

Australia & New Zealand Pancreas Transplant Registry Report 1984-2013



Southern Health



This report is a compilation of data provided by the four current Pancreas transplant units in Australia and New Zealand: Auckland Renal Transplant Group, New Zealand; National Pancreas Transplant Unit Monash Medical Centre, Clayton, Victoria, Austin Hospital and National Pancreas Transplant Unit, Westmead Hospital NSW Australia. The registry is funded in part by a grant from the Commonwealth Department of Health and Ageing.

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Data included in this report was extracted from RISC (Renal Information System Catalogue) on the 26th May, 2014, for all people transplanted up to the end of 2013. Please note new data is added to the registry regularly.



Summary

613 Pancreas transplants have been performed in Australia and New Zealand (ANZ) from 1984-2013 (Excluding Islet transplants)

In 2013, 36 transplants were performed:

Auckland (3)
Monash (13)
Westmead (20)

Transplant by category: SPK (36), PTA (0), PAK (0), PLI (0)

From 2002-2013, 53 Islet transplants have been performed in 23 patients.

Glossary

SPK - Simultaneous Kidney Pancreas Transplant
PTA - Pancreas Transplant Alone
PAK - Pancreas after Kidney Transplant
ITA - Islet Transplant Alone
BD - Bladder Drained Pancreas
ED - Enteric Drained Pancreas
PLK - Pancreas Liver Kidney
PLI - Pancreas Liver Intestine



Introduction

The Australia and New Zealand (ANZ) Pancreas transplant data has been obtained from the transplant centres in Auckland Renal Transplant Group (Auckland), Monash Medical Centre (Monash), Austin Hospital (Victoria) and National Pancreas Transplant Unit at Westmead Hospital (Westmead). Auckland commenced in 1998. Data has also been obtained for comparison from ANZDATA.

There have been 613 solid organ pancreas transplants in Australia and New Zealand (ANZ) between the dates of November 1984 to December 2013. No activity was recorded in 1985 and 1986.

There have been 53 Islet cell transplants in Australia between the dates of January 2002 to December 2013.

Analysis

The aim of this report is to record all pancreas transplant activity in Australia and New Zealand. A functioning pancreas transplant is defined as a recipient free of exogenous insulin dependence. Kidney transplants are defined as functioning if recipients are dialysis free. All causes of death are included in the survival analysis. Patients receiving a second transplant after failure of the first transplant are censored for Patient survival for the first transplant at the date of the second transplant.

Kaplan-Meier survival curves were used to illustrate the survival distributions generated using Stata software version 13 (StataCorp, College Station, TX USA).

The distribution of Patient survival, Kidney graft survival and Pancreas graft survival was analysed by four periods (1984-1999, 2000-2004, 2005-2009 and 2010-2013), in pancreas and kidney (SPK) recipients.

Changes since last year: the following two observations are included in this report.

Survival era categories are now quartiles not quintiles

Number of Pancreas transplants

Figure 1 illustrates the number of pancreas transplants (excluding islets) in ANZ between 1984 and 2013. The transplants were performed in Westmead (397), Monash (166), Auckland (46), RPA (1), RMH (1), QEH (1), Austin (1). In 2013, **36** transplants were performed: Auckland (3), Monash (13), and Westmead (20).

The number of transplants in 2013 decreased by nearly 14% compared to 2012 but future growth is predicted looking at increasing number of organ donors.

The figure also show the variation in the number of transplants over last 14 years(2000-2013). The number of transplants has substantially increased in last decade compared to previous years.

