Figure 80

Outcome of Request for Heart Donation 2008

Australia	New Zealand
Total Donors 259	**Total Donors 31**
No request for heart donation 46	No request for heart donation 2
Request for donation 213	**Request for donation 29**
No consent given 9	No consent given 0
Consent given 204 Donors	**Consent given 29 Donors**
Hearts not retrieved 113	Hearts not retrieved 19
Hearts retrieved 91	**Hearts retrieved 10**
Hearts not transplanted 6	Hearts not transplanted 0
Hearts Transplanted 85	**Hearts Transplanted 10**
Heart only - 80	Heart only - 10
Heart/Lungs - 5	Heart/Lungs - 0

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

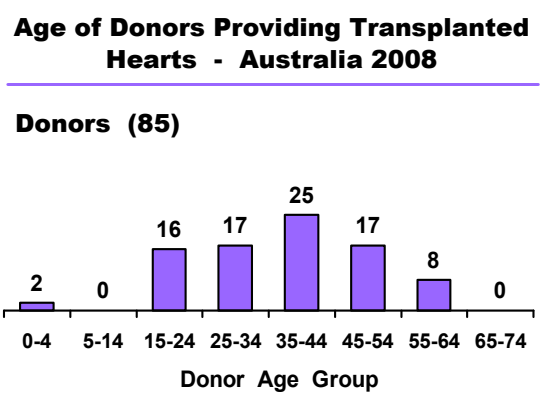
Figure 81

Age of Donors Providing Transplanted Hearts 2003 - 2008

	Year	Age Groups 00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	Total
Australia	2003	0	3	21	8	17	17	2	0	**68**
	2004	0	1	28	16	11	17	5	0	**78**
	2005	0	3	21	12	17	20	5	0	**78**
	2006	0	6	28	12	10	18	2	0	**76**
	2007	0	3	21	10	11	10	7	0	**62**
	2008	2	0	16	17	25	17	8	0	**85**
New Zealand	2003	0	2	8	3	6	3	3	0	**25**
	2004	0	0	3	1	1	0	1	0	**6**
	2005	0	0	2	2	2	6	4	0	**16**
	2006	0	0	3	3	2	1	0	0	**9**
	2007	0	1	1	1	2	6	1	0	**12**
	2008	0	0	3	1	2	2	2	0	**10**

Also includes hearts used for heart/lung transplants

Figure 82



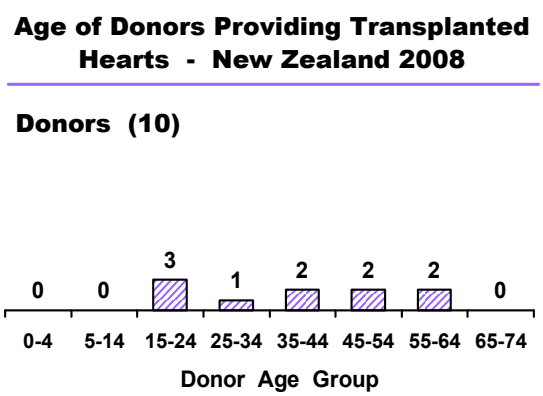


Figure 83

Heart Transplants by Transplant State
Australia and New Zealand 2007 - 2008

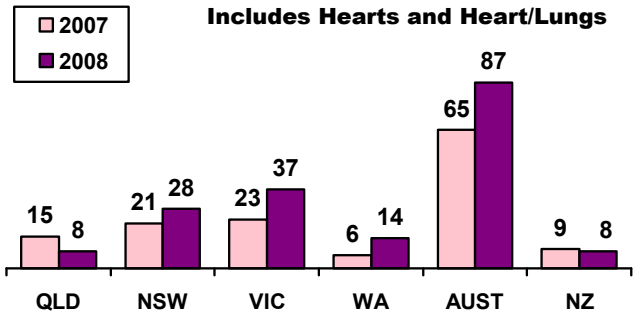


Figure 84

Heart and Lung Transplant Recipients
By Transplant Country 2002 - 2008

	Heart/Lung	2002	2003	2004	2005	2006	2007	2008
Australia	Heart	73	66	74	75	71	59	82
	Heart/lung	8	5	6	6	6	6	5
	Double Lung	66	58	82	71	79	69	100
	Single left lung	12	9	7	5	8	4	8
	Single right lung	13	7	6	5	8	4	4
	Total	**172**	**145**	**175**	**162**	**172**	**142**	**199**
New Zealand	Heart	8	22	4	13	8	9	8
	Heart/lung	0	0	0	0	0	0	0
	Double lung	5	10	9	8	9	9	12
	Single left lung	1	2	0	0	1	0	0
	Single right lung	2	2	0	0	0	0	0
	Total	**16**	**36**	**13**	**21**	**18**	**18**	**20**

Figure 85

Regional Outcome of Requests for Heart Donation 1989 - 2008

	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ *
Total Donors	**801**	**1220**	**92**	**921**	**71**	**538**	**43**	**352**	**4038**	**586**
Requested	757	997	81	802	64	397	36	279	**3413**	**481**
Consented	723	935	74	760	61	382	35	257	**3227**	**469**
Retrieved	386	530	49	440	42	201	15	146	**1809**	**200**
Transplanted	382	520	48	396	38	194	15	142	**1735**	**199**

* New Zealand 1993 - 2008
Includes Hearts only, Heart/Lungs and Heart / (L) Lung

Heart Valve Donation

The aortic and pulmonary heart valves can often be viable for transplantation when the whole heart is not suitable. Heart valves can be stored for up to five years.

This data relates only to heart valves retrieved from organ donors.

Figure 86

Outcome of Request for Heart Valve Donation 2008

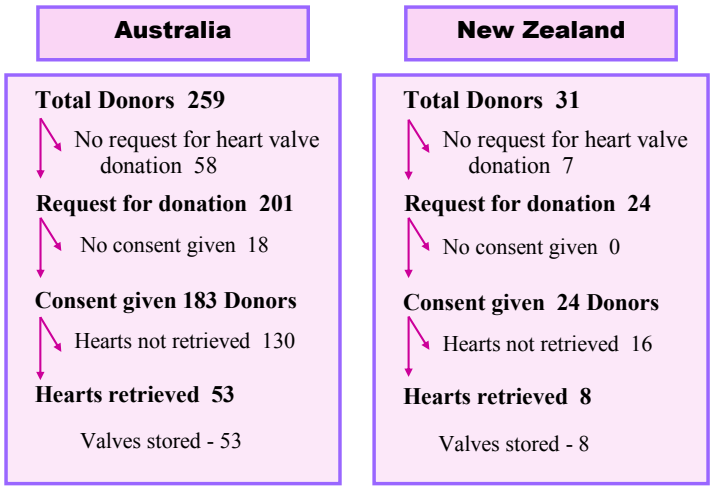


Figure 87

Age of Heart Valve Donors 2003 - 2008

		Age Groups									
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	Total
Australia	2003	1	2	7	4	4	11	8	0	1	**38**
	2004	0	3	3	6	4	13	7	0	0	**36**
	2005	4	3	1	2	4	17	3	0	0	**34**
	2006	0	2	3	5	10	10	4	0	0	**34**
	2007	3	1	6	8	6	10	8	0	0	**42**
	2008	0	5	14	5	7	12	10	0	0	**53**
New Zealand	2003	0	0	4	1	4	0	0	0	0	**9**
	2004	0	0	4	3	3	3	8	0	0	**21**
	2005	0	0	1	1	2	1	0	0	0	**5**
	2006	0	0	3	0	1	1	1	0	0	**6**
	2007	0	0	3	0	4	5	2	0	0	**14**
	2008	0	1	1	1	2	2	1	0	0	**8**

