	47	66	58
	Single left lung		13	12	10	12	9
	Single right lung		12	13	16	13	7
	Total		135	149	142	172	145
New Zealand	Heart		10	13	15	8	22
	Heart/lung		0	0	0	0	0
	Double lung		7	10	9	5	10
	Single left lung		0	0	1	1	2
	Single right lung		0	2	1	2	2
	Total		17	25	26	16	36

Figure 78

Regional Outcome of Requests for Heart Donation 1989 - 2003

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z. *
Total Donors	604	943	67	689	50	373	30	231	2957	423
Requested	571	794	60	564	44	286	24	182	2525	343
Consented	541	748	56	534	42	277	23	165	2386	334
Retrieved	304	437	40	318	31	152	11	96	1389	145
Transplanted	302	430	39	304	30	148	11	92	1356	146

* New Zealand 1993 - 2003

HEART VALVE DONATION

The aortic and pulmonary heart valves can often be viable for transplantation when the whole heart is not suitable. Heart valves can be stored for many years. This data relates only to heart valves retrieved from organ donors.

Figure 79

Outcome of Request for Heart Valve Donation 2003

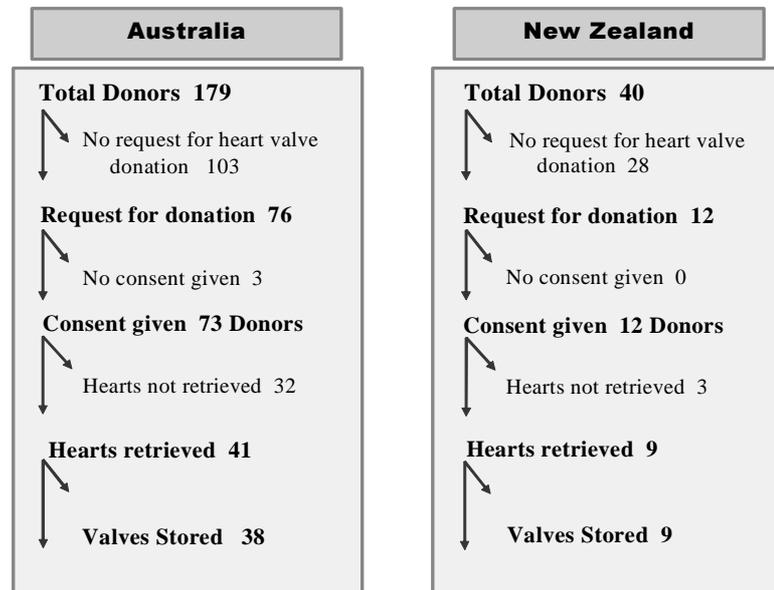


Figure 80

Age of Heart Valve Donors 1999 - 2003

	Year	Age Groups								Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	
Australia	1999	3	3	2	6	6	9	4	0	33
	2000	0	4	6	4	14	17	8	0	53
	2001	0	7	3	8	2	13	7	0	40
	2002	2	4	8	4	11	15	10	0	54
	2003	1	2	7	4	4	11	8	0	38
New Zealand	1999	1	3	2	1	3	5	4	0	19
	2000	0	1	3	0	3	8	4	0	19
	2001	0	0	2	1	3	4	3	0	13
	2002	0	2	1	2	6	7	2	0	20
	2003	0	0	4	1	4	0	0	0	9

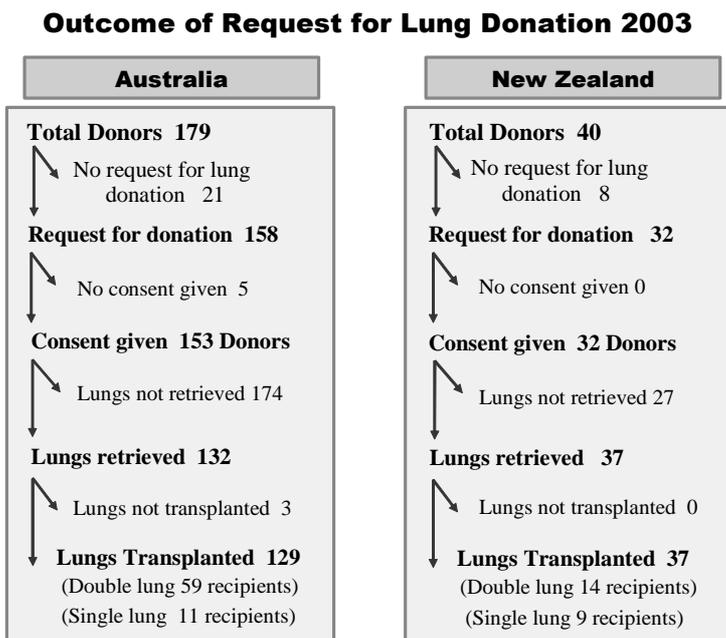
Figure 81

Regional Outcome of Requests for Heart Valve Donation 1989 - 2003

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z. *
Total Donors	604	943	67	689	50	373	30	231	2957	423
Requested	202	194	13	100	4	70	3	53	639	184
Consented	197	192	12	99	4	70	3	50	627	181
Retrieved	176	156	11	72	3	57	1	45	521	170
Transplanted or Stored	175	146	11	71	3	56	1	45	508	169

* New Zealand 1993 - 2003

Figure 82



Refer to Appendices for reasons lungs were not requested, not retrieved and not transplanted.