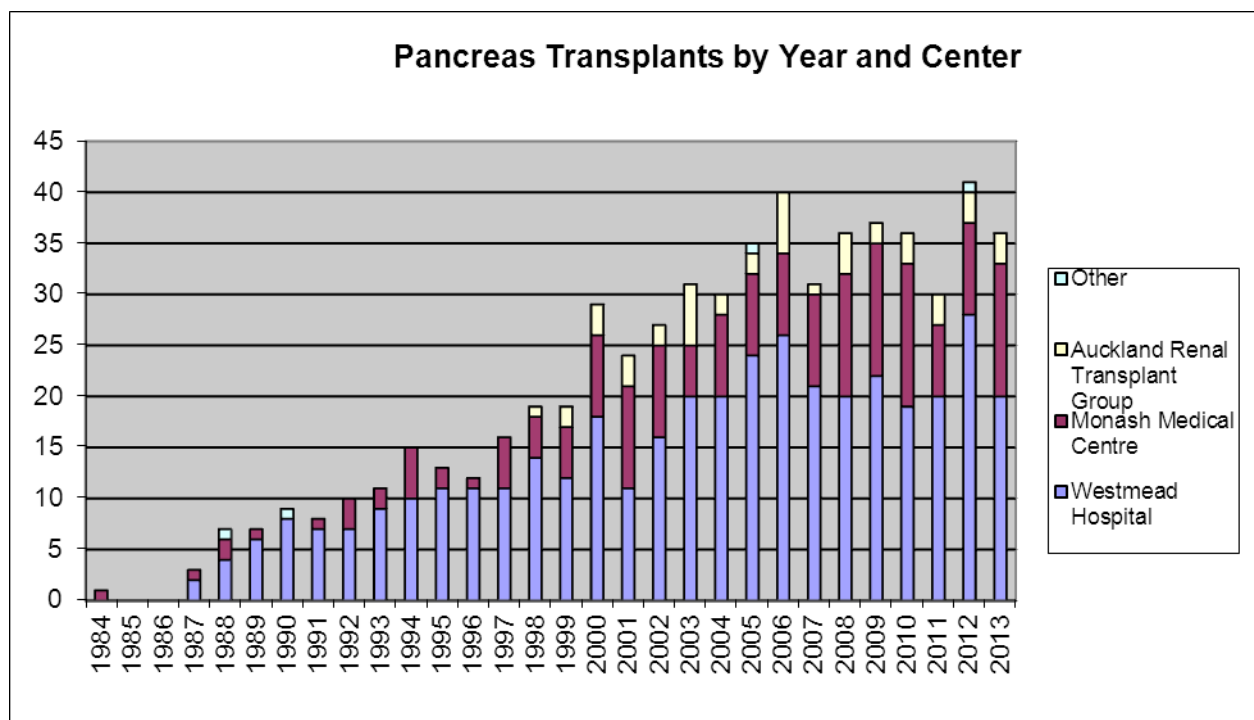


Figure 1: Number of Pancreas transplants by centre in Australia and New Zealand, 1984-2013

Pancreas Transplant by Category

Figure 2 shows the pancreas transplants by category: Simultaneous pancreas-kidney transplant (SPK), Pancreas after kidney (PAK), Pancreas transplant alone (PTA). SPK is the major pancreas transplants by category in ANZ at 97% with one simultaneous Pancreas/Liver and Kidney which was performed in 2005 and one Liver/Pancreas/Intestine in 2012. All 36 transplants performed in 2013 were SPK.

