

2010

SUMMARY - AUSTRALIA

1. In 2010 there were: 309 donors, 13.8 donors per million population [dpmp] with 554 kidneys (including four double adult and two en bloc), (548 recipients), 189 livers (204 recipients), 68 hearts (including three heart/lungs), 236 lungs (110 double, three heart/lungs and ten single lungs), 34 pancreas, twelve pancreas islets and one intestines (combined with a liver and pancreas) transplanted into recipients. In addition there were 260 corneas, 70 sets of heart valves and 29 bone donations from these donors.
2. In 2010 there were 69 donations after cardiac death (DCD). Twenty four of these donations occurred in both Victoria and New South Wales, thirteen in Queensland, five in South Australia and three in the Australian Capital Territory (ACT).
3. The highest donor rate was in Tasmania [20 dpmp], followed by South Australia [19 dpmp], Victoria [18 dpmp], the Australian Capital Territory (ACT) [17 dpmp], New South Wales [12 dpmp], Queensland [11 dpmp], Western Australia [10 dpmp] and the Northern Territory [9 dpmp].
4. The mean age of donors was 47.3 years, median age 48.9 years with a range of 2.1 - 84.3 years.
5. In 2010, the major cause of death in 50% of donors was (CVA) cerebrovascular accident, while road trauma caused 14% of all donor deaths.
6. Donors with a known occupation (73%) were classified as students, pre-school, white and blue collar, management, professional, small business owner, primary industry and tradesperson. An additional 12% were retired, 6% home duties, 5% unemployed, 2% had a disability and 2% were unknown.
The majority of donors were Caucasoid and their religion was recorded as Christian.
7. Authority for organ donation was sought in 69% of cases by the Intensive Care Clinician or Registrar, volunteered by the family in 82 (27%), by the Emergency Consultant or Registrar (3%), the Donor Coordinator (<1%) and nursing staff (<1%). Coronial inquiries were required in 39% of all donors.
8. The donation of more than one organ occurred in 79% of donors. The average number of organs transplanted per donor was 3.2.
9. The consent rate for specific organs were 99% of kidneys, 99% livers, 96% hearts, 99% lungs and 98% pancreas.
10. In 2010, from donors where organs had been retrieved, 97% of kidneys, 98% of livers, 84% of hearts, 97% of lungs and 41% of pancreas (34 pancreas and twelve pancreas islets) were actually transplanted. The first intestine (combined with a liver and pancreas) was transplanted in Victoria in 2010.
11. Six livers were sent to New Zealand in 2010.

SUMMARY - NEW ZEALAND

1. In 2010 there were: 41 donors, 9.4 donors per million population [dpmp], which resulted in 56 kidneys (including four double adult), (52 recipients), 32 livers (34 recipients), eleven hearts, 24 lungs (12 double lungs) and three pancreas being transplanted into recipients. In addition 38 corneas and seven sets of heart valves were sent to the tissue bank. There was no bone donation.
2. There was one donation after cardiac death (DCD) donor.
3. The mean age of donors was 43.5 years and median age 43.1 years, with an age range of 15.1 - 71.4 years.
4. Cerebrovascular accident (CVA) was the major cause of death in 54% of donors, while road trauma caused 22% of deaths in 2010.
5. Fifty nine percent of donors with a known occupation were classified as students, white and blue collar workers, professional or a small business owner. An additional 12% were unknown and 29% (twelve donors) were home duties, retired, unemployed or had a disability.
Thirty two donors (78%) were Caucasoid, five (12%) were Maori and one donor each were Pacific People, Chinese, Indian and Korean
The religion was unknown for 93% of donors.
6. Authority for organ donation was sought in 76% of cases by the Intensive Care Clinician, Registrar or other physician, volunteered in nine (22%) and by the nursing staff in 2% of cases.
Coronial inquiries were required in 44% of donors.
7. The donation of more than one organ occurred in 70% of donors. The average number of organs transplanted per donor was 2.7.
8. The consent rate for specific organs were 98% of kidneys, 100% of livers, 100% of hearts, 100% of lungs and 100% of pancreas.
9. In 2010, from donors where organs had been retrieved, 90% of kidneys, 100% of livers, 100% of hearts, 100% of lungs and 100% of pancreas were actually transplanted.
10. New Zealand has provided 23 kidneys, 228 livers, 27 hearts, one heart/lung and 102 lungs to the Australian Transplant programmes since 1989.
11. Two kidneys, five livers and six lungs were sent from New Zealand to Australia in 2010.

ORGAN DONORS IN AUSTRALIA AND NEW ZEALAND

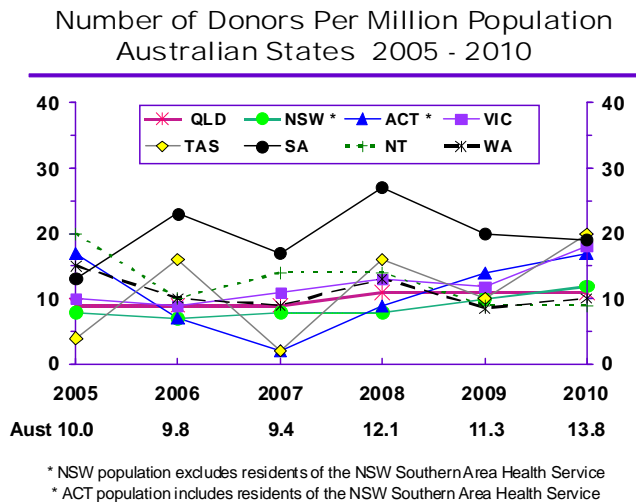
Figure 1

Number of Donors** by Retrieval State ^(x) 2006 - 2010					
() Donors Per Million					
	2006	2007	2008	2009	2010
Queensland	36 (9)	39 (9)	48 (11)	47 (11)	49 (11)
New South Wales + *	49 (7+) (7*)	53 (8+) (8*)	57 (8+) (8*)	68 (10+) (10*)	87 (12+) (12*)
ACT + *	4 (7+) (12*)	1 (2+) (3*)	5 (9+) (14.5*)	8 (14+) (23*)	10 (17+) (28*)
Victoria	46 ^(x) (9)	55 (11)	67 (13)	65 ^(x) (12)	98 ^(x) (18)
Tasmania	8 (16)	1 (2)	8 (16)	5 (10)	10 (20)
South Australia	36 (23)	27 (17)	43 (27)	33 (20)	31 (19)
Northern Territory	2 (10)	3 (14)	3 (14)	2 (9)	2 (9)
Western Australia	21 (10)	19 (9)	28 (13)	19 (8.5)	22 (10)
Australia	202 (9.8)	198 (9.4)	259 (12.1)	247 (11.3)	309 (13.8)
New Zealand	25 (6.0)	38 (9.0)	31 (7.3)	43 (10.0)	41 (9.4)

^(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.

Figure 2



Donor figures for Australia for 2010 include six donors who went to the operating theatre but organs or tissues were not retrieved. A further donor had corneas only retrieved, but were not suitable for transplantation.

Three donors had malignancies, two had disease of organs, one was medically unsuitable and one had extended ischaemic time. Two were DCD donors.

Donor (dpmp) figures in Australia rose to 13.8 (dpmp) in 2010 from 11.3 (dpmp) in 2009 and 12.1 (dpmp) in 2008.

New Zealand had one donor whose organs or tissues were not retrieved due to disease. A further two donors donated corneas only.

In 2010 there was a range between the States of nine donors per million population (dpmp) in the Northern Territory to 20 (dpmp) in Tasmania.

The ACT had 28 dpmp when the NSW Southern Area Health Service population was excluded.

Figure 3

International Donor Statistics 2010

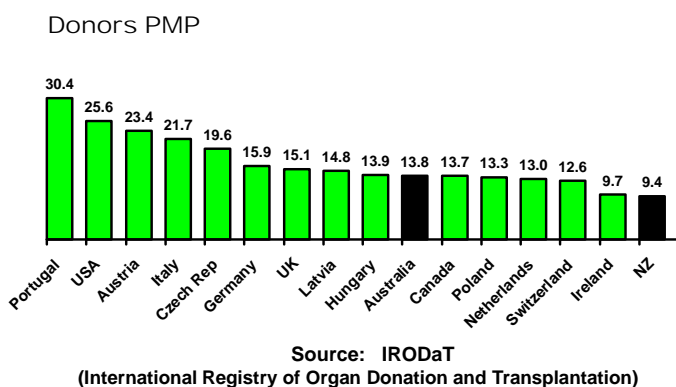


Figure 3 shows the number of donors per million population (dpmp) of Australia and New Zealand compared to other Countries.

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.

Donor pmp for 2010 was not available for Spain from the IRODaT web site at the time of publication.

Figure 4

Waiting List for Organs by Transplant Region 01-Jan-2011							
Organs	QLD	NSW/ACT	VIC/TAS	SA/NT	WA	AUST	NZ
Kidney	141	572	370	49	91	1223	479
Liver	23	65	49	18	12	167	28
Heart	5	18	13	-	10	46	12
Heart / Lung	1	4	1	-	-	6	-
Lung	24	22	53	-	11	110	8
Pancreas / Kidney	-	21	14	-	-	35	8
Pancreas Only	-	1	-	-	-	1	-
Pancreas Islets	-	4	3	2	-	9	-
Intestines	-	-	2	-	-	2	-
Total	194	707	505	69	124	1599	535

Data provided by NOMS (National Organ Matching System), ANZ National Liver Transplant Registry, ANZ Cardiothoracic and the National Pancreas Registry (Westmead) A/Prof John Kanellis and A/Prof David Goodman (Pancreas-Victoria) A/Prof Toby Coates (Pancreas Islets-South Australia)

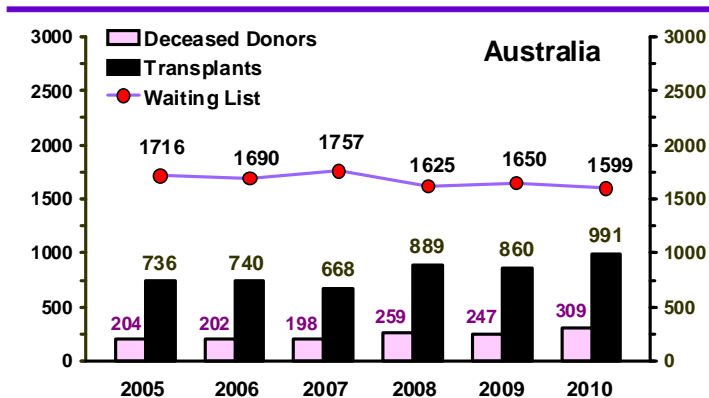
Figure 5

Transplanted Organs Donated in Australia and New Zealand by State of Transplantation 2010							
Organs	QLD	NSW	VIC	SA	WA	AUST	NZ
Kidneys (Total)	134	261	287	82	78	842	110
Deceased Donor	94	181	181	54	40	550	50
Live Donor * x Per Million []	40 (30%) [9]	80 (31%) [11]	106 (37%) [18]	28 (34%) [15]	38 (49%) [17]	292 (35%) [13]	60 (55%) [14]
Liver (Recipients)	32	74	57	20	20	203	35
Live Donor +	1	3	-	-	-	4	6
Heart	3	27	29	-	6	65	11
Domino #	-	-	-	-	-	-	-
Heart / Lung bloc	-	-	1	-	2	3	-
Lung (Recipients)	12 double 2 single	40 double 1 single	54 double 7 single	-	7 double	123	9 double
Pancreas	-	18	16	-	-	34	3
Pancreas Islets	-	7	-	5	-	12	-
Intestines	-	-	1	-	-	1	-
Total	184	431	452	107	113	1287	174

* Living Kidney Donor Registry (ANZDATA) New Zealand Donor Coordinators
 x National Organ Matching System (NOMS)
 + Australia and New Zealand Liver Transplant Registry # Australia and New Zealand Cardiothoracic Registry

Figure 6

Number of Deceased Donors Solid Organ Transplants and Patients on the Waiting List 2005 - 2010



The number of donors, transplants, and patients on the waiting list from 2005 to 2010.

Transplants includes those from donor organs from Australia and New Zealand.

DONORS PER THOUSAND DEATHS

Historically the comparison of organ donation rates between states and countries has been based upon donors per million population (dmpm). 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 shown in Figures 7 and 8.

Australian data on deaths for 2010 is not available until August of 2011.

New Zealand 2010 data was also not available.

