

CHAPTER 9

ORGAN PROCUREMENT

(Data from the ANZOD Registry)

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ORGAN DONORS IN AUSTRALIA AND NEW ZEALAND

(Summarised from the Australia and New Zealand Organ Donation Registry Report 2007)
 For more detail please refer to Website: www.anzdata.org.au/anzod/anzodwelcome.htm.

Figure 9.1

Number of Donors** by Retrieval State^x 2002 - 2006					
() Donors Per Million					
	2002	2003	2004	2005	2006
Queensland	44 (12)	40 (11)	39 (10)	35 (9)	36 (9)
New South Wales + *	55 (9+) (8*)	46 (7+) (7*)	63 (10+) (9*)	54 (8+) (8*)	49 (7+) (7*)
ACT + *	6 (12+) (19*)	8 (15+) (25*)	6 (12+) (19*)	9 (17+) (28*)	4 (7+) (12*)
Victoria	47 (10)	42 (9)	45 (9)	50 (10)	46 ^x (9)
Tasmania	6 (13)	2 (4)	2 (4)	2 (4)	8 (16)
South Australia	31 (20)	22 (14)	39 (25)	20 (13)	36 (23)
Northern Territory	2 (10)	1 (5)	1 (5)	4 (20)	2 (10)
Western Australia	15 (8)	18 (9)	23 (12)	30 (15)	21 (10)
Australia	206 (10)	179 (9)	218 (11)	204 (10)	202 (10)
New Zealand	38 (10)	40 (10)	40 (10)	29 (7)	25 (6)

x Refers to donors retrieved by retrieval State (ie Albury-NSW donors retrieved by Victoria)
 + 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 from the ACT service the NSW Southern Area Health Region. Population data—June 2006 ABS 3101.0

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

Donor figures for Australia for 2006 include two donors who went to the operating theatre but organs were not retrieved.

One South Australian donor had an infection and medically unsuitable organs and one Western Australian donor had diseased organs. All New Zealand donors had organs retrieved.

In 2006 there was a range between the States of seven donors per million population (dpmp) in New South Wales and the ACT to 23 dpmp in South Australia.

The ACT had 12 dpmp when the NSW Southern Area Health Service population was excluded.

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 2006 were not available at the time of going to print.

Figure 9.2

Donors per Thousand Deaths Aged <75 years 2001 - 2005											
() Represents % of Total Deaths Aged <75 years *											
Year	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ	
2001	4.9 (43%)	2.6 (39%)	11.1 (44%)	3.2 (38%)	1.9 (39%)	5.3 (36%)	2.9 (78%)	2.8 (42%)	3.6 (40%)	3.2 (41%)	
2002	4.4 (40%)	3.0 (38%)	11.6 (38%)	3.8 (34%)	3.9 (38%)	7.4 (35%)	2.7 (79%)	3.2 (40%)	4.0 (38%)	3.3 (41%)	
2003	4.1 (40%)	2.5 (37%)	8.3 (42%)	3.5 (36%)	1.3 (38%)	5.0 (34%)	1.5 (76%)	3.9 (40%)	3.4 (38%)	3.4 (40%)	
2004	4.0 (39%)	3.7 (35%)	10.1 (42%)	3.7 (34%)	1.4 (36%)	9.8 (34%)	1.4 (78%)	4.8 (40%)	4.3 (37%)	3.4 (48%)	
2005	3.6 (39%)	3.2 (36%)	16.5 (36%)	4.4 (35%)	1.3 (37%)	4.8 (34%)	5.1 (78%)	6.3 (39%)	4.1 (37%)	2.7 (40%)	

* The number of actual donors is compared to the number of deaths that are aged less than 75 years (Figure 8).

Australian Bureau of Statistics - Deaths 3302.0 and Statistics NZ

DONOR PROFILE

AGE AND GENDER DISTRIBUTION

In Australia in 2006, 12% (24 donors) were 65 years or older and 2% (four donors) were aged 75 years or older. The oldest donor was 78.2 years. Donor gender in each State, Australia and New Zealand is shown in five year cohorts in Figure 9.3.

The mean age for donors in Australia increased slightly to 43.3 years in 2006 from 42.8 years in 2005. The mean age for Australian States ranged from 36.4 years in Tasmania to 51.0 years in the ACT.

The median age for Australia was 45.3 years in 2006, the same as in 2005. The age range was between 16.2 months and 78.2 years.

In Australian States the median age ranged from 34.0 years in Tasmania to 56.6 years in the ACT.

The mean and median age for donors from 1992 to 2006 for each State are shown in three year cohorts are shown in Figures 9.4 and 9.5.

