

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 2008)
 For more detail please refer to Website: www.anzdata.org.au/anzod/anzodwelcome.htm.

Figure 9.1

Number of Donors** by Retrieval State^x 2003 - 2008					
() Donors Per Million					
	2004	2005	2006	2007	2008
Queensland	39 (10)	35 (9)	36 (9)	39 (9)	48 (11)
New South Wales + *	63 (10+) (9*)	54 (8+) (8*)	49 (7+) (7*)	53 (8+) (8*)	57 (8+) (8*)
ACT + *	6 (12+) (19*)	9 (17+) (28*)	4 (7+) (12*)	1 (2+) (3*)	5 (9+) (14.5*)
Victoria	45 (9)	50 (10)	46 ^x (9)	55 (11)	67 (13)
Tasmania	2 (4)	2 (4)	8 (16)	1 (2)	8 (16)
South Australia	39 (25)	20 (13)	36 (23)	27 (17)	43 (27)
Northern Territory	1 (5)	4 (20)	2 (10)	3 (14)	3 (14)
Western Australia	23 (12)	30 (15)	21 (10)	19 (9)	28 (13)
Australia	218 (11)	204 (10)	202 (10)	198 (9)	259 (12)
New Zealand	40 (10)	29 (7)	25 (6)	38 (9)	31 (7)

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 2008 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 2008 include four donors who went to the operating theatre but organs were not retrieved. Two donors had infections, one was found to have social risk factors and one had organs that were medically unsuitable.

Donor (dpmp) figures in Australia improved from 9-11 (dpmp) during the past five years, to 12 (dpmp) in 2008.

All New Zealand donors had organs retrieved.

In 2008 there was a range between the States of eight donors per million population (dpmp) in New South Wales to 27 dpmp in South Australia.

The ACT had 14.5 dpmp when the NSW Southern Area Health Service population was excluded.

Figure 9.2

Donors per Thousand Deaths Aged < 75 years 2003 - 2007										
() Represents % of Total Deaths Aged < 75 years *										
Year	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
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%)
2006	3.8 (38%)	2.9 (34%)	7.0 (38%)	4.0 (33%)	5.6 (36%)	9.0 (32%)	2.8 (76%)	4.6 (39%)	4.1 (36%)	2.3 (39%)
2007	3.9 (38%)	3.0 (34%)	1.6 (40%)	4.9 (33%)	0.6 (35%)	5.9 (32%)	3.9 (77%)	3.9 (39%)	4.0 (35%)	3.4 (38%)

* 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 2008, 13% (33 donors) were 65 years or older and 3% (eight donors) were aged 75 years or older. The oldest donor was 82.3 years and the youngest 15.5 months (1.3 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 in 2008, was 44.7 years, the highest since records began in 1989. The mean age in 1989 was 32.4 years and the age range was between 16.5 months and 69.5 years.

The mean age for Australian States ranged from 35.5 years in Tasmania to 55.6 years in the Northern Territory.

The median age for Australia in 2008 was 46.2 years, higher than the previous three years.

In Australian States the median age ranged from 40.1 years in Queensland to 54.7 years in Western Australia. If the smaller States and Territories are included, the range was 30.7 years in Tasmania to 60.8 years in the Northern Territory.

The mean and median age for donors from 1991 to 2008 for each State are shown in three year cohorts in Figures 9.4 and 9.5.

In New Zealand the mean age decreased from 46.6 years in 2007 to 42.7 years in 2008. The median age also decreased from 48.8 years to 44.4 years. Two donors were over 65 years of age and none over 75 years. The age range was between 12 years and 67.6 years.

