

SUMMARY - AUSTRALIA

1. In 2002 there were: 206 donors (10 donors per million population [dpmp]) with 372 kidneys, 188 livers, 73 hearts, 66 double and 25 single lungs, and 25 pancreas transplanted into recipients. In addition there were 194 corneas, 54 heart valves and 7 bone donations which were sent to the appropriate tissue bank.
2. In 2002 the highest donor rate was in South Australia (20 dpmp), in Tasmania (13 dpmp) and the lowest in New South Wales and Western Australia (8 dpmp).
3. The mean age of donors in 2002 was 38.7 years, with an age range of 0.01 - 78.8 years.
4. In 2002, 51% of donors with a known occupation were classified as student, blue collar and professional workers. The majority of donors were Caucasoid and their religion was recorded as Christian.
5. In 2002, the major cause of death of donors was cerebrovascular accident (CVA) in 48%. Road trauma caused 26% of all donor deaths.
6. In 2002, consent for organ donation was sought in 57% of cases by the Intensive Care Unit Clinician, volunteered by the family in 10% of cases and sought by the Donor Coordinator in 30% of cases. Coronial inquiries were required in 45% of all donors in 2002.
7. The donation of more than one organ occurred in 81% of donors in 2002. The average number of organs transplanted from each donor was 3.5.
8. The consent rates for specific organs were: kidneys 100%, livers 99%, hearts 97%, lungs 96% and pancreas 91%.
9. In 2002, from donors where organs had been retrieved, 98% of kidneys, 95% of livers, 94% of hearts, 95% of lungs and 55% of pancreas were actually transplanted.
10. In 2002 Australia sent 11 livers and 1 heart to New Zealand.

SUMMARY - NEW ZEALAND

1. In 2002 there were: 38 donors (10 dpmp), which resulted in 69 kidneys, 37 livers, 8 hearts, 5 double and 3 single lungs, and 2 pancreas being transplanted into recipients. In addition 29 corneas, 20 heart valves and 2 bone donations were sent to the appropriate tissue bank.
2. The mean age of donors was 40.3 years in 2002, with an age range of 7.7 - 66.7 years.
3. The major cause of death in 2002 was cerebrovascular accident in 53%, followed by road trauma in 26%.
4. In 2002, 35% of donors with a known occupation were classified as students and white collar workers. The majority of donors were Caucasoid and their religion was recorded as Christian.
5. Consent for organ donation was sought in 66% of cases in 2002 by the Intensive Care Unit Clinician. There were 9 (24%) cases whereby consent was volunteered by the family. Coronial inquiries were required in 47% of all donors.
6. The donation of more than one organ occurred in 87% of donors in 2002. The average number of organs transplanted per donor was 3.2.
7. The consent rate for specific organs were 100% of kidneys, 100% livers, 100% hearts, 100% lungs and 96% pancreas.
8. In 2002, from donors where organs had been retrieved, 99% of kidneys, 97% of livers, 100% of hearts, 88% of lungs and 100% of pancreas were actually transplanted.
9. New Zealand has provided 16 kidneys, 183 livers, 14 hearts and 43 lungs to the Australian Transplant Programs since 1989.
In 2002, 5 livers, 2 hearts and 8 lungs were sent from New Zealand to Australia.

ORGAN DONORS IN AUSTRALIA AND NEW ZEALAND

Figure 1

Number of Donors 1998 - 2002 **					
	1998	1999	2000	2001	2002
Queensland	40 (12)	20 (6)	37 (10)	48 (13)	44 (12)
New South Wales +	63 (10)	48 (8)	55 (9)	47 (7)	55 (8)
ACT *	2 (4)	2 (4)	5 (10)	7 (14)	6 (12)
Victoria	40 (9)	42 (9)	44 (9)	40 (8)	47 (10)
Tasmania	0 (0)	6 (13)	1 (2)	3 (6)	6 (13)
South Australia	35 (24)	30 (20)	30 (20)	25 (17)	31 (20)
Northern Territory	3 (16)	3 (16)	2 (10)	2 (10)	2 (10)
Western Australia	13 (7)	13 (7)	22 (12)	13 (7)	15 (8)
Australia	196 (10)	164 (9)	196 (10)	185 (10)	206 (10)
New Zealand	46 (12)	39 (10)	41 (11)	37 (10)	38 (10)

() Donors Per Million of Population

+ NSW population excludes residents of the NSW Southern Area Health Service
 * ACT population includes residents of the NSW Southern Area Health Service
 Medical services in the ACT service the NSW Southern Area Health Region
 Population data - June 2002 - 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.

In 2002 donor figures include two donors from New South Wales who went to the operating room but organs were not retrieved because of a suspicious lung lesion in one and disease of the liver in the other (being the only suitable organ for transplantation for each donor).

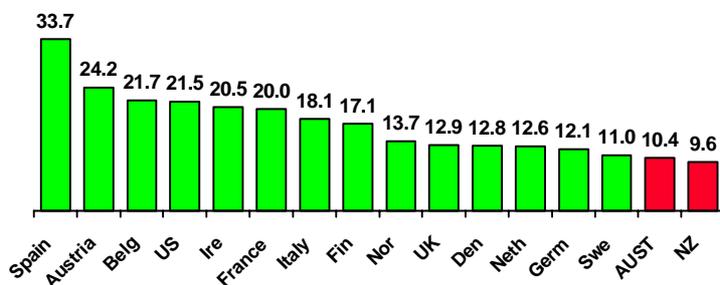
In 2002, there was a range between mainland States of 8 dpmp in New South Wales and Western Australia, to 20 dpmp in South Australia.

In New Zealand one donor was found to have a gastric tumour.

Figure 2

International Donor Statistics 2002

Donors PMP



Source: <http://www.msc.es/ont/ing/data/organo.asp>

Figure 2 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.

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 3 and 4).

Australian data on deaths for 2002 are not available until August of 2003. New Zealand data include 2002.

Figure 3

Donors per Thousand Deaths 1996 - 2002

Year	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
1996	1.6	1.5	4.8	1.5	0.3	2.2	3.9	1.1	1.5	1.3
1997	1.7	1.5	3.0	1.3	1.3	2.2	4.5	0.7	1.5	1.5
1998	1.8	1.4	1.6	1.2	0.0	3.0	3.6	1.2	1.5	1.8
1999	0.9	1.0	1.5	1.3	1.6	2.7	3.5	1.2	1.3	1.4
2000	1.7	1.2	3.9	1.4	0.3	2.5	2.2	2.1	1.5	1.5
2001	2.1	1.1	4.9	1.2	0.8	2.1	2.3	1.2	1.4	1.3
2002	-	-	-	-	-	-	-	-	-	1.3

Donor per thousand deaths less than 6 years

Figure 4

**Australian States
Comparison Between Donors per Million Population and Donors per
Thousand Deaths () 1996 - 2001**

Year	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
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)
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)
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)
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)
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)
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)

A further donor rate analysis is presented in Figure 5. The number of actual donors is compared to the number of deaths that are aged less than 65 years.

The age of less than 65 years was selected as being representative of the majority of the potential donor pool.

Figure 5

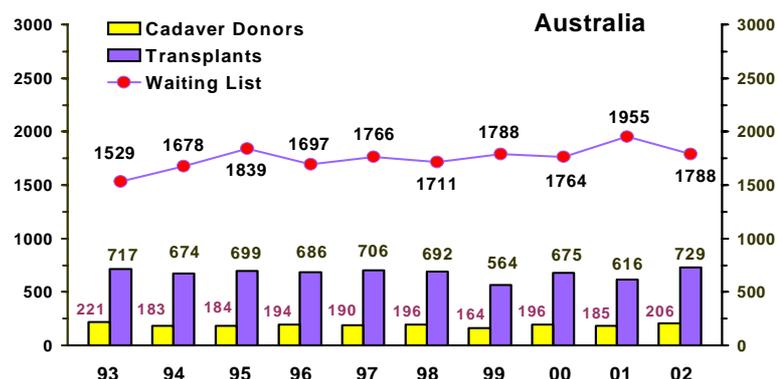
Donors per Thousand Deaths Aged less than 65 years 1997- 2001
() represents % of total deaths aged less than 65 years

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%)

Figure 6

Figure 6 shows the number of donors, transplants, and patients on the waiting list from 1993 to 2002.

Number of Cadaveric Donors and Solid Organ Transplants and Patients on the Waiting List 1993 - 2002



DONOR POSTCODES

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

In the last three years (2000-2002) there have been seven donors from overseas.

In 2002, Queensland had two donors from New South Wales and one each from the Northern Territory and overseas; Victoria had one donor each from Queensland, New South Wales and South Australia; South Australia had one donor from Victoria and the Northern Territory had one overseas donor.

DONOR PROFILE

Age and Gender Distribution

The mean age for donors decreased to 38.7 years in 2002 from 40.0 years in 2001. In Australia in 2002 there were 7% (14) donors 65 years or older. This is a slight decrease from 9% (16) in 2001. The oldest donor was 78.8 years (fig 7).

When comparing Australian mainland States, the mean age ranged from 44 years in Victoria to the lowest 26.5 years in Western Australia (fig 8).

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

Figures 10-11 show a breakdown of donors according to age and gender in Australia and New Zealand for the years 2000-2002.

Figure 7

Age of Male and Female Donors 1997 - 2002

	Year	Mean (years)			Median (years)			Range in Years
		All	Female	Male	All	Female	Male	
Aust.	1997	40.4	42.4	39.3	43.1	41.9	43.6	2.5 - 76.1
	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
N.Z.	1997	34.8	37.3	33.2	26.4	46.0	23.7	7.1 - 71.6
	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

Figure 8

Australian States Mean Age of Donors 1997 - 2002

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.
1997	37.5	39.6	48.3	43.8	38.3	45.3	33.5	28.7	40.4
1998	35.7	42.7	42.1	43.4	0	40.3	44.7	33.9	40.4
1999	40.0	42.4	49.9	40.1	35.8	35.4	24.3	36.5	39.3
2000	40.3	40.5	30.3	45.1	63.1	39.0	44.3	39.7	41.1
2001	40.3	40.8	35.1	41.4	30.8	43.0	33.4	31.5	40.0
2002	34.8	40.8	32.1	44.0	42.7	38.3	49.8	26.5	38.7

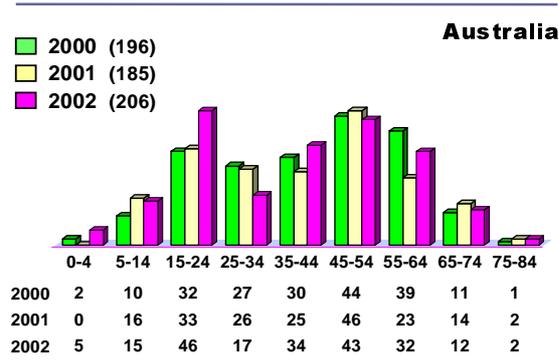
Figure 9

Gender of Donors 1989 - 2002

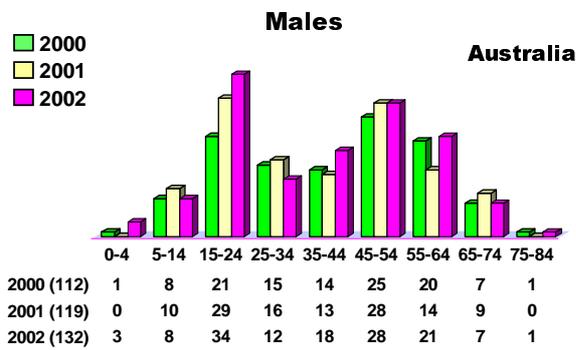
	Female	Male	Total
Queensland	193 (34%)	371 (66%)	564
New South Wales	369 (41%)	528 (59%)	897
ACT	20 (34%)	39 (66%)	59
Victoria	267 (43%)	350 (57%)	617
Tasmania	13 (27%)	35 (73%)	48
South Australia	142 (40%)	209 (60%)	351
Northern Territory	4 (14%)	25 (86%)	29
Western Australia	91 (43%)	122 (57%)	213
Australia	1099 (40%)	1679 (60%)	2778
New Zealand 1993-2002	169 (44%)	214 (56%)	383

Figure 10

Age Group of Cadaver Donors



Age and Gender Distribution of Donors



Age and Gender Distribution of Donors

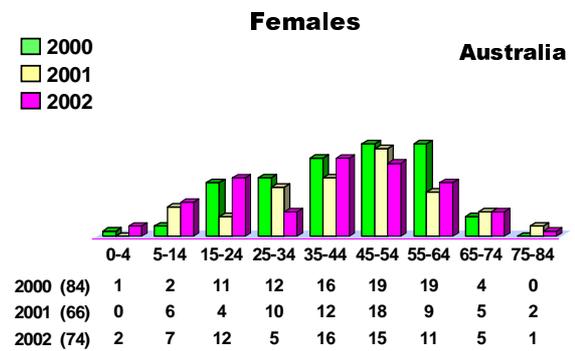
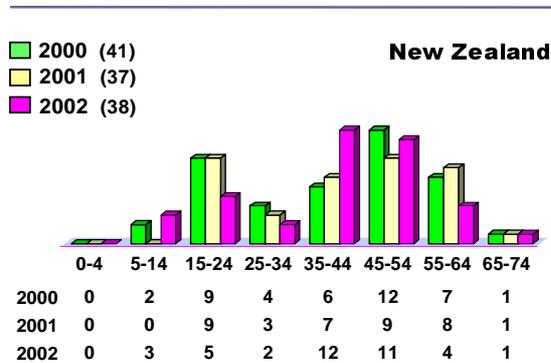
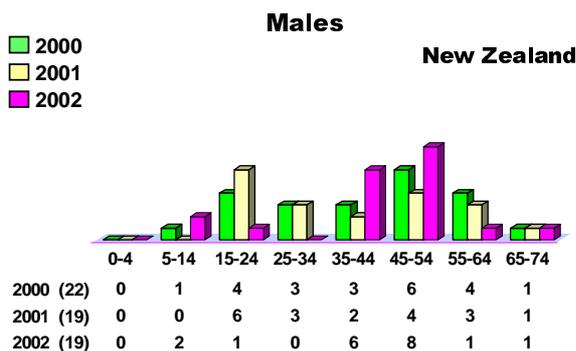


Figure 11

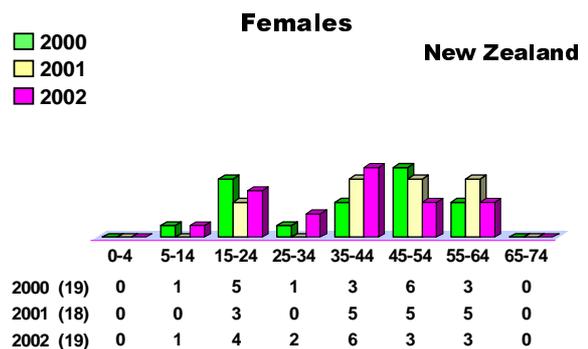
Age Group of Cadaver Donors



Age and Gender Distribution of Donors



Age and Gender Distribution of Donors



CAUSE OF DEATH - ALL DONORS

Figure 12

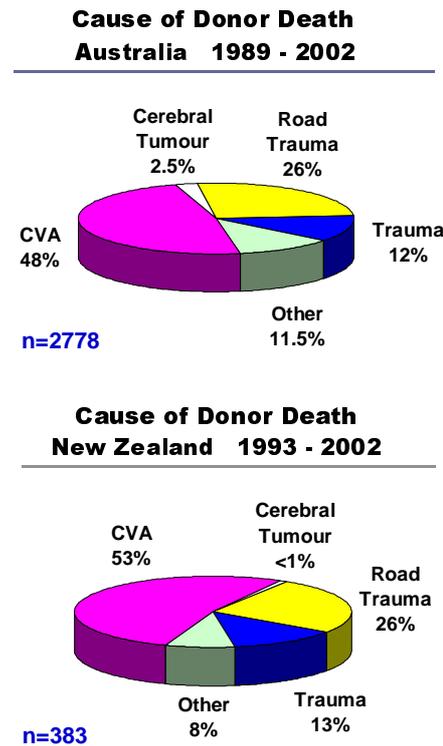


Figure 12 shows the cause of death for all organ donors in Australia since 1989 and for New Zealand since 1993. The primary cause of death was cerebrovascular accident (CVA) (48% of all Australian donors and 53% of all New Zealand donors).