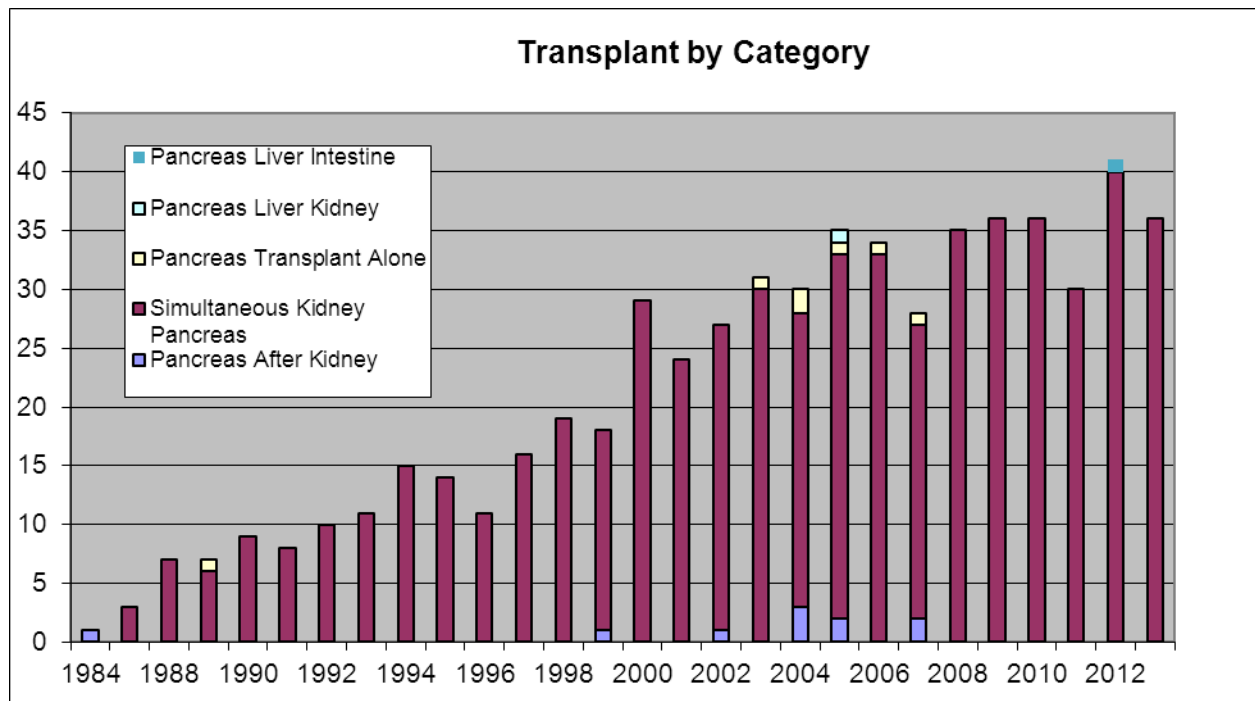


Figure 2: Pancreas transplant by category in Australia and New Zealand, 1984-2013

Number of Islets transplants

Figure 3 illustrates the number of islet cell transplants in Australia between 2002 and 2013. The transplants were performed in Westmead (32), St Vincent (12), RAH (8) and CNAR (1). In 2013, 1 transplant was performed: Westmead (1).