In New Zealand in 2006 the mean age decreased to 36.5 years from 45.3 years and the median age from 48.6 years to 35.4 years in 2006. One donor was over 65 years. The age range was 11.6 years to 69.4 years.

Figure 9.3

**Donor Gender – States, Australia, New Zealand
1992-1996 1997-2001 2002-2006**

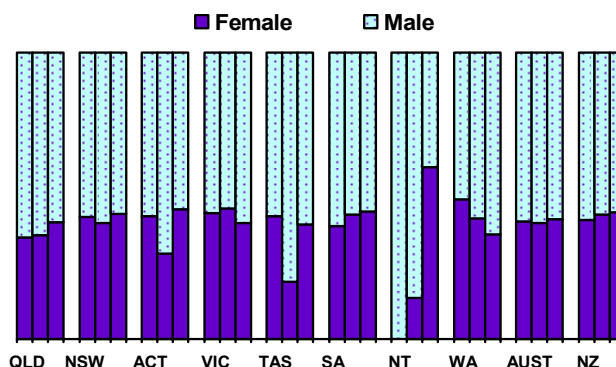


Figure 9.4

Australian States Mean Age of Donors (Years)

Years	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
1992 - 1994	31.9	38.2	35.3	39.8	27.4	38.2	29.3	35.0
1995 - 1997	34.2	38.5	44.2	42.0	33.2	41.4	36.0	36.9
1998 - 2000	38.4	41.9	37.2	42.9	39.7	38.3	37.0	37.3
2001 - 2003	38.6	41.4	40.0	43.8	34.3	41.2	44.7	32.5
2004 - 2006	39.9	46.5	40.4	42.6	33.4	43.6	38.9	43.2

Figure 9.5

Australian States Median Age of Donors (Years)

Years	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
1992 - 1994	31.4	40.1	27.2	40.7	25.1	38.6	27.9	33.6
1995 - 1997	37.5	38.4	45.9	45.5	33.9	45.4	35.5	39.4
1998 - 2000	40.3	43.6	37.2	46.4	42.6	42.4	32.8	44.7
2001 - 2003	40.5	42.9	37.9	48.8	21.4	44.7	47.6	31.8
2004 - 2006	42.2	48.3	45.8	46.9	34.0	47.2	42.4	44.6



CAUSE OF DEATH - ALL DONORS

Figure 9.6 shows the cause of death for all organ donors in Australia since 1989 and for New Zealand since 1993.

In Australia road trauma is a reducing cause of death, whereas cerebrovascular accident (CVA) is increasing since 1989.

In the period 2001-2006 CVA accounted for 54% of donor deaths and road trauma 18%.

Figure 9.7 shows the cause of death by percentage in each Australian State from 2001 to 2006.

Figure 9.8 shows detailed cause of death by gender for 2006.

Figure 9.9 shows that CVA is the main cause of death in donors 55 years and older, 70% in Australia and 100% in New Zealand, whereas in the 15-34 year age group, trauma accounted for 47% of all deaths in Australia and 45% in New Zealand in 2006.

