

CHAPTER 9

ORGAN PROCUREMENT

(Data from the ANZOD Registry)

Leonie Excell

Penny Wride

Graeme Russ



ORGAN DONORS IN AUSTRALIA AND NEW ZEALAND

(Summarised from the Australia and New Zealand Organ Donation Registry Report 2006)
 For more detail please refer to Website: www.anzdata.org.au/anzod/anzodwelcome.htm.

Figure 9.1					
Number of Donors 2001 - 2005 **					
	2001	2002	2003	2004	2005
Queensland	48 (13)	44 (12)	40 (11)	39 (10)	35 (9)
New South Wales + *	47 (7+) (7*)	55 (9+) (8*)	46 (7+) (7*)	63 (10+) (9*)	54 (8+) (8*)
ACT + *	7 (14+) (22*)	6 (12+) (19*)	8 (15+) (25*)	6 (12+) (19*)	9 (17+) (28*)
Victoria	40 (8)	47 (10)	42 (9)	45 (9)	50 (10)
Tasmania	3 (6)	6 (13)	2 (4)	2 (4)	2 (4)
South Australia	25 (17)	31 (20)	22 (14)	39 (25)	20 (13)
Northern Territory	2 (10)	2 (10)	1 (5)	1 (5)	4 (20)
Western Australia	13 (7)	15 (8)	18 (9)	23 (12)	30 (15)
Australia	185 (10)	206 (10)	179 (9)	218 (11)	204 (10)
New Zealand	37 (10)	38 (10)	40 (10)	40 (10)	29 (7)

() 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 2005 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.

Donor figures for Australia for 2005 include four donors who went to the operating theatre but organs were not retrieved.

One Queensland donor had a malignancy and one had medically unsuitable organs. One Victorian donor had emboli evident and one Western Australian donor had diseased organs.

In 2005 there was a range between the States of four donors per million population (dpmp) in Tasmania to 20 dpmp in the Northern Territory.

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 (Figure 9.2).

Australian and New Zealand data on deaths for 2005 were not available at the time of going to print.

Figure 9.2										
Donors per Thousand Deaths Aged less than 65 years 1999 - 2004										
() Represents % of Total Deaths aged less than 65 years *										
Year	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
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 (22%)	6.0 (24%)
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 (23%)	6.6 (23%)
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	8.3 (22%)	5.5 (20%)	20.9 (22%)	7.2 (19%)	7.8 (20%)	14.1 (18%)	3.8 (63%)	5.7 (22%)	7.4 (20%)	6.0 (22%)
2003	6.7 (23%)	4.5 (20%)	14.5 (25%)	5.6 (19%)	2.4 (20%)	7.6 (19%)	1.7 (63%)	6.9 (23%)	5.7 (21%)	5.9 (23%)
2004	6.8 (23%)	6.2 (19%)	17.2 (24%)	6.3 (18%)	0.0 (19%)	16.1 (19%)	1.9 (60%)	8.0 (24%)	7.2 (20%)	5.7 (22%)

DONOR PROFILE

In Australia in 2005, 10% (20 donors) were 65 years or older and 2% (five donors) were aged 75 years or older. The oldest donor was 79.5 years.

The mean age for donors in Australia decreased slightly to 42.8 years in 2005 from 43.2 years in 2004. The mean age for Australian mainland States ranged from 29.9 years in Tasmania to 47.0 years in New South Wales.

The median age for Australia increased from 46.6 years in 2004 to 45.3 years in 2005. The age range was between 7.6 months and 79.5 years.

In New Zealand in 2005 the mean age increased to 45.3 years from 43 years in 2004 and the median age to 48.6 years from 46.1 years previously.

No donors were aged 65 years or older. The age range was 17.4 months to 64.4 years.

The gender distribution by Australian States and New Zealand is shown in Figure 9.4.