Figure 13 shows detailed cause of death by each gender for 2002.

Figure 14 shows that CVA is responsible for 85% of all deaths in donors 55 years and older, whereas in the 15-34 year age group, trauma accounted for 56% of all deaths, compared to 61% in 2001.

Figures 18-20 show the occupation, ethnic origin and religious denomination of donors in Australia and New Zealand for 1998-2002.

Figure 13

Cause of Donor Death 2002

Causes of Death		Australia			New Zealand		
		Male	Female	Total	Male	Female	Total
CVA	Cerebral Infarct	8	3	11	2	1	3
	Intracranial Haemorrhage	30	15	45	3	3	6
	Subarachnoid Haemorrhage	26	25	51	4	8	12
Road Trauma	Cyclist	3	0	3	1	0	1
	Motor Bike Accident	6	0	6	1	0	1
	Motor Vehicle Accident	17	7	24	1	3	4
	Pedestrian	6	4	10	2	0	2
	Other Road Accident	2	1	3	0	0	0
Other Trauma	Fall	7	1	8	2	1	3
	Felony / Crime - Assault	3	0	3	1	0	1
	Gunshot	3	0	3	0	0	0
	Other Trauma	3	2	5	0	1	1
Hypoxia Anoxia	Anaphylaxis	0	1	1	0	0	0
	Asphyxiation	1	0	1	0	0	0
	Asthma	1	5	6	0	0	0
	Carbon Monoxide	1	0	1	1	0	1
	Cardiac Arrest	5	2	7	0	0	0
	Choking	1	0	1	0	0	0
	Drowning	2	0	2	0	1	1
	Epilepsy	1	0	1	0	0	0
	Hanging	1	1	2	0	0	0
	Ischaemic Brain Damage	0	1	1	0	0	0
	Ischaemic Encephalopathy	1	0	1	0	0	0
	Overdose	0	1	1	1	0	1
	Poisoning	0	0	0	0	1	1
Revision of VP shunt	1	0	1	0	0	0	
Other	Cerebral Oedema	0	1	1	0	0	0
	Glioma (malignant)	0	1	1	0	0	0
	Sting	1	0	1	0	0	0
	Meningioma (benign)	0	2	2	0	0	0
	Meningitis (meningococcal)	1	1	2	0	0	0
	Meningitis (organism unknown)	1	0	1	0	0	0
Total		132	74	206	19	19	38

Figure 14

Cause of Donor Death Related to Age Group 2002

	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	2	13	53	39	107	1	1	14	5	21
Trauma (road)	8	27	9	2	46	2	3	3	0	8
Trauma (non-road)	4	8	4	3	19	0	2	3	0	5
Other	6	15	11	2	34	0	1	3	0	4
Total	20	63	77	46	206	3	7	23	5	38

Figure 15

**Australian States
Cause of Donor Death Related to Age Group 2002**

		Age Groups				Total
		0-14	15-34	35-54	55 on	
Queensland	CVA	1	2	14	4	21
	Trauma (road)	5	5	2	0	12
	Trauma (non-road)	1	3	1	1	6
	Other	1	2	2	0	5
	Total	8	12	19	5	44
NSW	CVA	0	4	17	10	31
	Trauma (road)	1	4	3	0	8
	Trauma (non-road)	2	3	0	1	6
	Other	0	6	4	0	10
	Total	3	17	24	11	55
ACT	CVA	0	1	2	0	3
	Trauma (road)	0	0	1	0	1
	Trauma (non-road)	0	0	0	0	0
	Other	1	0	1	0	2
	Total	1	1	4	0	6
Victoria	CVA	0	2	10	18	30
	Trauma (road)	1	7	0	2	10
	Trauma (non-road)	0	1	0	0	1
	Other	2	2	2	0	6
	Total	3	12	12	20	47
Tasmania	CVA	0	1	2	1	4
	Trauma (road)	0	1	0	0	1
	Trauma (non-road)	0	0	1	0	1
	Other	0	0	0	0	0
	Total	0	2	3	1	6
South Australia	CVA	0	2	5	6	13
	Trauma (road)	0	6	2	0	8
	Trauma (non-road)	0	0	1	0	1
	Other	2	4	1	2	9
	Total	2	12	9	8	31
Northern Territory	CVA	0	0	1	0	1
	Trauma (road)	0	0	0	0	0
	Trauma (non-road)	0	0	1	0	1
	Other	0	0	0	0	0
	Total	0	0	2	0	2
Western Australia	CVA	1	1	2	0	4
	Trauma (road)	1	4	1	0	6
	Trauma (non-road)	1	1	0	1	3
	Other	0	1	1	0	1
	Total	3	7	4	1	15

Figure 16

Cause of Donor Death 1989 - 2002

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z. *
CVA	42%	51%	47%	53%	50%	45%	24%	46%	48%	53%
Trauma (road)	30%	24%	19%	24%	25%	24%	38%	37%	26%	26%
Trauma (non-road)	16%	12%	15%	8%	19%	12%	21%	7%	12%	13%
Other	12%	13%	19%	15%	6%	19%	17%	10%	14%	8%

* N.Z. 1993 -2002

Figure 17

Cause of Donor Death 1997 - 2002

		1997	1998	1999	2000	2001	2002
Queensland	CVA	23	20	12	17	25	21
	Trauma (road)	6	9	5	9	12	12
	Trauma (non-road)	4	5	1	5	6	6
	Other	4	6	2	6	5	5
	Total	37	40	20	37	48	44
NSW	CVA	37	32	25	27	24	31
	Trauma (road)	14	15	8	12	7	8
	Trauma (non-road)	6	8	9	9	3	6
	Other	8	8	6	7	13	10
	Total	65	63	48	55	47	55
ACT	CVA	2	2	1	2	3	3
	Trauma (road)	2	0	0	2	2	1
	Trauma (non-road)	0	0	1	1	0	0
	Other	0	0	0	0	2	2
	Total	4	2	2	5	7	6
Victoria	CVA	30	23	29	27	22	30
	Trauma (road)	3	6	7	8	7	10
	Trauma (non-road)	4	2	1	2	1	1
	Other	5	9	5	7	10	6
	Total	42	40	42	44	40	47
Tasmania	CVA	3	0	4	1	2	4
	Trauma (road)	1	0	2	0	0	1
	Trauma (non-road)	1	0	0	0	1	1
	Other	0	0	0	0	0	0
	Total	5	0	6	1	3	6
South Australia	CVA	14	17	13	14	12	13
	Trauma (road)	3	6	7	5	7	8
	Trauma (non-road)	3	2	3	4	2	1
	Other	5	10	7	7	4	9
	Total	25	35	30	30	25	31
Northern Territory	CVA	1	1	0	1	1	1
	Trauma (road)	1	0	2	1	1	0
	Trauma (non-road)	1	1	0	0	0	1
	Other	1	1	1	0	0	0
	Total	4	3	3	2	2	2
Western Australia	CVA	2	6	4	13	6	4
	Trauma (road)	5	5	6	4	5	6
	Trauma (non-road)	1	1	3	1	1	3
	Other	0	1	0	4	1	2
	Total	8	13	13	22	13	15
New Zealand	CVA	13	22	24	24	22	21
	Trauma (road)	18	11	8	6	9	8
	Trauma (non-road)	9	6	4	5	4	5
	Hypoxia-Anoxia	1	1	3	4	0	4
	Cerebral Tumour	0	2	0	0	0	0
	Other	1	4	0	2	2	0
	Total	42	46	39	41	37	38

Figure 18

Occupation of Donors 1998 - 2002

	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Blue collar	28	28	39	38	35	5	1	3	1	4
Home duties	29	21	17	11	8	5	5	3	5	2
Invalid pensioner	8	5	4	6	9	0	0	0	0	3
Management	2	3	4	0	6	0	1	1	2	1
Other	4	1	2	3	3	0	0	0	0	0
Pre-school	4	7	4	0	5	1	1	0	0	0
Primary industry	1	4	7	3	3	2	3	3	2	1
Professional	7	13	9	9	18	2	3	0	4	4
Retired	17	13	23	16	17	1	3	2	0	1
Small business owner	0	0	2	1	2	0	0	1	0	0
Student	23	25	21	27	34	9	4	7	3	5
Tradesperson	7	6	8	13	17	4	3	2	0	3
Unemployed	5	3	6	11	7	1	0	1	0	1
Unknown	46	25	40	24	34	13	11	14	15	7
White collar	15	10	10	23	8	3	4	4	5	6
Total	196	164	196	185	206	46	39	41	37	38

Figure 19

Ethnic Origin of Donors 1998 - 2002

	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Aboriginal	1	0	1	2	0	0	0	0	0	0
Arab	0	0	0	0	0	0	0	0	0	0
Caucasoid	189	154	184	172	197	43	36	38	34	33
Greek	(3)	(3)	(0)	(1)	(4)	0	0	0	0	0
Italian	(2)	(3)	(3)	(0)	(1)	0	0	0	0	0
Chinese	1	3	2	2	2	0	0	0	2	0
Filipino	1	0	2	1	1	0	1	0	0	0
Indian	1	0	2	2	2	0	0	0	0	1
Japanese	0	1	1	0	0	0	0	0	0	0
Korean	1	0	1	0	0	0	0	0	0	0
Malay	0	0	0	2	0	0	0	0	0	0
Maori	0	1	0	1	0	2	2	3	1	3
Mauritian	2	0	0	1	0	0	0	0	0	0
Pacific Islander	0	2	1	0	1	1	0	0	0	1
Sri Lankan	0	1	1	2	1	0	0	0	0	0
Vietnamese	0	2	1	0	2	0	0	0	0	0
Total	196	164	196	185	206	46	39	41	37	38

Figure 20

Religious Denomination of Donors 1998 - 2002

	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Buddhist	2	3	2	1	1	0	0	0	0	0
Christian	93	87	110	89	87	7	11	9	2	5
Jehovahs Witness	0	0	1	0	1	0	0	0	0	0
Druid	0	0	0	0	1	0	0	0	0	0
Hindu	0	0	1	0	0	0	0	0	0	1
Muslim	0	1	0	0	0	0	0	0	0	0
Ratna	0	0	0	0	0	0	0	1	0	0
Shinto	0	0	1	0	0	0	0	0	0	0
No religion	25	20	20	20	24	5	2	2	4	0
Unknown	76	53	61	75	92	34	26	29	31	32
Total	196	164	196	185	206	46	39	41	37	38

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 room..

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

Figure 21										
Intended Donors 1998 - 2002										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
1998	0	3	0	0	0	2	0	0	5	2
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

Figure 22		
Reasons Why Donation Did Not Proceed 1998 - 2002		
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	

HEART-BEATING DONORS

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

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.

In 2002 there were two non-heart beating donors in Australia (one in South Australia and one in the Northern Territory) (fig 23). In both cases, after the irreversible cessation of circulation and death was certified, a catheter was inserted into the aorta and kidney perfusion commenced while in the Intensive Care Unit.

Figure 23

Heart-Beating Donors 1998 - 2002

	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Yes	194	163	195	183	204	46	39	41	37	38
No	2	1	1	2	2	0	0	0	0	0
Total	196	164	196	185	206	46	39	41	37	38

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 1998 - 2002

	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Yes	39	34	44	44	48	6	10	6	4	10
No	156	129	152	140	157	39	29	35	33	28
Unknown	1	1	0	1	1	1	0	0	0	0
Total	196	164	196	185	206	46	39	41	37	38

Figure 25

Australian States Cardiopulmonary Resuscitation 2002 (2001)

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Yes	7 (7)	17 (11)	2 (3)	11 (13)	1 (0)	9 (8)	0 (1)	1 (1)
No	36 (41)	38 (35)	4 (4)	36 (27)	5 (3)	22 (17)	2 (1)	14 (12)
Unknown	1 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	44 (48)	55 (47)	6 (7)	47 (40)	6 (3)	31 (25)	2 (2)	15 (13)

VIROLOGY SCREENING

Figure 26										
Cytomegalovirus (CMV) Status of Donors 1998 - 2002										
	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Positive	129	111	128	132	131	20	23	24	19	18
Negative	67	53	68	53	75	21	14	17	18	20
Not done	0	0	0	0	0	5	2	0	0	0
Total	196	164	196	185	206	46	39	41	37	38

EPSTEIN-BARR VIRUS (EBV) STATUS OF DONORS

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

In 2002, 67% (137) of donors were tested, with 68% recording a positive result. Five New Zealand donors were tested and all were positive.

HEPATITIS B AND HEPATITIS C STATUS OF DONORS

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

In 1998, the Registry commenced collection of Hepatitis B core antibody results. A positive result was recorded for 7% (14) of Australian donors and 5% (2) of New Zealand donors in 2002.

In 2002, there were no Hepatitis C antibody positive donors in Australia or New Zealand.

From the 14 Australian donors there were 26 kidneys, 8 livers, 5 hearts, 6 lungs, 1 heart/lung and 1 pancreas transplanted.

From the two New Zealand donors there were four kidneys and one liver transplanted.

BLOOD GROUP OF DONORS

The distribution of donors for the total reporting period for each country is similar to population distribution (fig 27, 28).