Figure 7

Donors per Million Population and Donors per Thousand Deaths () Australian States - Australia and New Zealand 2004 - 2009										
Year	QLD	NSW *	ACT *	VIC	TAS	SA	NT	WA	AUST	NZ
2004	10 (1.6)	9 (1.4)	19 (4.2)	9 (1.4)	4 (0.5)	25 (3.4)	5 (1.1)	12 (2.1)	11 (1.6)	10 (1.4)
2005	9 (1.5)	8 (1.2)	28 (6.0)	10 (1.5)	4 (0.5)	13 (1.7)	20 (4.1)	15 (2.6)	10 (1.6)	7 (1.1)
2006	9 (1.5)	7 (1.1)	12 (2.7)	9 (1.3)	16 (2.0)	23 (3.0)	10 (2.1)	10 (1.8)	10 (1.5)	9 (0.9)
2007	9 (1.5)	8 (1.1)	3 (0.6)	11 (1.6)	2 (0.2)	17 (2.1)	14 (3.0)	9 (1.5)	9 (1.4)	9 (1.3)
2008	11 (1.7)	8 (1.2)	14.5 (3.0)	13 (1.9)	16 (1.9)	27 (3.4)	14 (2.9)	13 (2.2)	12 (1.8)	7 (1.1)
2009	11 (1.8)	10 (1.5)	14 (5.1)	12 (1.8)	10 (1.2)	20 (2.7)	9 (2.1)	9 (1.5)	11 (1.8)	10 (1.5)

* Donors per million population refers to the NSW and the ACT actual population
Data for deaths in the NSW Southern Area Health Service was not available

Figure 8

Donors per Thousand Deaths Aged < 75 years 2004 - 2009 () Is the % Deaths < 75 years as a Proportion of all Deaths*										
Year	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
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%)
2008	4.7 (38%)	3.4 (33%)	8.1 (36%)	5.6 (33%)	5.5 (35%)	10.4 (31%)	3.9 (74%)	5.4 (38%)	5.0 (34%)	2.9 (38%)
2009	4.6 (35%)	4.2 (34%)	13.0 (39%)	5.4 (33%)	3.3 (36%)	7.9 (33%)	2.7 (77%)	3.7 (39%)	4.9 (35%)	3.9 (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 POSTCODES

In the last five years (2006-2010) there have been 16 deceased donors from overseas in Australia and two in New Zealand. There were four donors from overseas in 2010, one each in Queensland, New South Wales, Victoria and South Australia. There were no overseas donors in New Zealand in 2010.

Figure 9

Location of Postcodes of Deceased Donors 2006 - 2010									
Postcode	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST
Metropolitan	94 (43%)	218 (69%)	20 (71%)	233 (71%)	1 (3%)	118 (69%)	0 (0%)	73 (67%)	757 (62%)
Inner Regional	64 (29%)	71 (22%)	5 (18%)	73 (22%)	14 (44%)	26 (15%)	0 (0%)	14 (13%)	267 (22%)
Outer Regional	46 (21%)	23 (7%)	3 (11%)	18 (5%)	14 (44%)	19 (11%)	6 (50%)	10 (9%)	139 (12%)
Rural	10 (5%)	2 (1%)	0 (0%)	1 (<1%)	3 (9%)	4 (2%)	5 (42%)	11 (10%)	36 (3%)
Overseas	5 (2%)	3 (1%)	0 (0%)	3 (1%)	0 (0%)	3 (2%)	1 (8%)	1 (1%)	16 (1%)
Total	219	317	28	328	32	170	12	109	1215

DONOR PROFILE

AGE AND GENDER DISTRIBUTION

In Australia in 2010, 16% (49 donors) were 65 years or older and 3% (eight donors) were aged 75 years or older. The oldest donor was 84.3 years and the youngest 2.1 years (Figure 11).

Donor gender in each State, Australia and New Zealand is shown in five year cohorts in Figure 10.

The mean age for donors in Australia in 2010, was 47.3 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 the larger Australian States in 2010 ranged from 45.6 years in Queensland to 48 years in New South Wales and Victoria. If the smaller States and Territories are included the range was 23.6 years in the Northern Territory to 50 years in Tasmania.

The median age for Australia in 2010 was 48.9 years, the highest since records began in 1989.

In the larger Australian States the median age ranged from 46.1 years in Western Australia to 49.5 years in Victoria. If the smaller States and Territories are included the range was 23.6 years in the Northern Territory to 55.7 years in Tasmania.

The mean and median age for donors from 1991 to 2009 for each State are shown in three year cohorts and for 2010 alone in Figures 12 and 13.

In New Zealand the mean age decreased from 44.3 years in 2009 to 43.5 years in 2010. The median age also decreased from 46.9 years to 43.1 years in 2010. Five donors were over 65 years of age and there were none over 75 years. The age range was between 15.1 years and 71.4 years.

Figure 14 shows donors according to age and gender in Australia and New Zealand for the years 2002-2004, 2005-2007 and 2008-2010.

Figure 10

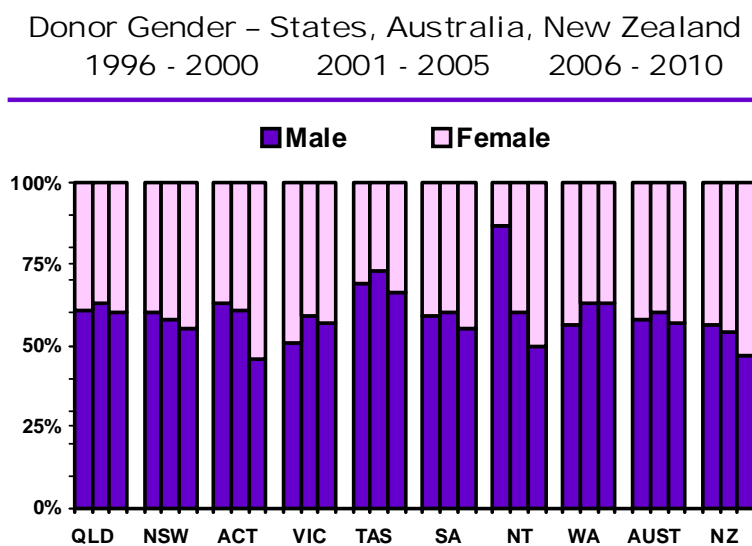


Figure 11

Age of Male and Female Donors 2001 - 2010								
	Year	Mean (years)			Median (years)			Range in Years
		All	Female	Male	All	Female	Male	
Aust	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
	2003	42.7	46.4	40.1	45.5	48.4	42.5	0.96 - 85.3
	2004	43.2	44.0	42.7	46.6	47.4	44.1	1.12 - 80.5
	2005	42.8	46.8	39.3	45.3	50.0	40.5	0.6 - 79.5
	2006	43.3	45.5	41.3	45.3	48.0	44.1	1.3 - 78.2
	2007	43.4	46.0	41.3	45.2	49.6	42.0	0.7 - 80.4
	2008	44.8	47.6	43.0	46.2	48.3	44.0	1.7 - 82.3
	2009	45.9	48.5	44.1	48.3	51.3	46.7	0.5 - 80.6
	2010	47.3	49.0	46.1	48.9	51.7	46.1	2.1 - 84.3
NZ	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
	2003	38.0	35.6	39.4	39.7	40.3	39.0	13.0 - 75.1
	2004	43.0	43.4	42.7	46.1	47.7	43.4	1.15 - 78.2
	2005	45.3	47.1	43.9	48.6	48.6	45.4	17.4 - 64.4
	2006	36.5	41.6	33.2	35.4	38.4	30.0	11.6 - 69.4
	2007	46.6	47.4	45.3	48.8	49.1	48.4	11.8 - 71.6
	2008	42.7	49.4	34.6	44.4	50.5	31.2	11.9 - 67.6
	2009	44.3	43.8	44.7	46.9	46.5	50.7	3.6 - 74.6
	2010	43.5	44.5	42.3	43.1	47.5	41.8	15.1 - 71.4

Figure 12

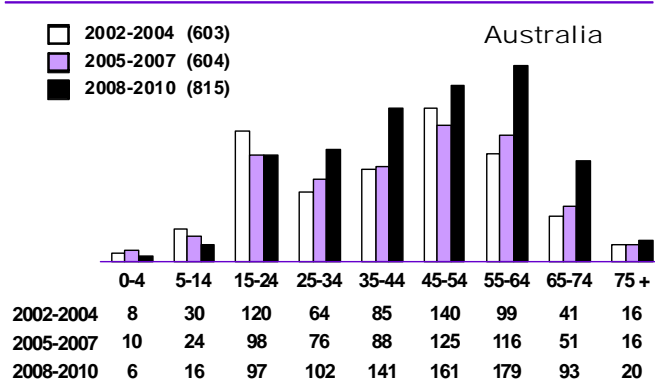
Australian States Mean Age of Donors								
Years	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
1989 - 1991	31.2	37.1	29.8	32.4	20.1	30.8	35.9	29.2
1992 - 1994	31.9	38.2	35.3	39.8	27.4	38.2	29.3	35.0
1995 - 1997	34.2	38.5	44.2	42.0	33.2	41.4	36.0	36.9
1998 - 2000	38.4	41.9	37.2	42.9	39.7	38.3	37.0	37.3
2001 - 2003	38.6	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
2007 - 2009	39.1	45.7	38.9	45.5	34.2	49.4	51.5	47.7
2010	45.6	48.0	47.6	48.0	50.0	47.1	23.6	46.1

Figure 13

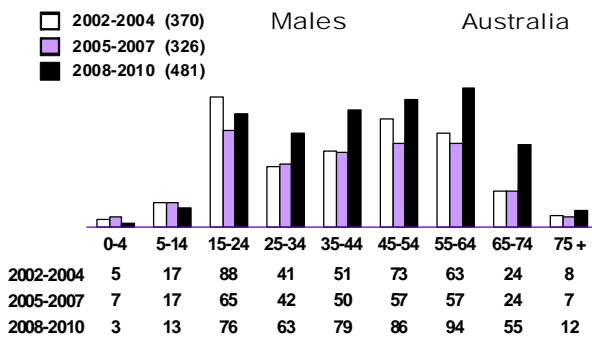
Australian States Median Age of Donors								
Years	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
1989 - 1991	31.5	38.9	30.4	28.4	17.3	28.9	31.8	28.8
1992 - 1994	31.7	40.1	27.2	40.7	25.1	38.6	27.9	33.6
1995 - 1997	37.5	38.4	45.9	45.5	33.9	45.4	35.5	39.4
1998 - 2000	40.3	43.6	37.2	46.4	42.6	42.4	32.8	44.7
2001 - 2003	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
2007 - 2009	40.8	48.2	40.6	47.4	30.7	51.5	60.0	52.9
2010	48.8	48.5	50.9	49.5	55.7	50.4	23.6	46.1

Figure 14

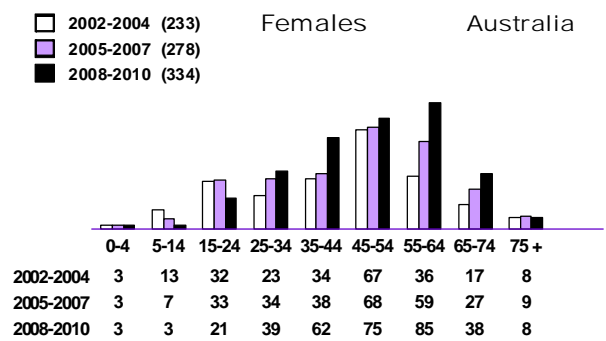
Age Group of Deceased Donors



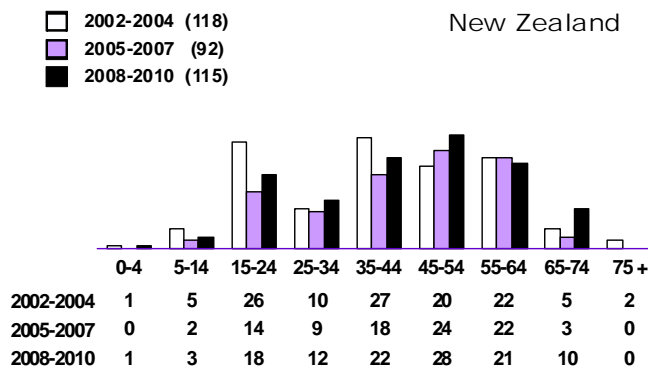
Age and Gender Distribution of Donors



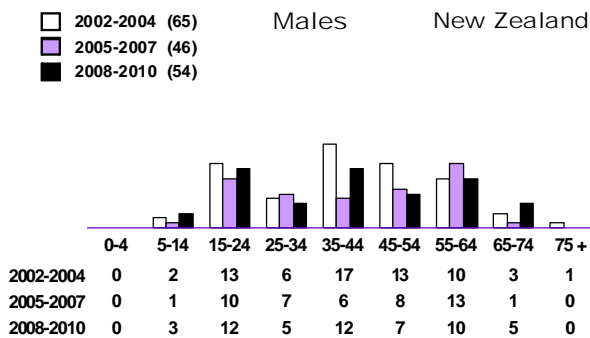
Age and Gender Distribution of Donors



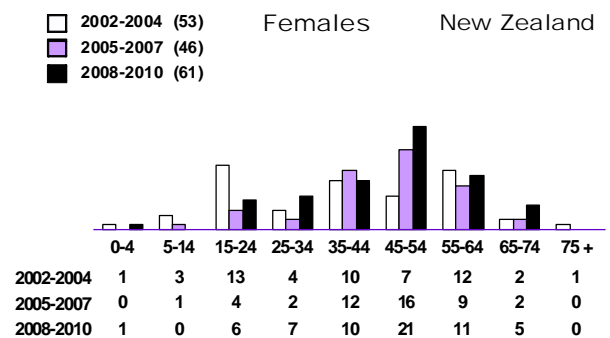
Age Group of Deceased Donors



Age and Gender Distribution of Donors



Age and Gender Distribution of Donors



CAUSE OF DEATH - ALL DONORS

The cause of death for all organ donors in Australia since 1989 and for New Zealand since 1996 is shown in Figure 15.