Figure 9.3

**Donor Gender – States, Australia, New Zealand
1994 - 1998 1999 - 2003 2004 - 2008**

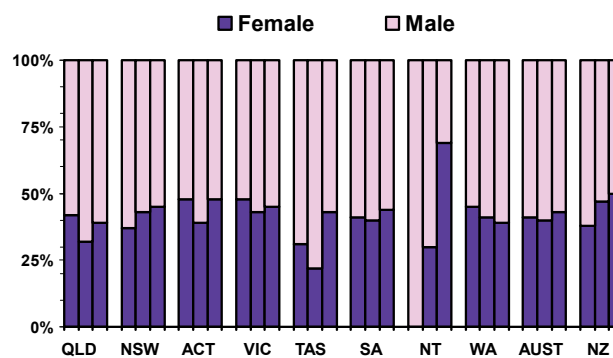


Figure 9.4

Years	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
1991 - 1993	32.4	38.2	34.7	38.7	24.5	37.8	29.5	32.4
1994 - 1996	32.1	38.4	40.2	40.3	31.9	37.7	36.7	38.8
1997 - 1999	37.3	41.5	47.1	42.4	37.0	40.0	34.1	33.7
2000 - 2002	38.5	40.7	32.7	43.6	41.2	39.9	42.5	33.6
2003 - 2005	40.6	46.1	42.0	44.2	22.9	41.0	39.4	41.2
2006 - 2008	38.3	45.2	45.0	43.1	36.1	48.8	52.0	45.8

Figure 9.5

Years	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
1991 - 1993	32.5	39.6	33.6	38.6	25.1	38.9	28.5	32.7
1994 - 1996	30.7	37.9	40.2	41.7	29.1	38.2	34.8	39.4
1997 - 1999	39.8	44.7	47.9	45.9	39.1	42.8	32.8	32.5
2000 - 2002	40.3	42.8	35.1	47.8	48.5	45.1	47.4	32.3
2003 - 2005	43.6	47.9	43.1	47.5	21.7	42.5	48.0	41.7
2006 - 2008	40.7	48.2	48.8	45.2	33.3	52.3	54.7	49.4



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 and New Zealand, road trauma continues to be a reducing cause of death while cerebrovascular accident (CVA) has been steadily increasing in Australia since 1989, although in New Zealand figures have remained relatively steady.

In the period 2002-2008, CVA accounted for 53% of donor deaths and road trauma 16%.

Figure 9.7 shows the cause of death by percentage in Australia and each Australian State from 2002 to 2008, and New Zealand from 2003 to 2008.

Figure 9.8 shows detailed cause of death by gender in Australia and New Zealand for 2008.

Figure 9.9 shows that CVA is the main cause of death in donors 55 years and older, 71% in Australia and 100% in New Zealand, whereas in the 15-34 year age group, trauma accounted for 48% of all deaths in Australia and 50% in New Zealand in 2008.

Figure 9.6

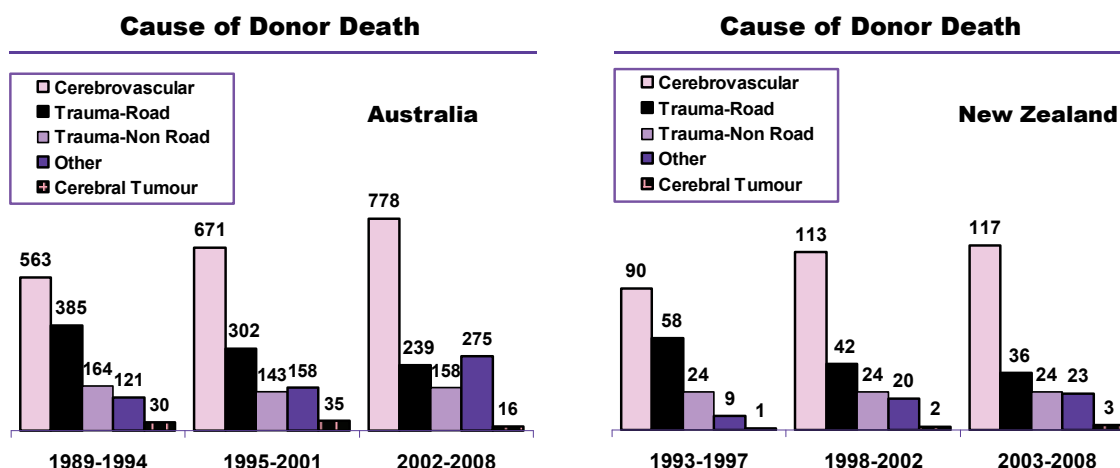


Figure 9.7

Cause of Donor Death 2002 - 2008										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ *
CVA	46%	57%	51%	60%	48%	49%	69%	47%	53%	58%
Trauma (road)	23%	15%	21%	12%	14%	13%	19%	21%	16%	18%
Trauma (non-road)	14%	8%	15%	8%	14%	9%	12%	18%	11%	12%
Hypoxia-Anoxia	14%	16%	13%	17%	24%	26%	0%	8%	16%	7%
Cerebral Tumour	1%	1%	0%	<1%	0%	1%	0%	3%	1%	1%
Other	2%	3%	0%	3%	0%	2%	0%	3%	3%	4%