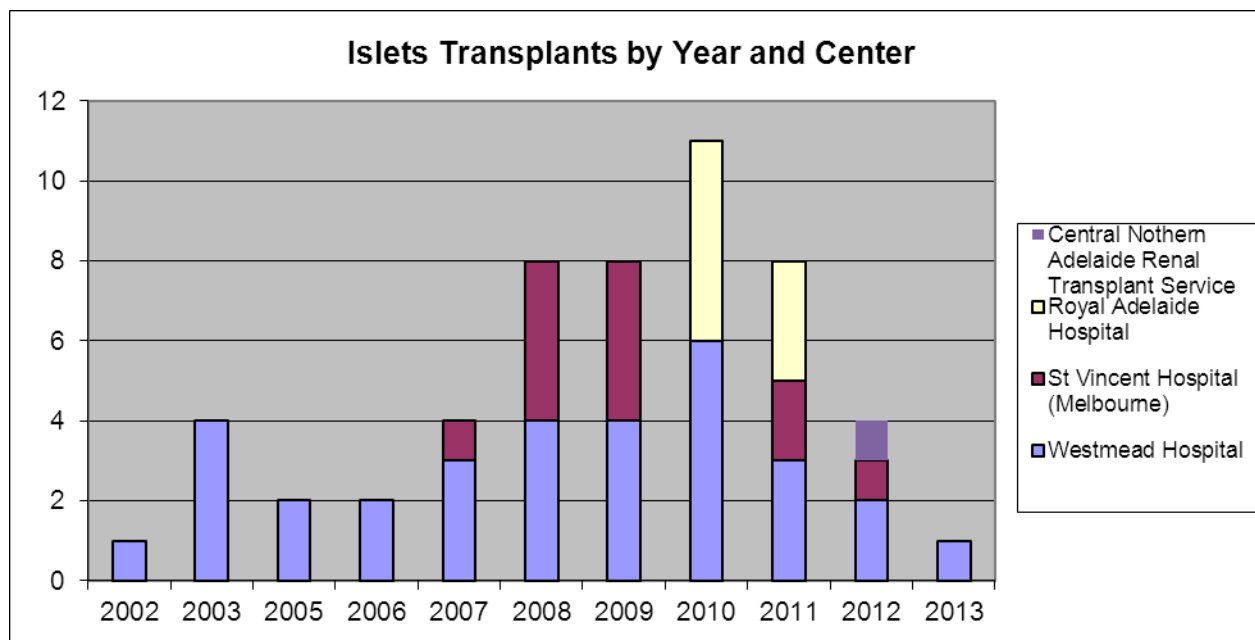


Figure 3: Number of Islets transplants by centre in Australia, 2002-2013

Gender of Donor and Recipient

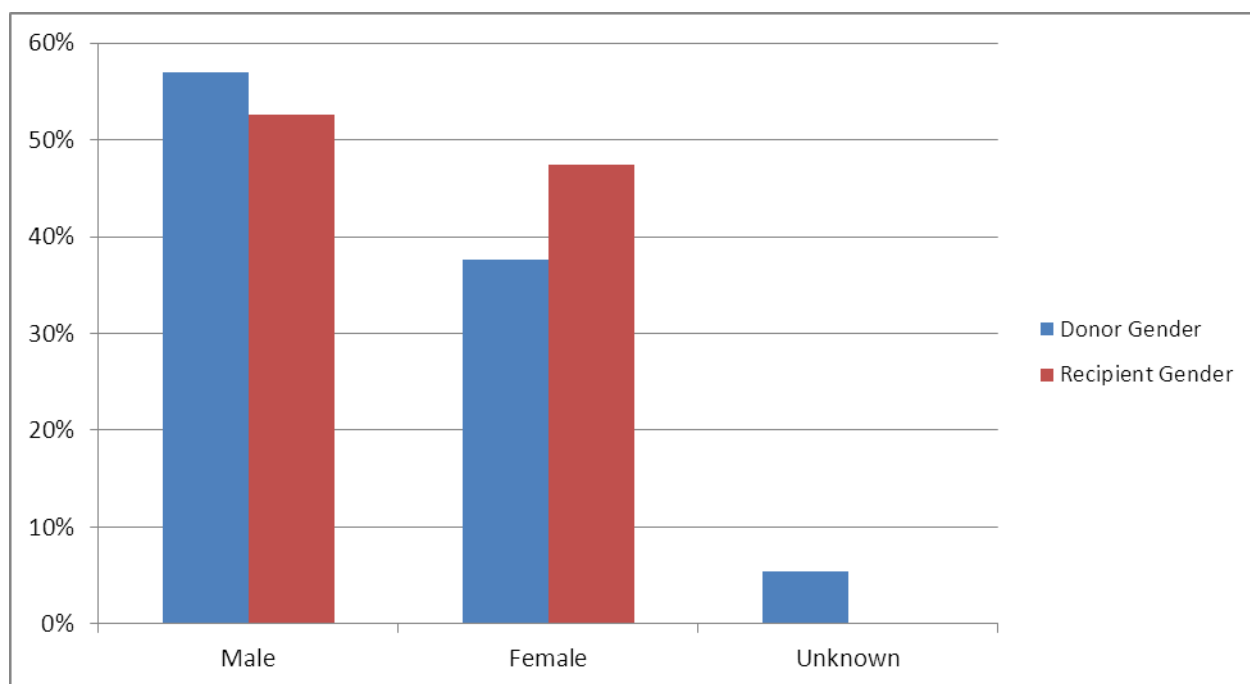


Figure 4: Gender comparison Donor and Recipient for Pancreas transplants, 1984-2013

More male donors were accepted than female for solid organs. The proportions remain very similar compared to last year.