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

In the period 2003-2010, CVA accounted for 52% of donor deaths and road trauma 15%.

Figure 16 shows the cause of death by percentage in Australia and each Australian State from 2003 to 2010, and New Zealand from 2006 to 2010.

Figure 17 shows detailed cause of death by gender in Australia and New Zealand for 2010.

Figure 18 shows that CVA is the main cause of death in donors 55 years and older, 69% in Australia and 50% in New Zealand, whereas in the 15-34 year age group, trauma accounted for 43% of all deaths in Australia and 50% in New Zealand in 2009.

The cause of death by age group is shown in Figure 19 for each Australian State for 2010.

Figure 20 shows the cause of donor death in each Australian State and New Zealand each year from 2002-2010.

Figures 21-23 show the occupation, ethnic origin and religious denomination of donors in Australia and New Zealand for 2005-2010.

Figure 15

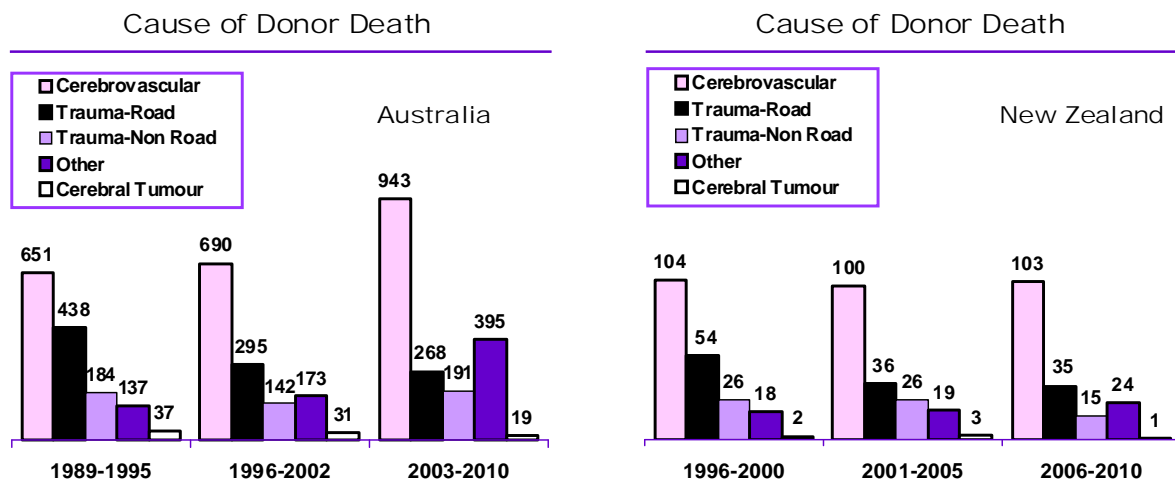


Figure 16

Cause of Donor Death 2003 - 2010										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ *
CVA	45%	54%	53%	55%	42%	52%	61%	51%	52%	58%
Trauma (road)	21%	15%	20%	10%	13%	11%	22%	19%	15%	20%
Trauma (non-road)	14%	8%	12%	8%	18%	10%	11%	15%	11%	8%
Hypoxia-Anoxia	17%	18%	14%	22%	24%	23%	0%	11%	18%	10%
Cerebral Tumour	1%	1%	0%	1%	0%	1%	0%	2%	1%	<1%
Other	2%	4%	1%	4%	3%	3%	6%	2%	3%	3%

* NZ 2006 - 2010

Figure 17

Cause of Donor Death 2010							
Causes of Death		Australia			New Zealand		
		Male	Female	Total	Male	Female	Total
CVA	Cerebral Infarct	9	3	12	2	1	3
	Intracranial Haemorrhage	38	22	60	1	6	7
	Subarachnoid Haemorrhage	36	46	82	5	7	12
Road Trauma	Cyclist	4	1	5	1	1	2
	Motor Bike Accident	4	1	5	2	0	2
	Motor Vehicle Accident	11	8	19	1	4	5
	Pedestrian	9	5	14	0	0	0
	Other Road Accident	1	0	1	0	0	0
Other Trauma	Fall	13	1	14	0	2	2
	Felony / Crime - Assault	4	0	4	0	0	0
	Gunshot	1	0	1	1	0	1
	Other Accident	5	0	5	1	0	1
Hypoxia Anoxia	Asthma	3	0	3	0	0	0
	Carbon Monoxide	1	0	1	0	0	0
	Cardiac Arrest	21	20	41	1	0	1
	Choking	1	1	2	0	0	0
	Drowning	4	0	4	0	0	0
	Epilepsy	0	1	1	0	0	0
	Hanging	3	7	10	0	0	0
	Hydrocephalus	0	0	0	1	0	1
	Myocardial Infarction	1	0	1	0	0	0
	Overdose	1	0	1	0	0	0
	Pulmonary Embolism	0	2	2	0	0	0
	Secondary Collapse-Apert Syndrome	1	0	1	0	0	0
Seizure	1	0	1	0	0	0	
Cerebral Tumour	Glioma (Malignant)	1	0	1	0	0	0
	Glioma (Benign)	0	0	0	1	0	1
	Meningioma (Benign)	0	1	1	0	0	0
	Oligoastrocytoma (Benign)	0	1	1	0	0	0
Other	Acute Obstructive Hydrocephalus	1	0	1	0	0	0
	Cerebral Oedema	7	3	10	1	0	1
	Medullary Neurosarcomoid	0	1	1	0	0	0
	Meningioma (Benign)	0	0	0	0	1	1
	Meningitis (Gram Negative)	1	0	1	0	0	0
	Meningitis (Pneumococcal)	0	1	1	0	0	0
	Self Inflicted Stab Wound	0	0	0	1	0	1
	Snake Bite	0	1	1	0	0	0
Suicide-Nail Gun	1	0	1	0	0	0	
Total		183	126	309	19	22	41

Figure 18

Cause of Donor Death Related to Age Group 2010										
	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	0	11	64	79	154 (50%)	0	4	12	6	22 (54%)
Trauma (road)	1	23	15	5	44 (14%)	0	6	1	2	9 (22%)
Trauma (non-road)	0	4	12	8	24 (8%)	0	1	1	2	4 (10%)
Hypoxia-Anoxia	5	17	24	22	68 (22%)	0	2	0	0	2 (5%)
Cerebral Tumour	0	1	2	0	3 (1%)	0	0	0	1	1 (2%)
Other	3	7	5	1	16 (5%)	0	1	1	1	3 (7%)
Total	9	63	122	115	309	0	14	15	12	41

Figure 19

Australian States Cause of Death Related to Age Group 2010						
		Age Groups				Total
		0-14	15-34	35-54	55 on	
Queensland	CVA	0	1	12	9	22
	Trauma (road)	0	6	4	1	11
	Trauma (non-road)	0	1	4	1	6
	Other	1	1	5	3	10
	Total	1	9	25	14	49
NSW	CVA	0	1	23	20	44
	Trauma (road)	0	5	8	2	15
	Trauma (non-road)	0	0	2	5	7
	Other	3	8	5	6	22
	Total	3	14	38	33	88
ACT	CVA	0	0	5	2	7
	Trauma (road)	0	1	0	0	1
	Trauma (non-road)	0	0	0	0	0
	Other	0	1	0	1	2
	Total	0	2	5	3	10
Victoria	CVA	0	7	12	30	49
	Trauma (road)	0	6	1	1	8
	Trauma (non-road)	0	2	3	0	5
	Other	2	8	15	10	35
	Total	2	23	31	41	97
Tasmania	CVA	0	0	0	5	5
	Trauma (road)	0	1	0	0	1
	Trauma (non-road)	0	0	0	1	1
	Other	0	2	1	0	3
	Total	0	3	1	6	10
South Australia	CVA	0	1	7	7	15
	Trauma (road)	1	3	1	1	6
	Trauma (non-road)	0	0	3	1	4
	Other	0	3	3	0	6
	Total	1	7	14	9	31
Northern Territory	CVA	0	0	1	0	1
	Trauma (road)	0	0	0	0	0
	Trauma (non-road)	0	0	0	0	0
	Other	1	0	0	0	1
	Total	1	0	1	0	2
Western Australia	CVA	0	1	4	6	11
	Trauma (road)	0	1	1	0	2
	Trauma (non-road)	0	1	0	0	1
	Other	1	2	2	3	8
	Total	1	5	7	9	22

Figure 20

Cause of Donor Death 2002 - 2010		2002	2003	2004	2005	2006	2007	2008	2009	2010
Queensland	CVA	21	19	18	19	19	16	18	18	22
	Trauma (road)	12	13	11	3	8	7	11	7	11
	Trauma (non-road)	6	6	7	6	2	5	8	7	6
	Hypoxia-Anoxia	3	2	2	6	6	9	11	11	7
	Cerebral Tumour	1	0	0	1	0	0	0	2	1
	Other	1	0	1	0	1	2	0	2	2
Total	44	40	39	35	36	39	48	47	49	
NSW	CVA	31	24	37	31	30	28	33	33	44
	Trauma (road)	8	12	8	9	10	8	2	7	15
	Trauma (non-road)	6	4	5	3	2	6	5	7	7
	Hypoxia-Anoxia	7	4	12	8	5	8	15	16	17
	Cerebral Tumour	1	0	1	2	0	1	0	1	1
	Other	2	2	0	1	3	2	2	5	4
Total	55	46	63	54	50	53	57	69	88	
ACT	CVA	3	4	3	3	3	1	3	3	7
	Trauma (road)	1	2	1	4	0	0	0	2	1
	Trauma (non-road)	0	1	2	1	1	0	1	0	0
	Hypoxia-Anoxia	2	1	0	1	0	0	1	2	2
	Other	0	0	0	0	0	0	0	1	0
Total	6	8	6	9	4	1	5	8	10	
Victoria	CVA	30	28	27	30	25	31	38	30	49
	Trauma (road)	10	1	4	3	8	10	5	7	8
	Trauma (non-road)	1	4	5	5	1	5	6	7	5
	Hypoxia-Anoxia	4	7	6	10	8	8	16	16	29
	Cerebral Tumour	1	0	1	1	0	0	0	0	1
	Other	1	2	2	1	3	1	2	4	5
Total	47	42	45	50	45	55	67	64	97	
Tasmania	CVA	4	0	1	1	5	1	2	1	5
	Trauma (road)	1	1	0	0	0	0	2	1	1
	Trauma (non-road)	1	1	0	1	0	0	1	3	1
	Hypoxia-Anoxia	0	0	1	0	3	0	3	0	2
	Other	0	0	0	0	0	0	0	0	1
Total	6	2	2	2	8	1	8	5	10	
South Australia	CVA	13	11	17	11	19	17	19	21	15
	Trauma (road)	8	4	3	5	3	3	3	1	6
	Trauma (non-road)	1	2	3	2	1	3	8	2	4
	Hypoxia-Anoxia	9	5	16	2	11	4	9	8	4
	Cerebral Tumour	0	0	0	0	1	0	1	0	0
	Other	0	0	0	0	1	0	3	1	2
Total	31	22	39	20	36	27	43	33	31	
Northern Territory	CVA	1	1	1	2	2	2	2	0	1
	Trauma (road)	0	0	0	2	0	0	1	1	0
	Trauma (non-road)	1	0	0	0	0	1	0	1	0
	Other	0	0	0	0	0	0	0	0	1
Total	2	1	1	4	2	3	3	2	2	
Western Australia	CVA	4	7	11	16	13	8	14	12	11
	Trauma (road)	6	4	5	6	3	2	6	5	2
	Trauma (non-road)	3	6	3	4	3	5	4	1	1
	Hypoxia-Anoxia	1	1	3	0	1	4	3	1	7
	Cerebral Tumour	0	0	1	2	1	0	0	0	0
	Other	1	0	0	2	0	0	1	0	1
Total	15	18	23	30	21	19	28	19	22	
New Zealand	CVA	21	20	20	17	14	24	22	21	22
	Trauma (road)	8	9	7	3	8	7	2	9	9
	Trauma (non-road)	5	7	7	3	1	3	3	4	4
	Hypoxia-Anoxia	4	2	5	0	2	2	4	8	2
	Cerebral Tumour	0	2	0	1	0	0	0	0	1
	Other	0	0	1	5	0	2	0	1	3
Total	38	40	40	29	25	38	31	43	41	

Please refer to Appendix I (pages 8-12) and Appendix II (pages 4 and 5) for further details of causes of donor death

Figure 21

Occupation of Donors 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Blue collar	41	49	34	53	43	68	1	4	2	1	4	8
Home duties	17	16	14	13	14	19	0	2	1	2	2	3
Disability	10	5	5	8	9	7	1	1	0	3	0	2
Management	0	3	4	6	5	9	0	0	1	1	1	0
Other	2	2	0	1	0	2	0	0	0	0	0	0
Pre-school	7	0	3	1	3	4	0	0	0	0	1	0
Primary industry	2	2	3	6	4	5	0	0	3	1	1	0
Professional	15	15	13	20	21	27	5	1	4	1	5	4
Retired	18	20	24	29	31	38	0	2	1	0	4	6
Small business owner	1	2	4	5	5	5	1	1	0	0	1	1
Student	16	23	19	15	18	18	3	3	3	4	7	6
Tradesperson	8	6	16	19	20	33	0	1	2	1	1	0
Unemployed	6	5	18	17	10	15	0	0	1	0	0	1
Unknown	34	28	20	32	34	5	15	9	16	13	15	5
White collar	27	26	21	34	30	54	3	1	4	4	1	5
Total	204	202	198	259	247	309	29	25	38	31	43	41