* NZ 2003 - 2008

Figure 9.8

Cause of Donor Death 2008							
Causes of Death		Australia			New Zealand		
		Male	Female	Total	Male	Female	Total
CVA	Cerebral Infarct	5	12	17	0	1	1
	Intracranial Haemorrhage	31	22	53	2	8	10
	Subarachnoid Haemorrhage	29	30	59	4	7	11
Road Trauma	Cyclist	3	0	3	0	0	0
	Motor Bike Accident	6	1	7	0	0	0
	Motor Vehicle Accident	10	3	13	1	0	1
	Pedestrian	4	1	5	1	0	1
	Other Road Accident	2	0	2	0	0	0
Other Trauma	Fall	7	4	11	2	0	2
	Felony / Crime - Assault	11	2	13	0	0	0
	Gunshot	6	0	6	0	0	0
	Other Accident	3	0	3	1	0	1
Hypoxia Anoxia	?Cardiac Event	1	0	1	0	0	0
	Anaphylaxis	0	1	1	0	0	0
	Aspiration	1	0	1	1	0	1
	Asthma	3	2	5	0	0	0
	Brain Injury	0	1	1	0	0	0
	Carbon Monoxide	0	0	0	1	0	1
	Cardiac Arrest	13	12	25	0	0	0
	Choking	0	0	0	1	0	1
	Drowning	3	0	3	0	0	0
	Electrocution	1	0	1	0	0	0
	Encephalopathy	1	3	4	0	0	0
	Epilepsy	1	0	1	0	0	0
	Hanging	5	1	6	0	0	0
	Iatrogenic	0	1	1	0	0	0
	Overdose	4	2	6	0	1	1
	Respiratory Arrest	1	0	1	0	0	0
	Unknown Cause	0	1	1	0	0	0
Other	Blocked VP Shunt-Hydrocephalus	0	1	1	0	0	0
	Fulminant Liver Failure	0	1	1	0	0	0
	Glioblastoma (Malignant)	0	1	1	0	0	0
	Hypoglycaemia	1	1	2	0	0	0
	Meningitis (Cryptococcal)	1	0	1	0	0	0
	Meningitis (Pseudomonas)	0	1	1	0	0	0
	Spinal Cord Infarct	1	0	1	0	0	0
	Unknown-Coroner Case	0	1	1	0	0	0
Total		154	105	259	14	17	31

Figure 9.9

Cause of Donor Death Related to Age Group 2008												
	Australia - Age Groups					Total	New Zealand - Age Groups					Total
	0-14	15-34	35-54	55 on	0-14		15-34	35-54	55 on			
CVA	2	12	51	64	129 (50%)	1	2	13	6	22 (71%)		
Trauma (road)	1	22	5	2	30 (12%)	0	2	0	0	2 (6%)		
Trauma (non-road)	0	12	11	10	33 (13%)	0	2	1	0	3 (10%)		
Hypoxia-Anoxia	5	20	22	11	58 (22%)	0	2	2	0	4 (13%)		
Cerebral Tumour	0	0	0	1	1 (<1%)	0	0	0	0	0 (0%)		
Other	0	5	1	2	8 (3%)	0	0	0	0	0 (0%)		
Total	8	71	90	90	259	1	8	16	6	31		



ORGANS REQUESTED

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

The difference between a request and a consent is a known objection by the donor or family refusal for the specific organ. Reasons for not requesting organs, not retrieving and not transplanting are documented for all of the specific organs.

For more detail please refer to Website: www.anzdata.org.au

The requests for specific organs in Australia in 2008 from 259 organ donors were: kidneys 99%, liver 95%, heart 82%, lungs 85% and pancreas 80%.