Figure 9.3

Australian States Mean Age of Donors 1998 - 2005								
	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
2004	38.2	47.8	46.3	43.2	34.6	41.5	59.5	42.0
2005	43.1	47.0	31.8	43.7	29.9	37.8	30.0	42.2

Figure 9.4

Donor Gender by Year for Each State 1989 - 2005																			
Donor State	Gender	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	Total
QLD	Male	25	27	34	48	25	22	22	23	22	18	14	26	36	29	23	23	18	435 (64%)
	Female	12	11	12	18	19	16	12	12	15	22	6	11	12	15	17	16	17	243 (46%)
NSW	Male	45	55	40	39	31	39	42	39	43	39	26	30	27	33	26	42	27	623 (59%)
	Female	41	19	32	31	37	32	18	24	22	24	22	25	20	22	20	21	27	437 (41%)
ACT	Male	3	3	3	0	6	0	3	3	3	2	1	3	5	4	4	6	3	52 (63%)
	Female	0	2	1	0	0	2	4	3	1	0	1	2	2	2	4	0	6	30 (37%)
VIC	Male	39	29	23	29	32	14	19	22	23	23	21	22	24	30	26	26	27	429 (57%)
	Female	26	16	22	13	20	12	19	27	19	17	21	22	16	17	16	19	23	325 (43%)
TAS	Male	2	2	2	2	3	3	4	0	4	0	4	1	3	5	1	1	1	38 (70%)
	Female	0	0	0	2	3	3	0	1	1	0	2	0	0	1	1	1	1	16 (30%)
SA	Male	11	16	10	8	16	11	16	18	16	16	16	19	15	21	12	22	12	255 (59%)
	Female	8	11	5	12	7	12	7	7	9	19	14	11	10	10	10	17	8	177 (41%)
NT	Male	2	1	1	0	3	1	1	3	4	3	3	0	2	1	1	0	2	28 (80%)
	Female	0	0	1	0	0	0	0	0	0	0	0	2	0	1	0	1	2	7 (20%)
WA	Male	10	6	17	7	10	5	13	5	5	8	9	11	7	9	12	13	21	168 (59%)
	Female	7	5	6	7	9	11	4	7	3	5	4	11	6	6	6	10	9	116 (41%)
Total		231	203	209	216	221	183	184	194	190	196	164	196	185	206	179	218	204	3379
NZ *	Male	-	-	-	-	16	23	23	17	26	31	18	22	19	19	25	21	16	276 (56%)
	Female	-	-	-	-	18	12	12	19	16	15	21	19	18	19	15	19	13	216 (44%)
Total		-	-	-	-	34	35	35	36	42	46	39	41	37	38	40	40	29	492

* Data for New Zealand complete from 1993 onwards



CAUSE OF DONOR DEATH

Figure 9.5 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), (49% of all Australian donors and 53% of all New Zealand donors).

Figure 9.6 shows that CVA is the main cause of death in

donors 55 years and older, 82% in Australia and 78% in New Zealand, whereas in the 15-34 year age group, trauma accounted for 55% of all deaths in Australia and 50% in New Zealand in 2005.

Figure 9.7 shows detailed cause of death by gender for 2005.