Figure 88

Regional Outcome of Requests for Heart Valve Donation 1989 - 2008

	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ *
Total Donors	**801**	**1220**	**92**	**921**	**71**	**538**	**43**	**352**	**4038**	**586**
Requested	327	328	23	262	18	129	6	89	**1182**	**272**
Consented	308	310	21	240	18	116	6	82	**1101**	**265**
Retrieved	221	216	19	127	10	71	3	60	**727**	**225**
Transplanted or Stored	218	206	19	124	10	68	3	59	**707**	**223**

* New Zealand 1993 - 2008

Figure 89

Outcome of Request for Lung Donation 2008

Australia	New Zealand
Total Donors 259	**Total Donors 31**
No request for lung donation 38	No request for lung donation 5
Request for donation 221	**Request for donation 26**
No consent given 4	No consent given 0
Consent given 217 Donors	**Consent given 26 Donors**
Lungs not retrieved 212	Lungs not retrieved 24
Lungs retrieved 222	**Lungs retrieved 28**
Lungs not transplanted 4	Lungs not transplanted 0
Lungs Transplanted 218	**Lungs Transplanted 28**
(Double lung - 98 recipients)	(Double lung - 14 recipients)
(Heart/double lung - 5 recipients)	(Heart/double lung - 0 recipients)
(Single lung - 12 recipients)	(Single lung - 0 recipients)

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

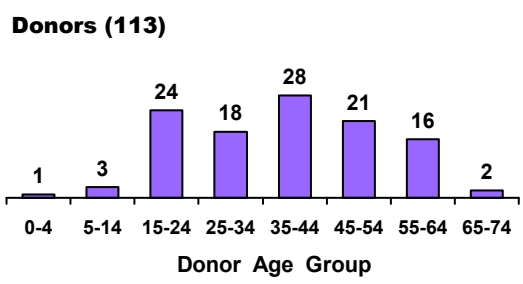
Figure 90

Age of Donors Providing Transplanted Lungs 2003 - 2008 (Including Heart/Lung Donors)

		Age Groups								
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	Total
Australia	2003	0	2	20	7	12	15	10	0	1	**67**
	2004	0	4	24	23	16	17	11	0	0	**95**
	2005	0	4	14	13	18	27	6	0	0	**82**
	2006	0	7	27	16	9	23	11	0	0	**93**
	2007	0	3	21	14	10	15	12	0	0	**75**
	2008	1	3	24	18	28	21	16	2	0	**113**
New Zealand	2003	0	1	5	3	8	0	2	0	0	**19**
	2004	0	0	3	1	1	0	6	0	0	**11**
	2005	0	0	2	0	2	5	2	0	0	**11**
	2006	0	1	1	3	5	1	2	0	0	**13**
	2007	0	0	1	0	3	7	2	0	0	**13**
	2008	0	1	2	0	3	5	2	1	0	**14**

Figure 91

Age of Donors Providing Transplanted Lungs - Australia 2008



Age of Donors Providing Transplanted Lungs - New Zealand 2008

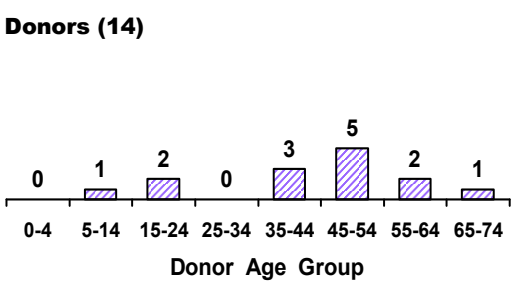


Figure 92

Lung Transplant Recipients 2007 - 2008 by Transplant State - Australia and NZ

Bilateral Sequential (Double) and Single Lung Transplants by State 2007 - 2008

Figure 93

Regional Outcome of Requests for Lung Donation 1989 - 2008

	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ **
Total Donors	**801**	**1220**	**92**	**921**	**71**	**538**	**43**	**352**	**4038**	**586**
Requested	719	974	82	744	59	355	35	251	**3219**	**410**
Consented	679	917	75	713	57	339	34	232	**3046**	**404**
Retrieved x	471	814	83	650	58	318	30	211	**2635**	**325**
Transplanted x	441	790	81	609	58	306	29	205	**2519**	**306**

X Number of Lungs (Includes Heart/Double Lungs and Heart/Single (L) Lung)
** New Zealand 1993 - 2008

Donor Lung Function

Australia

There were 65 Australian lung donors (58%) who had a bronchoscopy in 2008. Eight donors had chest trauma; these included five pneumothorax, one each haemopneumothorax, fractured ribs and contusions.

The arterial blood gases were taken on 100% FiO_2 and PEEP of 5 cm. Thirty three donors had a PEEP > 5 cm and two < 5cm.

The results from 76 lung donors in 2008 show 18% (14) to be acidotic (pH < 7.35) and 18% (14) to be alkalotic (pH > 7.45).

Oxygenation measured as PaO_2 ranged from 301-635 mmHg with a median of 448 mmHg.

$PaCO_2$ ranged from 27.70-64.2 mmHg with a median of 38.0 mmHg.

New Zealand

There were seven (50%) New Zealand lung donors who had a bronchoscopy in 2008. No donors had chest trauma.

Only one donor had a PEEP > 5 cm.

The arterial blood gas results from 13 lung donors in 2008 show 15% (2) to be acidotic (pH < 7.35) and none alkalotic (pH > 7.45).

Oxygenation measured as PaO_2 ranged from 305-547 mmHg with a median of 377 mmHg.

$PaCO_2$ ranged from 26.7-50.2 mmHg with a median of 41.0 mmHg.

Special Report

From the Australia and New Zealand Cardiothoracic Organ Transplant Registry

Contributed by

Professor Anne Keogh (Director) and

Mr Ross Pettersson (Data Manager)

For further information, please contact Ross Pettersson (rpettersson@stvincents.com.au)

This annual report details heart and lung transplant activity for Australia and New Zealand.

Lungs have proven extremely resilient as a donor organ. From 2000-2008 the average number of lungs procured and used has averaged around 175 per year for Australia and New Zealand (although lungs are mostly transplanted in pairs). For around eight years now, bilateral lung transplant has predominated as the best procedure for several disorders. Hearts transplanted meanwhile average around 80 per year, in effect meaning that fewer patients are able to be transplanted from independent living at home and more are dependent on left ventricular assist devices.

Survival after heart or lung transplants in Australia and New Zealand is superior to the international average and this is particularly significant since we are certain of the accuracy of our cause of death data.

The leading cause of death after heart transplantation is no longer rejection or infection, but to "other" - a wide assortment of human ailments. Second most common is malignancy (3/4 solid organ and 1/4 PTLD) followed by transplant vasculopathy. So heart transplantation is changing from a "disease" in itself, to a wedge into life's usual illnesses.

Lung transplantation remains thwarted by death from bronchiolitis obliterans and it is clear that novel drugs are needed to prevent this fibrosing process. Malignancy accounts for only a small percentage of deaths after lung transplant at present.