Figure 22

Ethnic Origin of Donors 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Aboriginal	1	2	1	4	2	4	0	0	0	0	0	0
Arab	0	0	0	1	0	0	0	0	0	0	0	0
Cambodian	0	0	0	1	0	0	0	0	0	0	0	0
Caucasoid	192	187	190	234	235	289	24	17	37	27	35	32
Greek	(1)	(1)	(1)	(0)	(3)	(2)	(0)	(0)	(0)	(0)	(0)	(0)
Italian	(1)	(1)	(1)	(0)	(4)	(2)	(0)	(0)	(0)	(0)	(0)	(0)
Lebanese	(0)	(0)	(0)	(0)	(2)	(2)	(0)	(0)	(0)	(0)	(0)	(0)
Turk	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Chinese	2	2	1	3	3	3	0	0	0	0	0	1
Coloured African	0	0	0	0	0	0	0	0	0	0	1	0
Columbian	0	0	0	0	0	1	0	0	0	0	0	0
Filipino	0	1	0	3	0	1	0	0	0	0	1	0
Indian	5	2	0	3	1	4	1	1	0	0	0	1
Sri Lankan	(2)	(0)	(0)	(1)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
Indonesian	0	0	0	0	0	1	0	0	0	0	0	0
Japanese	0	1	0	0	0	0	0	0	0	0	0	1
Korean	0	0	1	1	0	0	2	0	1	0	1	0
Malay	0	3	0	4	0	4	1	0	0	0	0	0
Maori	0	0	1	0	2	0	0	7	0	3	5	5
Mauritian	1	2	0	0	0	0	0	0	0	0	0	0
Nigerian	0	0	1	0	0	0	0	0	0	0	0	0
Pacific People	1	0	2	0	1	0	0	0	0	1	0	1
Papua New Guinea	0	0	0	1	0	0	0	0	0	0	0	0
Peruvian	0	0	1	0	0	0	0	0	0	0	0	0
Thai	0	1	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	1	0	0	0	0	0
Vietnamese	2	1	0	4	3	2	0	0	0	0	0	0
Total	204	202	198	259	247	309	29	25	38	31	43	41

Figure 23

Religious Denomination of Donors 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Buddhist	3	1	0	3	3	1	0	0	0	0	0	0
Christian	72	92	59	47	55	98	6	2	3	3	1	3
Coptic	0	0	0	0	1	0	0	0	0	0	0	0
Jehovah's Witness	0	0	0	0	3	0	0	0	0	0	0	0
Jewish	0	0	0	0	1	1	0	0	0	0	0	0
Hindu	3	2	0	2	0	2	1	1	0	0	0	0
Mormon	0	0	0	0	0	1	0	0	0	0	0	0
Muslim	0	0	0	0	1	0	0	0	0	0	0	0
No religion	37	28	21	17	35	64	0	0	0	0	0	0
Orthodox	0	0	0	0	1	0	0	0	0	0	0	0
Sikh	0	0	0	1	0	0	0	0	0	0	0	0
Unknown	89	79	118	189	147	142	22	22	35	28	42	38
Total	204	202	198	259	247	309	29	25	38	31	43	41

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 theatre.

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

Figure 24

Intended Donors 2005 - 2010										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
2005	3	2	0	0	1	1	0	0	7	0
2006	1	6	0	2	0	2	0	1	12	0
2007	0	6	1	5	0	3	0	0	15	0
2008	4	9	2	2	0	2	0	0	19	1
2009	2	8	1	7	1	2	0	1	22	0
2010	5	6	0	11	0	1	0	4	27	0

Figure 25

Reasons Why Donation Did Not Proceed 2005 - 2010	
Year	Australia and New Zealand
2005	DCD potential donors - did not proceed to cardiac standstill (2) Disease of organs and infection Family refusal prior to donation Parainfluenza3 virus
2006	DCD potential donors - did not proceed to cardiac standstill (4) Disease of organs and infection (3) Past history of malignancy (2) Consent withdrawn
2007	DCD potential donors - did not proceed to cardiac standstill (3) DCD - Lung protocol only. Lungs medically unsuitable (3) DCD - Past history of malignancy DCD - Medically unsuitable Coronial refusal Found to have refused on driver's licence Hepatitis C positive - no suitable recipients High risk behaviour Organs medically unsuitable
2008	Authority not obtained Consent withdrawn DCD potential donors - did not proceed to cardiac standstill (10) DCD - Infection Disease of organs - No suitable recipient High risk behaviour (2) Hepatitis C positive - Medically unsuitable Positive serology (2) New Zealand No suitable recipients (AB blood group) (1)
2009	Authority not obtained Consent withdrawn (4) DCD potential donors - did not proceed to cardiac standstill (9) Disease of organs (3) High risk behaviour (2) Positive serology (2) Previous history of melanoma
2010	Age of donor DCD potential donors - did not proceed to cardiac standstill (12) Disease of organs Donor unstable Extended ischaemic time (2) Hepatitis C positive (2) High risk behaviour Infection Malignancy (3) Medically unsuitable (3)

DONATION AFTER CARDIAC DEATH DONORS

Australia

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

After a heart-beating donor is certified brain dead, they remain on the ventilator and the removal of organs may occur many hours later.

Donation after cardiac death (DCD) donors are defined as patients who are certified dead using the criterion of irreversible cessation of circulation.

As soon as cardiac death is confirmed the retrieval procedure is commenced in order to minimise warm ischaemic time.

The number of DCD donors since 2005 continues to increase each year, particularly in New South Wales, Victoria and Queensland.

The total since 1989 is 200 donors for Australia and seven donors for New Zealand, as shown in Figure 26.

The first multiorgan DCD was performed in South Australia in 2006.

In 2010 there were 69 DCD donors; 24 in both New South Wales and Victoria, 13 in Queensland, five in South Australia and three in the Australian Capital Territory (ACT).

Mean age was 47.1 years and age range was 3.5 years to 72.7 years.

Causes of death in 2010 were hypoxia-anoxia (25), CVA (21), road trauma (12), other trauma (7), cerebral oedema (2), medullary neurosarcomatosis (1) and cerebral tumour (1).

Thirty donors had two or more organs transplanted, a further 28 donors had two kidneys transplanted (two kidneys=one organ), three donors had a single kidney transplanted (one of those was a double adult), and a further three donors had double lungs transplanted.

Five of the 69 donors in 2010 did not have any organs transplanted, but three of those donors had corneas sent to the Tissue Bank.

The number and type of organs transplanted or sent to the Tissue Bank from 1989-2010 is shown for each State in Figure 27 and for Australia in Figure 28.

There were 17 intended DCD donors during 2010; twelve did not proceed to cardiac standstill, two had extended ischaemic times and one each a malignancy, hepatitis C positive and unstable.

New Zealand

There was one DCD donor in New Zealand in 2010, who donated a liver, which was transplanted.

Figure 26

Donation after Cardiac Death Donors 1989 - 2010										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	Aust	NZ
1989	0	0	0	1	0	1	0	0	2	-
1990	0	2	0	0	0	1	0	0	3	-
1991	0	2	0	0	0	0	0	0	2	-
1992	0	1	0	0	0	0	0	0	1	-
1993	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	1	0	0	1	1
1995	0	3	0	1	0	0	0	0	4	0
1996	1	1	0	0	0	0	0	0	2	0
1997	0	2	0	0	0	1	0	0	3	1
1998	0	0	0	0	0	2	0	0	2	0
1999	1	0	0	0	0	0	0	0	1	0
2000	0	0	0	0	0	0	1	0	1	0
2001	0	1	0	1	0	0	0	0	2	0
2002	0	0	0	0	0	1	1	0	2	0
2003	0	1	0	0	0	0	0	0	1	0
2004	0	2	0	0	0	0	0	1	3	0
2005	0	8	0	0	0	1	0	0	9	0
2006	0	4	0	1	0	3	0	0	8	0
2007	0	8	0	9	0	2	0	0	19	0
2008	5	10	2	3	0	3	0	0	23	2
2009	5	15	2	17	0	3	0	0	42	2
2010	13	24	3	24	0	5	0	0	69	1
Total	25	84	7	57	0	24	2	1	200	7

Figure 27

Donation After Cardiac Death Donors 1989 - 2010 Organs Transplanted or Sent to Tissue Bank in Australia																							
Donor State	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Total
Queensland																							
Kidneys	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	10	8	25	47	
Lungs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	5	
Cornea	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	8	10	
Bone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	6	8	
Heart Valves	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3	2	3	10	
Total	0	0	0	0	0	0	0	5	0	0	3	0	0	0	0	0	0	0	15	12	45	80	
New South Wales																							
Kidneys	0	4	3	2	0	0	5	2	4	0	0	0	0	2	4	16	8	13	18	27	45	153	
Liver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	4	6	13	
Lungs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	5	8	19	
Cornea	0	2	0	0	0	0	0	2	0	0	0	0	2	0	4	10	2	8	8	4	20	62	
Bone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	5	
Heart Valves	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	5	3	3	6	6	10	35	
Total	0	6	3	2	0	0	5	5	5	0	0	0	2	0	2	8	31	13	27	39	47	92	287
ACT																							
Kidneys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	12	
Liver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
Lungs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	3	
Cornea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4	6	
Heart Valves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	3	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	4	12	26	
Victoria																							
Kidneys	2	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	12	6	30	33	86	
Liver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	2	5	
Lungs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	1	7	13	27	
(L) Lung	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
(R) Lung	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pancreas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
Cornea	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	10	4	20	37	77	
Bone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3	7	
Heart Valves	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	4	1	2	11	19	
Tissue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3	6	
Total	4	0	0	0	0	0	2	0	0	0	0	0	4	0	0	0	3	35	16	64	102	230	
South Australia																							
Kidneys	2	0	0	0	0	0	0	0	1	4	0	0	0	2	0	0	2	4	2	5	6	10	38
Liver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	4	
Lungs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	4	
Cornea	2	2	0	0	0	2	0	0	2	0	0	0	2	0	0	0	2	0	0	4	6	22	
Bone	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	
Heart Valves	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	4	
Total	5	3	0	0	0	3	0	0	3	4	0	0	0	4	0	0	2	9	5	5	11	21	75
Northern Territory																							
Kidneys	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	4	
Western Australia																							
Kidneys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	
Australian Total	9	9	3	2	0	3	7	10	8	4	3	2	6	6	2	10	33	25	67	85	138	272	704

Figure 28

Donation after Cardiac Death Donors 1989 - 2010 Organs Transplanted or Sent to Tissue Bank in Australia																							
Organs	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Total
Kidneys	4	4	3	2	0	0	7	4	5	4	2	2	1	4	2	6	18	12	27	43	75	117	342
Liver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	4	12	24	
Lungs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	7	14	27	58	
(L) Lung	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
(R) Lung	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pancreas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
Cornea	4	4	0	0	0	2	0	4	2	0	0	4	2	0	4	10	6	18	14	28	75	177	
Bone	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	4	3	12	23	
Heart Valves	0	1	0	0	0	0	0	2	1	0	1	0	1	0	0	5	3	8	12	11	26	71	
Tissue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3	6	
Total	9	9	3	2	0	3	7	10	8	4	3	2	6	6	2	10	33	25	67	85	138	272	704

CARDIOPULMONARY RESUSCITATION

Cardiopulmonary resuscitation is recorded for events leading up to the admission and hospital stay for the patient, prior to organ donation (Figures 29 and 30).

Figure 29

Cardiopulmonary Resuscitation 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Yes	47	51	60	83	89	112	6	8	6	11	13	15
No	157	151	137	176	158	197	23	17	32	19	30	26
Unknown	0	0	1	0	0	0	0	0	0	1	0	0
Total	204	202	198	259	247	309	29	25	38	31	43	41

Figure 30

Australian States Cardiopulmonary Resuscitation 2010 (2009)								
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Yes	18 (11)	26 (33)	2 (3)	44 (22)	2 (1)	11 (15)	0 (0)	9 (4)
No	31 (36)	62 (36)	8 (5)	53 (42)	8 (4)	20 (18)	2 (2)	13 (15)
Total	49 (47)	88 (69)	10 (8)	97 (64)	10 (5)	31 (33)	2 (2)	22 (19)

DONOR WEIGHT

The allocation of heart, lungs and livers are based on the matching of recipient and donor size and weight.

In 2010 there were eleven donors in Australia and one donor in New Zealand who weighed less than 40 kilograms (Figure 31).