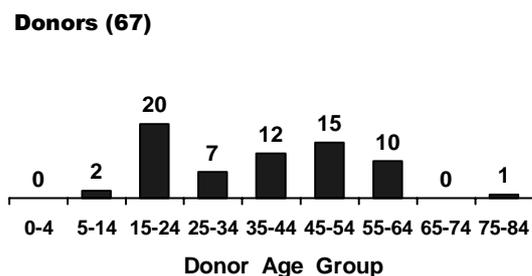
Figure 83

Age of Donors Providing Transplanted Lungs 1999 - 2003

	Year	Age Groups									Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	
Australia	1999	0	2	10	12	7	18	11	0	0	60
	2000	0	2	19	14	16	17	11	0	0	79
	2001	0	6	16	11	9	22	1	0	0	65
	2002	0	6	27	7	19	17	9	0	0	85
	2003	0	2	20	7	12	15	10	0	1	67
New Zealand	1999	0	0	0	0	2	5	1	0	0	8
	2000	0	0	2	2	2	8	0	0	0	14
	2001	0	0	3	0	2	4	3	0	0	12
	2002	0	0	0	0	8	2	2	0	0	12
	2003	0	1	5	3	8	0	2	0	0	19

Figure 84

Age of Donors Providing Transplanted Lungs - Australia 2003



Age of Donors Providing Transplanted Lungs - New Zealand 2003

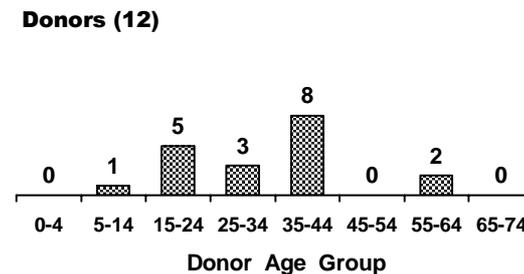
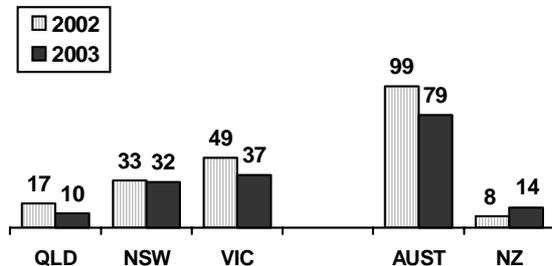
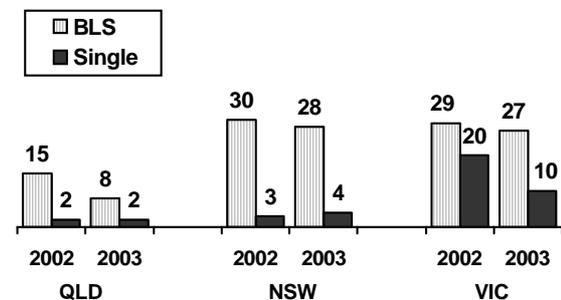


Figure 85**Lung Transplant Recipients 2002 - 2003
by Transplant State - Australia and NZ****Bilateral Sequential (Double) and Single
Lung Transplants by State 2002 - 2003****Figure 86****Regional Outcome of Requests for Lung Donation 1989 - 2003**

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	604	943	67	689	50	373	30	231	2957	423
Requested	540	758	60	511	40	243	23	150	2325	279
Consented	503	710	55	482	38	233	22	139	2182	274
Retrieved x	321	559	49	401	40	212	24	126	1732	201
Transplanted x	294	536	48	363	40	200	23	122	1626	185

x Number of Lungs

** New Zealand 1993 -2003

DONOR LUNG FUNCTION

In 2003, 32 Australian lung donors (47%) and 16 New Zealand lung donors (84%) had a bronchoscopy.

There were 12 lung donors in Australia who had chest trauma: these included pneumothorax (4), contusions (4), chest drains (2) and fractures (2). New Zealand had one donor with a (R) lung contusion.

Australia

The arterial blood gases were taken on 100% FiO₂ and PEEP of 5 cm. Six donors had a PEEP >5 cm and two had none recorded. The results from 60 lung donors in 2003 show 25% (15) to be acidotic (pH < 7.36) and 22% (13) to be alkalotic (pH > 7.44).

Oxygenation measured as PaO₂ ranged from 289-656 mmHg with a median of 460.5 mmHg.

PaCO₂ ranged from 27.7-66.0 mmHg with a median of 38.0 mmHg.

New Zealand

The arterial blood gas results from 19 lung donors in 2003 shows 12% (2) to be acidotic (pH < 7.36) and 24% (4) to be alkalotic (pH > 7.44).

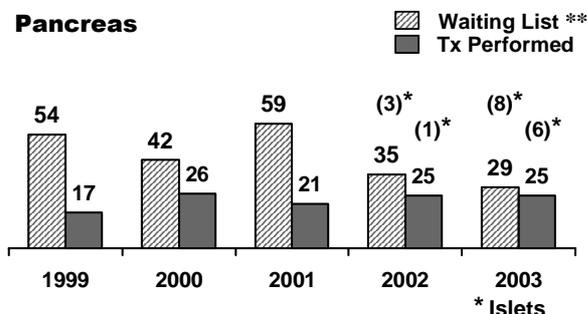
Oxygenation measured as PaO₂ ranged from 243-630 mmHg with a median of 434 mmHg.