Figure 9.5

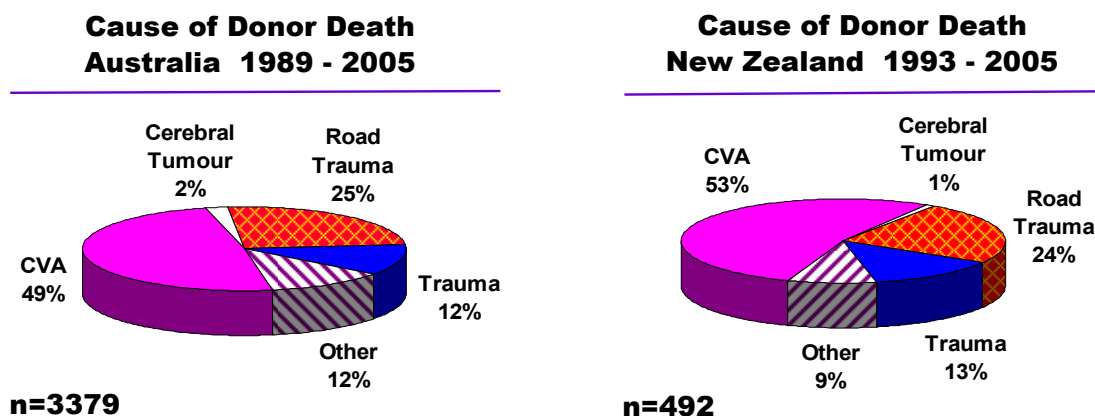


Figure 9.6

Cause of Donor Death Related to Age Group 2005										
	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	4	9	55	45	113	0	1	9	7	17
Trauma (road)	5	19	4	4	32	0	3	0	0	3
Trauma (non-road)	1	8	9	4	22	0	0	2	1	3
Other	5	13	17	2	37	0	2	3	1	6
Total	15	49	85	55	204	0	6	14	9	29

Figure 9.7							
Cause of Donor Death 2005							
Causes of Death		Australia			New Zealand		
		Male	Female	Total	Male	Female	Total
CVA	Cerebral Infarct	6	8	14	4	5	9
	Intracranial Haemorrhage	24	27	51	3	4	7
	Subarachnoid Haemorrhage	18	30	48	1	0	1
Road Trauma	Cyclist	1	2	3	0	0	0
	Motor Bike Accident	5	0	5	1	0	1
	Motor Vehicle Accident	13	1	14	1	1	2
	Pedestrian	5	3	8	0	0	0
	Other Road Accident	2	0	2	0	0	0
Other Trauma	Fall	9	1	10	0	2	2
	Felony / Crime - Assault	9	2	11	0	0	0
	Gunshot	1	0	1	1	0	1
	Other Trauma	0	0	0	0	0	0
Hypoxia Anoxia	Airway Obstruction	1	0	1	0	0	0
	Anaphylaxis	0	2	2	0	0	0
	Asthma	0	3	3	0	0	0
	Cardiac Arrest	4	1	5	0	0	0
	Choking	0	1	1	0	0	0
	Drowning	2	0	2	0	0	0
	Hanging	2	2	4	0	0	0
	Nitrous Oxide Inhalation	0	1	1	0	0	0
	Organophosphate Poisoning	1	0	1	0	0	0
	Overdose	0	2	2	0	0	0
	Respiratory Arrest	2	1	3	0	0	0
Seizure	1	0	1	0	0	0	
Other	Acute Encephalitis	0	0	0	1	0	1
	Astrocytoma (Benign)	1	0	1	0	0	0
	Astrocytoma (Malignant)	1	0	1	1	0	1
	Glioma (Malignant)	0	1	1	0	0	0
	Herpes Encephalitis	0	0	0	1	0	1
	Hypovolaemic Arrest	0	0	0	1	0	1
	Insulin Overdose	1	0	1	0	0	0
	Meningioma (Benign)	0	2	2	0	0	0
	Meningitis (Meningococcal)	1	0	1	0	1	1
	Meningitis (Pneumococcal)	1	1	2	0	0	0
	Meningitis (Streptococcal)	0	1	1	0	0	0
	Pituitary (Benign)	0	1	1	0	0	0
Suicide - Nail Gun	0	0	0	1	0	1	
Total		111	93	204	16	13	29



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 9.8										
Trend to Multiple Organ Retrieval 2001 - 2005										
Number of Organs	Australia					New Zealand				
	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
Single	19%	19%	18%	15%	17%	19%	13.5%	7%	13%	14%
Two	32%	24%	27%	27%	22%	31%	43%	28%	46%	34%
Three	21%	25%	20%	22%	17%	22%	30%	25%	30%	21%
Four	19%	24%	26%	23%	32%	25%	13.5%	35%	11%	28%
Five	9%	8%	9%	12%	10%	3%	0%	5%	0%	3%