Figure 31

Donor Weight 2005 - 2010												
		Kilograms										Total
		0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100 +	
Australia	2005	6	3	2	5	16	35	50	45	23	19	204
	2006	1	4	4	5	10	43	41	50	26	18	202
	2007	3	0	1	3	14	29	46	47	34	21	198
	2008	1	1	4	3	18	33	63	71	30	35	259
	2009	2	2	0	3	11	45	56	56	35	37	247
	2010	2	5	4	2	20	43	62	70	53	48	309
New Zealand	2005	0	0	0	1	0	8	10	4	1	4	28
	2006	0	1	0	0	2	5	6	4	4	3	25
	2007	0	0	1	0	2	8	12	8	5	2	38
	2008	0	0	0	2	2	4	11	6	4	2	31
	2009	0	2	0	1	7	7	11	6	8	1	43
	2010	1	0	0	1	2	6	14	8	4	5	41

VIROLOGY SCREENING

Figure 32

Cytomegalovirus (CMV) Status of Donors 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Positive	152	137	105	167	144	191	16	15	24	15	19	23
Negative	52	65	93	92	103	118	13	10	14	16	24	18
Total	204	202	198	259	247	309	29	25	38	31	43	41

Figure 33

Epstein-Barr Virus (EBV) Status of Donors 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Positive	118	123	132	177	157	198	19	24	33	28	37	33
Negative	21	26	12	20	14	14	2	1	5	3	3	2
Not done	65	53	54	62	76	97	8	0	0	0	3	6
Total	204	202	198	259	247	309	29	25	38	31	43	41

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

Figure 34

Hepatitis C Antibody Status of Donors 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Positive	4	1	4	5	5	2	2	1	1	1	0	0
Negative	200	201	194	254	242	307	27	24	37	30	43	41
Total	204	202	198	259	247	309	29	25	38	31	43	41

HEPATITIS C ANTIBODY

There were two positive Hepatitis C donors in Australia and none in New Zealand in 2010.

Both were beating heart donors. There were two kidneys and a liver transplanted from one donor and two kidneys and a heart/lung transplanted from the other donor.

The liver donor was also HBV core antibody positive.

Figure 35

Hepatitis B Core Antibody Status of Donors 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Negative	193	191	191	243	234	289	27	21	33	29	38	39
Positive	11	11	7	16	13	20	2	4	5	2	5	2
Total	204	202	198	259	247	309	29	25	38	31	43	41

HEPATITIS B CORE ANTIBODY

The Registry commenced collection of Hepatitis B core antibody results in 1998.

A positive result was recorded for 6% (20) of Australian donors and 5% (2) of New Zealand donors in 2010.

From the 20 Australian donors there were 36 kidneys, nine livers, four double lungs, one (L) lung, three hearts and six corneas transplanted. Two of the 20 donors did not donate any organs due to malignancy and kidneys found to be marginal at retrieval.

Two of the 20 Australian donors were DCD donors who donated four kidneys, one double lung and two corneas.

From the two New Zealand donors, two kidneys, two livers, two double lungs, one heart and two cornea were transplanted or sent to the Tissue Bank. Both were beating heart donors.

HEPATITIS B SURFACE ANTIGEN

Since 1993, all donors in Australia and New Zealand have been negative for Hepatitis B surface antigen, excepting one donor in 2004 who was not tested as their condition deteriorated in theatre and no organs were retrieved.

MEDICAL CONDITION OF DONORS

DIABETES

There were seven Type 1 and 22 Type 2 diabetic donors in Australia in 2010 and one Type 1 and two Type 2 diabetic donors in New Zealand.

The seven diabetic Type 1 donors (including two DCD donors) provided nine kidneys, four livers, two split livers, two hearts, two double lungs, one single lung, one heart/lung, four cornea and one set of heart valves. Two of those donors (one a DCD donor) did not have any organs retrieved due to disease.

The one diabetic Type 1 donor in New Zealand provided a single kidney and two cornea.

There were 22 Type 2 donors (included four DCD donors) who provided 23 kidneys, nine livers, two hearts, four double lungs, two single lungs, 16 corneas, two sets of heart valves and one bone donation.

The two Type 2 donors in New Zealand provided two kidneys, two livers, two corneas, one set of heart valves and tissue were transplanted or sent to the Tissue Bank..

HYPERTENSION

A past history of hypertension was recorded in 28% (86 donors) in Australia and 12% (five donors) in New Zealand in 2010 (Figure 37). Included in the 86 donors for Australia were 17 DCD donors with a past history of hypertension.

These donors provided Australia with 138 kidneys, 41 livers, three split livers, seven hearts, one heart/lung, 22 double lungs, three single lungs, one pancreas, three pancreas islets, 78 corneas, 15 sets of heart valves and nine bone for transplantation or sent to storage. Six of the 86 donors did not provide any organs due to disease, extended ischaemic time and malignancy.

In New Zealand, five donors provided five kidneys, three livers, two double lungs, two cornea, one set of heart valves. One donor did not have any organs retrieved due to disease.

SMOKING

In 2010, 39% (120) Australian donors were recorded as current smokers and 26% (80 donors) as former smokers, while in New Zealand, 20% (eight donors) were reported as current and 22% (nine donors) as former.

CANCER IN DONOR

Australia (16 donors)

- * five adenocarcinoma -
(three prostate (2006 (2), 1998)
(one uterus (2008), colon (1985)
- * one ductal carcinoma - breast (1990)
- * one oligodendroglioma - frontal lobe brain (2001)
- * one renal cell carcinoma - kidney (2010)
(tumour resected and kidney transplanted)
- * one melanoma - back (1965)
- * one carcinoid - colon (2010)
- * one testicular cancer - testis (1985)
- * one SCC - cervix (2007)
- * one astrocytoma - brain (2001)
glioma - brain (2010) in the same donor
- * one TCC - bladder (2010)
- * one unknown - colon - intra-operatively (2010)
- * one unknown - pancreas, liver - intra-operatively (2010)

There were 25 kidneys, eight livers, three hearts, one heart/lung, two double lungs, one single lung, one pancreas islets, twelve corneas and one bone donation were transplanted from fourteen of these donors.

Two donors had a malignancy diagnosed intra-operatively, one in the pancreas and liver and the other in the colon.

New Zealand (no donors had cancer in 2010)

Figure 36

Medical Condition of Donors by Australian States 2010 (2009)								
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Diabetes Type 1	0 (2)	1 (4)	0 (0)	4 (0)	0 (0)	1 (1)	0 (0)	1 (0)
Diabetes Type 2	0 (0)	7 (8)	1 (2)	10 (2)	1 (0)	3 (2)	0 (0)	0 (1)
Hypertension	11 (10)	21 (17)	4 (3)	30 (16)	4 (0)	10 (10)	0 (0)	6 (7)
Smoking - Current	23 (17)	32 (26)	4 (7)	38 (24)	4 (2)	11 (11)	1 (1)	7 (10)
Cancer	5 (2)	4 (1)	0 (0)	3 (1)	0 (0)	2 (4)	0 (0)	2 (1)

Figure 37

Donor Diabetes, Smoking and Cancer 2005 - 2010		2005	2006	2007	2008	2009	2010
Australia	Diabetes Type 1	1 (<1%)	7 (3%)	2 (1%)	5 (2%)	7 (3%)	7 (2%)
	Diabetes Type 2	13 (6%)	11 (5%)	12 (6%)	14 (5%)	15 (6%)	22 (7%)
	Hypertension	46 (23%)	44 (22%)	45 (23%)	58 (22%)	63 (25%)	86 (28%)
	Unknown	3 (1%)	2 (1%)	5 (3%)	3 (1%)	2 (1%)	2 (<1%)
	Smoking						
	Current	67 (33%)	77 (38%)	77 (39%)	115 (44%)	98 (40%)	120 (39%)
	Former	34 (17%)	44 (22%)	39 (20%)	53 (20%)	49 (20%)	80 (26%)
	Unknown	0 (0%)	0 (0%)	1 (1%)	2 (1%)	0 (0%)	0 (0%)
	Cancer	7 (3%)	3 (1%)	3 (2%)	6 (2%)	9 (4%)	16 (5%)
	Total Donors	(n=204)	(n=202)	(n=198)	(n=259)	(n=247)	(n=309)
New Zealand	Diabetes Type 1	0 (0%)	1 (4%)	1 (3%)	0 (0%)	0 (0%)	1 (2%)
	Diabetes Type 2	2 (7%)	1 (4%)	1 (3%)	1 (3%)	1 (2%)	2 (5%)
	Hypertension	7 (24%)	5 (20%)	9 (24%)	6 (19%)	15 (35%)	5 (12%)
	Smoking						
	Current	9 (31%)	8 (32%)	14 (37%)	8 (26%)	11 (26%)	8 (20%)
	Former	5 (17%)	3 (12%)	5 (13%)	5 (16%)	13 (30%)	9 (22%)
	Unknown	1 (3%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)
	Cancer	1 (3%)	0 (0%)	1 (3%)	1 (3%)	0 (0%)	0 (0%)
	Total Donors	(n=29)	(n=25)	(n=38)	(n=31)	(n=43)	(n=41)

Figure 38

Expanded* Criteria for Kidney Donors 2010 (2009) States, Australia and New Zealand										
Donor Type	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Expanded	10 (8)	29 (20)	4 (1)	31 (22)	5 (1)	7 (12)	0 (1)	6 (9)	92 (74)	5 (12)
Non Expanded	38 (36)	55 (42)	5 (7)	60 (40)	4 (4)	21 (18)	2 (1)	16 (10)	201 (158)	28 (2)
Total	48 (44)	84 (62)	9 (8)	90 (62)	9 (5)	28 (30)	2 (2)	22 (19)	293 (232)	33 (38)

*An expanded criteria kidney donor as defined in American Journal of Transplantation 2003; 3 (Suppl. 4): 114-125

i.e. any donor aged ≥ 60 years, or any donor aged 50-59, with two of the following three criteria:
CVA death, or terminal creatinine >133 , or hypertension

DONOR INTENTION

Figures 39 and 40 show whether the donor had recorded an intention to donate through a signed driver's licence. In 2010, 28% (85) Australian donors and 12% (five) New Zealand organ donors had a signed driver's licence. Figure 41 shows the number of donors enrolled in the Australian Organ Donation Registry, which commenced in 2000.

Figure 39

Driver's Licence Intention Status 2005 - 2010												
Intention	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Yes	48 (24%)	57 (28%)	68 (34%)	67 (26%)	73 (30%)	85 (28%)	4 (14%)	5 (20%)	13 (34%)	2 (6%)	7 (16%)	5 (12%)
No	31	23	50	55	42	47	1	0	0	1	0	0
Age/Not Applicable	35	38	35	56	49	126	1	1	2	2	3	0
Unknown	90	84	45	81	83	51	23	19	23	26	33	36
Total	204	202	198	259	247	309	29	25	38	31	43	41

Figure 40

Australian States 2010 (2009) Driver's Licence Intention Status								
Intention	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Yes	1 (3)	60 (47)	6 (4)	2 (3)	0 (0)	13 (16)	0 (0)	3 (0)
No	1 (4)	18 (12)	4 (3)	5 (8)	0 (1)	0 (0)	0 (0)	3 (3)
Student/ Not Applicable	38 (24)	7 (4)	0 (0)	55 (5)	9 (1)	2 (1)	1 (0)	14 (14)
Unknown	9 (16)	3 (6)	0 (1)	35 (48)	1 (3)	16 (16)	1 (2)	2 (2)
Total	49 (47)	88 (69)	10 (8)	97 (64)	10 (5)	31 (33)	2 (2)	22 (19)

Figure 41

Donors Enrolled in the Australian Organ Donor Registry 2010 (2009)									
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST
Yes	11 (9)	35 (32)	6 (5)	18 (11)	4 (1)	8 (13)	1 (0)	9 (8)	92 (79)
Not Registered	36 (32)	47 (33)	4 (3)	77 (52)	6 (4)	22 (18)	0 (2)	9 (11)	201 (155)
Not Accessed	0 (1)	1 (1)	0 (0)	1 (1)	0 (0)	1 (1)	0 (0)	2 (0)	5 (4)
Not Applicable	2 (5)	5 (3)	0 (0)	1 (0)	0 (0)	0 (1)	1 (0)	2 (0)	11 (9)
Total	49 (47)	88 (69)	10 (8)	97 (64)	10 (5)	31 (33)	2 (2)	22 (19)	309 (247)

AUTHORITY SOUGHT FOR ORGAN DONATION

The predominant group requesting authority for organ donation in 2010 were the Intensive Care Clinicians and Registrars, (69%) in Australia and (73%) in New Zealand shown in Figure 42.

In Australia authority for organ donation was sought by donor coordinators in only two cases (Figure 42). See Figure 43 for individual State and Territory statistics.

Authority for organ donation was not sought by donor coordinators in New Zealand.

In 2010, 27% of families volunteered authority for organ donation in Australia, compared to 36% in 2009 (Figure 42).

In New Zealand, 22% volunteered authority in 2010 compared to 16% in 2009 and 26% in 2008.