Figure 27

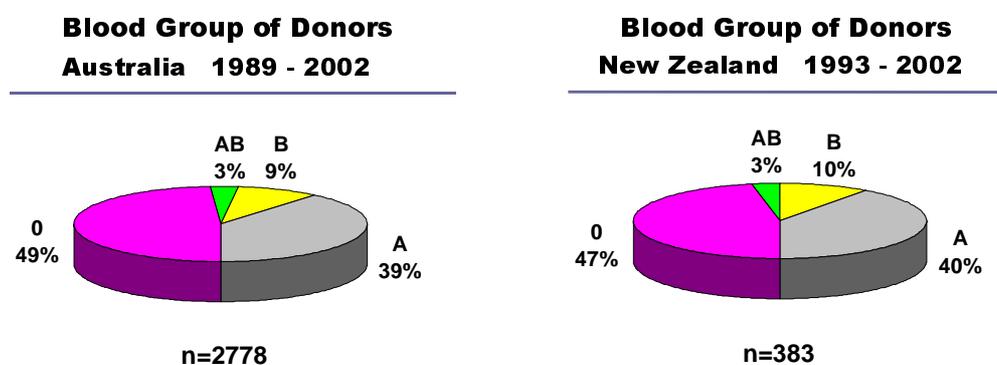


Figure 28

Blood Group of Donors 1998 - 2002												
		1998		1999		2000		2001		2002		** Blood Group distribution in the general population
Australia	O	102	52%	93	57%	90	46%	89	48%	99	48%	49%
	A	70	36%	50	30%	89	45%	66	36%	85	41%	39%
	B	18	9%	17	10%	12	6%	23	12%	18	9%	9%
	AB	6	3%	4	3%	5	3%	7	4%	4	2%	3%
	Total	196	100%	164	100%	196	100%	185	100%	206	100%	
New Zealand	O	22	48%	15	39%	19	46%	23	62%	14	37%	46%
	A	14	30%	18	46%	20	49%	9	24%	21	55%	40%
	B	6	13%	4	10%	2	5%	4	11%	3	8%	10%
	AB	4	9%	2	5%	0	0%	1	3%	0	0%	4%
	Total	46	100%	39	100%	41	100%	37	100%	38	100%	

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

MEDICAL CONDITION OF DONORS

The following information relating to diabetes, hypertension and smoking has been collected since 1993. Cancer data collection commenced on 1st January 2002.

DIABETES

There were two Type 1 diabetic (insulin dependent) and five Type 2 (non-insulin requiring) accepted as donors in Australia in 2002. There were no diabetic donors in New Zealand in 2002.

Type 1 diabetic donors provided four kidneys, one heart and one liver for transplantation.

Type 2 diabetic donors provided eight kidneys, two livers, two double and one single lung for transplantation. One donor did not donate kidneys (diseased).

HYPERTENSION

In 2002, 14% (28) of Australian donors had a past history of chronic hypertension and New Zealand recorded 16% (6) donors (fig 29, 30).

Donors with a history of chronic hypertension provided Australia with 49 kidneys, 13 livers, two hearts, nine double and two single lungs for transplantation.

In New Zealand there were nine kidneys, three livers, one heart, two double and one single lung transplanted.

SMOKING

In 2002, 43% (89) of Australian donors were recorded as being current smokers, and 15% (30) as former smokers, while in New Zealand, 42% (16) were reported as current and 15% (2) as former.

CANCER IN DONOR

Australia (five donors)

- * one renal cell carcinoma of the (R) kidney
- * one unknown type of the prostate
- * one skin melanoma
- * one glioma of the brain
- * one basi-squamous of the nasal cavity

Six kidneys, two heart/lungs, one liver, one heart, one double lung and five corneas were transplanted from these donors.

New Zealand (one donor)

- * one gastric schwannoma

Corneas and heart valves only were retrieved from the New Zealand donor.

DONOR WEIGHT

The allocation of heart, lungs and livers are based on the matching of recipient and donor weight. In 2002 there were twelve donors in Australia and three in New Zealand who weighed less than 40 kilograms (fig 31).

Figure 29

		1998	1999	2000	2001	2002
		(n=196)	(n=164)	(n=196)	(n=185)	(n=206)
Australia	Diabetes Type 1	2 (1%)	1 (<1%)	2 (1%)	4 (2%)	2 (1%)
	Diabetes Type 2	3 (1.5%)	3 (2%)	3 (1.5%)	7 (4%)	5 (2%)
	Hypertension	31 (16%)	24 (15%)	42 (21%)	31 (17%)	28 (14%)
	Unknown	9 (5%)	2 (1%)	4 (2%)	5 (3%)	3 (1.5%)
	Smoking					
	Current	66 (34%)	54 (33%)	73 (37%)	71 (38%)	89 (43%)
	Former	10 (5%)	17 (10%)	26 (13%)	21 (11%)	30 (15%)
	Unknown	12 (6%)	10 (6%)	2 (1%)	3 (2%)	5 (2%)
	Cancer *					5 (2%)
			(n=46)	(n=39)	(n=41)	(n=37)
New Zealand	Diabetes Type 1	2 (0%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)
	Diabetes Type 2	1 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Hypertension	4 (9%)	8 (21%)	3 (7%)	3 (8%)	6 (16%)
	Unknown	1 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Smoking					
	Current	11 (24%)	14 (36%)	19 (46%)	10 (27%)	16 (42%)
	Former	1 (2%)	1 (2.5%)	2 (5%)	4 (11%)	2 (5%)
	Unknown	3 (7%)	2 (5%)	0 (0%)	1 (3%)	1 (3%)
	Cancer *					1 (3%)

* Cancer data collected from 1st January 2002

Figure 30

Medical Condition of Donors by Australian States 2002 (2001)

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Diabetes Type 1	0 (1)	2 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Diabetes Type 2	3 (1)	1 (2)	0 (0)	0 (2)	0 (0)	1 (2)	0 (0)	0 (0)
Hypertension	5 (8)	9 (10)	0 (0)	7 (6)	1 (0)	5 (6)	0 (0)	1 (1)
Smoking Current	18 (21)	19 (14)	3 (5)	23 (16)	1 (3)	18 (7)	1 (1)	6 (4)
Cancer *	2	2	0	0	1	0	0	0

* Cancer data collected from 1st January 2002

Figure 31

Donor Weight 1998 - 2002

	Years	Kilograms									Total
		0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90 +	
Australia	1998	4	2	4	6	22	34	60	36	26	194
	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
New Zealand	1998	1	0	0	1	3	12	12	15	2	46
	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

DONOR INTENTION

Figures 32 and 33 show whether the donor had recorded an intention to donate through a signed driver's licence.

In 2002, 30% of Australian and 26% of New Zealand organ donors had a signed driver's licence.

Figure 34 shows the number of donors enrolled in the Australian Organ Donation Register, which commenced in 2000.

In some states the donor intention from the driver's licence has been transferred to the Australian Organ Donor Register, in other states the process is still under consideration.

Figure 32

Driver's Licence Status 1998 - 2002

Intention Known	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Yes	54 (28%)	34 (21%)	67 (34%)	48 (26%)	62 (30%)	10 (22%)	6 (15%)	9 (22%)	9 (24%)	10 (26%)
No	60	55	59	38	40	1	3	0	0	1
Student / Not Applicable	18	23	21	23	34	9	4	5	1	4
Unknown	64	52	49	76	70	26	26	27	27	23
Total	196	164	196	185	206	46	39	41	37	38

Figure 33

**Australian States 2002 (2001)
Driver's Licence Status**

Intention Known	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Yes	16 (19)	15 (14)	2 (0)	8 (3)	2 (0)	16 (7)	1 (0)	2 (5)
No	2 (3)	2 (2)	0 (1)	21 (13)	1 (3)	8 (10)	0 (0)	6 (6)
Student / Not Applicable	11 (1)	6 (9)	2 (0)	7 (5)	0 (0)	3 (6)	0 (0)	5 (2)
Unknown	15 (25)	32 (22)	2 (6)	11 (19)	3 (0)	4 (2)	1 (2)	2 (0)
Total	44 (48)	55 (47)	6 (7)	47 (40)	6 (3)	31 (25)	2 (2)	15 (13)

Figure 34

Donors for 2002 (2001) Enrolled in the Australian Organ Donor Register

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Total
Yes	0 (0)	1 (0)	0 (0)	5 (2)	2 (0)	11 (4)	0 (0)	3 (4)	22 (10)
Not Registered	13 (6)	3 (6)	0 (0)	27 (16)	2 (2)	16 (11)	1 (0)	7 (9)	69 (50)
Not accessed	31 (42)	51 (41)	6 (7)	15 (22)	2 (1)	4 (10)	1 (2)	5 (0)	115 (125)
Total	44 (48)	55 (47)	6 (7)	47 (40)	6 (3)	31 (25)	2 (2)	15 (13)	206 (185)

CONSENT FOR ORGAN DONATION

Intensive Care Clinicians and Registrars played the predominant role in requesting consent for organ donation in both Australia (57%) and New Zealand (66%) in 2002 (fig 35).

There is a large difference between the Australian States in the role of the Donor Coordinator in seeking consent. In 2002, consent was sought by

the Donor Coordinator in Queensland 61%, Western Australia 40%, ACT 33%, South Australia 26%, New South Wales 18%, Victoria and Tasmania 17% (fig 36).

Ten percent of families volunteered consent for organ donation in Australia (24% in 2001) and 24% in New Zealand.

Figure 35

Consent 1998 - 2002										
	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
ICU Clinician/Registrar	118	101	112	106	118	41	33	35	31	25
Renal Physician/Registrar	0	0	0	0	0	1	2	1	4	0
Emergency Consultant/Registrar	1	1	0	1	2	4	1	0	0	0
Donor Coordinator	28	30	44	31	62	0	1	0	0	0
Volunteered	45	30	37	44	21	0	2	2	0	9
Nursing Staff	2	2	3	2	2	0	0	0	1	4
Social Worker	1	0	0	0	0	0	0	0	0	0
Others	1	0	0	1	1	0	0	3	1	0
Total	196	164	196	185	206	46	39	41	37	38

Figure 36

Consent 2002 (2001)									
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	
ICU Clinician/Registrar	11 (17)	39 (36)	4 (3)	35 (27)	5 (3)	18 (16)	1 (1)	5 (3)	
Renal Phys/Registrar	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
Donor Coordinator	27 (14)	10 (6)	2 (1)	8 (3)	1 (0)	8 (6)	0 (1)	6 (0)	
Volunteered	4 (14)	5 (5)	0 (3)	2 (9)	0 (0)	5 (3)	1 (0)	4 (10)	
Nursing Staff	2 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
Other	0 (1)	1 (0)	0 (0)	2 (1)	0 (0)	0 (0)	0 (0)	0 (0)	
Total	44 (48)	55 (47)	6 (7)	47 (40)	6 (3)	31 (25)	2 (2)	15 (13)	

DIRECT CONTACT WITH DONOR COORDINATOR

There were six families (3%) in Australia with which the Donor Coordinator had no contact, compared to 21 families (55%) in New Zealand.

Figure 37

Direct Contact with Donor Coordinator 2002										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
Face to Face	42 (95%)	45 (82%)	6 (100%)	45 (96%)	1 (17%)	27 (87%)	1 (50%)	15 (100%)	182 (88%)	15 (40%)
Telephone	2 (5%)	7 (13%)	0 (0%)	2 (4%)	5 (83%)	2 (6.5%)	0 (0%)	0 (0%)	18 (9%)	2 (5%)
None	0 (0%)	3 (5%)	0 (0%)	0 (0%)	0 (0%)	2 (6.5%)	1 (50%)	0 (0%)	6 (3%)	21 (55%)
Total	44	55	6	47	6	31	2	15	206	38

CORONER'S CASES

Forty five percent of all Australian donors were subject to coronial inquiry compared to 47% in 2001.

In New Zealand it was 47% for 2002, similar to 2001.

Figure 38										
Coroner's Cases 1998 - 2002										
	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Yes	94	76	93	87	93	25	18	13	17	18
No	102	88	103	98	113	21	21	28	20	20
Total	196	164	196	185	206	46	39	41	37	38

Figure 39								
Australian States Coroner's Cases 2002 (2001)								
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Yes	19 (22)	23 (26)	4 (3)	18 (14)	3 (1)	16 (12)	1 (2)	9 (7)
No	25 (26)	32 (21)	2 (4)	29 (26)	3 (2)	15 (13)	1 (0)	6 (6)
Total	44 (48)	55 (47)	6 (7)	47 (40)	6 (3)	31 (25)	2 (2)	15 (13)

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.

Figure 40 shows the outcome of organs requested in 2002 (2001).

Figure 40						
Outcome Following Request for Organ Donation 2002 (2001)						
		Kidneys	Liver	Heart	Lungs	Pancreas
Australia	Requested	402 (366)	201 (178)	183 (160)	352 (322)	152 (129)
	Consent Given	402 (366)	199 (175)	178 (153)	338 (310)	139 (120)
	Retrieved	380 (344)	156 (133)	85 (72)	173 (141)	47 (34)
	Transplanted	372 (330)	*148 (127)	80 (69)	165 (120)	+26 (21)
New Zealand	Requested	76 (74)	38 (36)	32 (34)	62 (32)	22 (28)
	Consent Given	76 (74)	38 (35)	32 (34)	62 (31)	22 (26)
	Retrieved	70 (68)	31 (30)	9 (15)	24 (24)	2 (3)
	Transplanted	69 (67)	*30 (29)	9 (15)	21 (24)	2 (3)

* Split Liver Australia (11) 2002, (6) 2001 NZ (3) 2002
Kidneys and lungs are counted as separate organs
+ includes one pancreas islet transplant

ORGANS REQUESTED

From the 206 Australian organ donors in 2002, the requests for specific organs were: kidneys 98%, liver 98%, heart 89%, lungs 85% and pancreas 74%.

From the 38 New Zealand donors in 2002, the requests for specific organs were: kidneys 100%, liver 100%, heart 84%, lungs 82% and pancreas 58%.

MULTIPLE ORGAN RETRIEVAL

In Australia there were 19% (39) of donors in 2002 who had a single organ retrieved. Kidney only donation occurred in 31 cases.

In New Zealand there were five single organ donors, of which four were kidney only donors.