Recipient gender was more equally distributed (52.61% Male vs 47.39% Female)

SECTION 1: DONOR REVIEW

Donor Demographics

Donor Gender

From 1984 – 2013, 56.93% of pancreas donors were males and 37.64% were females (the remaining 5.43% were unknown)

Donor Age

The mean donor age was 27.33yrs with the range from 4 yrs (minimum) to 61yrs (maximum). The median of donor age was 25 yrs.

Donor Statistics

Donor Ventilation

From 1984 – 2013 the average number of days donors were ventilated was 2.26 days

Donor Blood Group

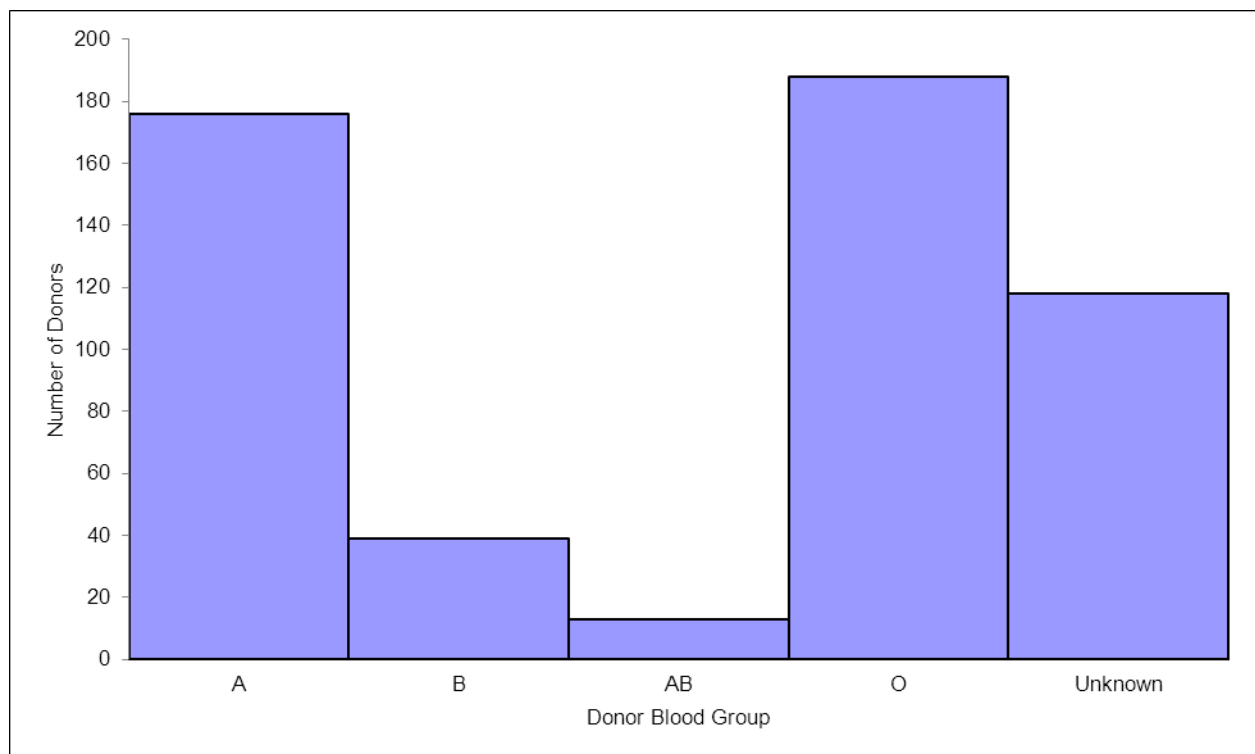


Figure 5: Donor Blood Group, 1984-2013

More than 35% of donor were 'O' blood group, 33% blood group 'A' with a large number of unrecorded blood group.