Figure 9.9										
State by State Comparison of Multiple Organ Retrieval 2005										
Number of Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Single	8 (23%)	15 (28%)	1 (11%)	5 (10%)	0 (0%)	3 (15%)	1 (25%)	2 (7%)	35 (17%)	4 (14%)
Two	7 (20%)	13 (24%)	1 (11%)	8 (16%)	0 (0%)	4 (20%)	2 (50%)	9 (30%)	44 (22%)	10 (34%)
Three	6 (17%)	6 (11%)	3 (33%)	8 (16%)	1 (50%)	2 (10%)	0 (0%)	9 (30%)	35 (17%)	6 (21%)
Four	9 (26%)	16 (30%)	1 (11%)	23 (46%)	0 (0%)	9 (45%)	1 (25%)	6 (20%)	65 (32%)	8 (28%)
Five	3 (9%)	4 (7%)	3 (33%)	5 (10%)	1 (50%)	2 (10%)	0 (0%)	3 (10%)	21 (10%)	1 (3%)
No organs	2 (5%)	0 (0%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)	4 (2%)	0 (0%)
Total	35	54	9	50	2	20	4	29	204	29

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

ORGAN RECIPIENTS TRANSPLANTED

Both Australia and New Zealand had 3.6 organ recipients per donor used for transplantation in 2005.

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

Tasmania had the highest number of organs transplanted, 5.0 per donor, followed by the ACT 4.7, South Australia 4.0, New South Wales, Victoria, Western Australia 3.5, Queensland 3.3 and the Northern Territory 3.0.

These figures exclude tissue transplantation.

Figure 9.10										
Organ Recipients Transplanted per Donor 2005										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
No. Organs Transplanted	116	188	42	174	10	80	12	105	727	103
No. of Donors	35	54	9	50	2	20	4	30	204	29
Average per Donor	3.3	3.5	4.7	3.5	5.0	4.0	3.0	3.5	3.6	3.6
Double lungs = 1 organ (1 recipient) Two kidneys = 2 organs										

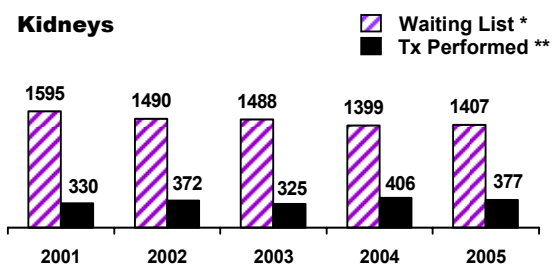
Figure 9.11												
Age of Donors Providing Transplanted Kidneys 2001 - 2005												
	Year	Age Group										Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
Australia	2001	0 (0)	16	32	25	22	44	19	11	1 (x)	0	170
	2002	3 (2)	14 (2)	44	17	31	42	30	11 (1x)	1	0	193
	2003	2 (2)	10	32 (1*)	15	26	39	28	9 (2x)	5	1	167
	2004	0	5 (1)	40	30	23	50	39	15 (2x)	4	0	206
	2005	6 (4)	8	27	22	36	46 (1x)	33 (1x)	13	5 (x)	0	196
New Zealand	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
	2004	0	0	8	4	3	6	9	1	1	0	32
	2005	0	0	3	3	6	8	7	0	0	0	27
() En-Bloc Kidneys *Horseshoe Kidney (Adult) x Double Adult												



KIDNEY DONATION

Figure 9.12

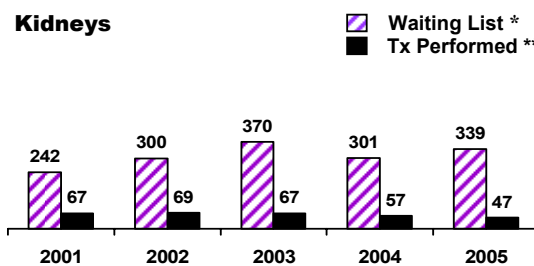
**Waiting List vs Deceased Donor Transplants
Australia 2001 - 2005**



* Source: NOMS (National Organ Matching System)

** Includes kidneys sent from New Zealand

**Waiting List vs Deceased Donor Transplants
New Zealand 2001 - 2005**



* Source of Waiting List – NZ Donor Coordinators

** Not included kidneys sent to Australia: 2004 (1) 2005 (4)

Figure 9.13

Outcome of Request for Kidney Donation 2005