PaCO₂ ranged from 26.0-78.0 mmHg with a median of 37.0 mmHg.

PANCREAS DONATION

Figure 87

Waiting List vs Cadaver Transplants Australia 1999 - 2003



There were 25 combined kidney/pancreas transplants performed in 2003: twenty at Westmead Hospital, NSW and five at Monash Medical Centre, Victoria.

The first combined kidney/pancreas transplant was performed in New Zealand in August 1998, followed by two in 1999, three in 2000, 2001, two in 2002 and six in 2003.

** NOMS (National Organ Matching Service)

Figure 88

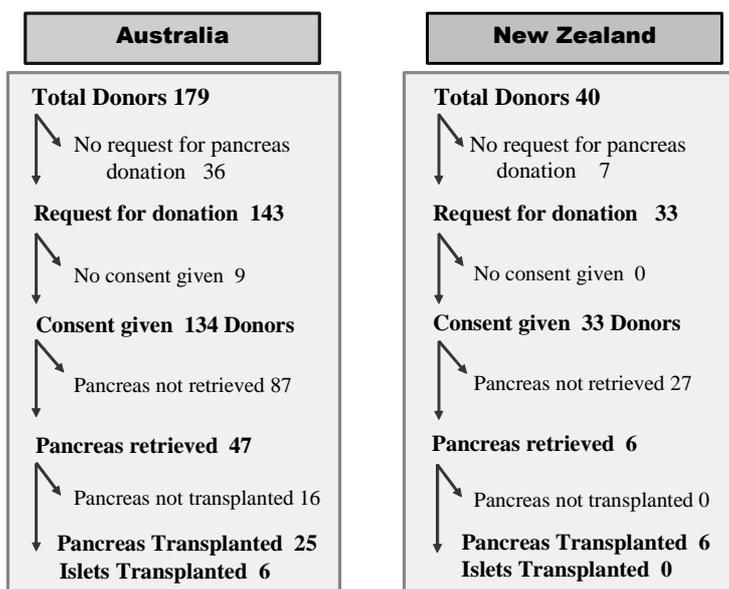
Waiting List

Numbers of Patients on Waiting List	Aust.	N.Z.
* Number of Patients with Diabetes Type 1 on dialysis (Sept 2003)	216	52
Patient < 45 years of age	103	30
Patient < 55 years of age	175	46
Number of Patients on Kidney Transplant Waiting List	1488	370
Number of Patients on Kidney Pancreas Transplant Waiting List	29	4
Number of patients on Islet Transplant Waiting List	8	0

Reference: * ANZDATA Registry

Figure 89

Outcome of Request for Pancreas Donation 2003



Refer to Appendices for reasons pancreas were not requested, not retrieved and not transplanted.

Figure 90

Age of Donors Providing Transplanted Pancreas 1999 - 2003

	Year	Age Groups						Total	
		00-04	05-14	15-24	25-34	35-44	45-54		55-64
Australia	1999	0	2	8	3	3	1	0	17
	2000	0	0	9	9	6	2	0	26
	2001	0	2	10	3	5	1	0	21
	2002	0	1	14	6	2	2	0	25
	2003	0	0	14	4	7	0	0	25
New Zealand	1999	0	0	0	0	2	0	0	2
	2000	0	0	3	0	0	0	0	3
	2001	0	0	1	0	2	0	0	3
	2002	0	0	1	0	0	1	0	2
	2003	0	0	3	2	1	0	0	6

Figure 91

Age of Donors Providing Transplanted Islets 2002 - 2003

	Year	Age Groups						Total	
		00-04	05-14	15-24	25-34	35-44	45-54		55-64
Australia	2002	0	0	0	1	0	0	0	1
	2003	0	0	1	0	3	0	2	6

Figure 92

Age of Donors Providing Transplanted Pancreas and Islets - Australia 2003

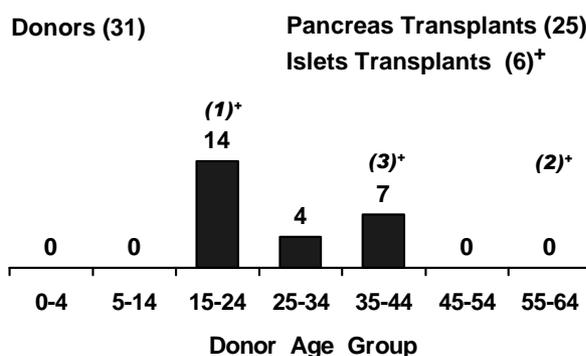


Figure 93

Regional Outcome of Requests for Pancreas Donation 1989 - 2003

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	604	943	67	689	50	373	30	231	2957	423
Requested	499	724	60	345	20	109	7	72	1836	180
Consented	436	683	55	317	17	89	7	53	1657	173
Retrieved	22	188	16	112	6	22	0	42	408	26
Transplanted	16	130	9	58	6	14	0	0	233	17
Pancreas Islets	0	5	1	0	0	1	0	0	7	0