Figure 42

Authority to Donate 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
ICU Clinician	101	117	107	152	147	200	23	16	33	19	31	29
ICU Registrar	7	14	11	10	4	13	1	2	2	0	2	1
Emergency Consultant/ Registrar	1	4	1	6	2	9	0	0	0	0	0	0
Other Physicians/Anaesthetist	2	4	2	1	0	0	1	1	1	2	2	1
Donor Coordinator	25	17	4	4	2	2	0	0	0	0	0	0
Volunteered by Family	66	45	73	84	90	82	4	6	2	8	7	9
Nursing Staff - Social Worker	2	1	0	0	2	2	0	0	0	2	1	1
Accident and Emergency Staff	0	0	0	2	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	1	0	0	0	0	0	0
Total	204	202	198	259	247	309	29	25	38	31	43	41

Figure 43

Authority to Donate 2010 (2009)								
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
ICU Clinician	36 (21)	65 (47)	8 (8)	48 (34)	6 (2)	25 (29)	0 (2)	12 (4)
ICU Registrar	0 (0)	1 (2)	0 (0)	8 (2)	0 (0)	2 (0)	0 (0)	2 (0)
Donor Coordinator	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
Volunteered by Family	13 (26)	21 (20)	2 (0)	33 (26)	2 (3)	4 (4)	1 (0)	6 (11)
Emergency/Other Physician	0 (0)	1 (0)	0 (0)	6 (1)	2 (0)	0 (0)	0 (0)	0 (1)
Accident and Emergency Staff	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Nursing Staff - Social Worker	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	1 (0)	0 (1)
Unknown	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	49 (47)	88 (69)	10 (8)	97 (64)	10 (5)	31 (33)	2 (2)	22 (19)

DIRECT CONTACT WITH DONOR COORDINATOR

There were no families in Australia with whom the Donor Coordinator had no contact, compared to 17 families (41%) in New Zealand in 2010.

Figure 44

Direct Contact with Donor Coordinator 2010										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Face to Face	48 (98%)	88 (100%)	10 (100%)	93 (96%)	7 (70%)	30 (97%)	2 (100%)	22 (100%)	300 (97%)	20 (49%)
Telephone	1 (2%)	0 (0%)	0 (0%)	4 (4%)	3 (30%)	1 (3%)	0 (0%)	0 (0%)	9 (3%)	4 (10%)
None	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	17 (41%)
Total	49	88	10	97	10	31	2	22	309	41

CORONER'S CASES

In Australia, 39% of donors in 2010 were subject to Coronerial inquiry, compared to 43% in 2009. In New Zealand it was 44% for 2010, the same as for 2009.

Figure 45

Coroner's Cases 2005 - 2010												
	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Yes	97	80	96	120	106	121	9	15	12	12	19	18
No	107	122	102	139	141	188	20	10	26	19	24	23
Total	204	202	198	259	247	309	29	25	38	31	43	41

Figure 46

Australian States Coroner's Cases 2010 (2009)									
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	
Yes	20 (22)	31 (26)	5 (7)	36 (26)	4 (5)	15 (11)	0 (2)	10 (7)	
No	29 (25)	57 (43)	5 (2)	61 (38)	6 (0)	16 (22)	2 (0)	12 (12)	
Total	49 (47)	88 (69)	10 (8)	97 (64)	10 (5)	31 (33)	2 (2)	22 (19)	

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.

For further details see Appendix I for Australia and Appendix II for New Zealand.

Figure 47 shows the outcome of organs requested in 2010 (2009).

Figure 47

Outcome Following Request for Organ Donation 2010 (2009)							
		Kidneys	Liver	Heart	Lungs	Pancreas	Stomach/Intestines
Australia	Requested	616 (480)	282 (234)	250 (201)	540 (406)	257 (211)	55 (35)
	Consent Given	610 (480)	280 (234)	241 (191)	536 (396)	252 (210)	49 (30)
	Retrieved	570 (457)	192 (174)	81 (71)	243 (217)	113 (110)	1 (0)
	Recipients Transplanted	548 (446)	204 (185)	68 (61)	236 (217)	(+46) (+46)	1 (0)
New Zealand	Requested	82 (86)	40 (43)	33 (34)	64 (74)	26 (26)	0 (0)
	Consent Given	82 (86)	40 (43)	33 (34)	64 (74)	26 (26)	0 (0)
	Retrieved	62 (73)	32 (33)	11 (11)	24 (32)	3 (2)	0 (0)
	Recipients Transplanted	52 (54)	34 (33)	11 (11)	24 (31)	3 (2)	0 (0)
Kidneys and lungs are counted as separate organs + Includes (9) 2009 and (12) 2010 pancreas islet transplants							

ORGANS REQUESTED

The requests for specific organs in Australia in 2010 from 309 organ donors were: kidneys 99.7%, liver 91%, heart 81%, lungs 87% and pancreas 83%.

From the 41 New Zealand donors in 2010, the requests for specific organs were: kidneys 100%, liver 98%, heart 80%, lungs 78% and pancreas 63%.

MULTIPLE ORGAN RETRIEVAL

There were 60 (19%) of Australian donors in 2010 who donated solid organs, who had a single organ retrieved, shown in Figure 48. Kidney only donation occurred in 51 cases.

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

New Zealand had nine single organ donors in 2010, four donating kidneys and five donating a liver only.

In Australia 78% of donors and in New Zealand 71% of donors had two or more organs retrieved for the purpose of transplantation

Figure 48

Multiple Organ Retrieval 2005 - 2010												
Number of Organs	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Single	17%	11%	15.5%	17%	17%	19%	14%	8%	16%	19%	16%	22%
Two	22%	23%	23%	23%	20%	32%	34%	24%	40%	23%	35%	29%
Three	17%	23%	23%	25%	27%	20%	21%	44%	26%	39%	33%	29%
Four	32%	23%	20%	20%	19%	18%	28%	12%	18%	16%	9%	12%
Five	10%	18%	15.5%	14%	14%	9%	3%	12%	0%	3%	2%	0%
No organs	2%	1%	3%	1%	3%	2%	0%	0%	0%	0%	5%	7%

Figure 49

State by State Comparison of Multiple Organ Retrieval 2010										
Number of Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Single	14 (29%)	18 (20%)	0 (0%)	18 (18%)	1 (10%)	7 (22.5%)	0 (0%)	2 (9%)	60 (19%)	9 (22%)
Two	14 (29%)	31 (35%)	3 (30%)	24 (25%)	5 (50%)	8 (26%)	1 (50%)	12 (55%)	98 (32%)	12 (29%)
Three	12 (24%)	12 (14%)	4 (40%)	22 (23%)	0 (0%)	7 (22.5%)	0 (0%)	4 (18%)	61 (20%)	12 (29%)
Four	8 (16%)	13 (15%)	1 (10%)	21 (22%)	3 (30%)	4 (13%)	1 (50%)	4 (18%)	57 (18%)	5 (12%)
Five	1 (2%)	11 (13%)	1 (10%)	10 (10%)	1 (10%)	4 (13%)	0 (0%)	0 (0%)	28 (9%)	0 (0%)
No organs	0 (0%)	3 (3%)	1 (10%)	2 (2%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)	7 (2%)	3 (7%)
Total	49	88	10	97	10	31	2	22	309	41

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 3.2 organs per donor in 2010 used for transplantation, while New Zealand had 2.7 organs per donor (Figure 50).

The number of organs transplanted per donor each year for 2000-2010 in Australia and New Zealand is shown in Figure 51.

The number of recipients transplanted per donor in Australia in 2010 was 3.0 compared to 3.2 in 2009.

The Northern Territory had the highest number of organs transplanted; 3.5 per donor, followed by the Australian Capital Territory, 3.4, Queensland and Western Australia both 3.3, New South Wales, 3.2, Victoria and Tasmania 3.1 and South Australia, 3.0.

These figures include pancreas islets transplants but exclude tissue transplantation.

Figure 50

Organs Transplanted per Donor 2010										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
No. Organs Transplanted	160	285	34	303	32	94	7	72	987	112
No. of Donors	49	88	10	97	10	31	2	22	309	41
Mean per Donor	3.3	3.2	3.4	3.1	3.2	3.0	3.5	3.3	3.2	2.7

Double Lungs = one organ
 Kidney-Pancreas, Kidney-Heart, Kidney-Liver, Heart/Lungs = two organs

Figure 51

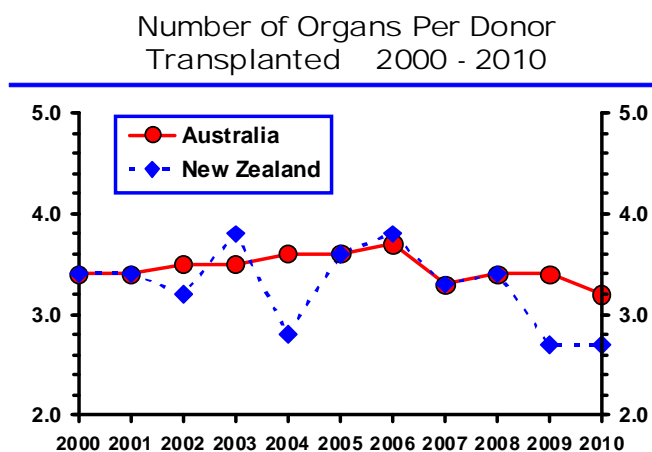


Figure 52

Organs Transplanted by Donor State in Australia and New Zealand 2010										
Organs Transplanted	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Kidney	94	156	18	164	17	53	4	42	548	52
Liver	27	49	6	51	5	16	2	17	173	30
Liver (Left)	3	6	2	2	1	2	0	0	16	2
Liver (Right)	3	6	2	2	1	1	0	0	15	2
Heart	11	17	1	24	2	4	0	6	65	11
Heart/Lungs	0	0	0	0	0	1	0	2	3	0
Lungs	15	33	2	43	2	10	1	4	110	12
Lung (Left)	2	1	0	0	0	1	0	0	4	0
Lung (Right)	1	1	1	2	0	1	0	0	6	0
Pancreas	1	14	1	12	2	3	0	1	34	3
Pancreas Islets	3	2	1	3	1	2	0	0	12	0
Intestines	0	0	0	0	1	0	0	0	1	0
Total	160	285	34	303	32	94	7	72	987	112

EXCHANGE OF ORGANS

Figure 53 shows the number of organs that were sent and received between Australian States and New Zealand in 2010 and 2009

Figure 53

Exchange of Organs Between States and New Zealand 2010 (2009)										
Organs Transplanted	Exchange	Kidneys	Liver ⁺	Heart	Heart/Lungs ^x	Lungs #	Pancreas	Islets	Intestines	Total [*]
Queensland	Sent	10 (13)	8 (7)	9 (7)	0 (0)	13 (10)	1 (3)	3 (0)	0 (0)	44 (40)
	Received	10 (11)	7 (4)	1 (2)	0 (0)	6 (6)	0 (0)	0 (0)	0 (0)	24 (23)
New South Wales	Sent	23 (24)	7 (5)	3 (2)	0 (0)	14 (12)	2 (1)	0 (0)	0 (0)	49 (44)
	Received	48 (35)	20 (10)	13 (9)	0 (0)	27 (26)	6 (15)	5 (4)	0 (0)	119 (99)
ACT	Sent	18 (13)	10 (4)	1 (1)	0 (0)	5 (4)	1 (1)	1 (0)	0 (0)	36 (23)
Victoria	Sent	13 (9)	8 (3)	3 (0)	0 (0)	2 (0)	0 (0)	3 (2)	0 (0)	29 (14)
	Received	30 (25)	10 (18)	8 (9)	1 (0)	29 (42)	4 (4)	0 (2)	1 (0)	85 (100) *
Tasmania	Sent	17 (10)	7 (6)	2 (3)	0 (0)	4 (8)	2 (4)	1 (0)	1 (0)	34 (31)
South Australia	Sent	9 (12)	3 (11)	4 (9)	1 (0)	22 (22)	3 (5)	0 (4)	0 (0)	44 (63) *
	Received	10 (16)	4 (4)	0 (0)	0 (0)	0 (0)	0 (0)	3 (0)	0 (0)	17 (20)
Northern Territory	Sent	4 (4)	2 (2)	0 (0)	0 (0)	2 (2)	0 (0)	0 (0)	0 (0)	8 (8)
Western Australia	Sent	14 (9)	2 (3)	1 (0)	0 (0)	0 (2)	1 (5)	0 (0)	0 (0)	18 (19)
	Received	12 (7)	5 (7)	1 (2)	0 (0)	6 (2)	0 (0)	0 (0)	0 (0)	24 (18)
New Zealand	Sent	2 (0)	5 (5)	0 (0)	0 (0)	6 (16)	0 (0)	0 (0)	0 (0)	13 (21)
	Received	0 (0)	6 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (3)

+ Number of recipients of livers x Number of sets of Heart/Lungs (not counted under heart or lungs)
Total number of lungs (not recipients) excludes heart/lungs
* Total includes a heart and two lungs from each heart/lungs transplant

Figure 54

Summary of Organs Transplanted in Australia from New Zealand Donors 1989 - 2010						
Year	Kidneys	Liver ⁺	Heart	Heart/Lung ^x	Lungs [*]	Total [#]
1989	0	1	0	0	0	1
1990	0	7	0	0	0	7
1991	0	11	0	0	0	11
1992	3	24	0	0	0	27
1993	0	16	0	0	0	16
1994	4	21	0	0	2	27
1995	0	21	5	0	9	35
1996	1	23	1	0	4	29
1997	2	22	1	1	0	28
1998	4	16	3	0	8	31
1999	2	7	1	0	2	12
2000	0	7	0	0	4	11
2001	0	2	0	0	4	6
2002	0	5	2	0	8	15
2003	0	5	3	0	13	21
2004	1	7	2	0	4	14
2005	4	5	3	0	5	17
2006	0	8	1	0	5	14
2007	0	8	3	0	8	19
2008	0	2	2	0	4	8
2009	0	5	0	0	16	21
2010	2	5	0	0	6	13
Total	23	228	27	1	102	383

+ Number of recipients of livers
x Number of sets of Heart/Lungs (not counted under heart or lungs)
Total number of lungs (not recipients) excludes heart/lungs
* Total includes a heart and two lungs from each heart/lungs transplant

New Zealand organs are sent to Australia when there are no suitable 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

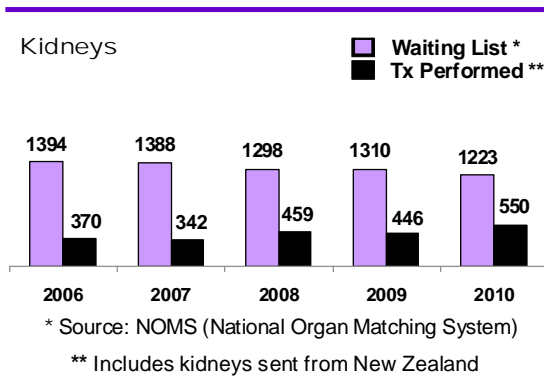
Figure 55 shows the number of Australian and New Zealand patients waiting for a kidney transplant and the number of deceased donor transplants performed for each year from 2006-2010.