Figure 9.6

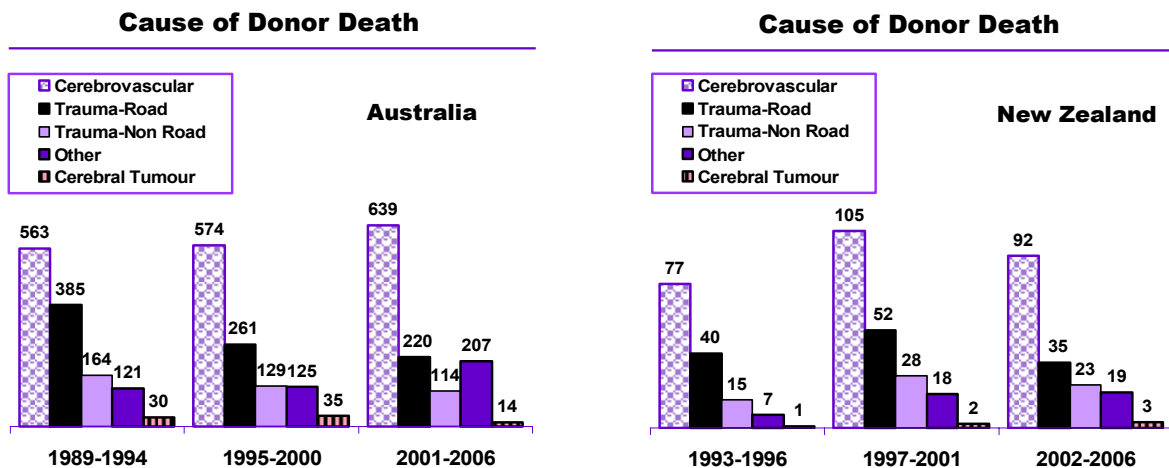


Figure 9.7

Cause of Donor Death 2001 - 2006										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ *
CVA	50%	56%	48%	60%	57%	47%	67%	48%	54%	53%
Trauma (road)	24%	17%	25%	12%	9%	17%	25%	24%	18%	20%
Trauma (non-road)	14%	8%	12%	7%	17%	6%	8%	17%	10%	14%
Cerebral Tumour	1%	1%	0%	1%	0%	1%	0%	3%	1%	2%
Other	11%	18%	15%	20%	17%	29%	0%	8%	17%	11%

* NZ 2002 - 2006

Figure 9.8

Cause of Donor Death 2006

Causes of Death		Australia			New Zealand		
		Male	Female	Total	Male	Female	Total
CVA	Cerebral Infarct	6	5	11	2	1	3
	Intracranial Haemorrhage	27	27	54	3	3	6
	Subarachnoid Haemorrhage	19	31	50	1	4	5
Road Trauma	Cyclist	1	0	1	1	1	2
	Motor Bike Accident	3	0	3	0	0	0
	Motor Vehicle Accident	14	7	21	4	0	4
	Pedestrian	2	4	6	1	0	1
	Other Road Accident	1	0	1	1	0	1
Other Trauma	Fall	4	2	6	0	1	1
	Felony / Crime - Assault	1	0	1	0	0	0
	Gunshot	3	0	3	0	0	0
Hypoxia Anoxia	Asthma	0	2	2	0	0	0
	Cardiac Arrest	12	9	21	1	0	1
	Choking	0	1	1	0	0	0
	Drowning	0	1	1	0	0	0
	Encephalopathy-Acute Liver Failure	0	1	1	0	0	0
	Hanging	6	0	6	1	0	1
	Precipitating Cause Unknown	1	0	1	0	0	0
	Respiratory Arrest	1	0	1	0	0	0
	Respiratory Failure	0	1	1	0	0	0
Other	Cerebral Oedema ? Aneurysm	0	1	1	0	0	0
	Cerebral Vasculitis	0	1	1	0	0	0
	Diabetic Ketoacidosis	0	1	1	0	0	0
	Hyponatraemia	1	0	1	0	0	0
	Meningioma (Benign)	1	1	2	0	0	0
	Meningitis (Meningococcal)	1	0	1	0	0	0
	Meningitis (Streptococcal)	0	1	1	0	0	0
	Sagittal Sinus Thrombosis	1	0	1	0	0	0
	Thoracic Aortic Aneurysm	0	1	1	0	0	0
Total		105	97	202	15	10	25

Figure 9.9

Cause of Donor Death Related to Age Group 2006

	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	3	17	50	45	115	0	2	8	4	14
Trauma (road)	5	22	3	2	32	1	7	0	0	8
Trauma (non-road)	0	5	3	2	10	0	1	0	0	1
Hypoxia-Anoxia	2	12	9	12	35	0	1	1	0	2
Cerebral Tumour	0	0	2	0	2	0	0	0	0	0
Other	2	2	1	3	8	0	0	0	0	0
Total	12	58	68	64	202	1	11	9	4	25



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.

There were 23 (11%) of Australian donors in 2006 who donated solid organs, who had a single organ retrieved shown in Figure 9.10. Kidney only donation occurred in 20 cases.

Two donors in Australia went to theatre but no solid organs were retrieved.

New Zealand had two single organ donors in 2006, one donating kidneys and one donating a liver.

In Australia and New Zealand respectively, 87% and 92% of donors had two or more organs retrieved for the purposes of transplantation.

Figure 9.10										
Trend to Multiple Organ Retrieval 2002 - 2006										
Number of Organs	Australia					New Zealand				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Single	19%	18%	15%	17%	11%	13.5%	7%	13%	14%	8%
Two	24%	27%	27%	22%	23%	43%	28%	46%	34%	24%
Three	25%	20%	22%	17%	23%	30%	25%	30%	21%	44%
Four	24%	26%	23%	32%	23%	13.5%	35%	11%	28%	12%
Five	8%	9%	12%	10%	18%	0%	5%	0%	3%	12%