** New Zealand 1993 -2003

PANCREAS SPECIAL SECTION

By Ms KAREN WC CHAN AND MR PAUL ROBERTSON *

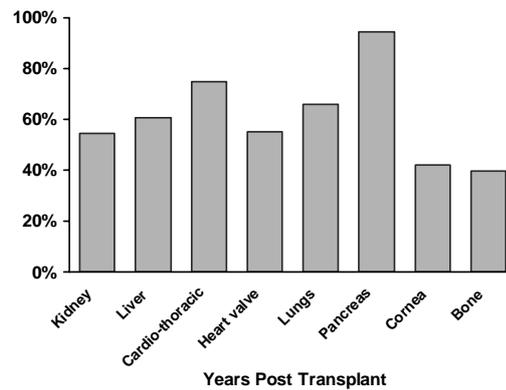
Data derived from the Australia and New Zealand Pancreas Registry, Westmead Hospital, New South Wales.
 * For further information, please contact: Paul_Robertson@wsahs.nsw.gov.au

There have been 268 pancreas transplants in Australia and New Zealand between November 1984 and December 2003. No activity was recorded in 1985 and 1986. Of these, six had a second transplant. Simultaneous pancreas-kidney transplant (SPK) was the major transplant by

category of 96% (256 out of 268). The following demonstrates the pancreas graft survival for SPK recipients stratified by selected donor details. These observations are then compared to the graft survival in other organs (noted by # in the text).

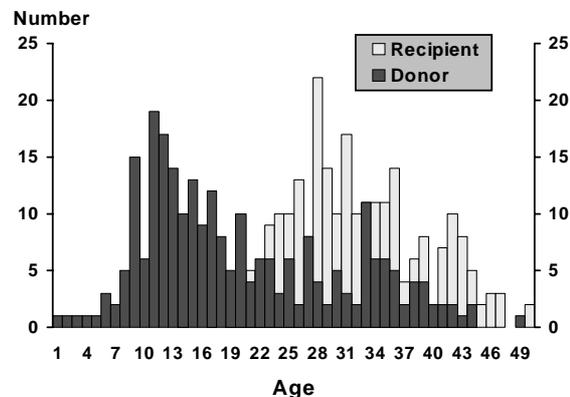
Pancreas donors have the highest proportion of donors (94%) aged less than 45 years than any other organ donations. This is followed by Cardio-thoracic donors (75%). #

Proportion of Donors Aged Less Than 45 According to Organs Donated 1988 - 2002



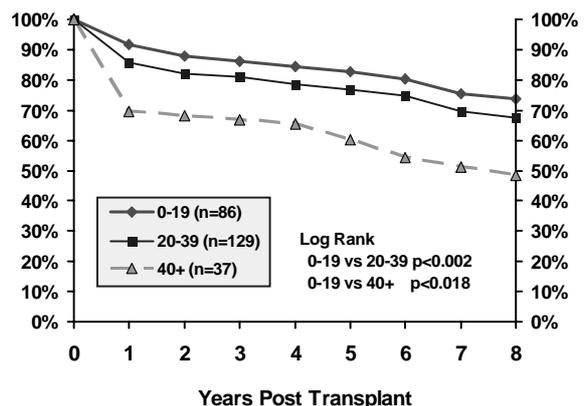
Pancreas donor age ranged from 4-55 years with a median of 23 years (standard deviation: 10.3). The age range for SPK recipients was 20-56 years with a median of 37 years (standard deviation: 7.05). Eighty percent of SPK recipients are aged below 45 years compared to 94% of pancreas donors.

Age Distribution of Pancreas Donors and SPK Recipients 1984 - 2003



Pancreas graft survival reduced significantly with the advance of donor age. One year pancreas graft survival from donors aged 0-19, 20-39, and >= 40 years were 92%, 86% and 69% respectively. Five year pancreas graft survival from donors aged 0-19, 20-39, and >= 40 years were 83%, 77% and 60% respectively.

Primary Cadaver Graft Survival 1984 - 2003 According to Donor Age Group

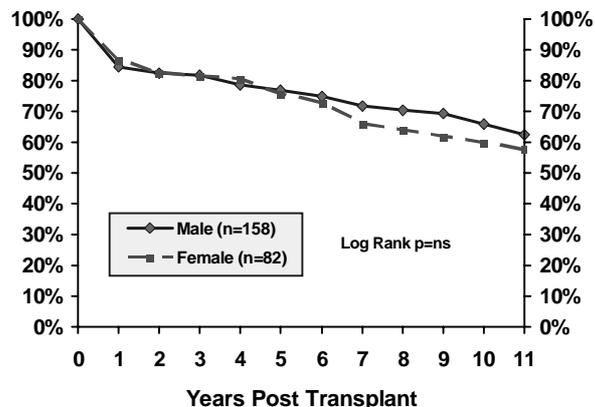


Graft survival is significantly different among age groups in liver (ANZODR 1998, 2003), kidney (1997, 2001) but not in heart (ANZODR 1999).

**Primary Cadaver Graft Survival 1984 - 2003
According to Gender**

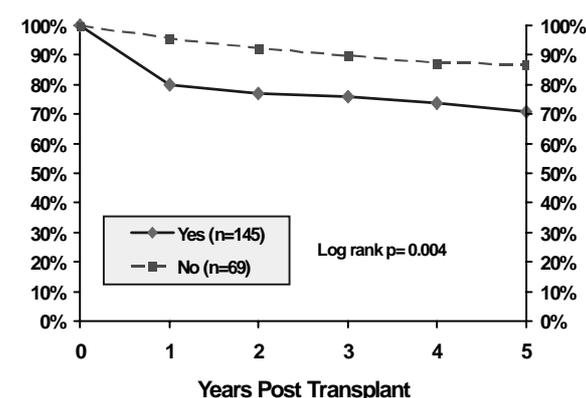
Pancreas graft survival was similar between male and female donors.