There were 33 combined kidney/pancreas, four whole liver/kidney, two split liver/kidney and three kidney/heart transplants in 2010 in Australia.

In New Zealand there were two combined kidney/pancreas transplants in 2010.

Figure 55

Waiting List vs Deceased Donor Transplants
Australia 2006 - 2010



Waiting List vs Deceased Donor Transplants
New Zealand 2006 - 2010

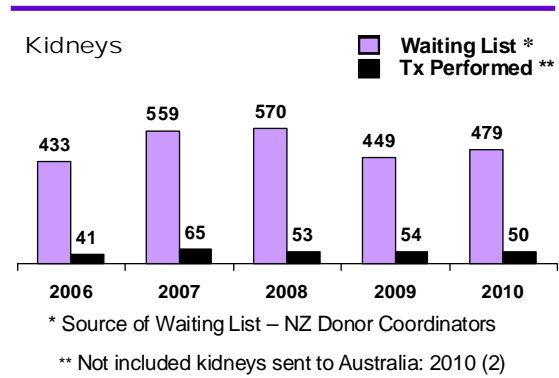
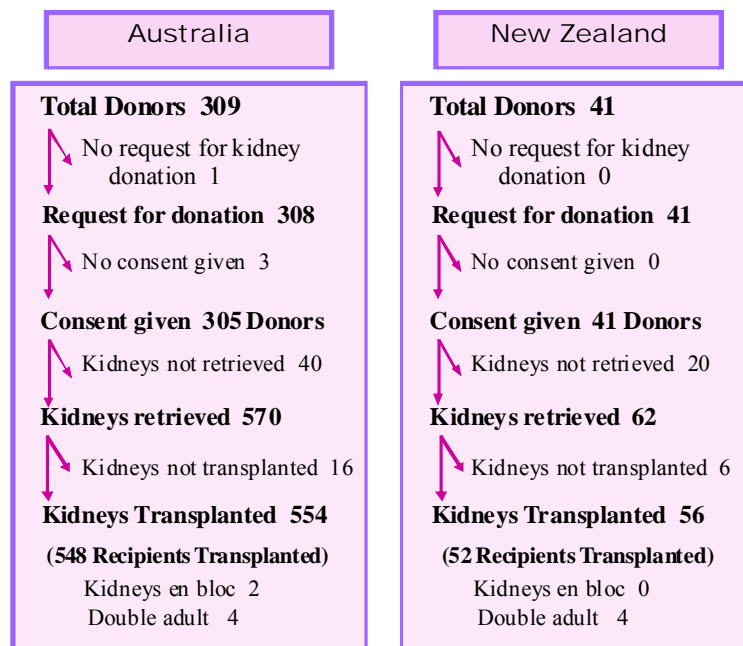


Figure 56

Outcome of Request for Kidney Donation 2010



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

Figure 57

Age of Donors Providing Transplanted Kidneys 2005 - 2010												
		Age Group										
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	Total
Australia	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	1 (1)	6	36	31	42	43	49 (1x)	23	7	0	238
	2009	2 (2)	4	33	29	28	55	53 (1x)	23 (2x)	2 (1x)	0	229
	2010	3 (2)	5	26 (1*)	36	59	56	63	30 (2x)	7 (1x)	0	285
New Zealand	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
	2009	1 (1)	2 (1)	6	2	5	9	4	2	0	0	31
	2010	0	0	6	4	7 (1x)	7 (1x)	3 (2x)	1	0	0	28

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

Figure 58

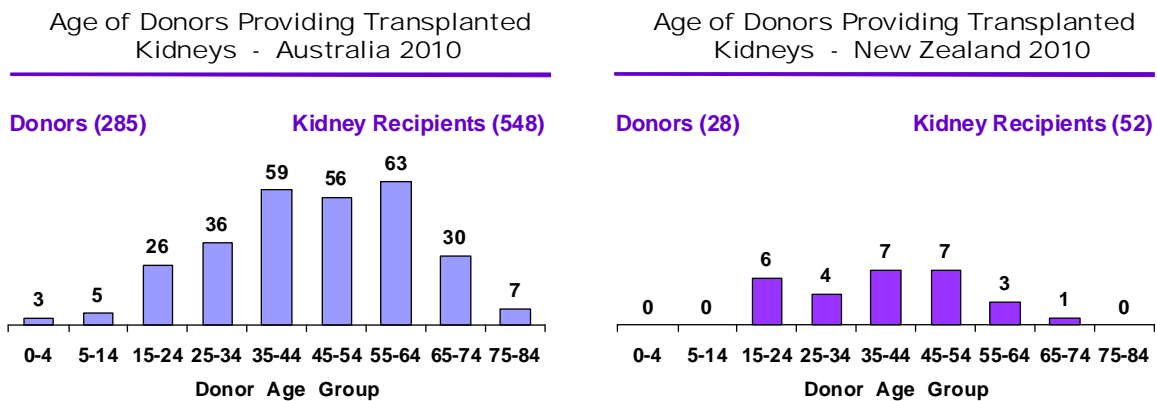


Figure 59

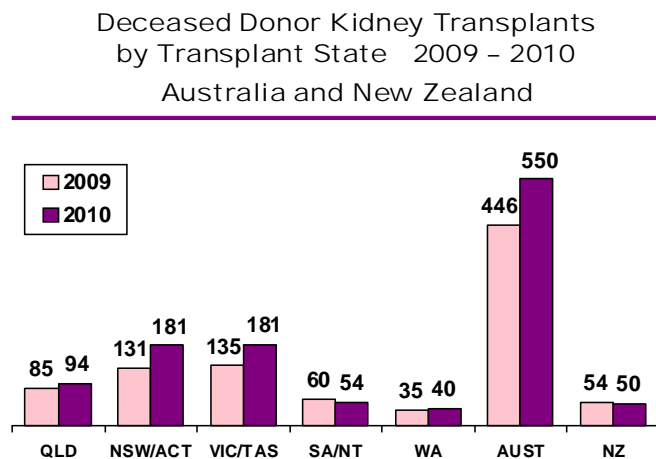


Figure 60

Regional Outcome of Requests for Kidney Donation 1989 - 2010										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ **
Total Donors	897	1377	110	1082	86	602	47	393	4594	670
Requested	894	1359	109	1066	85	592	46	389	4540	665
Consented	894	1355	109	1063	85	591	46	389	4532	665
Retrieved	1739	2588	209	2052	162	1115	92	745	8702	1245
Transplanted *	1693	2507	202	1955	153	1053	88	717	8368	1158
	(14) (4x)	13 (5x)	(2)	(8) (1x)	(2)	(5) (16x)	(1x)	(5) (5x)	(49) (32x)	(5) (9x)
* Recipients () En bloc (x) Double Adult ** New Zealand 1993 - 2010										

DONOR KIDNEY FUNCTION

TERMINAL LEVELS OF SERUM CREATININE

AUSTRALIA

In 2010 in Australia, 15% (45 donors) had a terminal serum creatinine concentration of $\geq 125 \mu\text{mol/L}$ and 19% (54 donors) had a terminal serum urea concentration of $\geq 9 \text{ mmol/L}$, shown in Figure 61.

NEW ZEALAND

There were 6% (two donors) in New Zealand with a terminal serum creatinine concentration of $\geq 125 \mu\text{mol/L}$ and 3% (one donor) with a terminal serum urea concentration of $\geq 9 \text{ mmol/L}$ in 2010.

Figure 61

Terminal Serum Creatinine Levels 2005 - 2010												
Creatinine ($\mu\text{mol/L}$)	Australia						New Zealand					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
00-99	75%	77%	73%	72%	77%	78%	59%	74%	85%	87%	87%	90%
100-124	13%	10%	11%	12%	9%	6%	23%	10.5%	15%	7%	5%	3%
125-149	5%	6%	8%	4%	5%	4%	9%	10.5%	0%	3%	5%	3%
150-174	2%	2%	2%	4%	2%	4%	9%	5%	0%	3%	3%	3%
175-199	1%	1%	1%	2%	1%	2%	0%	0%	0%	0%	0%	0%
200-224	2%	<1%	0%	<1%	1%	2%	0%	0%	0%	0%	0%	0%
225-249	0%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
>250	2%	3%	4%	5%	4%	3%	0%	0%	0%	0%	0%	0%

REASONS KIDNEYS WERE UNUSABLE

KIDNEY BIOPSY AT RETRIEVAL

There were 27 donors (9%) who had a biopsy of the kidneys taken at retrieval in 2010 in Australia and ten donors (30%) in New Zealand.

Since 2000, there have been 13% (293) biopsies from 2276 kidney donors in Australia and 35% (127) from 368 kidney donors in New Zealand.

The reasons for kidneys that were unusable and the donor age are shown in Figures 62 and 63.

Figure 62

Reasons Kidneys Unused 2005 - 2010		2005	2006	2007	2008	2009	2010
Australia	Renal disease in donor	5	6	5	6	1	4
	Cancer in donor	1	1	0	3	2	2
	Anatomical	1	0	0	1	1	2
	Surgical	0	3	0	2	0	0
	Trauma	2	0	0	1	0	0
	Marginal donor	0	0	0	0	0	3
	Poor perfusion	0	0	0	0	0	4
	Recipient problems	0	1	1	3	1	0
	Hepatitis B Core Antibody	2	0	0	0	0	0
	Hepatitis C Nat Positive	0	0	1	0	0	0
	High risk donor	0	0	1	0	0	0
	No suitable recipient	0	0	0	0	0	1
	Recent asymptomatic peritonitis	0	0	1	0	0	0
	Total	11	11	9	16	5	16
New Zealand	Renal disease in donor	3	1	3	6	16	4
	Anatomical	0	0	0	0	1	0
	Recipient unsuitable	1	0	0	0	0	0
	Surgical	0	0	0	0	0	2
	Total	4	1	3	6	17	6

Figure 63

Donor Age of Unused Kidneys 2005 - 2010		Age Groups									Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	
Australia	2005	0	0	0	2	2	2	2	1	0	9
	2006	0	0	0	1	0	1	2	2	1	7
	2007	0	0	0	3	1	1	0	1	1	7
	2008	0	0	1	1	0	4	3	2	2	13
	2009	0	0	0	0	0	0	2	2	0	4
	2010	0	0	0	0	1	2	2	5	0	10
New Zealand	2005	0	0	0	0	0	1	2	0	0	3
	2006	0	0	0	0	0	0	1	0	0	1
	2007	0	0	0	0	0	1	0	1	0	2
	2008	0	0	0	0	0	1	1	1	0	3
	2009	0	0	0	0	1	4	3	2	0	10
	2010	0	0	0	1	0	0	1	1	0	3

KIDNEY PERFUSION METHODS

Where kidneys were perfused with only one solution, Ross (79%) and UW (21%) were the only solutions used in Australia in 2010.

In New Zealand UW was the only solution used in 2010 (Figure 64).

UW was used as the second perfusion solution in 99% of cases and Ross (1%) in Australia in 2010 (Figure 65).

Figure 64

Kidney Perfusion with Only One Solution 2005 - 2010													
	Australia						New Zealand						
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010	
Ross	24	16	18	16	17	46	4	0	0	0	0	0	
UW	4	0	2	2	2	12	49	42	36	0	41	62	
HTK	23	38	7	24	10	0	0	0	28	59	32	0	
Hartman's	0	0	0	0	0	0	0	0	0	0	0	0	
Celsior	0	2	0	0	0	0	0	0	0	0	0	0	
Total	51	56	27	42	29	58	53	42	64	59	73	62	

Figure 65

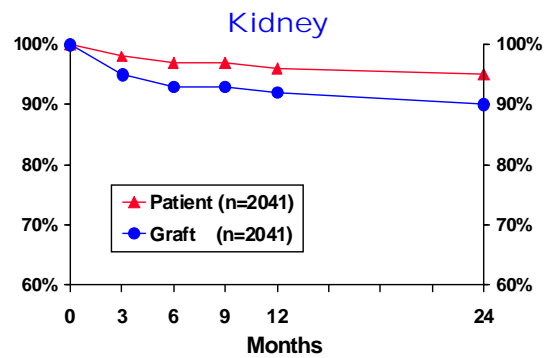
Second Perfusion Solution - Kidneys 2005 - 2010													
	Australia						New Zealand						
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010	
Ross	0	4	8	16	16	4	0	0	0	0	0	0	
UW	338	323	320	399	402	508	2	0	4	0	0	0	
HTK	2	2	0	20	10	0	0	0	0	0	0	0	
Total	340	329	328	435	428	512	2	0	4	0	0	0	

KIDNEY TRANSPLANT OUTCOME

Figure 66 shows the patient and graft outcome for kidney transplants performed over the preceding five years in Australia and New Zealand.