Figure 94 Australia and New Zealand

Number of All Transplants *
By Year 1984 - 2007
(Total of all Transplants = 3393)

Year	Heart	Heart/ Lung	Single Lung	Bilateral Lung
1984	14	0	0	0
1985	22	0	0	0
1986	34	1	0	0
1987	30	1	0	0
1988	56	2	0	0
1989	93	14	0	0
1990	103	12	5	0
1991	103	19	18	0
1992	115	18	27	3
1993	114	13	24	33
1994	104	13	26	44
1995	108	13	28	43
1996	103	7	32	42
1997	105	4	43	43
1998	82	4	38	50
1999	76	2	27	47
2000	70	2	28	73
2001	82	1	29	55
2002	82	9	29	70
2003	89	5	20	68
2004	78	6	13	91
2005	89	6	10	79
2006	80	6	17	88
2007	68	6	8	78
Total	**1900**	**164**	**422**	**907**

* Includes domino, hetero and retransplants

Figure 95 Australia and New Zealand

Recipient Age at Heart Transplant
By Year 1984 - 2007

Year	Number Patients	Mean	Std Dev +-	Median	Minimum-Maximum
1984	14	33	15	39	11-51
1985	19	39	13	38	10-54
1986	32	40	13	43	11-57
1987	30	41	12	46	13-56
1988	56	41	14	45	4-63
1989	93	42	14	46	1-65
1990	103	43	15	47	6-65
1991	103	47	14	52	1-64
1992	115	45	15	51	4-66
1993	114	46	14	51	6-65
1994	104	47	13	50	1-66
1995	108	46	16	50	2-68
1996	103	48	13	53	10-64
1997	105	46	14	50	9-66
1998	82	46	15	51	1-64
1999	75	47	15	53	2-67
2000	70	49	13	53	12-66
2001	80	45	15	49	2-64
2002	82	45	18	52	7-70
2003	88	45	15	47	1-67
2004	76	47	15	52	9-66
2005	89	48	14	52	5-65
2006	79	43	17	49	3-67
2007	66	46	16	49	5-71

Number of patients excludes re transplants

Figure 96 **Australia and New Zealand**

Mean Heart Ischaemic Time Minutes 1984 - 2007

Year	Number Patients	Mean	Std Dev +-	Median	Minimum-Maximum
1984	14	74	16	70	54-108
1985	19	114	41	95	53-183
1986	32	136	47	133	80-235
1987	30	151	45	155	60-260
1988	56	152	44	158	78-240
1989	93	150	57	147	39-311
1990	103	165	74	144	54-441
1991	103	178	80	163	55-390
1992	115	183	76	164	52-420
1993	114	207	82	198	41-446
1994	104	193	75	190	75-445
1995	108	208	98	186	42-465
1996	103	201	79	177	60-405
1997	105	211	90	194	60-454
1998	82	240	103	213	74-612
1999	75	236	101	244	43-447
2000	70	247	89	242	102-516
2001	80	265	102	253	186-338
2002	82	237	79	224	107-443
2003	88	258	90	268	176-323
2004	76	244	87	239	88-427
2005	89	239	91	239	59-491
2006	79	246	84	238	109-413
2007	66	244	91	248	73-510

Number of patients excludes re transplants

Figure 97 **Australia and New Zealand**

Cause of Death Hearts 1984 -2007

Transplant Coronary Artery Disease (Tx CAD)	**139**
Infection	**109**
Acute Rejection	**92**
Non PTLD Malignancy	**104**
Non-specific Graft Failure (NSGF)	**72**
PTLD	**34**
CVA	**20**
Haemorrhage	**11**
Other (including unspecified)	**185**

Renal failure (34), sudden death (22), cardiac arrest (16), heart failure (10), TxCAD + rejection (11), pulmonary failure (7), motor vehicle accident (6), suicide (6), non-compliance (5), pancreatitis (4), liver failure (3), pulmonary hypertension (3), pulmonary embolism (3), bowel ischaemia (3), (R) ventricular failure (2), respiratory failure (2), aortic dissection (Marfan's) (2), drug overdose (2), congenital bronchomalacia (1), pericarditis (1), peripheral vascular disease (2), acute abdomen (1), anoxic brain/head injury (3), myelodysplasia (1), oesophageal perforation (1), oesophageal diverticulum (1), drug induced lung damage (2), COPD (2), died on table (1), hepatic encephalopathy (1), general deterioration (2), amyloidosis (1), Parkinson's (1) mesenteric ischaemia (1), aortic aneurysm (1), unspecified (no data) (2).

Total all Deaths = 766

Figure 98 **Australia and New Zealand**

Cause of Death All Hearts < 5 Years After Transplant 1984 - 2007

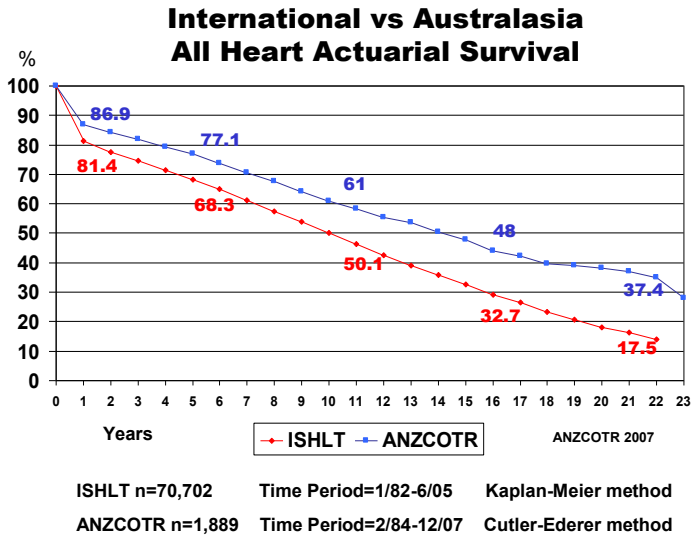
	Number	%
Infection	85	21
Miscellaneous	62	15
Rejection	74	18
Non Specific Graft Failure	58	14
Graft Atherosclerosis (Tx CAD)	52	13
Non Lymphoid Malignancy	28	7
Lymphoproliferative Disease	12	3
CVA	9	2
Haemorrhage	9	2
Graft Atherosclerosis and Rejection	8	2
Pulmonary Failure	5	1
Pulmonary Hypertension	2	1
Totals	**404**	**100%**

Figure 99 **Australia and New Zealand**

Cause of Death All Hearts ≥ 5 Years After Transplant 1984 - 2007

	Number	%
Miscellaneous (including 2 no data)	105	28
Graft Atherosclerosis (Tx CAD	86	24
Non Lymphoid Malignancy	76	21
Infection	23	6
Lymphoproliferative Disease	22	6
Rejection	17	5
CVA	11	3
Non Specific Graft Failure	14	4
Haemorrhage	2	0.5
Pulmonary Failure	2	0.5
Graft Atherosclerosis and Rejection	3	0.5
Pulmonary Hypertension	1	0.5
Totals	**362**	**100%**

