

## **CHAPTER 9**

# **ORGAN DONOR PROCUREMENT**

**Karen Herbertt**

**Graeme R Russ**



## ORGAN DONORS IN AUSTRALIA AND NEW ZEALAND

(Summarised from the Australia and New Zealand Organ Donation Registry Report 2002)

For more detail please refer to Website: [www.anzdata.org.au](http://www.anzdata.org.au)

**Figure 9.1**

Number of Donors 1997 - 2001 *					
	1997	1998	1999	2000	2001
Queensland	37 (11)	40 (12)	20 (6)	37 (10)	48 (13)
New South Wales	65 (10)	63 (10)	48 (7)	55 (9)	47 (7)
ACT	4 (13)	2 (6)	2 (6)	5 (16)	7 (22)
Victoria	42 (9)	40 (9)	42 (9)	44 (9)	40 (8)
Tasmania	5 (11)	0 (0)	6 (13)	1 (2)	3 (6)
South Australia	25 (17)	35 (24)	30 (20)	30 (20)	25 (17)
Northern Territory	4 (21)	3 (16)	3 (16)	2 (10)	2 (10)
Western Australia	8 (4)	13 (7)	13 (7)	22 (12)	13 (7)
<b>Australia</b>	<b>190 (10)</b>	<b>196 (10)</b>	<b>164 (9)</b>	<b>196 (10)</b>	<b>185 (10)</b>
<b>New Zealand</b>	<b>42 (11)</b>	<b>46 (12)</b>	<b>39 (10)</b>	<b>41 (11)</b>	<b>37 (10)</b>

( ) Donors Per Million of Population  
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 be deemed medically unsuitable at time of surgery or after removal of organs.

In 2001 donor figures include five donors from Australia (two Queensland, and three South Australia) who went to the operating room, but, the decision was made not to retrieve organs. The reasons were; presence of infection (3), biopsy results (1) and cancer detected (1).

The donor rate in both Australia and New Zealand has not changed appreciably over the last five years.

Historically the comparison of organ donation rates between States and Countries has been based upon donors per million population (dpm).

However, the number of deaths that occur and therefore the ability of a deceased person to be a donor may be a more valuable way of comparing donation rates. These are shown for Australian States and New Zealand in Figure 9.2.

Australian data on deaths for 2001 are not available until August of 2002. New Zealand data include 2001.

**Figure 9.2**

Donors per Thousand Deaths 1996 - 2001										
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	-	-	-	-	-	-	-	-	-	1.3

## DONOR PROFILE

### Age and Gender Distribution

The mean age for donors has remained similar for the past five years. In Australia in 2001 there were 16 donors (9%) 65 years or older. This is an increase from 12 in 2000. The oldest donor was 77.4 years.

When comparing Australian mainland States, the mean age ranged from the highest in South Australia of 43 years to the lowest 31.5 years in Western Australia.

**Figure 9.3**

Australian States Mean Age of Donors 1997 - 2001									
	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	<b>40.4</b>
1998	35.7	42.7	42.1	43.4	-	40.3	44.7	33.9	<b>40.4</b>
1999	40.0	42.4	49.9	40.1	35.8	35.4	24.3	36.5	<b>39.3</b>
2000	40.3	40.5	30.3	45.1	63.1	39.0	44.3	39.7	<b>41.1</b>
2001	40.3	40.8	35.1	41.4	30.8	43.0	33.4	31.5	<b>40.0</b>

**Figure 9.4**

<b>Gender of Donors 1989 - 2001</b>			
	<b>Female</b>	<b>Male</b>	<b>Total</b>
Queensland	178 (34%)	342 (66%)	<b>520</b>
New South Wales	347 (41%)	495 (59%)	<b>842</b>
ACT	18 (34%)	35 (66%)	<b>53</b>
Victoria	250 (44%)	320 (56%)	<b>570</b>
Tasmania	12 (29%)	30 (71%)	<b>42</b>
South Australia	132 (41%)	188 (59%)	<b>320</b>
Northern Territory	3 (11%)	24 (89%)	<b>27</b>
Western Australia	85 (43%)	113 (57%)	<b>198</b>
<b>Australia</b>	<b>1025 (40%)</b>	<b>1547 (60%)</b>	<b>2572</b>
<b>New Zealand 1993-2001</b>	<b>150 (43%)</b>	<b>195 (57%)</b>	<b>345</b>

In all States and in New Zealand, male donors out number female donors.