Figure 41

Trend to Multiple Organ Retrieval 1998 - 2002

No. of Organs	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Single	23%	17%	21%	19%	19%	20%	21%	7%	19%	13.5%
Two	32%	30%	29%	32%	24%	50%	44%	42%	31%	43%
Three	19%	27%	24%	21%	25%	16%	23%	34%	22%	30%
Four	20%	23%	20%	19%	24%	12%	10%	15%	25%	13.5%
Five	6%	3%	6%	9%	8%	2%	2%	2%	3%	0%

Figure 42

State by State Comparison of Multiple Organ Retrieval 2002

No. of Organs	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
Single	8 (18%)	12 (23%)	12 (17%)	8 (17%)	0 (0%)	8 (26%)	1 (50%)	1 (7%)	39 (19%)	5 (13.5%)
Two	12 (27%)	9 (17%)	0 (0%)	14 (30%)	2 (33%)	7 (23%)	1 (50%)	3 (20%)	48 (24%)	16 (43%)
Three	10 (23%)	13 (25%)	3 (50%)	12 (25%)	1 (17%)	10 (32%)	0 (0%)	3 (20%)	52 (25%)	11 (30%)
Four	12 (27%)	16 (30%)	2 (33%)	7 (15%)	2 (33%)	5 (16%)	0 (0%)	6 (40%)	48 (24%)	5 (13.5%)
Five	2 (5%)	3 (5%)	0 (0%)	6 (13%)	1 (17%)	1 (3%)	0 (0%)	2 (13%)	17 (8%)	0 (0%)
Total	44	53	6	47	6	31	2	15	204	37

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 43

Organs Transplanted by Donor State in Australia and New Zealand 2002

Donor State	Kidneys	Liver	(L) Liver	(R) Liver	Heart	Lungs	(L) Lung	(R) Lung	Pancreas	Islets	Total
Queensland	83	31	3	2	20	14	4	4	2	0	163
New South Wales	97	32	4	3	17	20	1	3	8	1	186
ACT	9	4	1	1	4	4	0	0	1	0	24
Victoria	85	32	1	1	18	13	5	5	8	0	168
Tasmania	12	4	1	1	3	3	0	0	2	0	26
South Australia	55	22	1	1	11	8	1	1	4	0	104
Northern Territory	4	1	0	0	0	0	0	0	0	0	5
Western Australia	27	11	0	0	7	8	1	0	0	0	54
Australia	372	137	11	99	80	70	12	13	25	1	730
New Zealand	69	27	3	1	9	9	1	2	2	0	123

ORGAN RECIPIENTS TRANSPLANTED

Australia had 3.5 and New Zealand 3.2 organ recipients per donor used for transplantation in 2002.

For the purpose of this calculation, the number of recipients transplanted is used, rather than the number of organs.

Tasmania had the highest number of organs transplanted, 4.3 per donor, followed by the ACT 4.0, Queensland 3.7, Victoria and Western Australia 3.6, New South Wales and South Australia 3.4 and the Northern Territory 2.5. These figures exclude tissue transplantation.

Figure 44

Organ Recipients Transplanted per Donor 2002										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
No. Organs Transplanted	163	186	24	168	26	104	5	54	730	123
No. of Donors	44	55	6	47	6	31	2	15	206	38
Average per Donor	3.7	3.4	4.0	3.6	4.3	3.4	2.5	3.6	3.5	3.2
Double lungs = 1 organ (1 recipient) Two kidneys = 2 organs										

Waiting times for organ transplants are presented in Figures 45 and 46. 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 45

Waiting List by Transplant Centres January 2003						
	Kidney	Liver	Heart	Lung	Pancreas	Islets
Patients awaiting a transplant at 31 December 2002	1490	78	70	112	35	3
Patients who died while on the waiting list during 2002	49	22	10	23	3	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 46

Average Waiting Time in Years, for Patients Transplanted with Cadaver Donor Organs in 2002					
() denotes number of patients					
Organ	Blood Group				All
	A	AB	B	O	
* Kidney	3.4 (482)	2.9 (31)	3.3 (192)	4.2 (785)	3.8 (1490)
Heart	2.1 (22)	0 (1)	0.6 (8)	2.2 (38)	2.2 (69)
Liver	1.0 (21)	0.3 (6)	0.5 (11)	2.1 (40)	1.5 (78)
Pancreas	1.8 (11)	1.3 (2)	1.0 (3)	1.9 (19)	1.7 (35)
Lung	0.9 (41)	0.7 (5)	1.1 (9)	1.5 (57)	1.2 (112)
Islets	0.5 (1)	0 (0)	1.1 (1)	0.7 (1)	0.7 (3)
* 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

Figure 47 shows the number of organs that were sent and received between Australian States and New Zealand. 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 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 47

Exchange of Organs Between States and New Zealand 2002 (2001)							
	Exchange	Kidneys	Liver	Heart	Lungs *	Pancreas	Total
Queensland	Sent	10 (10)	+10 (11)	7 (13)	22 (26)	2 (0)	51 (60)
	Received	4 (6)	11 (13)	6 (1)	18 (2)	0 (0)	39 (22)
New South Wales	Sent	10 (15)	+4 (7)	6 (3)	9 (1)	0 (0)	29 (26)
	Received	34 (28)	+25 (11)+	10 (7)	28 (36)	8 (5)	105 (87)
ACT	Sent	9 (14)	+6 (5)+	4 (3)	8 (6)	1 (1)	28 (29)
Victoria	Sent	5 (10)	14 (4)	4 (0)	2 (1)	0 (1)	25 (16)
	Received	12 (18)	+16 (12)	21 (20)	44 (32)	1 (0)	94 (82)
Tasmania	Sent	12 (6)	+6 (2)	3 (2)	6 (4)	2 (1)	29 (15)
South Australia	Sent	10 (5)	+14 (14)	11 (6)	18 (14)	4 (2)	57 (41)
	Received	9 (9)	2 (2)	0 (0)	0 (0)	0 (0)	11 (11)
Northern Territory	Sent	4 (4)	1 (0)	0 (1)	0 (2)	0 (0)	5 (7)
Western Australia	Sent	3 (2)	6 (6)	2 (1)	17 (12)	0 (0)	28 (21)
	Received	4 (5)	1 (4)	1 (1)	0 (0)	0 (0)	6 (10)
New Zealand	Sent	0 (0)	+5 (2)	2 (0)	8 (4)	0 (0)	15 (6)
	Received	0 (0)	11 (9)	1 (0)	0 (0)	0 (0)	12 (9)

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

Figure 48

Summary of Organs Transplanted in Australia from New Zealand Donors 1989 - 2002					
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
Total	16	183	14	43	256

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

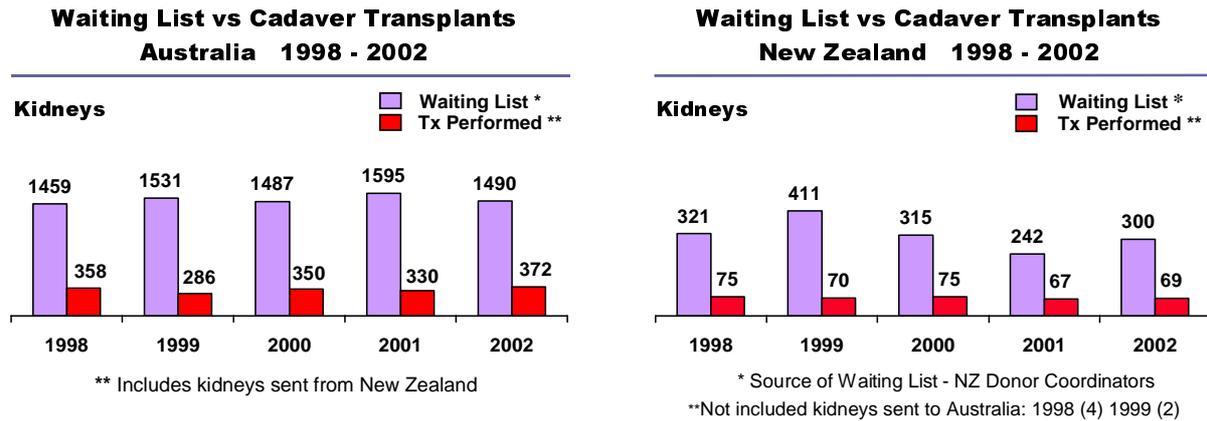
New Zealand organs are sent to Australia when there are no compatible recipients in New Zealand.

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

KIDNEY DONATION

Figure 49 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 1998-2002.

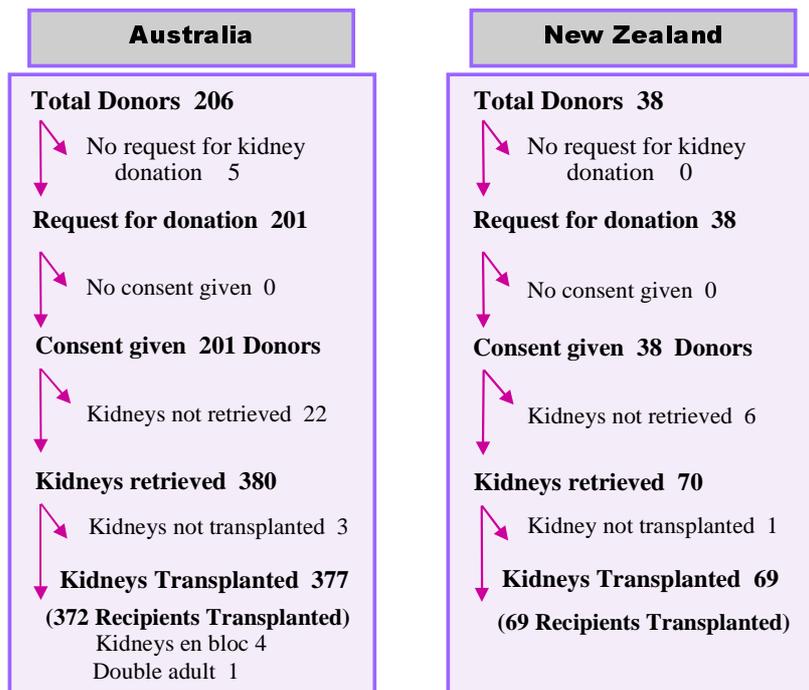
Figure 49



* Data as at 31-Dec-1998 Australians Donate
 Data as at Feb-2000 Individual Transplant Units and the
 Date as at Jan-2001 National Organ Matching System

Figure 50

Outcome of Request for Kidney Donation 2002



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

Figure 51

Age of Donors Providing Transplanted Kidneys 1998 - 2002

	Year	Age Groups									Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	
Australia	1998	1 (1)	10	37	22	32	33	34 (1*)	14 (1x)	0	183
	1999	4 (3)	11 (2)	24	22	17	32	29	9 (1x)	2 (1x)	150
	2000	2 (3)	10	30	24	28	42	34 (1x)	11	1	182
	2001	0 (0)	16	32	25	22	44	19	11	1 (x)	170
	2002	3 (2)	14 (2)	44	17	31	42	30	11 (1x)	1	193
New Zealand	1998	1 (1)	4	8	6	8	7	6	1	0	41
	1999	0	3 (1)	3	4	4	14	5	4	0	37
	2000	0	2	9	4	6	12	6	1	0	40
	2001	0	0	9	2	7	7	8	1	0	34
	2002	0	3	5	2	11	10	3	1	0	35

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

Figure 52

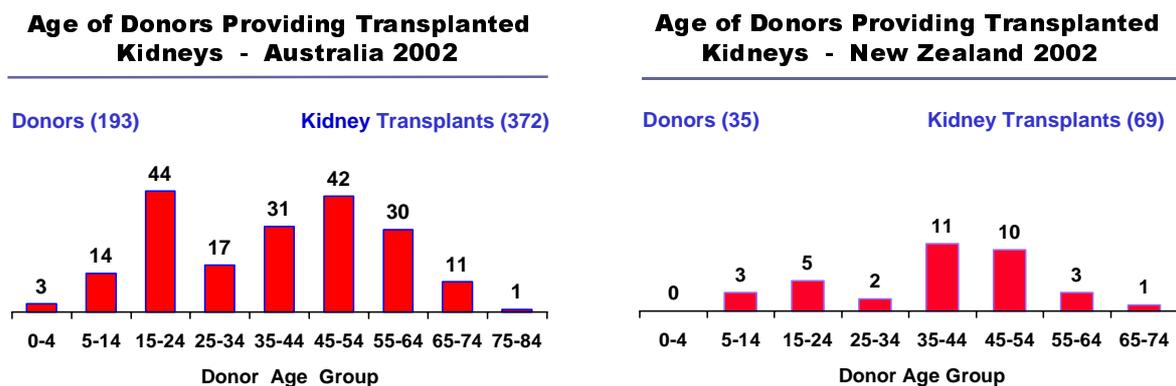
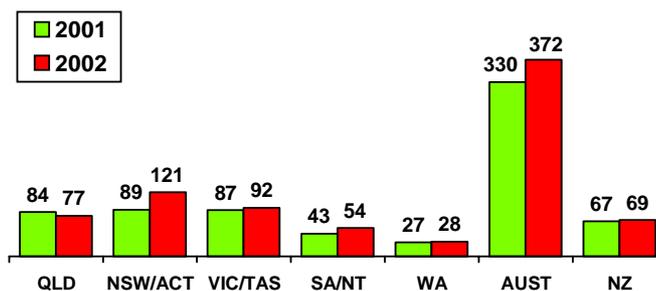


Figure 53

**Cadaver Kidney Transplants by Transplant State
Australia and New Zealand 2001 - 2002**



KIDNEY PERFUSION METHODS

In Australia, Ross continues to be the preservation solution of choice (78%) when only one solution is used. University of Wisconsin (UW) was used as the second perfusion solution in 82% of cases.

Figure 54										
Kidney Perfusion with Only One Solution 1998 - 2002										
	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Ross	46	38	26	26	14	6	10	2	4	2
UW	16	12	8	4	4	71	66	78	64	66
Collins	8	0	0	2	0	2	0	0	0	0
Hartmans	0	0	0	0	0	2	0	0	0	0
Baxter's Fluid	0	0	0	0	0	0	0	2	0	0
Total	70	50	34	32	18	81	76	82	68	68

Figure 55										
Second Perfusion Solution - Kidneys 1998 - 2002										
	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Ross	14	43	7	52	54	0	0	0	0	0
UW	253	195	313	256	296	6	2	0	0	2
Collins	28	10	16	4	8	0	0	0	0	0
Hartmans	0	2	0	0	4	0	0	0	0	0
Baxter's Fluid	0	0	0	0	0	0	0	0	0	0
Total	295	250	336	312	362	6	2	0	0	2

REASONS KIDNEYS WERE UNUSABLE

Biopsies of the donor kidney occurred at the time of retrieval in Australia in 11% (22) of donors and in New Zealand 31% (11) of donors.

This data has been collected since 2000. These findings are consistent with 2001 data.