From the 31 New Zealand donors in 2008, the requests for specific organs were: kidneys 100%, liver 94%, heart 94%, lungs 90% and pancreas 71%.

MULTIPLE ORGAN RETRIEVAL

There were 44 (17%) of Australian donors in 2008 who donated solid organs, who had a single organ retrieved, shown in Figure 48. Kidney only donation occurred in 35 cases.

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

New Zealand had six single organ donors in 2008, all six donating kidneys only.

In both Australia and New Zealand, 81% of donors had two or more organs retrieved for the purpose of transplantation.

Figure 9.10

Number of Organs	Australia						New Zealand					
	2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
Single	17%	15%	17%	11%	15.5%	17%	7%	13%	14%	8%	16%	19%
Two	27%	27%	22%	23%	23%	23%	28%	43%	34%	24%	40%	23%
Three	20%	22%	17%	23%	23%	25%	25%	27%	21%	44%	26%	39%
Four	26%	23%	32%	23%	20%	20%	35%	10%	28%	12%	18%	16%
Five	8%	12%	10%	18%	15.5%	14%	5%	0%	3%	12%	0%	3%
No organs	2%	1%	2%	1%	3%	1%	0%	7%	0%	0%	0%	0%

Figure 9.11

Number of Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Single	10 (21%)	6 (11%)	0 (0%)	11 (16.5%)	0 (0%)	10 (23%)	1 (33%)	6 (21%)	44 (17%)	6 (19%)
Two	13 (27%)	15 (26%)	2 (40%)	11 (16.5%)	2 (25%)	9 (21%)	1 (33%)	7 (25%)	60 (23%)	7 (23%)
Three	11 (23%)	16 (28%)	0 (0%)	17 (25.5%)	4 (50%)	11 (26%)	0 (0%)	5 (18%)	64 (25%)	12 (39%)
Four	10 (21%)	7 (12%)	3 (60%)	19 (28.5%)	1 (12.5%)	6 (14%)	0 (0%)	6 (22%)	52 (20%)	5 (16%)
Five	4 (8%)	10 (18%)	0 (0%)	9 (13%)	1 (12.5%)	6 (14%)	1 (33%)	4 (14%)	35 (14%)	1 (3%)
No organs	0 (0%)	3 (5%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)	4 (1%)	0 (0%)
Total	48	57	5	67	8	43	3	28	259	31

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 and New Zealand both had 3.4 organs per donor used for transplantation in 2008 (Figure 50).

The number of organs transplanted per donor each year for 1998-2008 in Australia and New Zealand is shown in Figure 51.

The number of recipients transplanted per donor in Australia in 2008 was 3.3 compared to 3.2 in 2007.

The ACT had the highest number of organs transplanted; 4.0 per donor, followed by Queensland 3.7, New South Wales and Western Australia both 3.5, Victoria and Tasmania both 3.4, the Northern Territory 3.3 and South Australia 3.0.

These figures exclude tissue transplantation.

Figure 9.12

Organs Transplanted per Donor 2008										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
No. Organs Transplanted	177	201	20	231	27	127	10	99	892	105
No. of Donors	48	57	5	67	8	43	3	28	259	31
Mean per Donor	3.7	3.5	4.0	3.4	3.4	3.0	3.3	3.5	3.4	3.4