No difference in graft survival was observed in kidney (ANZODR 1997, 2001), liver (ANZODR 1998, 2003) and heart (ANZODR 1999).



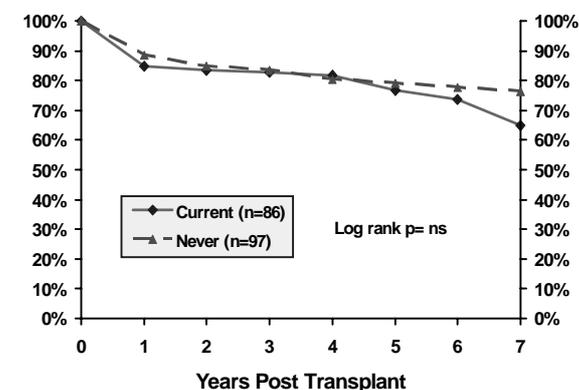
**Primary Cadaver Graft Survival 1984 - 2003
According to Use of DDAVP / Pitressin in Donor**

Pancreas graft survival was three times significantly higher from donors who had not received DDAVP/Pitressin to those who did.



**Primary Cadaver Graft Survival 1994 - 2003
According to Donor's Status of Smoking**

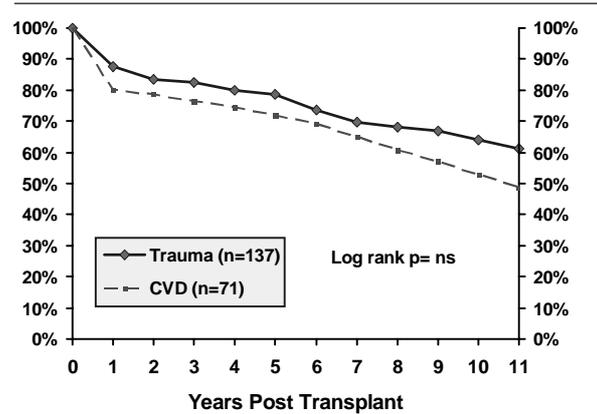
There is no difference in pancreas graft survival from donors who were current smokers and those who had never smoked.



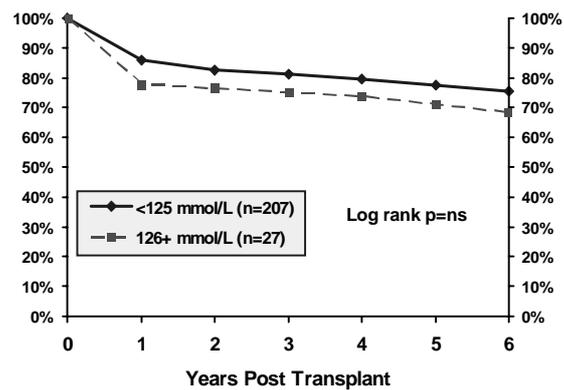
Although pancreas graft survival was higher from donors who died from trauma compared to donors dying from cerebrovascular disease, the difference was not statistically significant.

No association of graft survival to cause of death was observed in liver (ANZODR 1998) although a significant lower graft survival was found from donors dying from trauma than other causes of death in liver (ANZODR 2003) and kidney (ANZODR 1997, 2001).

**Primary Cadaver Graft Survival 1984 - 2003
According to Donor Cause of Death**

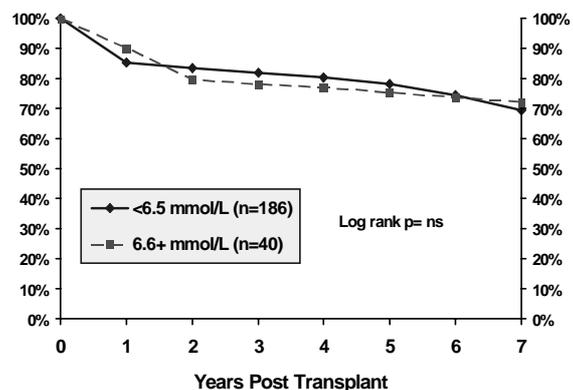


**Primary Cadaver Graft Survival 1984 - 2003
According to the Terminal Creatinine in Donor**



No difference is observed for pancreas graft survival from donors with terminal creatinine greater or less than 125 mmol/L.

**Primary Cadaver Graft Survival 1984 - 2003
According to the Terminal Urea in Donor**



There is no difference in pancreas graft survival between donors with terminal urea less than 6.5 mmol/L to those with a level over 6.6 mmol/L.