Donor Kidney Side

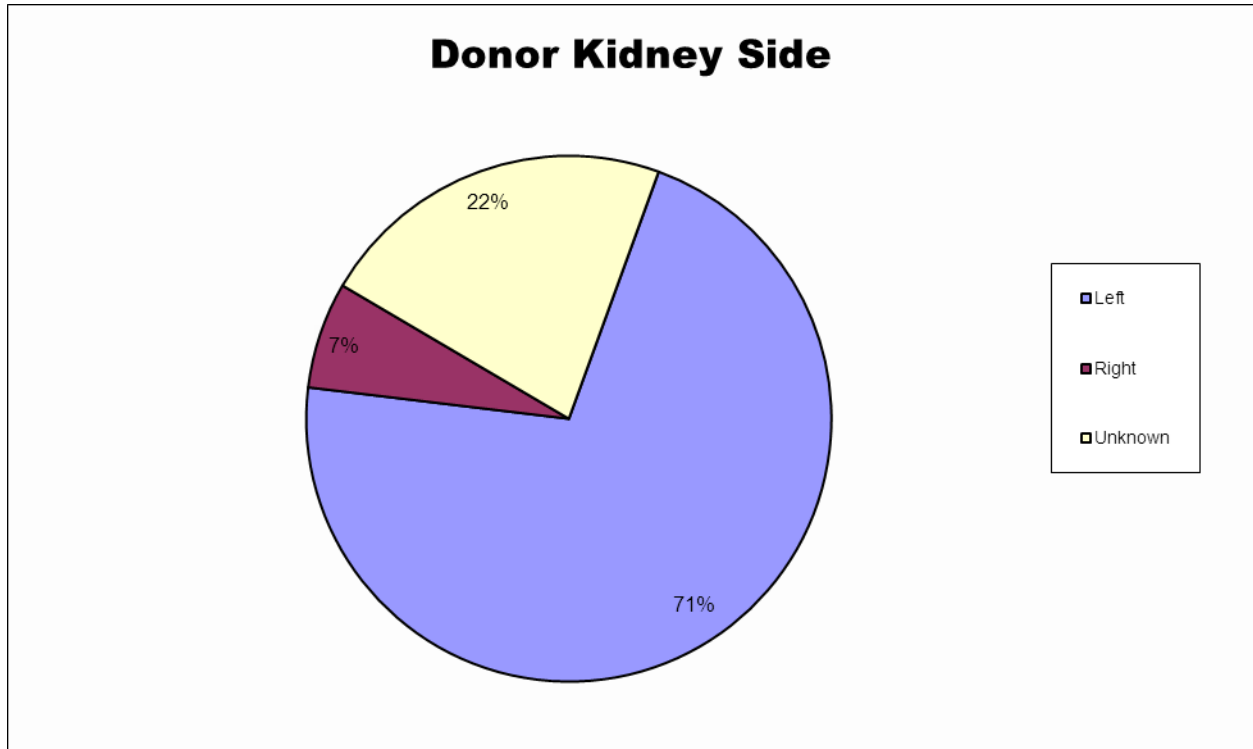


Figure 6: Donor Kidney Side, 1984-2013

Other donor characteristics, from 1984 – 2013;

		Number	Proportion (%)
Donor Biopsy	Performed	99	18.5
	Not performed	427	80.0
	Unknown	8	1.5
Donor Cytomegalovirus status	IgG positive	318	59.5
	IgG negative	142	26.6
	Unknown	74	13.9
		Mean	Median (range)
Donor terminal glucose		8.3	7.5 (2.8-20.0)
Donor terminal amylase		98.9	(9-2,550)
Donor height (cm)		172	175
Donor weight (kg)		71	70

Donor BMI

The BMI is one of the important factors determining the donor eligibility. Obese donors have fatty pancreas, which results in more difficult surgery and increased post-operative complications. We have complete donor data for 534/613 donors