Figure 100



ISHLT n=70,702 Time Period=1/82-6/05 Kaplan-Meier method

ANZCOTR n=1,889 Time Period=2/84-12/07 Cutler-Ederer method

Figure 101

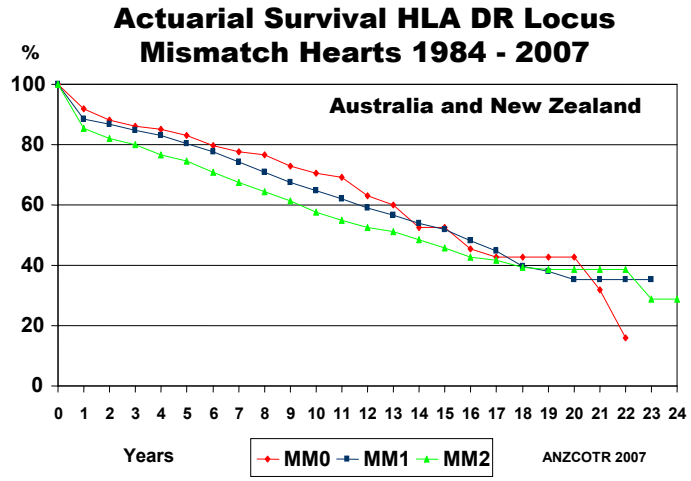


Figure 102

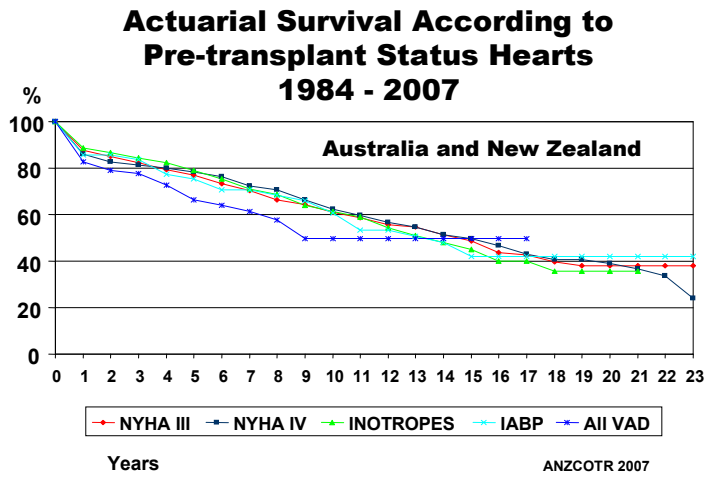


Figure 103

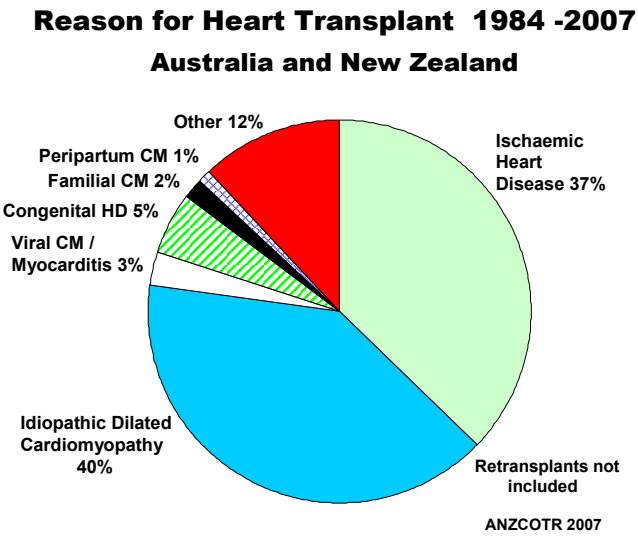


Figure 104

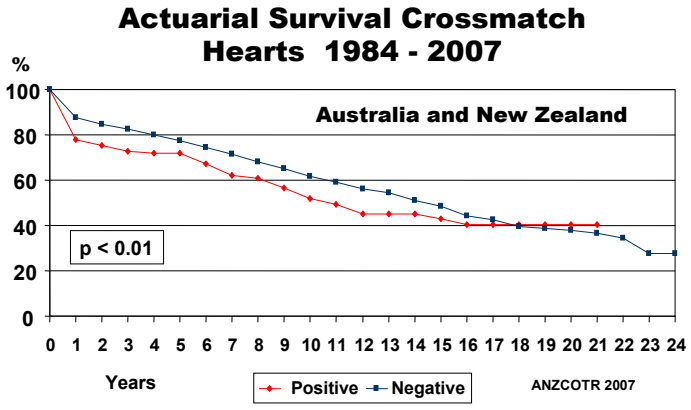


Figure 105

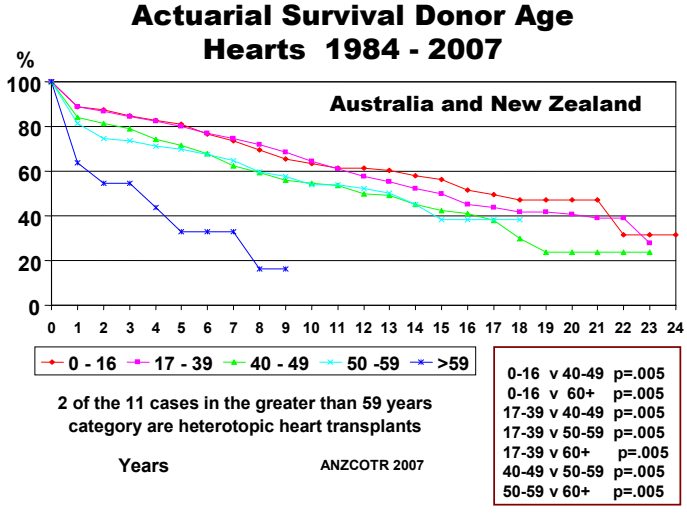


Figure 106 **Australia and New Zealand**

Mean Recipient Age at Lung Transplant 1989 - 2007

	Heart/ Lung				Single Lung				Bilateral Sequential Lung			
Year	No. Pts	Mean	Std Dev +-	Minimum-Maximum	No. Pts	Mean	Std Dev +-	Minimum-Maximum	No. Pts	Mean	Std Dev +-	Minimum-Maximum
1989	14	32	12	11-46	-	-	-	-	-	-	-	-
1990	12	37	10	20-51	5	48	5	42-55	-	-	-	-
1991	19	34	11	19-46	18	46	8	32-57	-	-	-	-
1992	18	31	12	15-49	27	46	7	26-57	3	34	17	19-52
1993	13	31	13	12-48	24	51	3	46-57	33	34	13	19-56
1994	13	32	10	14-46	26	49	6	30-57	44	36	10	19-54
1995	13	38	11	24-52	28	51	7	22-59	43	35	13	16-60
1996	7	26	6	18-37	32	54	6	30-60	42	39	14	13-60
1997	4	36	9	23-42	43	51	6	35-62	43	37	14	14-61
1998	4	26	14	13-43	38	51	9	30-65	50	38	14	14-60
1999	2	38	n/a	22-53	27	55	7	37-64	47	36	13	15-62
2000	2	34	n/a	22-46	28	55	6	39-65	73	40	13	14-63
2001	1	40	n/a	40	29	56	9	32-69	55	38	14	13-60
2002	9	35	10	22-49	29	57	5	43-66	70	39	14	14-65
2003	5	36	18	13-55	21	57	7	42-66	65	41	15	17-64
2004	6	36	10	21-47	13	56	6	48-64	90	44	14	15-65
2005	5	37	8	25-46	10	61	3	57-66	77	44	14	16-64
2006	6	25	14	9-45	17	54	7	34-60	85	45	16	15-66
2007	6	38	12	15-48	8	57	5	50-64	73	45	15	9-63

Figure 107 **Australia and New Zealand**

Cause of Death All Lungs < 5 Years After Transplant 1984 - 2007

	Number	%
Bronchiolitis Obliterans	193	32.9
Infection	137	23.3
Miscellaneous	88	15.0
Pulmonary Failure	44	7.5
Non Specific Graft Failure	38	6.5
Rejection	21	3.6
Haemorrhage	18	3.1
PTLD	16	2.7
Non Lymphoid Malignancy	14	2.4
CVA	13	2.2
Graft Atherosclerosis (TxCAD)	4	0.7
No data	1	0.2
Totals	**587**	**100%**

Figure 108 **Australia and New Zealand**

Cause of Death All Lungs ≥ 5 Years After Transplant 1984 - 2007

	Number	%
Bronchiolitis Obliterans	80	41.7
Miscellaneous	35	18.2
Infection	33	17.2
Non Lymphoid Malignancy	19	9.9
Pulmonary Failure	14	7.3
PTLD	3	1.6
No data	3	1.6
Rejection	2	1.0
Haemorrhage	2	1.0
CVA	1	0.5
Totals	**192**	**100%**