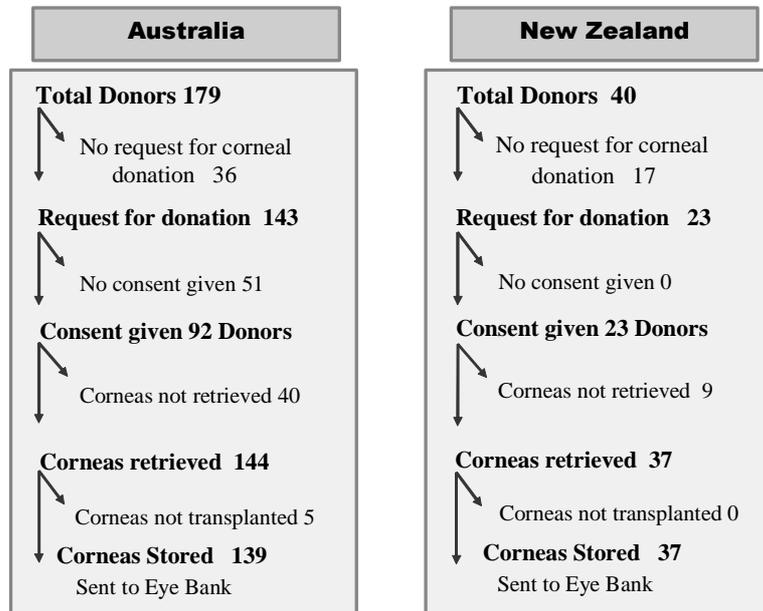
CORNEAL DONATION

This section refers only to corneas donated from solid organ donors. It does not include any cases of cornea only donation. Full data is available from

The Australian Corneal Graft Registry (Editors K.A. Williams, S.M. Muehlberg, C. Bartlett and D.J. Coster), Flinders Medical Centre, Bedford Park 5042, South Australia.

Figure

Outcome of Request for Corneal Donation 2003



Refer to Appendices for reasons cornea were not requested, not retrieved and not transplanted.

Figure 101

Age of Corneal Donors 1999 - 2003

	Year	Age Groups										Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
Australia	1999	0	3	10	13	12	19	24	7	2	0	90
	2000	0	2	10	10	14	21	23	8	1	0	89
	2001	0	5	11	8	9	29	15	6	2	0	85
	2002	1	4	18	5	16	23	25	6	2	0	100
	2003	0	2	13	4	6	25	12	6	2	1	71
New Zealand	1999	0	0	0	1	2	2	2	1	0	0	8
	2000	0	0	1	0	1	8	0	1	0	0	11
	2001	0	0	3	1	1	3	4	1	0	0	13
	2002	0	0	0	1	6	5	3	0	0	0	15
	2003	0	0	7	1	7	1	3	0	0	0	19

Figure 102

Regional Outcome of Requests for Corneal Donation 1989 - 2003

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	604	943	67	689	50	373	30	231	2957	423
Requested	556	825	59	584	34	262	9	185	2514	240
Consented	390	611	35	453	25	159	6	114	1793	184
Retrieved x	573	1148	59	887	45	285	2	214	3213	304
Gone to Eye Bank xx	563	897	46	865	42	276	2	204	2895	300

x Number of Corneas xx Gone to Eye Bank - Transplanted later

** New Zealand 1993 -2003

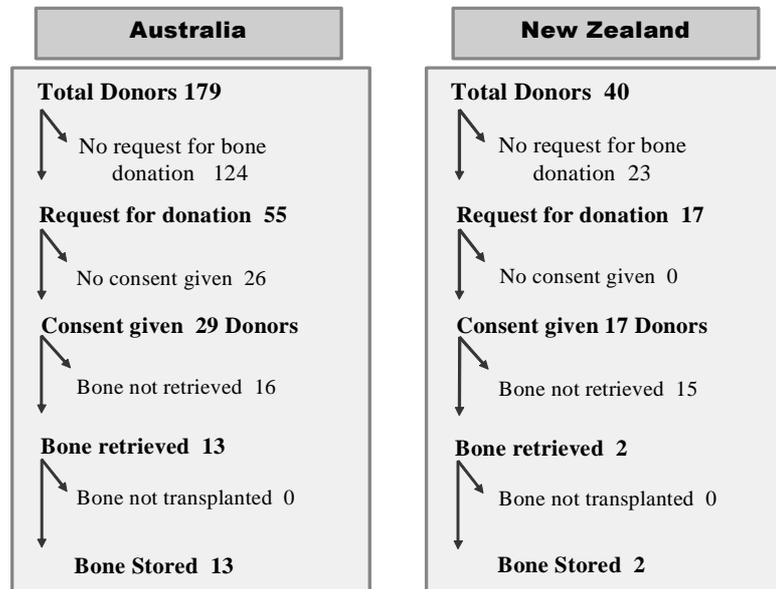
BONE DONATION

There were thirteen bone donations from the solid organs in Australia and two from New Zealand in 2003.

The majority of bone donations are from tissue donors. Many states have logistical difficulties retrieving bone for transplantation.

Figure

Outcome of Request for Bone Donation 2003



Refer to Appendices for reasons bones were not requested, not retrieved and not transplanted.