Figure 56						
Reasons Kidneys were Unusable 1998 - 2002						
		1998	1999	2000	2001	2002
Australia	Renal disease in donor	7	3	10	8	2
	Cancer in donor	0	0	2	0	0
	Anatomical	1	1	0	1	0
	Surgical	0	2	2	3	1
	Trauma	0	1	2	0	0
	High Creatinine and Urea	0	2	0	0	0
	Courier Failure	0	0	0	1	0
	Total	8	9	16	13	3
New Zealand	Renal Disease in Donor	5	3	6	1	1
	Infection in Donor	2	0	0	0	0
	Surgical	0	0	1	0	0
	Trauma	0	1	0	0	0
	Donor Unstable	0	1	0	0	0
	Total	7	5	7	1	1

Figure 57										
Donor Age of Unusable Kidneys 1998 - 2002										
		Age Groups								Total
Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74		
Australia	1998	0	0	1	0	3	1	0	2	7
	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
New Zealand	1998	0	0	0	1	0	1	2	0	4
	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

DONOR KIDNEY FUNCTION

Terminal Levels of Serum Creatinine and Urea

In 2002, 12% of Australian donors had a terminal serum creatinine concentration of ≥ 125 $\mu\text{mol/L}$ and 9% had a terminal serum urea concentration of ≥ 9 mmol/L .

New Zealand had 17% of donors with a terminal serum creatinine concentration of ≥ 125 $\mu\text{mol/L}$ and 7% with terminal serum urea concentration of ≥ 9 mmol/L .

Figure 58

Terminal Serum Creatinine Levels 1998 - 2002

Creatinine ($\mu\text{mol/l}$)	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
00-99	72%	67%	77%	74%	76%	73%	76%	79%	78%	80%
100-124	19%	16%	11%	17%	12%	23%	19%	15%	16%	7%
125-149	6%	6%	3%	1%	4%	2%	0%	0%	3%	13%
150-174	2%	5%	4%	2%	3%	0%	5%	3%	0%	0%
175-199	<1%	3%	1%	2%	1%	2%	0%	3%	0%	0%
200-224	<1%	<1%	0%	1%	2%	0%	0%	0%	0%	0%
225-249	0%	0%	<1%	<1%	<1%	0%	0%	0%	0%	0%
> 250	0%	3%	3%	2%	<1%	0%	0%	0%	3%	0%

Figure 59

Terminal Serum Urea Levels 1998 - 2002

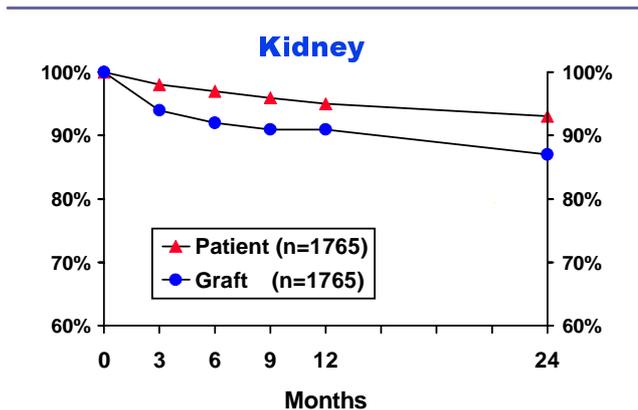
Urea (mmol/l)	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
00-04	48%	49%	54%	51%	57%	41%	54%	54%	59%	50%
05-08	46%	42%	34%	38%	33%	49%	35%	44%	38%	43%
09-12	5%	5%	7%	9%	5%	10%	11%	2%	3%	7%
13-16	1%	1%	3%	2%	2%	0%	0%	0%	0%	0%
> 16	0%	3%	2%	<1%	2%	0%	0%	0%	0%	0%

KIDNEY TRANSPLANT OUTCOME

Summary results are presented of outcomes for kidney transplants performed over the preceding five years in Australia. These have been provided by the ANZDATA Registry, and further information is

available from their website. Transplants performed in Australia are comparable with other centres throughout the world.

Figure 60 Primary Cadaver Patient and Graft Survival Australia 1996 - 2001



Primary Cadaver Patient and Graft Survival New Zealand 1996 - 2001

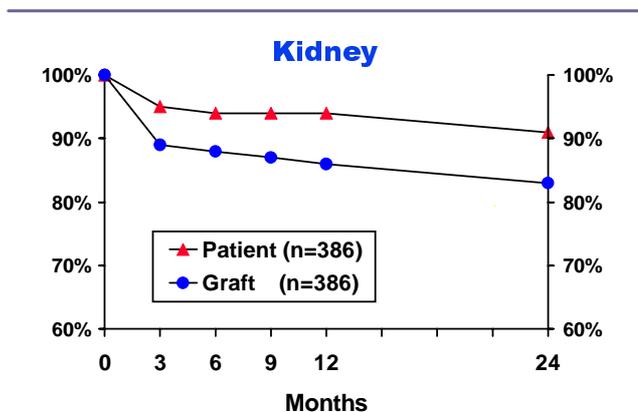
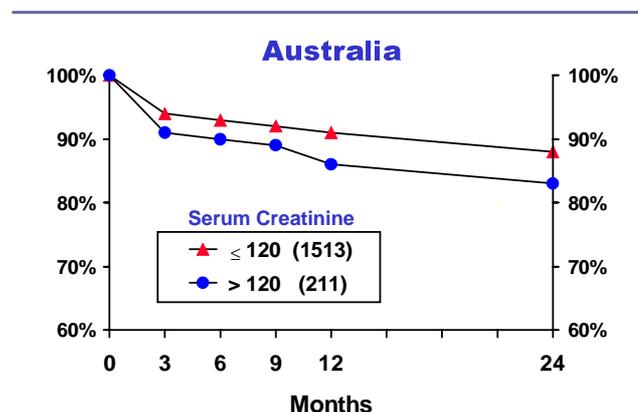


Figure 61 Primary Cadaver Kidney Graft Survival Terminal Serum Creatinine 1996 - 2001



Further information on kidney transplant outcome is available on the Australia and New Zealand Dialysis and Transplant Registry Website - www.anzdata.org.au

LIVER DONATION

There were 188 liver transplants performed in 2002, 151 in Australia and 37 in New Zealand.

Eleven livers were donated from Australia and transplanted into New Zealand recipients and three livers donated from New Zealand were transplanted into Australian recipients.

There were 148 Australian donors, who provided 157 recipients with transplanted livers and 30 New Zealand donors provided livers for 31 recipients.

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

- * 5 Royal Prince Alfred Hospital, NSW
- * 4 New Children’s, NSW
- * 3 Princess Alexandra Hospital, Qld
- * 3 Austin and Repatriation Medical Centre, Vic.
- * 3 Royal Children’s, Vic.
- * 1 Flinders Medical Centre, SA
- * 1 Auckland Hospital, New Zealand

Figure 62

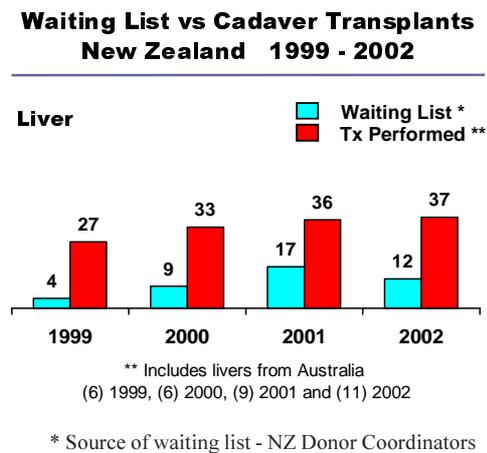
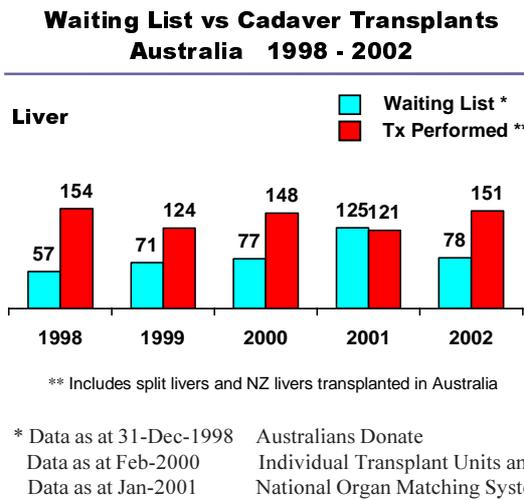
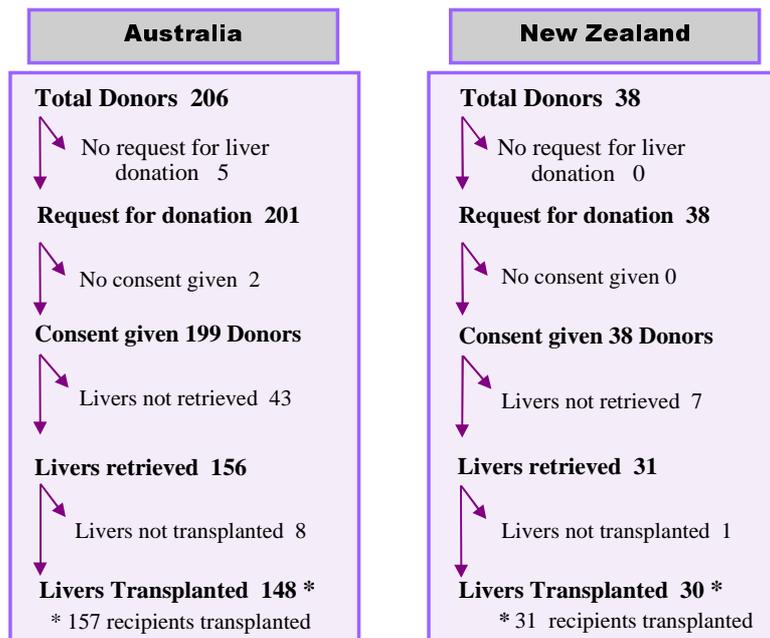


Figure 63

Outcome of Request for Liver Donation 2002



* 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 64

Age of Donors Providing Transplanted Livers 1998 - 2002											
	Year	Age Groups									Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	
Australia	1998	3	9	32 (3+)	15 (+)	21 (+)	23 (+)	22 (+)	7	0	132
	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
New Zealand	1998	1	2	5	5	7	6	4	0	0	30
	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

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

Figure 65

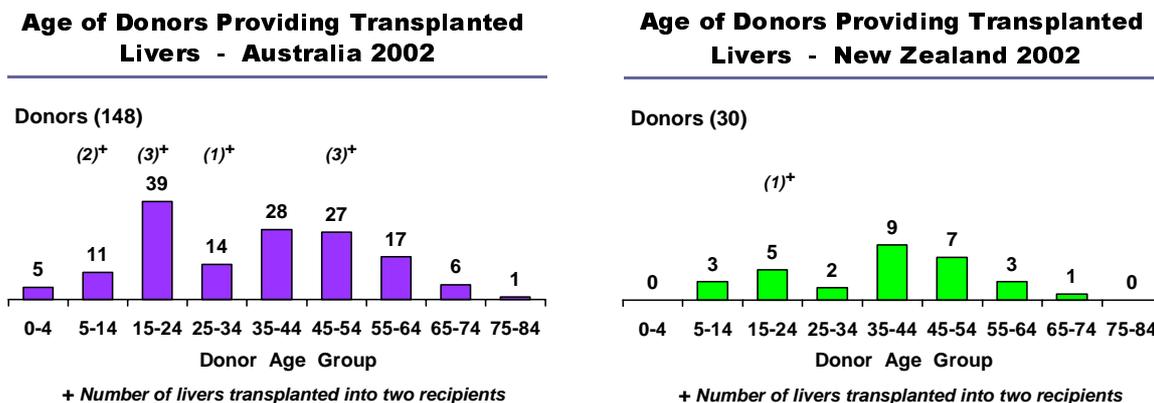
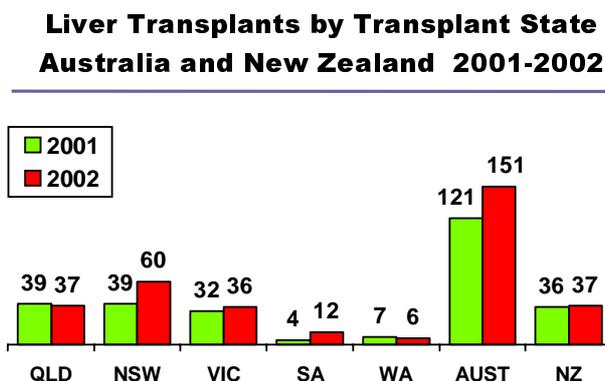


Figure 66



PERFUSION OF LIVERS

Australia

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

New Zealand

University of Wisconsin solution was used for all livers retrieved.

Figure 67

Regional Outcome of Requests for Liver Donation 1989-2002										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	564	897	59	617	48	351	29	213	2778	383
Requested	554	811	57	544	42	305	24	182	2519	327
Consented	545	790	54	524	39	295	24	174	2445	324
Retrieved	412	533	42	355	32	213	16	118	1721	265
Transplanted *	431	527	43	313	30	206	15	115	1680	255

* Refers to number of recipients - use of split livers
** New Zealand 1993 - 2002

REASONS LIVERS WERE UNUSABLE AFTER RETRIEVAL

The liver is only retrieved when a compatible recipient has been identified. Figure 68 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 68

Reasons Livers were Unusable 1999 - 2002					
		1999	2000	2001	2002
Australia	Biopsy - Fatty	4	3	4	3
	Disease	2	0	0	1
	Anatomical	0	0	1	1
	Research	0	0	1	2
	Cancer in Donor	0	1	0	0
	Recipient Issue	2	0	0	1
	Total	8	4	6	8
New Zealand	Biopsy - Fatty	1	2	1	0
	Recipient Issue	1	0	0	1
	Total	2	2	1	1

Figure 69

Donor Age of Unusable Livers 1999 - 2002										
	Year	Age Groups								Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	
Australia	1999	0	0	1	0	0	4	2	1	8
	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
New Zealand	1999	1	0	0	0	0	1	0	0	2
	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

DONOR LIVER FUNCTION

The results of the serum tests for liver function for 156 Australian and 31 New Zealand donors in 2002, who had livers retrieved, is shown below.

Seventy one percent of Australian and 48% of New Zealand donors had all five tests performed. Figure 70 shows the number of donors whose liver function was above the normal range.