Figure 109

Actuarial Survival All Lung Transplants 1986 - 2007

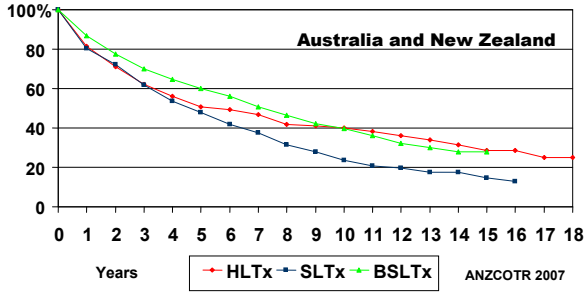


Figure 110

Actuarial Survival CMV Status Lungs 1986 - 2007

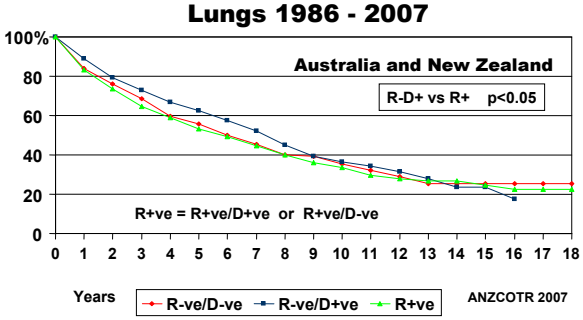
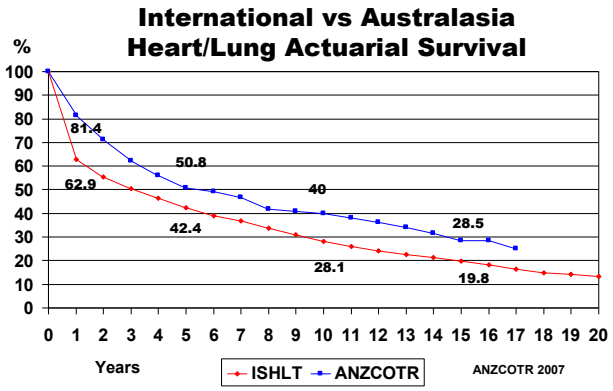


Figure 111



ISHLT n=3,184 Time Period=1/82-6/05 Kaplan-Meier method
ANZCOTR n=163 Time Period=11/86-12/07 Cutler-Ederer method

Figure 112

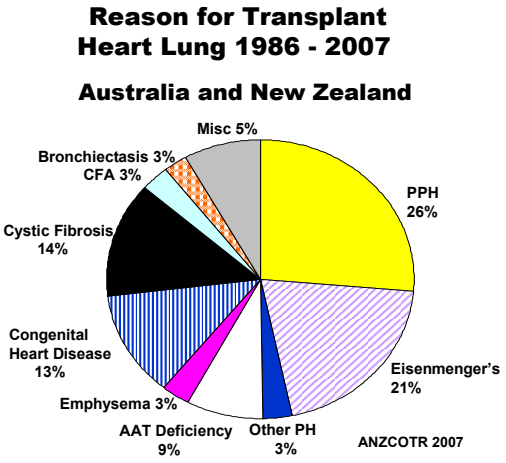
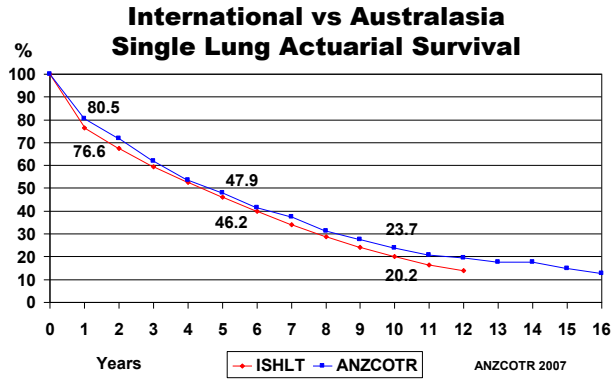


Figure 113



ISHLT n=8,369 Time Period=1/94-6/05 Kaplan-Meier method
ANZCOTR n=423 Time Period=10/90-12/07 Cutler-Ederer method

Figure 114

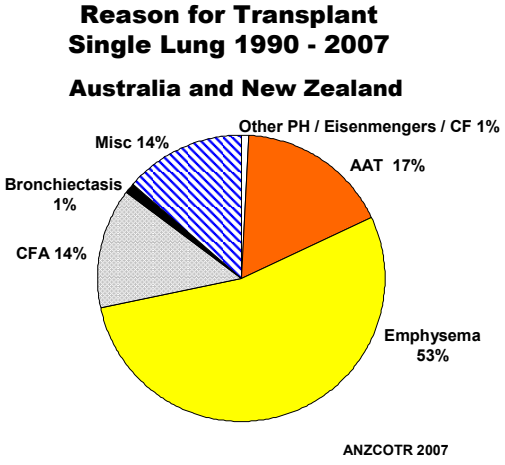
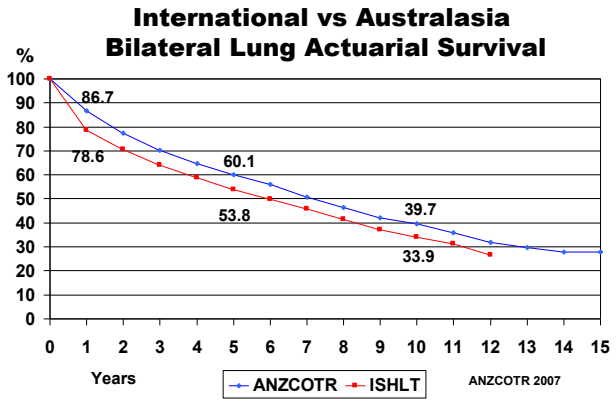
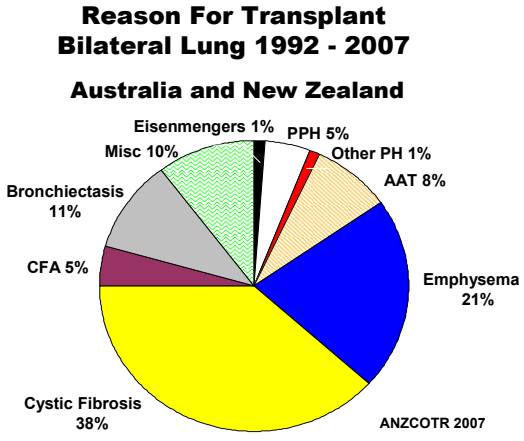


Figure 115



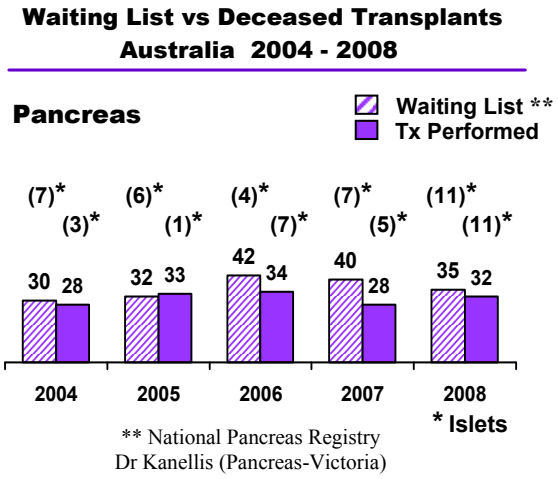
ISHLT n=8,658 Time Period=1/94-6/05 Kaplan-Meier method
ANZCOTR n=895 Time Period=8/92-12/07 Cutler-Ederer method

Figure 116



PANCREAS DONATION

Figure



There were 32 combined kidney/pancreas transplants performed in 2008: twenty at Westmead Hospital, NSW and twelve at Monash Medical Centre, Victoria.

Eleven pancreas islets transplants were performed in 2008; six at St Vincent's in Victoria and five at Westmead in New South Wales.

In New Zealand in 2008, there were four combined kidney/pancreas transplant performed in Auckland.