Figure 104

Age of Bone Donors 1999 - 2003

	Year	Age Groups								Total	
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74		75-84
Australia	1999	0	0	2	2	2	4	4	1	0	15
	2000	0	0	0	1	3	8	3	0	1	16
	2001	0	0	0	2	1	7	4	1	0	15
	2002	0	0	2	1	3	1	0	0	0	7
	2003	0	0	4	4	1	3	1	0	0	13
New Zealand	1999	0	0	0	0	0	0	0	0	0	0
	2000	0	1	0	0	0	1	0	0	0	2
	2001	0	0	0	0	0	0	0	0	0	0
	2002	0	0	0	0	2	0	0	0	0	2
	2003	0	0	1	0	1	0	0	0	0	2

Figure 105

Regional Outcome of Bone Donation 1989 - 2003

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	604	943	67	689	50	373	30	231	2957	423
Requested	469	76	4	48	4	146	3	114	864	150
Consented	325	56	4	38	2	61	3	67	556	113
Retrieved	126	8	0	8	2	42	0	42	228	36
Transplanted or Stored	124	8	0	2	2	42	0	41	219	36

* New Zealand 1993 -2003

TERMINAL MANAGEMENT

Time from Admission to Brain Death

Australia

There continues to be a decrease in the median time from admission to brain death. In 2003 it was 29 hours compared to 43 in 2000, 31 in 2001 and 30 last year.

Eleven percent of donors were in hospital for more than five days.

New Zealand

Thirty five percent of donors were certified brain dead within 24 hours of hospital admission.

However in 27% (11) of donors, the time of admission was unknown.

No donor was in hospital for more than five days.

Figure 106

Time from Admission to Brain Death 1999 - 2003												
	Year	Hours								Unknown	Median (hours)	No. of Donors
		0-23	24-47	48-71	72-95	96-119	120-143	144-167	>=168			
Australia	1999	38%	26%	13%	5%	6%	2%	2%	7%	1%	33	164
	2000	24%	31%	13%	11%	6%	4%	2%	9%	0%	43	196
	2001	36%	34%	9%	6%	2%	4%	2%	7%	0%	31	185
	2002	39%	28%	16%	4%	4%	2%	1%	6%	0%	30	206
	2003	37%	32%	10%	7%	3%	2%	1%	8%	0%	29	179
New Zealand	1999	41%	31%	8%	5%	2%	5%	0%	8%	0%	25	39
	2000	42%	24%	12%	10%	7%	0%	0%	5%	0%	28.5	41
	2001	59%	27%	5%	3%	3%	0%	0%	3%	0%	21	37
	2002	44%	33%	3%	6%	3%	0%	3%	8%	6%	26	38
	2003	35%	20%	5%	5%	8%	0%	0%	0%	27%	24	40

Figure 107

Australian States Time from Admission to Brain Death 2003											
States	Hours								Median (hours)	No. of Donors	
	0-23	24-47	48-71	72-95	96-119	120-143	144-167	>=168			
Queensland	40%	30%	13%	5%	0%	0%	2%	10%	26.0	40	
New South Wales	33%	30%	13%	7%	2%	2%	0%	13%	37.9	46	
ACT	50%	25%	0%	12.5%	0%	12.5%	0%	0%	22.1	8	
Victoria	31%	36%	9.5%	9.5%	5%	0%	0%	9%	33.0	42	
Tasmania	0%	100%	0%	0%	0%	0%	0%	0%	29.9	2	
South Australia	41%	27%	9%	9%	5%	5%	0%	4%	26.3	22	
Northern Territory	0%	0%	0%	100%	0%	0%	0%	0%	72.2	1	
Western Australia	50%	33%	6%	0%	11%	0%	0%	0%	23.7	18	

Figure 108

Time from Ventilation to Brain Death 1999 - 2003												
	Year	Hours								Unknown	Median (hours)	No. of Donors
		0-23	24-47	48-71	72-95	96-119	120-143	144-167	>=168			
Australia	1999	42%	28%	10%	6%	5%	2%	<1%	5%	1%	27.8	164
	2000	26%	35%	12%	11%	6%	4%	<1%	6%	0%	39.2	196
	2001	40%	32%	10%	7%	2%	3%	2%	4%	0%	28.5	185
	2002	38%	31%	16%	4%	3%	1%	1%	5%	<1%	29.3	206
	2003	39%	35%	7%	6%	4%	2%	<1%	12%	0%	27.0	179
New Zealand	1999	46%	33%	10%	5%	3%	0%	0%	3%	0%	24.5	39
	2000	49%	22%	10%	10%	7%	0%	0%	2%	0%	26	41
	2001	65%	24%	3%	3%	3%	0%	0%	2%	0%	17.4	37
	2002	42%	32%	5%	5%	2.5%	2.5%	0%	0%	11%	24.8	38
	2003	43%	18%	2%	5%	5%	2%	0%	0%	25%	21.1	40

Time from Brain Death to Aortic Cross Clamp

Australia

Forty five percent of donors had organs retrieved within twelve hours of the certification of brain death in 2003.

The median time was 13.4 hours.

New Zealand

Eighty percent of donor organs were retrieved within twelve hours in 2003.

The median time was 9.9 hours.