Figure 70

Number of Donors with Liver Function Tests above Normal Range

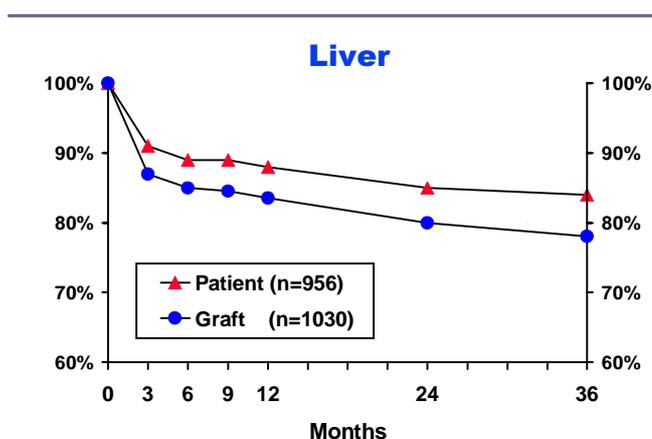
Liver Function Tests	Australia			New Zealand		
	Donors with value recorded *	Above Normal	Maximum recorded 1989-2002	Donors with value recorded *	Above Normal	Maximum recorded 1993-2002
Alanine Transaminase ALT > 40 u/L	156	54 (35%)	1194 (550)x	23	7 (30%)	393 (393)
Aspartate Transaminase AST > 40 u/L	119	57 (48%)	1008 (471)	23	9 (39%)	428 (216)
Gamma Glutamol Transferase GGT > 60 u/L	147	27 (18%)	750 (563)	23	4 (17%)	117 (117)
Alkaline Phosphatase > 116 u/L	151	11 (7%)	317 (317)	31	4 (13%)	264 (196)
Total Bilirubin > 20 umol/L	154	23 (15%)	114 (114)	31	2 (6%)	57 (23)

* Not all donors have all tests
x (2002) Maximum

LIVER TRANSPLANT OUTCOME

Figure 71

Cadaver Patient and Graft Survival Australia 1996 - 2001



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/

LIVER SPECIAL SECTION

BY Ms GLENDA BALDERSON AND A/PROFESSOR STEPHEN LYNCH

TRANSPLANT ANALYSIS 1985 - 2001

Data derived from the Australia and New Zealand Liver Transplant Registry
Coordinating Centre, Princess Alexandra Hospital, Brisbane, Queensland.

For further information, please contact Ms Balderson
at Email: glenda_balderson@health.qld.gov.au

Figure 72

There is no difference in graft survival of livers from male or female donors.

**Primary Liver Graft Survival 1985 - 2001
According to Donor Gender**

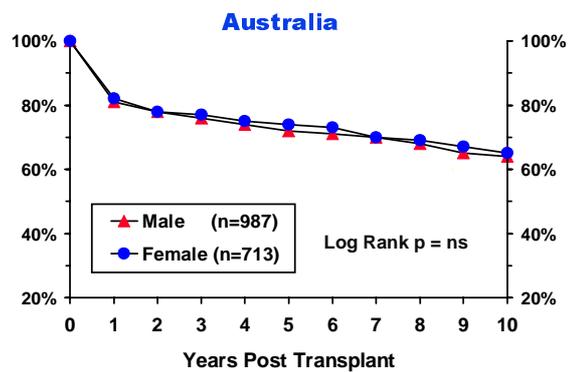


Figure 73

There is no difference in graft survival of livers from male or female donors transplanted into recipients of either gender.

**Primary Liver Graft Survival 1985 - 2001
Donor-Recipient Gender Combinations**

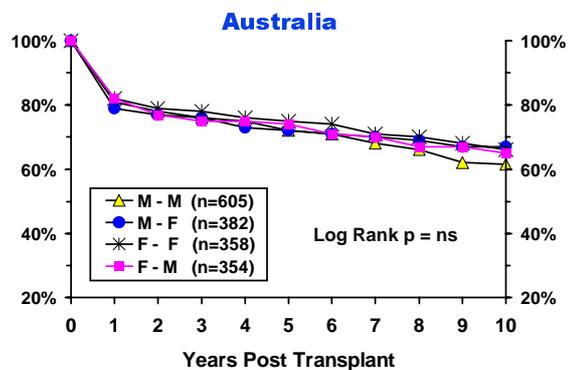


Figure 74

Livers from younger donors (aged <40 years) had a significantly better graft survival after transplantation than livers from older donors. Recipients of livers from donors >51 years were significantly older than recipients of livers for younger donors (median 49y [9.8 - 71y] vs 44y [0.2 - 67y]; $p < 0.001$).

**Primary Liver Graft Survival 1985 - 2001
According to Donor Age Group**

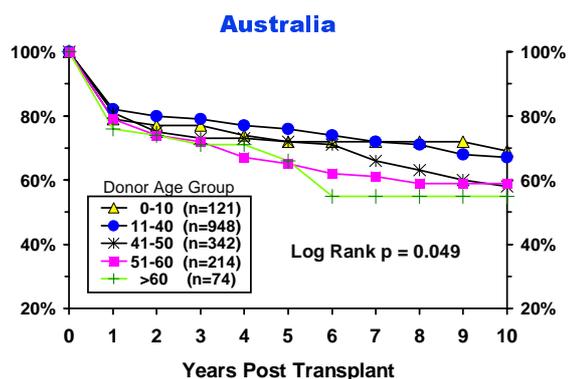


Figure 75

There is a significant difference in graft survival after transplantation between livers of donors dying from head trauma, cerebrovascular disease (CVD) and intracranial malignancy. Donors dying from CVD were significantly older than donors dying from other causes (median age 45y vs trauma 21y and tumour 37y; $p < 0.001$).

**Primary Liver Graft Survival 1985 - 2001
According to Donor Cause of Death**

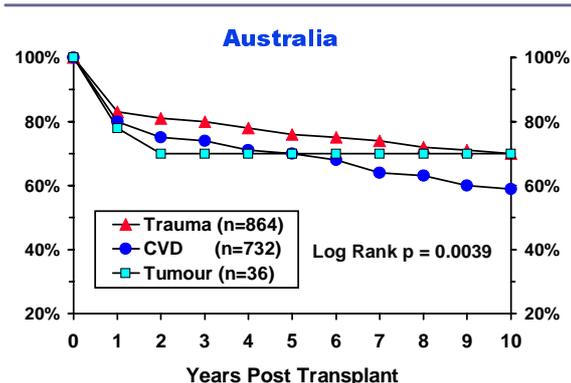


Figure 76

Graft survival is significantly reduced in livers from male donors dying from CVD when the effect of cause of donor death is analysed according to donor gender. There is no significant difference in age between male and female donors for any cause of death.

**Primary Liver Graft Survival 1985 - 2001
According to Donor Gender and Cause of Death**

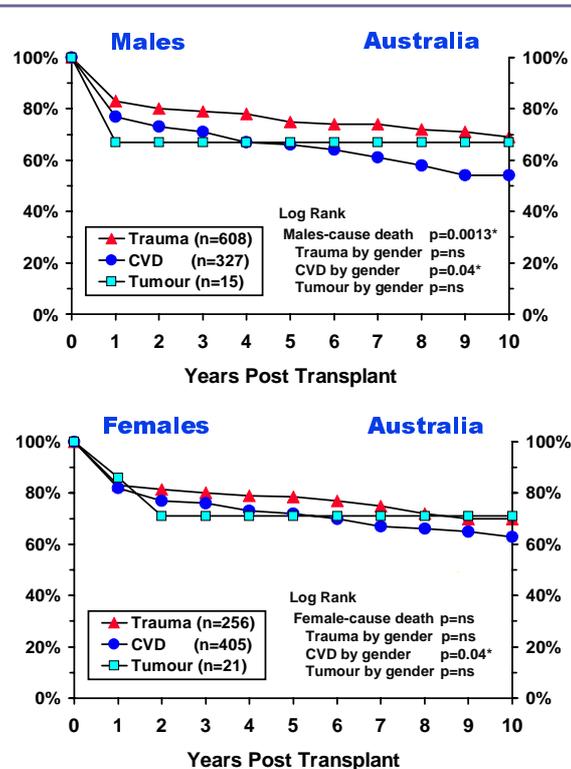
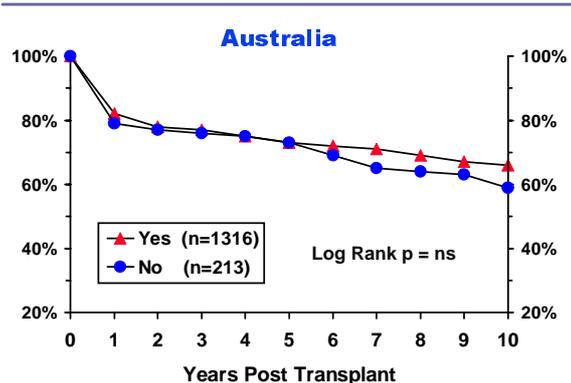


Figure 77

The differences in liver graft survival between donors maintained on inotropes and those receiving no inotropes are not significant.

**Primary Liver Graft Survival 1985 - 2001
According to Inotrope Use**



CARDIO-THORACIC ORGAN DONATION

Australia performed 73 heart transplants, eight heart/lung, 66 double and 25 single lung transplants.

New Zealand performed eight heart transplants, five double lung and three single lung transplants.

In 2002, 88% (73 Australian heart donors)

and 78% (seven New Zealand heart donors) had a normal ECG.

Seventy one percent (60 Australian heart donors) and 100% (nine New Zealand heart donors) had an echocardiogram in 2002.

Figure 78

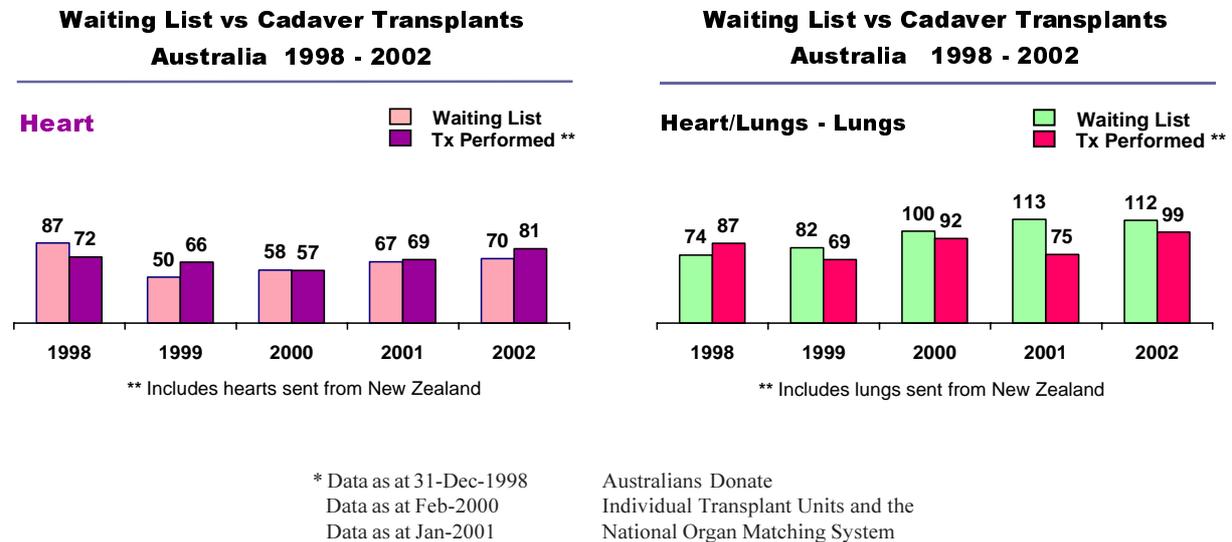


Figure 79

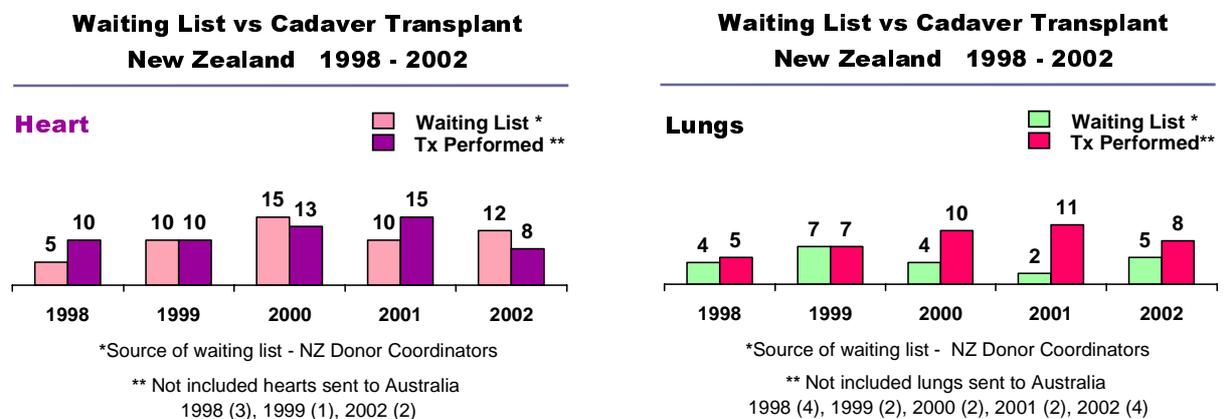
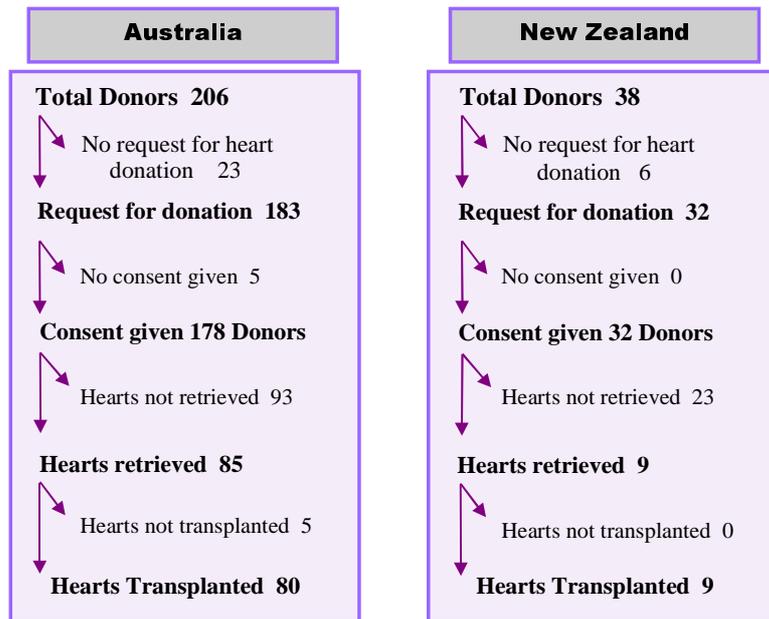


Figure 80

Outcome of Request for Heart Donation 2002



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

Figure 81

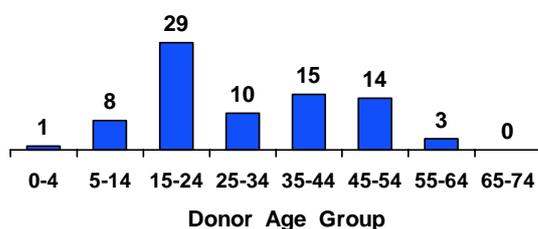
Age of Donors Providing Transplanted Hearts 1998 - 2002

	Year	Age Groups								Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	
Australia	1998	2	3	24	14	18	10	2	0	73
	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
New Zealand	1998	0	0	2	3	5	2	1	0	13
	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