Figure 118

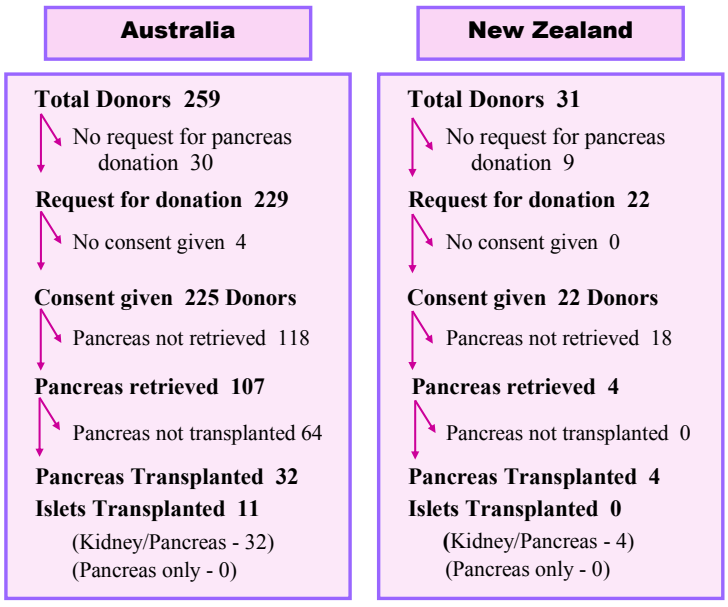
Waiting List

	AUST	NZ **
Number of Patients with Diabetes Type 1 on dialysis (December 2007) *	**244**	**46**
Patients < 45 years of age	109	24
Patients < 55 years of age	182	38
Number of patients on the Kidney Transplant Waiting List *	1298	570
Number of patients on the Kidney Pancreas Transplant Waiting List	31	5
Number of patients on the Pancreas only Waiting List	4	0
Number of patients on the Islet Transplant Waiting List	11	0

Reference: * ANZDATA Registry NOMS (National Organ Matching Service)
National Pancreas Registry and Dr Kanellis (Pancreas-Victoria)
** NZ Donor Coordinators

Figure 119

Outcome of Request for Pancreas Donation 2008



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

Figure 120

Age of Donors Providing Transplanted Pancreas 2003 - 2008

		Age Groups							
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	Total
Australia	2003	0	0	14	4	7	0	0	**25**
	2004	0	1	11	6	9	1	0	**28**
	2005	0	2	11	8	8	4	0	**33**
	2006	0	1	15	9	8	1	0	**34**
	2007	0	4	15	4	4	1	0	**28**
	2008	0	1	10	11	10	0	0	**32**
New Zealand	2003	0	0	3	2	1	0	0	**6**
	2004	0	0	1	0	1	0	0	**2**
	2005	0	0	0	1	1	0	0	**2**
	2006	0	0	3	2	1	0	0	**6**
	2007	0	0	0	1	0	0	0	**1**
	2008	0	1	3	0	0	0	0	**4**

Figure 121

Age of Donors Providing Transplanted Islets 2003 - 2008

		Age Groups								
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	Total
Australia	2003	0	0	1	0	3	0	2	0	**6**
	2004	0	0	2	0	1	0	0	0	**3**
	2005	0	0	0	0	1	0	0	0	**1**
	2006	0	0	1	1	1	1	2	1	**7**
	2007	0	0	0	1	1	1	1	1	**5**
	2008	0	0	1	2	2	2	4	0	**11**

Figure 122

Age of Donors Providing Transplanted Pancreas and Islets - Australia 2008

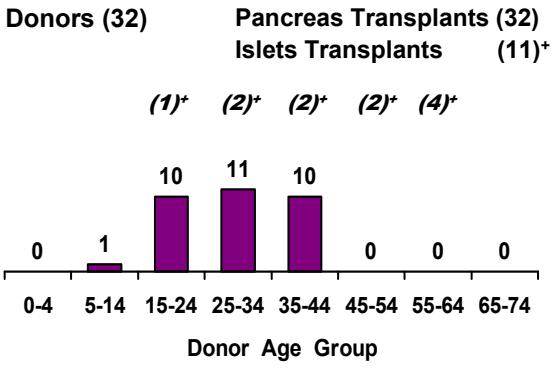


Figure 123

Regional Outcome of Requests for Pancreas 1989 - 2008

	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ **
Total Donors	**801**	**1220**	**92**	**921**	**71**	**538**	**43**	**352**	**4038**	**586**
Requested	675	944	81	593	41	234	18	149	**2735**	**290**
Consented	609	895	75	559	38	212	18	124	**2530**	**283**
Retrieved	47	291	28	279	22	91	4	74	**836**	**41**
Transplanted	32	177	16	107	14	32	0	10	**388**	**32**
Pancreas Islets	1	18	1	8	0	4	1	1	**34**	**0**

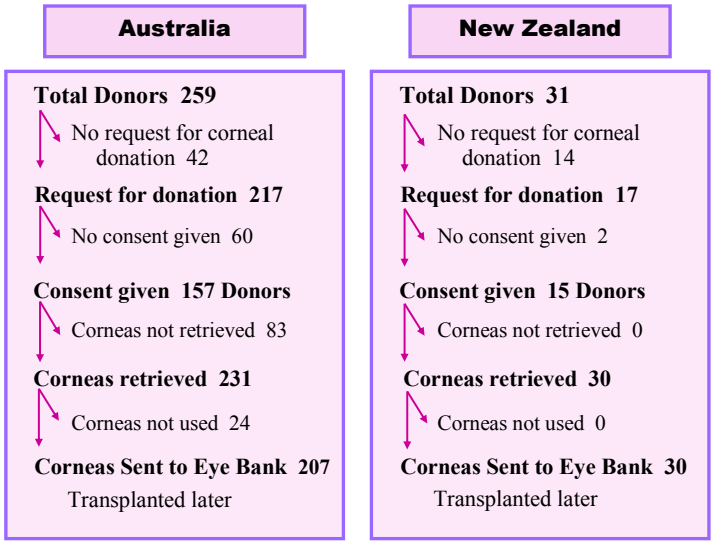
** New Zealand 1993 - 2008

CORNEAL DONATION

This section refers only to corneas donated from solid organ donors. It does not include any cases of cornea only donation. Full data is available from The Australian Corneal Graft Registry (Editors K.A.Williams, S. Muehlberg, C.Bartlett and D.J.Coster), Flinders Medical Centre, Bedford Park 5042, South Australia and in New Zealand from the New Zealand Corneal Transplant Registry, Dept Ophthalmology, University of Auckland, Private Bag 92019, Auckland, New Zealand.