Figure 9.13

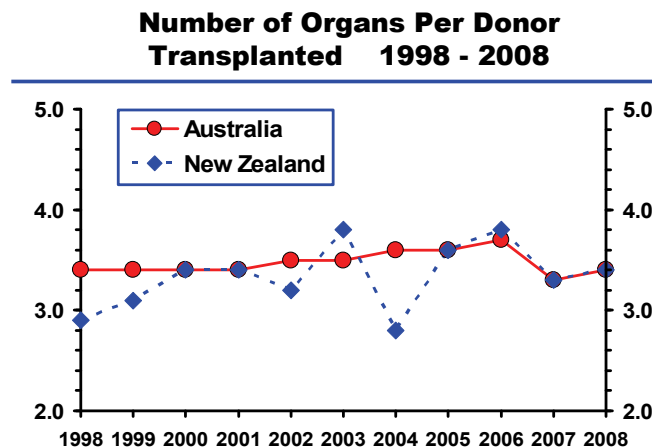


Figure 9.14

Age of Donors Providing Transplanted Kidneys 2003 - 2008												
		Age Group										Total
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
Australia	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	39	36 (1x)	20 (1x)	3 (1x)	0	191
	2007	3 (3)	4	35	25	21	32 (1x)	40	14 (2x)	6 (1x)	0	180
	2008	2 (1)	6	36	31	41	43	49 (1x)	23	7	0	238
New Zealand	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
	2007	0	1	5	1	6	12	9	1	0	0	35
	2008	0	1	5	3	8	7	2	1	0	0	27

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

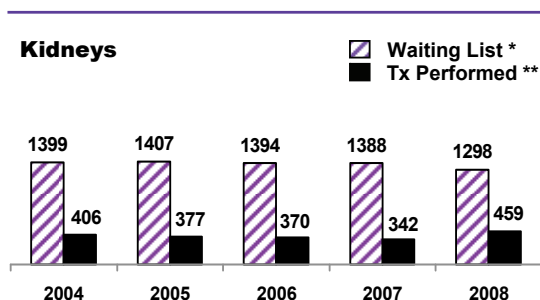


KIDNEY DONATION

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 2004-2008.

Figure 9.15

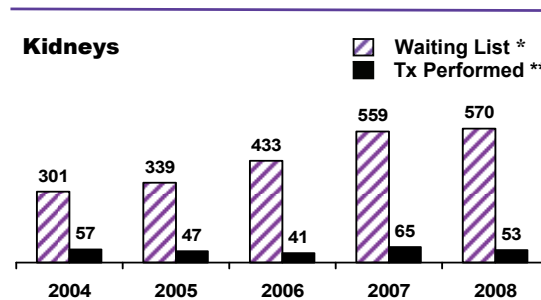
**Waiting List vs Deceased Donor Transplants
Australia 2004 - 2008**



* Source: NOMS (National Organ Matching System)

** Includes kidneys sent from New Zealand

**Waiting List vs Deceased Donor Transplants
New Zealand 2004 - 2008**

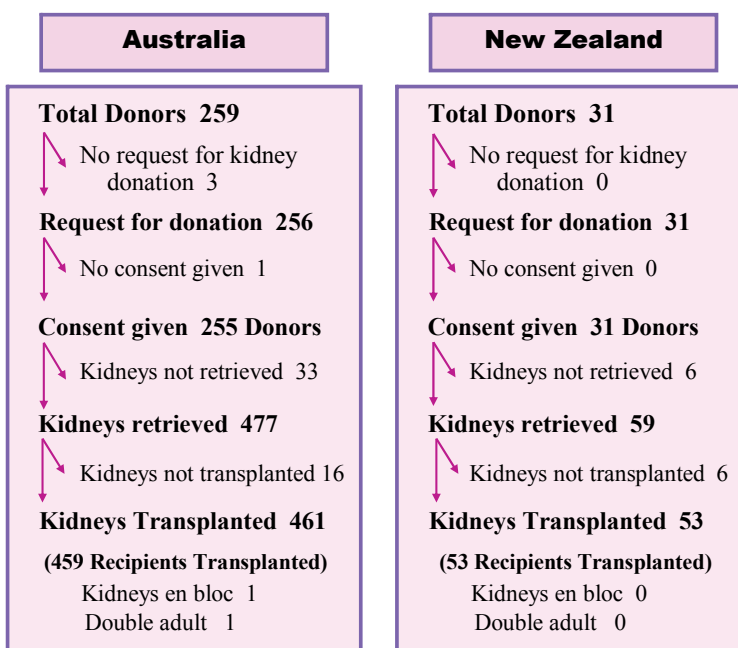


* Source of Waiting List – NZ Donor Coordinators

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

Figure 9.16

Outcome of Request for Kidney Donation 2008



Refer to the Website: www.anzdata.org.au ANZOD 2008 Annual Report.
See Appendices for reasons kidneys were not requested, not retrieved and not transplanted