Figure 109

Time from Brain Death to Aortic Cross Clamp 1999 - 2003											
Hours	Australia					New Zealand					
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003	
<= 6	9%	10%	6%	4%	3%	36%	34%	19%	18%	12.5%	
7 - 12	60%	53%	53%	48%	42%	54%	54%	65%	61%	67.5%	
13-18	26%	31%	32%	39%	41%	2.5%	5%	14%	13%	17.5%	
19-24	3%	2%	4%	6%	7%	5%	2%	2%	3%	0%	
> 24	2%	4%	5%	3%	7%	2.5%	5%	0%	5%	2.5%	
Median Hours	11.3	11.6	12.1	12.8	13.4	8.1	9.0	9.5	9.5	9.9	
Number of Donors	163	195	183	204	178	39	41	37	38	40	
Non-Heart Beating Donors	1	1	2	2	1	0	0	0	0	0	

Figure 110

Australian States Time from Brain Death to Aortic Cross Clamp 2003								
	Qld	NSW	ACT	Vic.	Tas	SA	NT	WA
<= 6 hours	2%	5%	0%	2%	0%	9%	0%	0%
7 - 12 hours	48%	38%	25%	41%	0%	55%	0%	44%
13-18 hours	38%	53%	38%	45%	50%	27%	0%	28%
19-24 hours	5%	2%	25%	7%	50%	0%	100%	11%
> 24 hours	7%	2%	12%	5%	0%	9%	0%	17%
Median Hours	13.0	13.6	16.8	13.3	19.1	10.9	19.0	14.6
Number of Donors	40	45	8	42	2	22	1	18

DONOR MAINTENANCE

Drugs for Maintenance of the Donor (given in the Intensive Care/Critical Care Unit)

Australia

There were 5% (9) of donors who did not require inotropic support in 2003.

Antidiuretic agents (desmopressin/vasopressin) were prescribed to 68% (122) of all donors.

MAP <50 mm Hg

Mean arterial blood pressure (MAP) <50 mm Hg was recorded in 9% (17) of donors in Australia.

Eight donors had a duration of less than one hour, four one hour and five greater than one hour.

Range was fifteen minutes to four hours.

New Zealand

In 2003 there were 5% (2) of donors who did not require inotropic support.

Antidiuretic agents were prescribed to 50% (20) of all donors.

MAP <50 mm Hg

One donor was reported with a mean arterial blood pressure (MAP) <50 MM Hg with a duration of one hour.

Figure 111

Donor Maintenance 1999 - 2003										
Drugs	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Number of Donors	(164)	(196)	(185)	(206)	(179)	(39)	(41)	(37)	(38)	(40)
Dopamine	39	30	30	18	12	15	13	12	10	9
Adrenaline	47	52	42	42	34	7	2	4	2	0
Noradrenaline	80	126	121	151	138	26	23	26	31	28
Aramine	14	5	7	7	12	2	4	4	0	2
Dobutamine	3	5	3	5	3	0	0	0	0	0
Desmopressin/Vasopressin	118	116	123	134	122	26	17	20	14	20

NB: Donors may be given more than one drug

Figure 112

Australian States Donor Maintenance 2003 (2002)								
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Number of Donors	40 (44)	46 (55)	8 (6)	42 (47)	2 (6)	22 (31)	1 (2)	18 (15)
Dopamine	5 (4)	4 (2)	0 (1)	2 (7)	1 (1)	0 (0)	0 (0)	0 (3)
Adrenaline	4 (6)	11 (11)	0 (0)	6 (6)	0 (1)	11 (17)	1 (0)	1 (1)
Noradrenaline	32 (32)	36 (45)	8 (5)	36 (37)	2 (3)	7 (12)	1 (2)	16 (15)
Aramine	1 (0)	6 (1)	1 (0)	4 (4)	0 (1)	0 (0)	0 (0)	0 (1)
Dobutamine	0 (0)	3 (1)	0 (1)	0 (1)	0 (0)	0 (0)	0 (0)	0 (2)
Desmopressin/Vasopressin	26 (24)	36 (44)	7 (6)	25 (28)	2 (0)	12 (21)	1 (0)	13 (11)

NB: Donors may be given more than one drug

TERMINAL TREATMENT

Terminal Treatment (provided in the Operating Theatres)

Australia

There were two donors who received no heparin of which one donor received no form of terminal treatment.

New Zealand

All forty donors received terminal treatment in 2003.

Figure 113

Terminal Treatment 1999 - 2003										
	Australia					New Zealand				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Number of Donors	(164)	(196)	(185)	(206)	(179)	(39)	(41)	(37)	(38)	(40)
Heparin	158	192	177	203	177	37	41	36	37	40
Methyl Prednisolone	159	179	166	186	157	5	1	0	2	4
Chlorpromazine	29	34	34	49	37	1	0	0	2	0
Mannitol	20	23	16	8	12	0	0	0	0	0
Prostacyclin	64	86	69	89	76	8	15	12	12	21

NB: Donors may be given more than one drug

Figure 114

	Australian States Terminal Treatment 2003 (2002)							
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Number of Donors	40 (44)	46 (55)	8 (6)	42 (47)	2 (6)	22 (31)	1 (2)	18 (15)
Heparin	39 (44)	46 (54)	8 (6)	42 (47)	2 (6)	22 (30)	1 (1)	17 (15)
Methyl Prednisolone	38 (43)	44 (55)	8 (6)	39 (45)	2 (6)	22 (29)	1 (1)	3 (1)
Chlorpromazine	29 (36)	0 (0)	1 (0)	3 (8)	0 (2)	3 (2)	0 (1)	1 (0)
Mannitol	0 (4)	1 (0)	0 (0)	1 (0)	0 (0)	9 (4)	1 (0)	0 (0)
Prostacyclin	19 (20)	20 (24)	2 (4)	17 (19)	1 (3)	8 (10)	0 (0)	9 (9)

NB: donors may be given more than one drug