Figure 124

Outcome of Request for Corneal Donation 2008



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

Figure 125

Age of Corneal Donors 2003 - 2008

		Age Groups										
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	Total
Australia	2003	0	2	13	4	6	25	12	6	2	1	**71**
	2004	0	4	13	10	11	31	20	10	1	0	**100**
	2005	0	4	8	9	12	18	21	8	1	0	**81**
	2006	0	3	13	8	12	14	22	10	1	0	**83**
	2007	0	2	7	7	10	13	19	5	1	0	**64**
	2008	1	2	10	10	18	19	30	12	6	0	**108**
New Zealand	2003	0	0	7	1	7	1	3	0	0	0	**19**
	2004	0	0	5	2	2	2	4	2	0	0	**17**
	2005	0	0	0	1	1	6	4	0	0	0	**12**
	2006	0	0	3	1	0	1	2	1	0	0	**8**
	2007	0	0	3	0	4	5	7	1	0	0	**20**
	2008	0	1	1	1	7	2	3	0	0	0	**15**

Figure 126

Regional Outcome of Requests for Corneal Donation 1989 - 2008

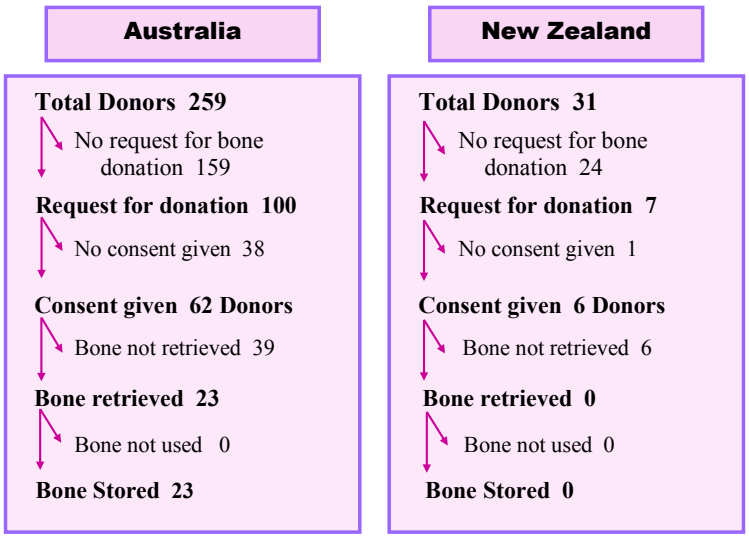
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ **
Total Donors	**801**	**1220**	**92**	**921**	**71**	**538**	**43**	**352**	**4038**	**586**
Requested	725	1077	82	825	52	384	9	251	**3405**	**325**
Consented	503	773	50	635	37	240	6	161	**2405**	**260**
Retrieved x	687	1414	85	1207	65	394	2	284	**4138**	**450**
Sent to Eye Bank xx	675	1116	70	1171	62	378	2	270	**3744**	**444**

x Number of Corneas xx Sent to Eye Bank - Transplanted later
** New Zealand 1993 - 2008

Bone Donation

Figure 127

Outcome of Request for Bone Donation 2008



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

Figure 128

Age of Bone Donors 2003 - 2008

		Age Groups									
	Year	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	Total
Australia	2003	0	0	4	4	1	3	1	0	0	**13**
	2004	0	0	6	1	1	6	2	0	0	**16**
	2005	0	0	1	0	1	6	2	0	0	**10**
	2006	0	0	6	2	3	3	3	0	0	**17**
	2007	0	0	0	1	1	4	5	0	0	**11**
	2008	0	0	6	1	6	6	2	2	0	**23**
New Zealand	2003	0	0	1	0	1	0	0	0	0	**2**
	2004	0	0	0	0	0	0	0	0	0	**0**
	2005	0	0	1	0	0	0	0	0	0	**1**
	2006	0	0	0	0	0	0	0	0	0	**0**
	2007	0	0	0	0	0	0	0	0	0	**0**
	2008	0	0	0	0	0	0	0	0	0	**0**

Figure 129

Regional Outcome of Bone Donation 1989 - 2008

	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ **
Total Donors	**801**	**1220**	**92**	**921**	**71**	**538**	**43**	**352**	**4038**	**586**
Requested	631	102	4	148	5	202	3	157	**1252**	**199**
Consented	428	75	4	75	3	79	3	91	**758**	**160**
Retrieved	170	13	0	26	2	49	0	48	**308**	**37**
Transplanted/Stored	166	13	0	19	2	49	0	47	**296**	**37**

** New Zealand 1993 - 2008

TERMINAL MANAGEMENT

TIME FROM ADMISSION TO BRAIN DEATH

AUSTRALIA

In 2008, 25% of Australian donors were declared brain dead within 23 hours of hospital admission.

The median time from admission to brain death was 42.9 hours.

Seventeen percent of donors were in hospital for more than five days.

NEW ZEALAND

In 2008, 35% of New Zealand donors were declared brain dead within 23 hours of hospital admission.

Time of admission to hospital was unknown in 10% of donors. The median time from admission to brain death was 27.7 hours.

Nine percent of donors were in hospital for more than five days.

Figure 130

Time from Admission to Brain Death 2003 - 2008

		Hours								Not Known	Median (hours)	No. of Donors
	Year	0-23	24-47	48-71	72-95	96-119	120-143	144-167	>=168			
Australia	2003	37%	32%	10%	7%	3%	2%	1%	8%	0%	28.6	**179**
	2004	36%	30%	11%	8%	5%	3%	1%	6%	0%	33.3	**218**
	2005	30%	32%	16%	3.5%	5%	1.5%	1%	10%	1%	36.7	**204**
	2006	37%	27%	8%	10%	3%	4%	4%	6%	<1%	33.0	**202**
	2007	30%	30%	15%	7%	3%	5%	2%	6%	2%	36.0	**198**
	2008	25%	29%	14%	9%	5%	4%	2%	11%	1%	42.9	**259**
New Zealand	2003	35%	20%	5%	5%	8%	0%	0%	0%	27%	24.0	**40**
	2004	33%	25%	10%	0%	2%	2%	2%	8%	18%	26.3	**40**
	2005	38%	14%	10%	7%	3.5%	0%	0%	10.5%	17%	31.2	**29**
	2006	12%	32%	12%	20%	4%	4%	0%	0%	16%	43.5	**25**
	2007	47%	18%	8%	8%	3%	3%	0%	3%	10%	22.6	**38**
	2008	35%	35%	10%	0%	0%	3%	6%	0%	10%	27.7	**31**

Figure 131

Australian States Time from Admission to Brain Death 2008

States	Hours								Not Known	Median (hours)	No. of Donors
	0-23	24-47	48-71	72-95	96-119	120-143	144-167	>=168			
Queensland	27%	31%	15%	6%	2%	0%	2%	17%	0%	37.0	**48**
New South Wales	19%	33%	14%	12%	4%	5%	2%	9%	2%	44.0	**57**
ACT	40%	40%	0%	20%	0%	0%	0%	0%	0%	24.5	**5**
Victoria	21%	27%	18%	4%	9%	9%	3%	6%	3%	50.8	**67**
Tasmania	25%	25%	0%	12.5%	0%	12.5%	0%	12.5%	0%	59.6	**8**
South Australia	35%	26%	16%	7%	5%	2%	2%	7%	0%	36.8	**43**
Northern Territory	33%	33%	0%	33%	0%	0%	0%	0%	0%	28.3	**3**
Western Australia	21%	29%	11%	11%	4%	0%	4%	21%	0%	48.8	**28**

Figure 132

Time from Ventilation to Brain Death 2003 - 2008

	Year	Hours								Not Known	Median (hours)	No. of Donors
		0-23	24-47	48-71	72-95	96-119	120-143	144-167	>=168			
Australia	2003	39%	35%	7%	6%	4%	2%	<1%	12%	0%	27.0	**179**
	2004	39%	33%	12%	7%	4%	1%	1%	3%	0%	29.7	**218**
	2005	32%	37%	16%	4%	2%	1%	0%	7%	<1%	31.4	**204**
	2006	40%	28%	12%	8%	2.5%	2.5%	2.5%	3.5%	1%	28.8	**202**
	2007	31%	32%	16%	5%	4%	4%	2%	4%	2%	32.9	**198**
	2008	29%	34%	14%	7%	4%	3%	1%	7%	1%	36.9	**259**
New Zealand	2003	43%	18%	2%	5%	5%	2%	0%	0%	25%	21.1	**40**
	2004	40%	22.5%	7.5%	2.5%	5%	0%	2.5%	5%	15%	25.3	**40**
	2005	34.5%	17%	14%	0%	0%	0%	0%	10.5%	24%	27.7	**29**
	2006	36%	28%	16%	0%	4%	0%	0%	0%	16%	28.4	**25**
	2007	47%	26%	5%	11%	0%	0%	0%	0%	11%	21.9	**38**
	2008	39%	39%	13%	0%	0%	0%	0%	0%	9%	25.6	**31**

Time From Brain Death to Aortic Cross Clamp

Australia

In 2008, 27% of donors had undergone aortic cross clamp within twelve hours of the certification of brain death in 2008.