Figure 82

Age of Donors Providing Transplanted Hearts - Australia 2002

Donors (80)



Age of Donors Providing Transplanted Hearts - New Zealand 2002

Donors (9)

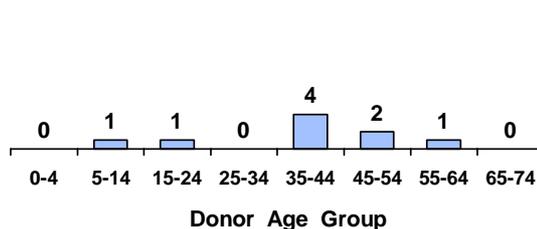
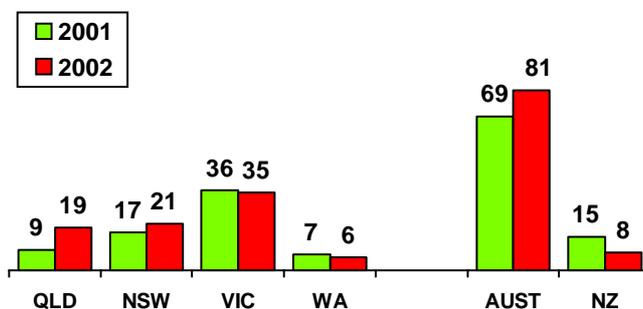


Figure 83

Heart Transplants by Transplant State Australia and New Zealand 2001 - 2002

**Figure 84**

Heart and Lung Transplant Recipients By Transplant Country 1998 - 2002

Heart/Lung		1998	1999	2000	2001	2002
Australia	Heart	69	66	57	67	73
	Heart/lung	4	2	2	2	8
	Double lung	49	42	65	47	66
	Single left lung	17	13	12	10	12
	Single right lung	17	12	13	16	13
	Total	156	135	149	142	172
New Zealand	Heart	13	10	13	15	8
	Heart/lung	0	0	0	0	0
	Double lung	6	7	10	9	5
	Single left lung	1	0	0	1	1
	Single right lung	2	0	2	1	2
	Total	22	17	25	26	16

Figure 85

Regional Outcome of Requests for Heart Donation 1989 - 2002

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z. *
Total Donors	564	897	59	617	48	351	29	213	2778	383
Requested	532	754	56	525	42	272	24	164	2369	308
Consented	504	709	52	496	40	263	23	148	2235	299
Retrieved	281	423	37	305	29	145	11	85	1316	121
Transplanted	279	420	36	291	28	142	11	81	1288	121

* New Zealand 1993 - 2002

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 and stored.

Figure 86

Outcome of Request for Heart Valve Donation 2002

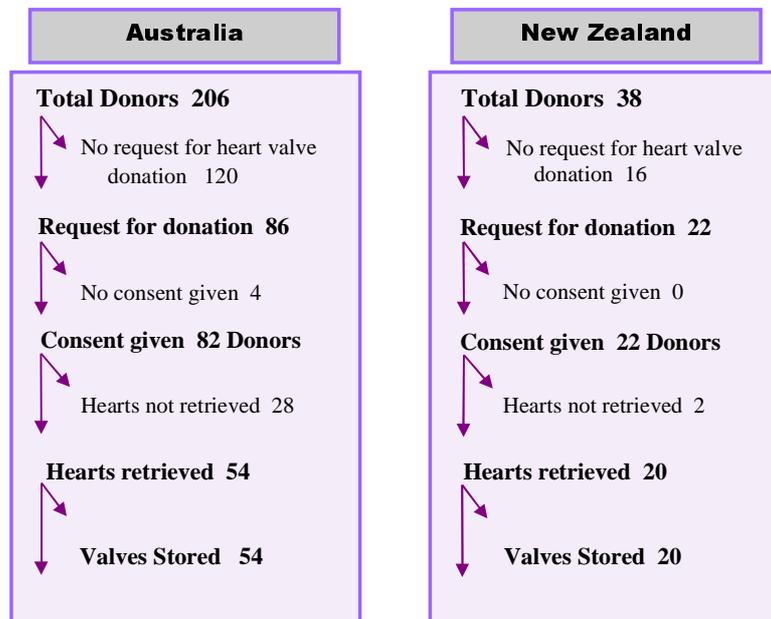


Figure 87

Age of Heart Valve Donors 1998 - 2002

	Year	Age Groups								Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	
Australia	1998	0	4	6	4	9	10	4	0	37
	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
New Zealand	1998	1	2	5	1	2	4	3	0	18
	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

Figure 88

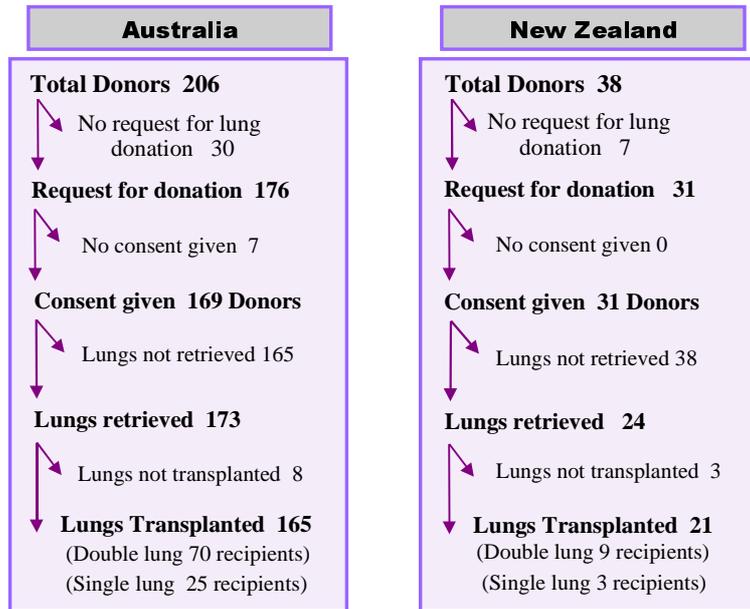
Regional Outcome of Requests for Heart Valve Donation 1989 - 2002

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z. *
Total Donors	564	897	59	617	48	351	29	213	2778	383
Requested	188	165	12	77	4	64	3	50	563	172
Consented	185	164	11	76	4	64	3	47	554	169
Retrieved	168	138	10	61	3	55	1	44	480	161
Transplanted or Stored	167	131	10	60	3	54	1	44	470	160

* New Zealand 1993 - 2002

Figure 89

Outcome of Request for Lung Donation 2002



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

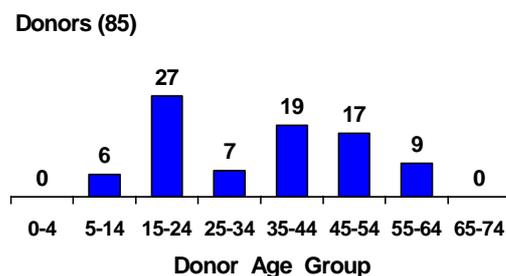
Figure 90

Age of Donors Providing Transplanted Lungs 1998 - 2002

	Year	Age Groups								Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	
Australia	1998	0	2	19	13	19	15	2	0	70
	1999	0	2	10	12	7	18	11	0	60
	2000	0	2	19	14	16	17	11	0	79
	2001	0	6	16	11	9	22	1	0	65
	2002	0	6	27	7	19	17	9	0	85
New Zealand	1998	0	0	1	1	2	2	2	0	8
	1999	0	0	0	0	2	5	1	0	8
	2000	0	0	2	2	2	8	0	0	14
	2001	0	0	3	0	2	4	3	0	12
	2002	0	0	0	0	8	2	2	0	12

Figure 91

Age of Donors Providing Transplanted Lungs - Australia 2002



Age of Donors Providing Transplanted Lungs - New Zealand 2002

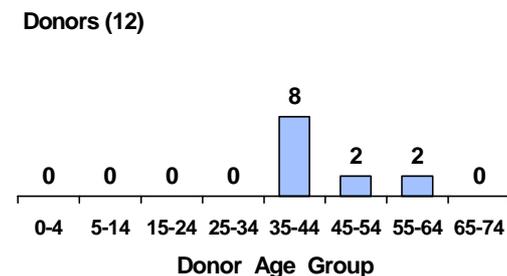
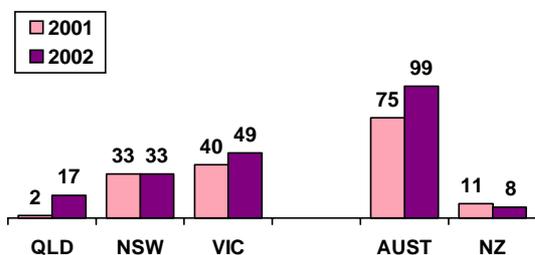
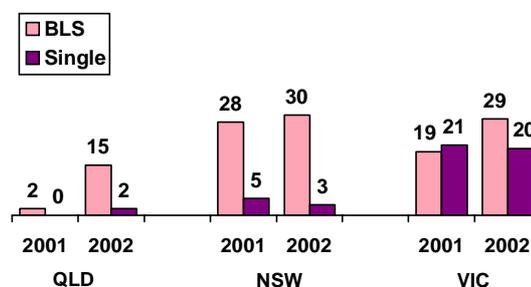


Figure 92**Lung Transplant Recipients 2001 - 2002
by Transplant State - Australia and NZ****Single and Bilateral Sequential (Double)
Lung Transplants by State 2001 - 2002****Figure 93****Regional Outcome of Requests for Lung Donation 1989 - 2002**

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	564	897	59	617	48	351	29	213	2778	383
Requested	501	717	56	472	38	228	22	133	2167	247
Consented	465	670	52	444	36	218	21	123	2029	242
Retrieved x	286	522	45	373	38	200	24	112	1600	164
Transplanted x	259	501	44	335	38	188	23	109	1497	148

x Number of Lungs

** New Zealand 1993 -2002

DONOR LUNG FUNCTION

In 2002, 63% (55 Australian lung donors) and 83% (10 New Zealand lung donors) had a bronchoscopy.

There were 12 lung donors (Australia) who had chest trauma: these included, chest drains (4), pneumothorax (1), fractures (2), haematoma (2) and contusions (3).

Australia

The arterial blood gases were taken on 100% FiO₂ and PEEP of 5 cm. Four donors had a PEEP >5 cm. The results from 82 lung donors are available for 2002 and show 24% (20) to be acidotic (pH < 7.36) and 22% (18) to be alkalotic (pH > 7.44).

Oxygenation measured as PaO₂ ranged from 119-821 mmHg with a median of 445 mmHg.

PaCO₂ ranged from 24.3-56.0 mmHg with a median of 38.5 mmHg.

New Zealand

The arterial blood gas results from 12 lung donors in 2002 shows 8% (1) to be acidotic (pH < 7.36) and 17% (2) to be alkalotic (pH > 7.44).

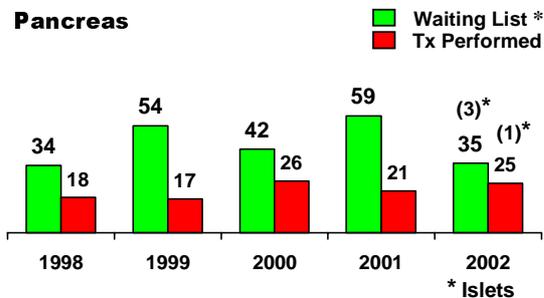
Oxygenation measured as PaO₂ ranged from 329-528 mmHg with a median of 482 mmHg.

PaCO₂ ranged from 31.0-44.0 mmHg with a median of 40.0 mmHg.

PANCREAS DONATION

Figure 94

Waiting List vs Cadaver Transplants Australia 1998 - 2002



* Data as at 31-Dec-1998 Australians Donate
 Data as at Feb-2000 Individual Transplant Units and the
 Data as at Jan-2001 National Organ Matching System

There were 25 combined kidney/pancreas transplants performed in 2002: sixteen at Westmead Hospital, NSW and nine at Monash Medical Centre, Victoria.

There was one pancreas islet transplant at Westmead Hospital, NSW in 2002.

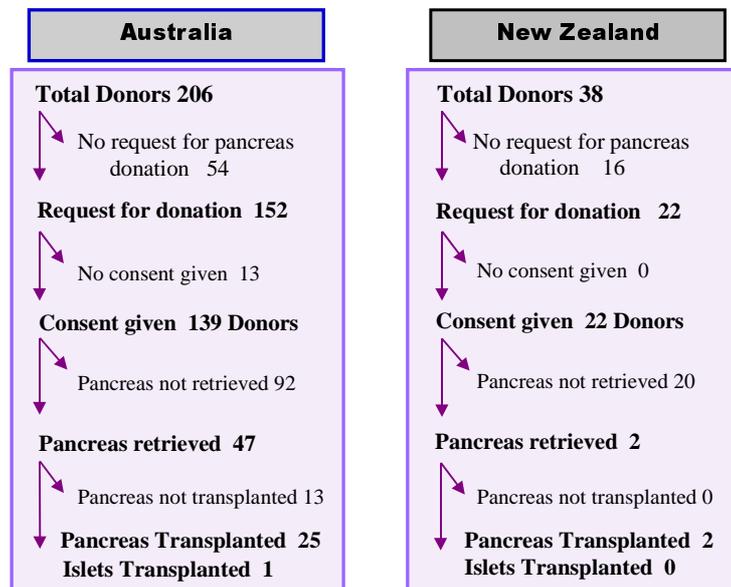
The first combined kidney/pancreas transplant was performed in New Zealand in August 1998, two in 1999 and three in 2000, 2001 and two in 2002.