## CAUSE OF DONOR DEATH

**Figure 9.5**

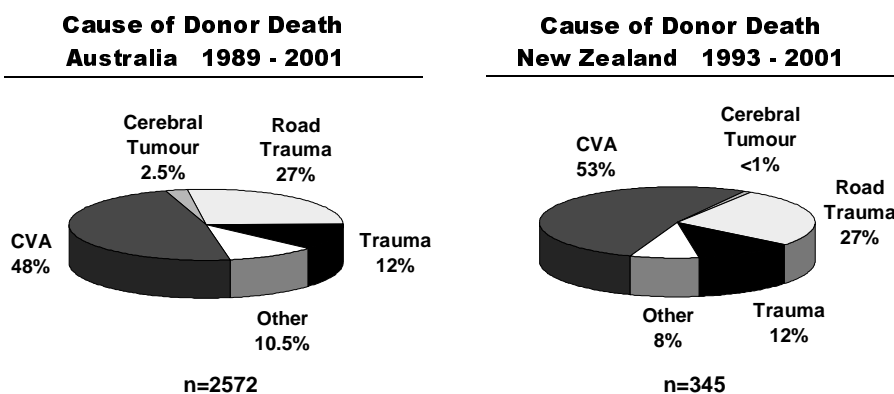


Figure 9.5 shows the cause of death for all organ donors in Australia since 1989 and for New Zealand since 1993. The primary cause of death was cerebrovascular accident (CVA) (48% of all Australian donors and 53% of all New Zealand donors).

Figure 9.6 shows CVA is responsible for 92% of all deaths in donors 55 years and older, whereas in the 15-34 year age group, trauma accounted for 61% of all deaths, compared to 59% in 2000.

Figure 9.7 shows detailed cause of death by gender for 2001.

**Figure 9.6**

<b>Cause of Donor Death Related to Age Group 2001</b>										
	<b>Australia</b>					<b>New Zealand</b>				
	<b>0-14</b>	<b>15-34</b>	<b>35-54</b>	<b>55 on</b>	<b>Total</b>	<b>0-14</b>	<b>15-34</b>	<b>35-54</b>	<b>55 on</b>	<b>Total</b>
CVA	4	12	43	36	<b>95</b>	0	2	12	8	<b>22</b>
Trauma (road)	5	31	5	0	<b>41</b>	0	5	4	0	<b>9</b>
Trauma (non-road)	2	5	5	2	<b>14</b>	0	3	0	1	<b>4</b>
Other	5	11	18	1	<b>35</b>	0	2	0	0	<b>2</b>
<b>Total</b>	<b>16</b>	<b>59</b>	<b>71</b>	<b>39</b>	<b>185</b>	<b>0</b>	<b>12</b>	<b>16</b>	<b>9</b>	<b>37</b>



**Figure 9.7**

**Cause of Donor Death 2001**

Causes of Death		Australia			New Zealand		
		Male	Female	Total	Male	Female	Total
CVA	Cerebral Infarct	9	6	15	2	1	3
	Intracranial Haemorrhage	49	31	80	6	13	19
Road Trauma	Cyclist	2	0	2	0	0	0
	Motor Bike Accident	6	0	6	1	0	1
	Motor Vehicle Accident	13	7	20	6	1	7
	Pedestrian	8	2	10	0	1	1
	Other Road Accident	3	0	3	0	0	0
Other Trauma	Fall	6	1	7	1	1	2
	Felony / Crime - Assault	1	0	1	1	0	1
	Gunshot	4	0	4	1	0	1
	Other Trauma	1	1	2	0	0	0
Hypoxia Anoxia	Airway Obstruction	1	0	1	0	0	0
	Asphyxiation	2	0	2	0	0	0
	Asthma	1	2	3	0	0	0
	Carbon Monoxide	0	1	1	0	0	0
	Cardiac Arrest	5	6	11	0	0	0
	Cyanide Poisoning	1	0	1	0	0	0
	Hanging	2	0	2	0	0	0
	Seizure	1	0	1	0	0	0
	Smoke Inhalation	1	0	1	0	0	0
	Pulmonary Embolism	0	1	1	0	0	0
	Thoracic Aortic Aneurysm	1	0	1	0	0	0
	Ventricular Fibrillation	0	1	1	0	0	0
	Other	Carotid Artery Dissection	0	1	1	0	0
Cerebral Arteritis		0	1	1	0	0	0
Cerebral Oedema		1	3	4	0	0	0
Meningitis (Meningococcal)		0	1	1	1	0	1
Meningitis (Strep.pneumoniae)		0	1	1	0	0	0
Meningitis (Viral)		0	0	0	0	1	1
Water Intoxication		1	0	1	0	0	0
<b>Total</b>		<b>119</b>	<b>66</b>	<b>185</b>	<b>19</b>	<b>18</b>	<b>37</b>