The median time was 15.3 hours.

New Zealand

Eighty per cent of donors had undergone aortic cross clamp within twelve hours of certification of brain death in 2008.

The median time was 11.0 hours

Figure 133

Time from Brain Death to Aortic Cross Clamp 2003 - 2008

Hours	Australia						New Zealand					
	2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
<=6	3%	5%	5%	4%	2%	4%	12.5%	12.5%	3%	8%	5%	10%
7 - 12	42%	40%	30%	27%	28%	23%	67.5%	70%	80%	68%	55%	70%
13 - 18	41%	44%	48%	48%	49%	50%	17.5%	17.5%	17%	16%	37%	10%
19 - 24	7%	6%	13%	13%	15%	17%	0%	0%	0%	8%	3%	0%
> 24	7%	5%	4%	8%	6%	6%	2.5%	0%	0%	0%	0%	10%
Median Hours	**13.4**	**13.5**	**14.5**	**14.7**	**15.2**	**15.3**	**9.9**	**9.6**	**10.3**	**9.8**	**11.8**	**11.0**
Number of Donors	178	215	195	194	179	236	40	40	29	25	38	29
DCD Donors *	1	3	9	8	19	23	0	0	0	0	0	2

Figure 134

Australian States Time from Brain Death to Aortic Cross Clamp 2008

	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
<= 6 hours	0%	4%	0%	6%	0%	10%	0%	0%
7 - 12 hours	33%	30%	67%	9%	0%	37.5%	0%	11%
13 - 18 hours	56%	60%	33%	49%	37.5%	45%	33%	46%
19 - 24 hours	4%	2%	0%	30%	62.5%	2.5%	0%	39%
> 24 hours	7%	4%	0%	6%	0%	5%	67%	4%
Median Hours	**14.6**	**14.4**	**11.9**	**17.1**	**20.0**	**13.1**	**31.3**	**18.3**
Number of Donors	43	47	3	64	5	40	3	28
DCD Donors *	5	10	2	3	0	3	0	0

* DCD = Donation after Cardiac Death Donors

Donor Maintenance

Drugs for Maintenance of the Donor (given in the Intensive Care/Critical Care Unit)

Australia

Eight donors (3%) did not require inotropic support in 2008. Five of those were DCD donors.

Antidiuretic agents (desmopressin/vasopressin) were prescribed to 67% (173) of all donors.

MAP <50 mm Hg

Mean arterial blood pressure (MAP) <50 mm Hg was recorded in 7% (18) of donors in Australia in 2008. Six donors had a duration of less than one hour and twelve donors had one hour or longer.

Range was fifteen minutes to four hours.

New Zealand

In 2008 there was only one donor (3%) who did not require inotropic support.

Antidiuretic agents (desmopressin/vasopressin) were prescribed to 65% (20) of all donors.

MAP <50 mm Hg

Three donors were reported with a mean arterial blood pressure (MAP) <50 mm Hg. In two donors the duration of the (MAP) was less than one hour and in the other a duration of one hour.

Range was fifteen minutes to one hour.

Figure 135

Donor Maintenance 2003 - 2008

Drugs	Australia						New Zealand					
	2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
Number of Donors	**(179)**	**(218)**	**(204)**	**(202)**	**(198)**	**(259)**	**(40)**	**(40)**	**(29)**	**(25)**	**(38)**	**(31)**
Dopamine	12	22	15	15	10	7	9	6	1	2	5	3
Adrenaline	34	28	26	21	17	22	0	4	0	1	0	1
Noradrenaline	138	174	165	156	160	220	28	44	26	20	31	28
Insulin Infusion *	-	-	-	-	-	155	-	-	-	-	-	11
T3 Protocol *	-	-	-	-	-	56	-	-	-	-	-	0
Aramine	12	4	4	11	4	2	2	0	0	0	0	0
Dobutamine	3	3	8	5	11	3	0	0	1	0	1	0
Vasopressin / DDAVP	122	133	127	121	115	173	20	16	20	13	20	20

NB: Donors may be given more than one drug
* Insulin Infusion and T3 Protocol recorded for all donors from 1st Jan 2008

Figure 136

Australian States Donor Maintenance 2008 (2007)

	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Number of Donors	**48 (39)**	**57 (53)**	**5 (1)**	**67 (42)**	**8 (1)**	**43 (27)**	**3 (3)**	**28 (19)**
Dopamine	5 (6)	2 (1)	0 (0)	0 (1)	0 (1)	0 (0)	0 (0)	0 (1)
Adrenaline	2 (5)	4 (2)	1 (0)	8 (5)	2 (0)	5 (3)	0 (1)	0 (1)
Noradrenaline	31 (25)	50 (49)	3 (1)	60 (42)	7 (8)	38 (22)	3 (2)	28 (18)
Insulin Infusion *	32	30	3	32	6	29	1	22
T3 Protocol *	21	14	0	12	0	6	0	3
Desmopressin / DDAVP	41 (26)	38 (37)	3 (0)	31 (22)	6 (1)	27 (12)	3 (3)	24 (14)

NB: Donors may be given more than one drug
* Insulin Infusion and T3 Protocol recorded for all donors from 1st Jan 2008

Terminal Treatment

Terminal Treatment (provided in the operating theatres)

Australia

Eight donors did not receive any heparin as part of their terminal treatment in 2008. Five of these were DCD (donation after cardiac death) donors.

Five donors did not receive any terminal treatment at all. All were DCD donors.

New Zealand

One DCD donor did not receive heparin as part of their terminal treatment.

All 29 beating heart donors in 2008 received heparin and also one DCD donor.

Figure 137

Terminal Treatment 2003 - 2008

Drugs	Australia						New Zealand					
	2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
Number of Donors	**(179)**	**(218)**	**(204)**	**(202)**	**(198)**	**(259)**	**(40)**	**(40)**	**(29)**	**(25)**	**(38)**	**(31)**
Heparin	177	211	193	196	187	251	40	37	27	25	38	30
Methyl Prednisolone	157	182	145	162	145	192	4	5	2	4	3	1
Chlorpromazine	37	35	30	38	30	27	0	1	0	0	0	0
Mannitol	12	4	6	11	17	19	0	0	0	0	0	0
Antibiotics *	-	-	-	-	-	190	-	-	-	-	-	12
Prostacyclin	76	93	59	58	46	61	21	11	10	13	12	13

NB: Donors may be given more than one drug
* Antibiotics given recorded for all donors from 01-Jan-2008

Figure 138

Australian States Terminal Treatment 2008 (2007)

	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Number of Donors	**48 (39)**	**57 (53)**	**5 (1)**	**67 (52)**	**8 (1)**	**43 (27)**	**3 (3)**	**28 (19)**
Heparin	47 (37)	52 (52)	4 (1)	67 (51)	8 (1)	42 (25)	3 (3)	28 (17)
Methyl Prednisolone	8 (17)	45 (45)	3 (0)	56 (37)	8 (1)	41 (27)	3 (2)	28 (16)
Chlorpromazine	23 (26)	1 (0)	0 (0)	1 (3)	1 (0)	0 (0)	0 (0)	1 (1)
Mannitol	0 (2)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (1)	18 (14)
Antibiotics *	11	48	3	53	6	42	3	24
Prostacyclin	15 (11)	22 (20)	2 (0)	1 (0)	0 (0)	8 (5)	1 (1)	12 (9)

NB: Donors may be given more than one drug
* Antibiotics given recorded for all donors from 01-Jan-2008