Figure 95		
Waiting List September 2002		
Numbers of Patients on Waiting List	Aust.	N.Z.
* Number of Patients with Diabetes Type 1 on dialysis (Sept 2002)	202	49
Patient < 45 years of age	103	36
Patient < 55 years of age	160	45
Number of Patients on Kidney Transplant Waiting List	1490	300
Number of Patients on Kidney Pancreas Transplant Waiting List	35	12
Number of patients on Islet Transplant Waiting List	3	0

Reference: * ANZDATA Registry

Figure 96

Outcome of Request for Pancreas Donation 2002



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

Figure 97

Age of Donors Providing Transplanted Pancreas 1998 - 2002

	Year	Age Groups							Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	
Australia	1998	0	2	9	5	2	0	0	18
	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	7	2	2	0	26
New Zealand	1998	0	0	0	0	1	0	0	1
	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

Figure 98

Age of Donors Providing Transplanted Pancreas - Australia 2002

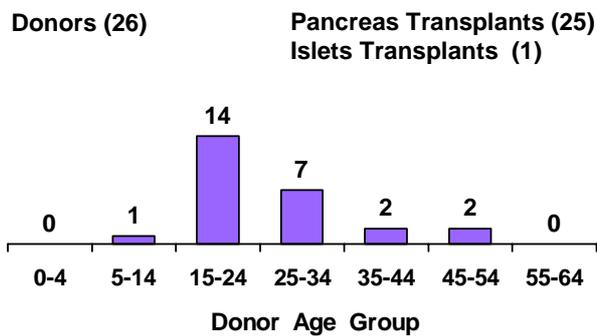


Figure 99

Regional Outcome of Requests for Pancreas Donation 1989 - 2002

	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	564	897	59	617	48	351	29	213	2778	383
Requested	461	684	56	308	19	100	7	58	1693	147
Consented	400	644	52	281	16	80	7	43	1523	140
Retrieved	16	171	14	99	5	21	0	35	361	20
Transplanted	11	117	8	53	5	14	0	0	208	11
Pancreas Islets	0	1	0	0	0	0	0	0	1	0

** New Zealand 1993 -2002

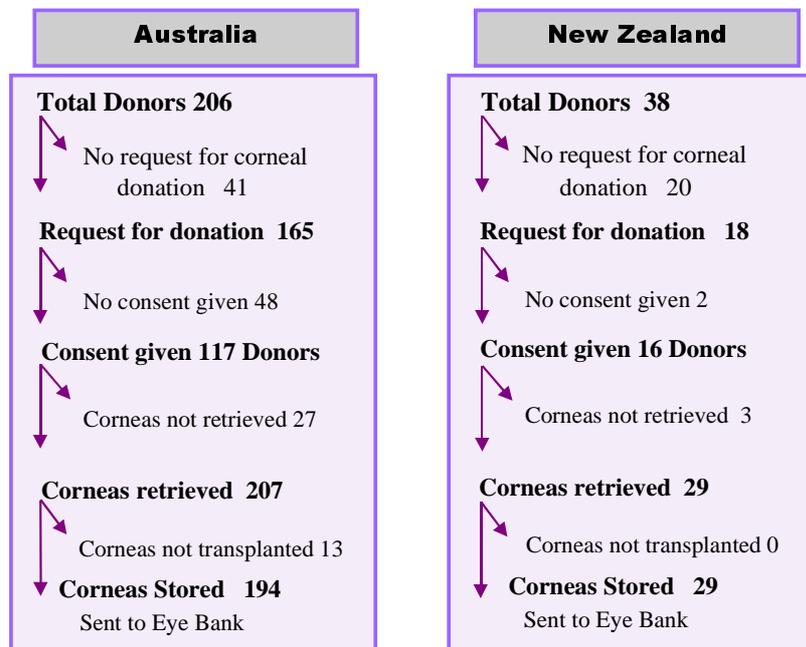
CORNEAL DONATION

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 100

Outcome of Request for Corneal Donation 2002



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

Figure 101

Age of Corneal Donors 1998 - 2002											
	Year	Age Groups									Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	
Australia	1998	0	4	9	11	17	27	16	10	0	94
	1999	0	3	10	13	12	19	24	7	2	90
	2000	0	2	10	10	14	21	23	8	1	89
	2001	0	5	11	8	9	29	15	6	2	85
	2002	1	4	18	5	16	23	25	6	2	100
New Zealand	1998	0	2	1	3	3	3	2	0	0	14
	1999	0	0	0	1	2	2	2	1	0	8
	2000	0	0	1	0	1	8	0	1	0	11
	2001	0	0	3	1	1	3	4	1	0	13
	2002	0	0	0	1	6	5	3	0	0	15

Figure 102

Regional Outcome of Requests for Corneal Donation 1989 - 2002										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	564	897	59	617	48	351	29	213	2778	383
Requested	518	785	52	552	33	250	9	172	2371	217
Consented	369	582	33	430	24	150	6	107	1701	161
Retrieved x	549	1098	57	841	45	273	2	204	3069	267
Gone to Eye Bank xx	539	851	44	820	42	264	2	194	2756	263

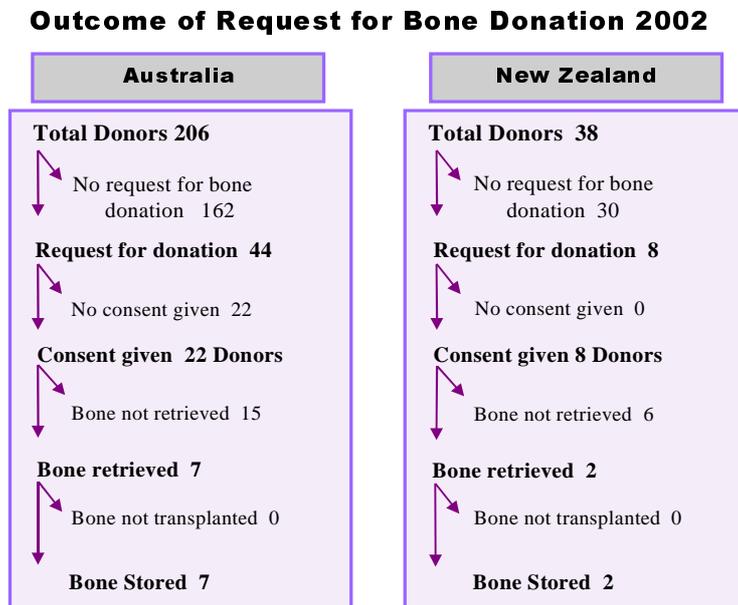
x Number of Corneas xx Gone to Eye Bank - Transplanted later
** New Zealand 1993 -2002

BONE DONATION

The majority of bone donations are from tissue donors.
There were seven bone donations from the solid organs in Australia
and two from New Zealand in 2002.

Many states have logistical difficulties retrieving bone for transplantation.

Figure 103



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

Figure 104

Age of Bone Donors 1998 - 2002											
	Year	Age Groups									Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	
Australia	1998	0	0	5	2	3	6	3	1	0	20
	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
New Zealand	1998	0	0	0	1	0	1	0	0	0	2
	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

Figure 105

Regional Outcome of Bone Donation 1989 - 2002										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.**
Total Donors	564	897	59	617	48	351	29	213	2778	383
Requested	433	75	4	44	3	142	3	105	809	133
Consented	304	55	4	38	2	59	3	62	527	96
Retrieved	115	8	0	8	2	41	0	41	215	34
Transplanted or Stored	113	8	0	2	2	41	0	40	206	34

* New Zealand 1993 -2002

TERMINAL MANAGEMENT

Time from Admission to Brain Death

Australia

There has been a decrease in the median time from admission to brain death, from 43 hours in 2000, 31 hours in 2001 to 30 hours in 2002.

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

New Zealand

Forty four percent of donors were certified brain dead within 24 hours of hospital admission.

This was a decrease from last year (59% in 2001). Eleven percent were in hospital for more than five days.

Figure 106

Time from Admission to Brain Death 1998 - 2002												
	Year	Hours								Unknown	Median (hours)	No. of Donors
		0-23	24-47	48-71	72-95	96-119	120-143	144-167	>168			
Australia	1998	29%	25%	14%	10%	4%	3%	2%	9%	4%	39	196
	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
New Zealand	1998	46%	33%	7%	4%	2%	0%	2%	6%	0%	25	46
	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

Figure 107

Australian States Time from Admission to Brain Death 2002											
States	Hours								Median (hours)	No. of Donors	
	0-23	24-47	48-71	72-95	96-119	120-143	144-167	> 168			
Queensland	43%	25%	16%	5%	2%	0%	0%	9%	27.1	44	
New South Wales	44%	27%	16%	2%	4%	2%	0%	5%	26.9	55	
ACT	17%	33%	17%	17%	0%	0%	0%	16%	51.7	6	
Victoria	36%	26%	15%	6.5%	6.5%	4%	2%	4%	31.6	47	
Tasmania	67%	33%	0%	0%	0%	0%	0%	0%	14.9	6	
South Australia	39%	26%	19%	6.5%	3%	0%	0%	6.5%	35.9	31	
Northern Territory	0%	0%	50%	0%	0%	0%	50%	0%	112.32	2	
Western Australia	20%	47%	13%	7%	0%	7%	0%	7%	39.8	15	

Figure 108

Time from Ventilation to Brain Death 1998 - 2002

	Year	Hours								Unknown	Median (hours)	No. of Donors
		0-23	24-47	48-71	72-95	96-119	120-143	144-167	> 168			
Australia	1998	36%	28%	11%	9%	3%	3%	1%	4%	5%	31	196
	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
New Zealand	1998	52%	31%	9%	2%	0%	0%	2%	4%	0%	23.1	46
	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

Time from Brain Death to Aortic Cross Clamp

Australia

Fifty two percent of donors had organs retrieved within twelve hours of the certification of brain death.

The median time was 12.8 hours.

New Zealand

Seventy nine percent of donor organs were retrieved within twelve hours.

The median time was 9.5 hours.

Figure 109

Time from Brain Death to Aortic Cross Clamp 1998 - 2002

Hours	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
<= 6	10%	9%	10%	6%	4%	24%	36%	34%	19%	18%
7 - 12	59%	60%	53%	53%	48%	70%	54%	54%	65%	61%
13-18	25%	26%	31%	32%	39%	6%	2.5%	5%	14%	13%
19-24	2%	3%	2%	4%	6%	0	5%	2%	2%	3%
> 24	4%	2%	4%	5%	3%	0	2.5%	5%	0%	5%
Median Hours	11.3	11.3	11.6	12.1	12.8	8.8	8.1	9.0	9.5	9.5
Number of Donors	194	163	195	183	204	46	39	41	37	38
Non-Heart Beating Donors	2	1	1	2	2	0	0	0	0	0

Figure 110

Australian States Time from Brain Death to Aortic Cross Clamp 2002

	Qld	NSW	ACT	Vic.	Tas	SA	NT	WA
<= 6 hours	3 (7%)	2 (4%)	0 (0%)	1 (2%)	0 (0%)	2 (7%)	0 (0%)	0 (0%)
7 - 12 hours	29 (66%)	22 (40%)	2 (33%)	21 (45%)	1 (17%)	18 (60%)	0 (0%)	4 (27%)
13-18 hours	12 (27%)	26 (47%)	21 (33%)	21 (45%)	4 (66%)	9 (30%)	0 (0%)	6 (40%)
19-24 hours	0 (0%)	3 (5%)	1 (17%)	4 (8%)	0 (0%)	0 (0%)	1 (100%)	3 (20%)
> 24 hours	0 (0%)	2 (4%)	1 (17%)	0 (0%)	1 (17%)	1 (3%)	0 (0%)	2 (13%)
Median Hours	10.6	13.5	14.9	13.1	14.8	12.1	19.1	15.2
Number of Donors	44	55	6	47	6	30	1	15

DONOR MAINTENANCE

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

There has been a significant increase in the use of noradrenaline in Australia and New Zealand.

Australia

In 2002 there were 10% (21) of donors who did not require inotropic support.

Antidiuretic agents (desmopressin/vasopressin) were prescribed to 134 donors, 65% of all donors.

MAP <50 mm Hg

Mean arterial blood pressure (MAP) <50 mm Hg

was recorded in 11% (23) of donors in Australia.

Three donors had a duration of less than one hour, eleven one hour and nine greater than one hour. Range was fifteen minutes to six hours.

New Zealand

In 2002 there were 13% (5) of donors who did not require inotropic support.

Antidiuretic agents were prescribed to fourteen donors, 37% of all donors.

MAP <50 mm Hg

No donors were reported with a mean arterial blood pressure (MAP) <50 MM Hg in New Zealand.

Figure 111

Donor Maintenance 1998 - 2002										
Drugs	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Number of Donors	(196)	(164)	(196)	(185)	(206)	(46)	(39)	(41)	(37)	(38)
Dopamine	48	39	30	30	18	25	15	13	12	10
Adrenaline	71	47	52	42	42	3	7	2	4	2
Noradrenaline	70	80	126	121	151	18	26	23	26	31
Aramine	8	14	5	7	7	1	2	4	4	0
Dobutamine	4	3	5	3	5	0	0	0	0	0
Desmopressin/Vasopressin	142	118	116	123	134	34	26	17	20	14

NB: Donors may be given more than one drug

Figure 112

Australian States Donor Maintenance 2002 (2001)								
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Number of Donors	44 (48)	55 (47)	6 (7)	47 (40)	6 (3)	31 (25)	2 (2)	15 (13)
Dopamine	4 (10)	2 (9)	1 (0)	7 (9)	1 (0)	0 (1)	0 (0)	3 (1)
Adrenaline	6 (10)	11 (9)	0 (0)	6 (6)	1 (0)	17 (15)	0 (0)	1 (2)
Noradrenaline	32 (28)	45 (29)	5 (6)	37 (34)	3 (3)	12 (7)	2 (2)	15 (12)
Aramine	0 (0)	1 (2)	0 (2)	4 (3)	1 (0)	0 (0)	0 (0)	1 (0)
Dobutamine	0 (0)	1 (2)	1 (0)	1 (1)	0 (0)	0 (0)	0 (0)	2 (0)
Desmopressin/Vasopressin	24 (27)	44 (34)	6 (7)	28 (26)	0 (2)	21 (14)	0 (1)	11 (12)

NB: Donors may be given more than one drug

TERMINAL TREATMENT

Terminal Treatment (provided in the Operating Theatres)

Australia

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

New Zealand

Thirty seven donors received terminal treatment in 2002. Data was unavailable for one donor.

Figure 113

Terminal Treatment 1998 - 2002										
	Australia					New Zealand				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Number of Donors	(196)	(164)	(196)	(185)	(206)	(46)	(39)	(41)	(37)	(38)
Heparin	194	158	192	177	203	42	37	41	36	37
Methyl Prednisolone	192	159	179	166	186	14	5	1	0	2
Chlorpromazine	40	29	34	34	49	0	1	0	0	2
Mannitol	40	20	23	16	8	2	0	0	0	0
Prostacyclin	74	61	82	68	83	8	4	7	12	12

NB: Donors may be given more than one drug

Figure 114

	Australian States Terminal Treatment 2002 (2001)							
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA
Number of Donors	44 (48)	55 (47)	6 (7)	47 (40)	6 (3)	31 (25)	2 (2)	15 (13)
Heparin	44 (46)	55 (46)	6 (7)	47 (39)	6 (3)	30 (21)	1 (2)	15 (13)
Methyl Prednisolone	43 (47)	55 (45)	6 (7)	45 (39)	6 (3)	29 (23)	1 (1)	1 (1)
Chlorpromazine	36 (26)	0 (1)	0 (0)	8 (3)	2 (0)	2 (4)	1 (0)	0 (0)
Mannitol	4 (7)	0 (0)	0 (0)	0 (0)	0 (0)	4 (9)	0 (0)	0 (0)
Prostacyclin	20 (17)	24 (14)	2 (3)	19 (17)	3 (2)	6 (7)	0(1)	9 (7)

NB: donors may be given more than one drug