**Figure 9.8**

**Trend to Multiple Organ Retrieval 1997 - 2001**

No. of Organs	Australia					New Zealand				
	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
Single	24%	23%	17%	21%	19%	33%	20%	21%	7%	19%
Two	23%	32%	30%	29%	32%	31%	50%	44%	42%	31%
Three	23%	19%	27%	24%	21%	33%	16%	23%	34%	22%
Four	24%	20%	23%	20%	19%	3%	12%	10%	15%	25%
Five	6%	6%	3%	6%	9%	0%	2%	2%	2%	3%

**ORGANS REQUESTED**

From the 185 Australian organ donors in 2001, the requests for specific organs were: kidneys 99%, liver 96%, heart 86%, lungs 87% and pancreas 70%.

From the 37 New Zealand donors in 2001, the requests for specific organs were: kidneys 100%, liver 97%, heart 92%, lungs 86% and pancreas 76%.

**Figure 9.9**

**State by State Comparison of Multiple Organ Retrieval 2001**

No. of Organs	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
Single	7 (15%)	14 (30%)	0 (0%)	8 (20%)	1 (33%)	4 (18%)	0 (0%)	0 (0%)	34 (19%)	7 (19%)
Two	18 (39%)	12 (26%)	3 (43%)	6 (15%)	0 (0%)	11 (50%)	1 (50%)	4 (31%)	57 (32%)	11 (31%)
Three	8 (17%)	11 (23%)	2 (29%)	11 (28%)	0 (0%)	2 (9%)	1 (50%)	5 (38%)	38 (21%)	8 (22%)
Four	11 (24%)	5 (10.5%)	1 (14%)	9 (22%)	1 (33%)	4 (18%)	0 (0%)	3 (23%)	34 (19%)	9 (25%)
Five	2 (5%)	5 (10.5%)	1 (14%)	6 (15%)	1 (33%)	1 (5%)	0 (0%)	1 (8%)	17 (9%)	1 (3%)
<b>Total</b>	<b>46</b>	<b>47</b>	<b>7</b>	<b>40</b>	<b>3</b>	<b>22</b>	<b>2</b>	<b>13</b>	<b>180</b>	<b>36</b>

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 3.4 organs per donor used for transplantation in 2001, similar to New Zealand at 3.4.

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

Tasmania had the highest number of organs transplanted, 4.3 per donor, followed by Victoria 3.8, ACT 3.7, Western Australia 3.6, Queensland 3.4, New South Wales 3.1, Northern Territory 3.0 and South Australia 2.8. These figures exclude tissue transplantation.

**Figure 9.10**

<b>Organ Recipients Transplanted per Donor 2001</b>										
	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	<b>Aust.</b>	<b>N.Z.</b>
No. Organs Transplanted	162	145	26	152	13	71	6	47	<b>622</b>	<b>127</b>
No. of Donors	48	47	7	40	3	25	2	13	<b>185</b>	<b>37</b>
Average per Donor	3.4	3.1	3.7	3.8	4.3	2.8	3.0	3.6	<b>3.4</b>	<b>3.4</b>

Double lungs = 1 organ (1 recipient)  
Two kidneys = 2 organs

**KIDNEY DONATION**

**Figure 9.11**

<b>Age of Donors Providing Transplanted Kidneys 1997 - 2001</b>											
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	Total
<b>Australia</b>	1997	3 (2)	8	32	21	36	46	21	12	3	<b>182</b>
	1998	1 (1)	10	37	22	32	33	34 (1*)	14 (1x)	0	<b>183</b>
	1999	4 (3)	11 (2)	24	22	17	32	29	9 (1x)	2 (1x)	<b>150</b>
	2000	2 (3)	10	30	24	28	42	34 (1x)	11	1	<b>182</b>
	2001	0 (0)	16	32	25	22	44	19	11	1 (x)	<b>170</b>
<b>New Zealand</b>	1997	0	4	14	4	3	9	7	1	0	<b>42</b>
	1998	1 (1)	4	8	6	8	7	6	1	0	<b>41</b>
	1999	0	3 (1)	3	4	4	14	5	4	0	<b>37</b>
	2000	0	2	9	4	6	12	6	1	0	<b>40</b>
	2001	0	0	9	2	7	7	8	1	0	<b>34</b>

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

**Figure 9.12 Outcome of Request for Kidney Donation 2001**