Figure 66

Primary Deceased Patient and Graft Survival
Australia 2004 - 2009



Primary Deceased Patient and Graft Survival
New Zealand 2004 - 2009

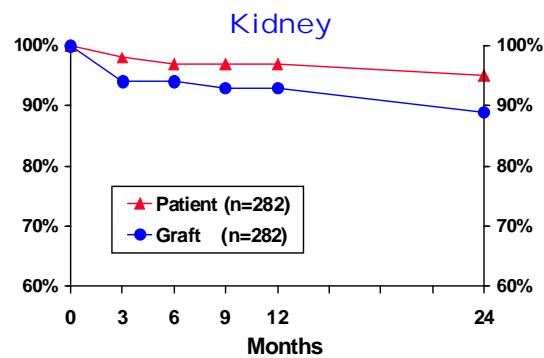
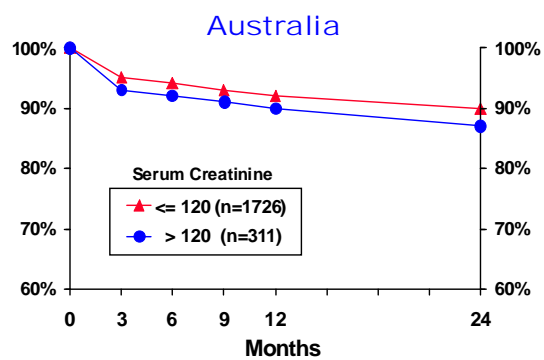


Figure 67

Primary Deceased Kidney Graft Survival
Terminal Serum Creatinine 2004 - 2009



This data has been provided by the ANZDATA (Australia and New Zealand Dialysis and Transplant) Registry and further information on kidney transplant outcome is available from their website - www.anzdata.org.au

SPECIAL SECTION

KIDNEY TRANSPLANTS FROM DONORS AFTER CARDIAC DEATH

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Kidney transplantation extends life and improves quality of life compared with dialysis. Unfortunately there is a shortage of organ donors, meaning that many patients with end-stage kidney disease never receive a transplant. Traditionally most deceased organ donors had died from brain death (donors after brain death, DBD). However, not all potential organ donors meet the strict criteria for brain death. Over the last decade donation after death from circulatory arrest (donation after cardiac death, DCD) has become increasingly accepted, and consequently transplants from DCD donors have increased significantly.

Although accepting kidneys from DCD donors increases the number of kidney transplants performed, the nature of such donations means that the kidneys suffer more ischaemic injury compared with kidneys from DBD donors. This may lead to concerns regarding the short and long term outcomes of such transplants. Australia has been performing a rapidly growing number of kidney transplants from DCD kidneys over the last ten years (Figure 68).

This section examines the characteristics of DBD and DCD kidney donors, recipients and outcomes over 2000-2009 in Australia. The analysis excludes multiple organ recipients.

Figure 68

Kidney Transplants From Donors After Cardiac Death

Australian deceased donor grafts 2000-2010
(excluding multiple organ recipients)

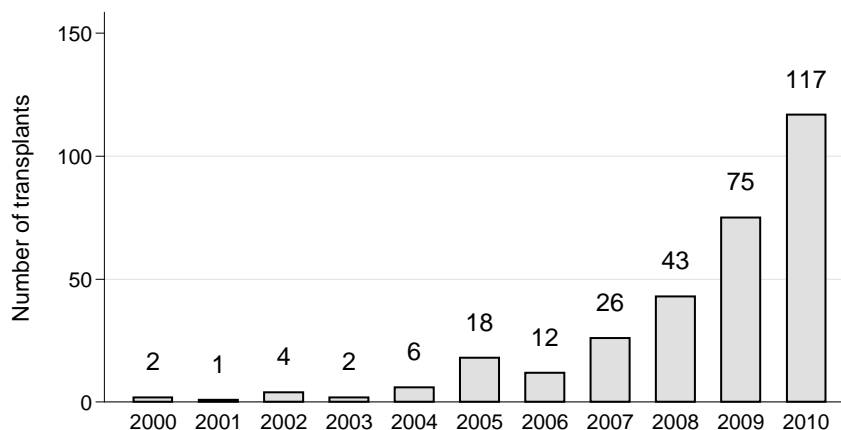


Figure 69 shows the characteristics of deceased donors, divided into donors after brain death (DBD, n=1,857) and donors after cardiac death (DCD, n=98). The DCD donors were less likely to have died from a stroke (34% vs 52% of DBD donors) and more likely to have died from hypoxia/anoxia (31% vs 15%). They were also more likely to have received cardiopulmonary resuscitation (35% vs 27%). The other donor characteristics were very similar between DBD and DCD donors.

Figure 69

Characteristics of Deceased Kidney Donors Australia 2000-2009 (Excluding Multiple Organ Recipients)		
	DBD Donors (n=1857)	DCD Donors (n=98)
Age Years (mean ± sd)	41.7 ± 18.0	44.2 ± 16.6
Sex	58% Male	65% Male
Race - Caucasoid	93%	95%
Cause of Death		
Stroke	52%	34%
Road Trauma	17%	20%
Other Trauma	11%	10%
Hypoxia / Anoxia	15%	31%
Cerebral Tumour	1%	0%
Other	3%	5%
CPR	27%	35%
Diabetes	5%	5%
Hypertension	19%	18%
Smoker (Former / Current)	58%	57%
History of Cancer	2%	1%
Biopsy Obtained	12%	12%
Creatinine (Median) µmol/L		
Admission	80	83
Terminal	76	75
Oliguria	15%	19%

The 190 recipients of DCD kidneys were similar to the 3,587 recipients of DBD kidneys (Figure 70), with the notable exception that DCD recipients had been waiting a median of 1.1 years longer for a kidney transplant compared with DBD recipients. Allocation of DCD kidneys is State-based due to concerns about ischaemic time, so differences in waiting times partially reflect the fact the New South Wales has performed more kidney transplants from DCD donors than the other States.

Figure 70

Characteristics of Recipients - Australia 2000-2009 (Excluding Multiple Organ Recipients)		
	DBD Recipients (n=3587)	DCD Recipients (n=190)
Age (mean ± sd)	46.4 ± 13.5	48.6 ± 12.8
Sex	62% Male	68% Male
Race - Caucasoid	84%	79%
Indigenous	6%	5%
Asian	9%	15%
Other	2%	1%
Number of Previous Grafts		
0	86%	87%
1	12%	12%
≥ 2	3%	<1%
Waiting Time (Years, Median)	3.8 years	4.9 years

Characteristics of the transplants performed are shown in Figure 71. Transplants from DCD donors had a slightly higher degree of HLA mismatch and a similar amount of total ischaemic time. As expected, a much higher proportion of transplants from DCD kidneys exhibited delayed graft function (57% vs 21%), here defined as the need for dialysis within 72 hours. Despite this, patient (Figure 72) and graft (Figure 73) survival, rejection rates (Figure 74) and kidney function at six months (Figure 75) were very similar.

Figure 71

Characteristics of Transplants - Australia 2000-2009 (Excluding Multiple Organ Recipients)		
	DBD Transplants (n=3587)	DCD Transplants (n=190)
HLA Mismatches		
0-2	37%	41%
3-4	32%	22%
5-6	21%	37%
Ischaemic Time Hours (mean ± sd)	13.2 ± 4.4	13.7 ± 4.6
Delayed Graft Function	21%	57%
Patient Survival (95% CI)		
1 year	96.3% [95.7, 96.9]	91.8% [86.1, 95.2]
3 years	93.1% [92.1, 93.9]	91.8% [86.1, 95.2]
5 years	89.6% [88.4, 90.7]	89.2% [80.6, 94.2]
Graft Survival (95% CI)		
1 year	91.7% [90.7, 92.5]	87.8% [81.6, 92.0]
3 years	86.0% [84.7, 87.1]	83.8% [74.8, 89.8]
5 years	79.9% [78.3, 81.4]	79.0% [67.7, 86.8]
Rejection at 6 months (95% CI)	24.1% [22.7, 25.5]	22.1% [16.3, 28.4]
eGFR at 6 months * mL/min/1.73 ² (mean ± sd)	53 ± 19	49 ± 16
* in adult recipients		

Figure 72

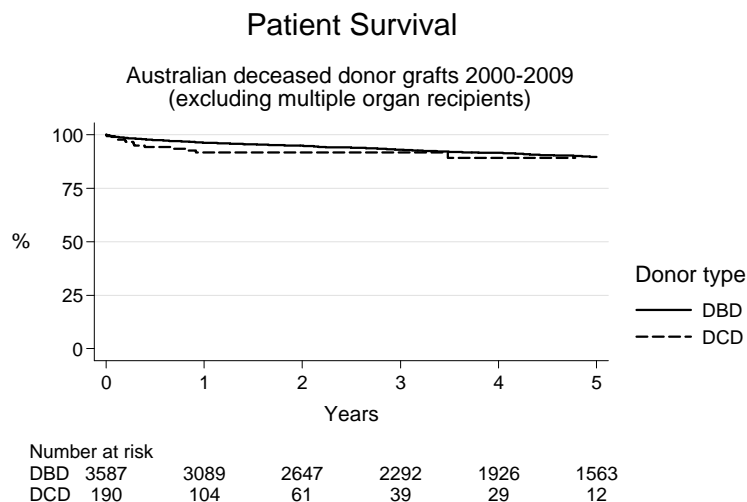


Figure 73

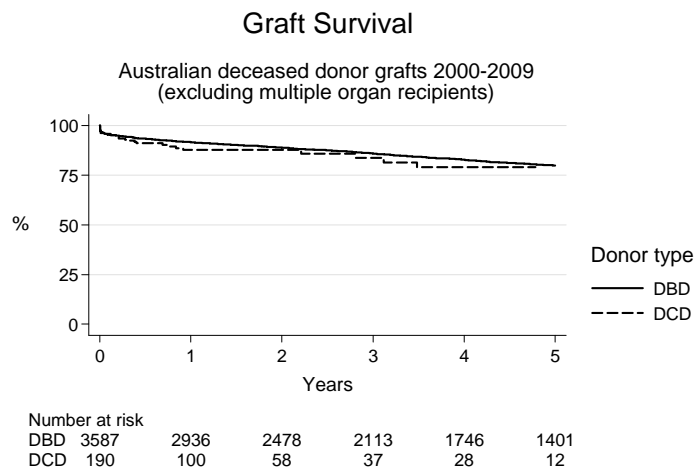


Figure 74

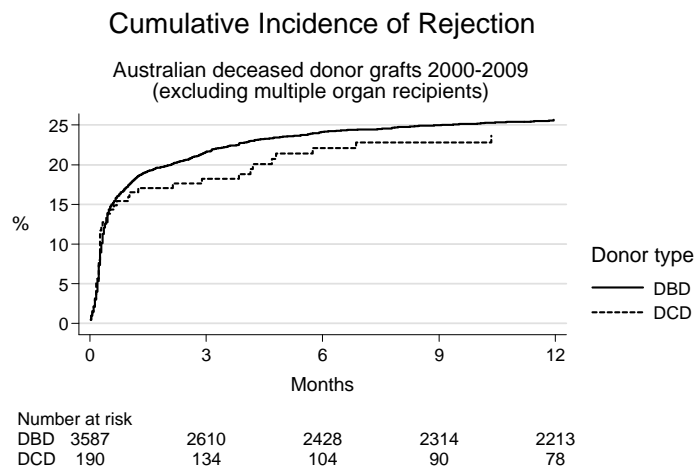
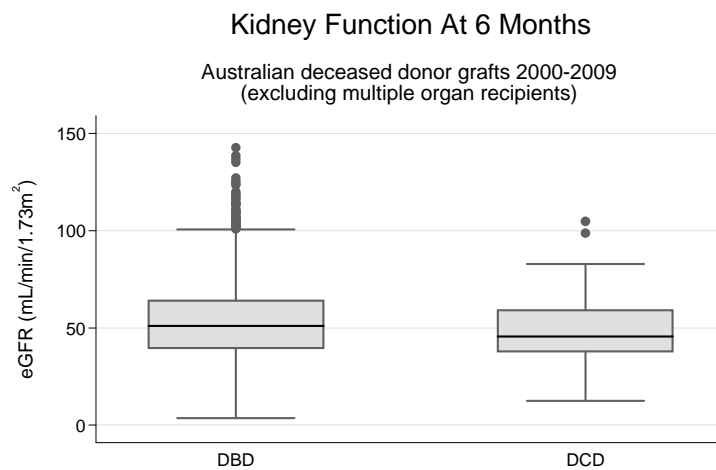


Figure 75



In summary, the use of kidneys from donors after cardiac death has increased the number of kidney transplants performed in Australia in the last decade. Despite higher rates of delayed graft function, the long-term outcomes of these kidney transplants were similar to those donated by donors after brain death.