Figure 9.11										
State by State Comparison of Multiple Organ Retrieval 2006										
Number of Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Single	2 (6%)	11 (22%)	1 (25%)	2 (5%)	0 (0%)	5 (14%)	1 (50%)	1 (4%)	23 (11%)	2 (8%)
Two	16 (44%)	11 (22%)	0 (0%)	5 (11%)	2 (25%)	7 (19%)	0 (0%)	6 (29%)	47 (23%)	6 (24%)
Three	7 (19%)	8 (16%)	1 (25%)	9 (20%)	3 (37.5%)	12 (33%)	1 (50%)	6 (29%)	47 (23%)	11 (44%)
Four	10 (28%)	10 (20%)	0 (0%)	15 (33%)	1 (12.5%)	6 (17%)	0 (0%)	5 (24%)	47 (23%)	3 (12%)
Five	1 (3%)	10 (20%)	2 (50%)	14 (31%)	2 (25%)	5 (14%)	0 (0%)	2 (10%)	36 (18%)	3 (12%)
No organs	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	1 (4%)	2 (1%)	0 (0%)
Total	36	50	4	45	8	36	2	21	202	25

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

Australia had 3.7 organ recipients per donor used for transplantation in 2006. New Zealand had 3.8 recipients per donor shown in Figure 9.12.

The number of organs transplanted per donor each year for 2002-2006 in Australia and New Zealand is shown in Figure 9.13.

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

Victoria had the highest number of organs transplanted, 4.0 per donor, followed by New South Wales and Tasmania, both 3.8, Western Australia, Queensland and the ACT, all 3.5, South Australia 3.2 and the Northern Territory 3.0 per donor.

These figures exclude tissue transplantation.

Figure 9.12

Organ Recipients Transplanted per Donor 2006										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
No. Organs Transplanted	128	188	14	184	30	114	6	74	738	97
No. of Donors	36	49	4	46	8	36	2	21	202	25
Mean per Donor	3.5	3.8	3.5	4.0	3.8	3.2	3.0	3.5	3.7	3.8

Figure 9.13

Mean Number of Recipients Per Donor Transplanted 1996 - 2006

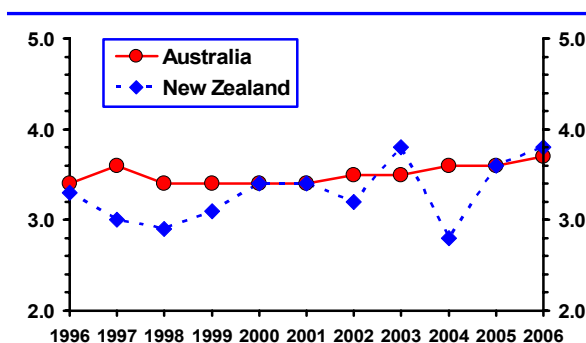


Figure 9.14

Age of Donors Providing Transplanted Kidneys 2002 - 2006

	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	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 (1x)	0	196
	2006	1 (1)	11	34	19	28	38	35(1x)	20 (1x)	3 (1x)	0	189
New Zealand	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
	2006	0	1	6	5	3	3	3	1	0	0	22

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

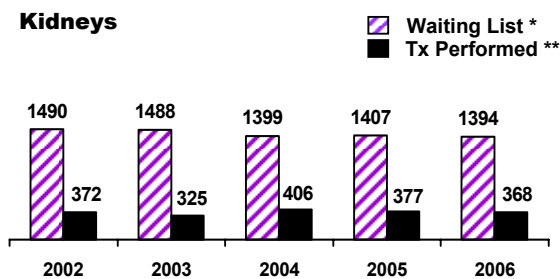


KIDNEY DONATION

Figure 9.15 shows the number of Australian and New Zealand patients waiting for a kidney transplant and the number of deceased donor transplants performed for each year from 2002-2006.

Figure 9.15

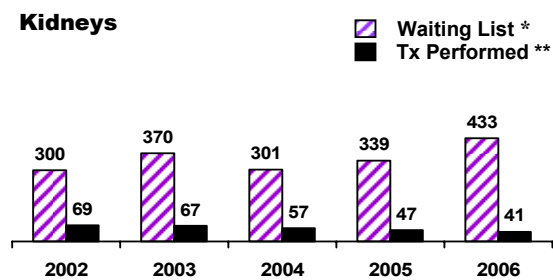
**Waiting List vs Deceased Donor Transplants
Australia 2002 - 2006**



* Source: NOMS (National Organ Matching System)

** Includes kidneys sent from New Zealand

**Waiting List vs Deceased Donor Transplants
New Zealand 2002 - 2006**



* Source of Waiting List – NZ Donor Coordinators

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

Figure 9.16

Outcome of Request for Kidney Donation 2006