Donor BMI 2013

Body Type	BMI	Number	Proportion (%)
Median	24.16	534	
Underweight	≤ 18.5	18	3.4
Normal Weight	18.5 - 24.9	278	52.1
Overweight	25 - 29.9	138	25.8
Obese	≥ 30	29	5.4
Unknown		71	13.3

Donor Smoking & Alcohol Status

Alcohol consumption is defined by a history of consumption of more than 40g/day

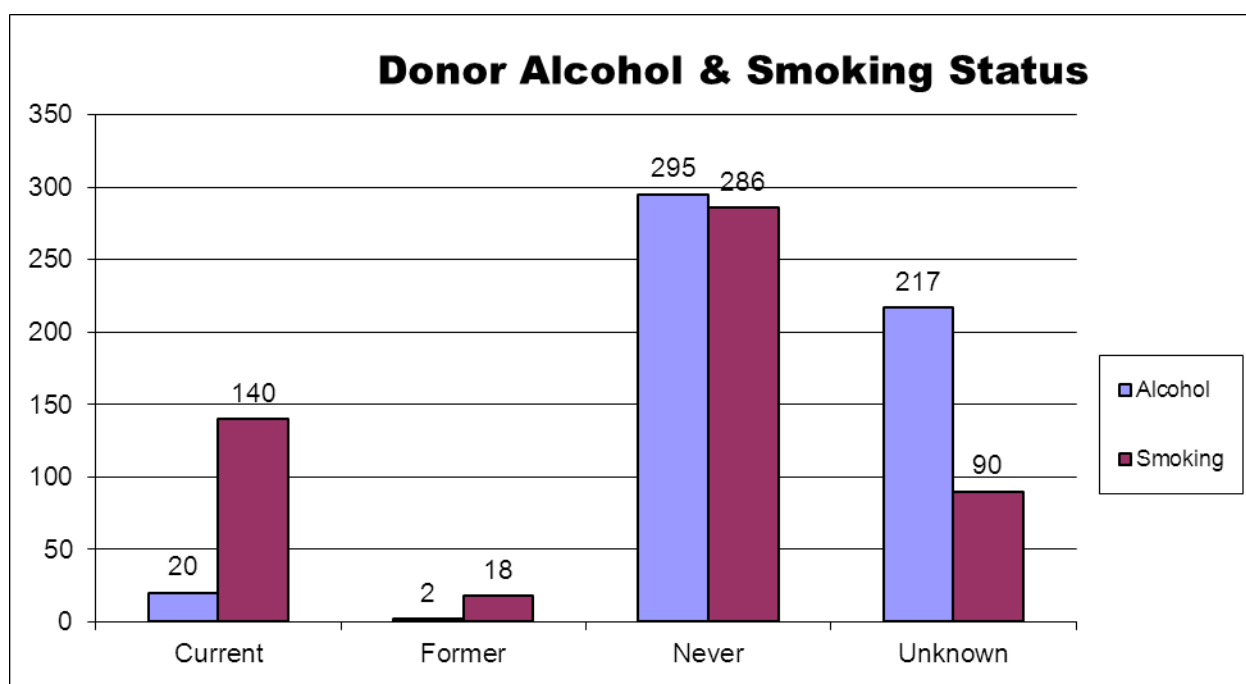


Figure 7: Donor Alcohol & Smoking Status, 1984-2013

SECTION 2: RECIPIENT REVIEW

Anastomosis Time

Anastomosis time for transplantation from 1984 – 2013, the mean was 29 minutes and median was 29 minutes, range 14 to 70 minutes.

Total Ischaemia Time

Mean was 10 hours 29 Mins

Median was 11 hours 29 Mins (range 5-14 hours)

Exocrine Drainage

Enteric Drainage of the pancreas was introduced in ANZ during 2001. Figure 8 illustrates the number of transplants by pancreas duct management. All pancreas transplants over the last 6 years used enteric drainage of the pancreas duct.

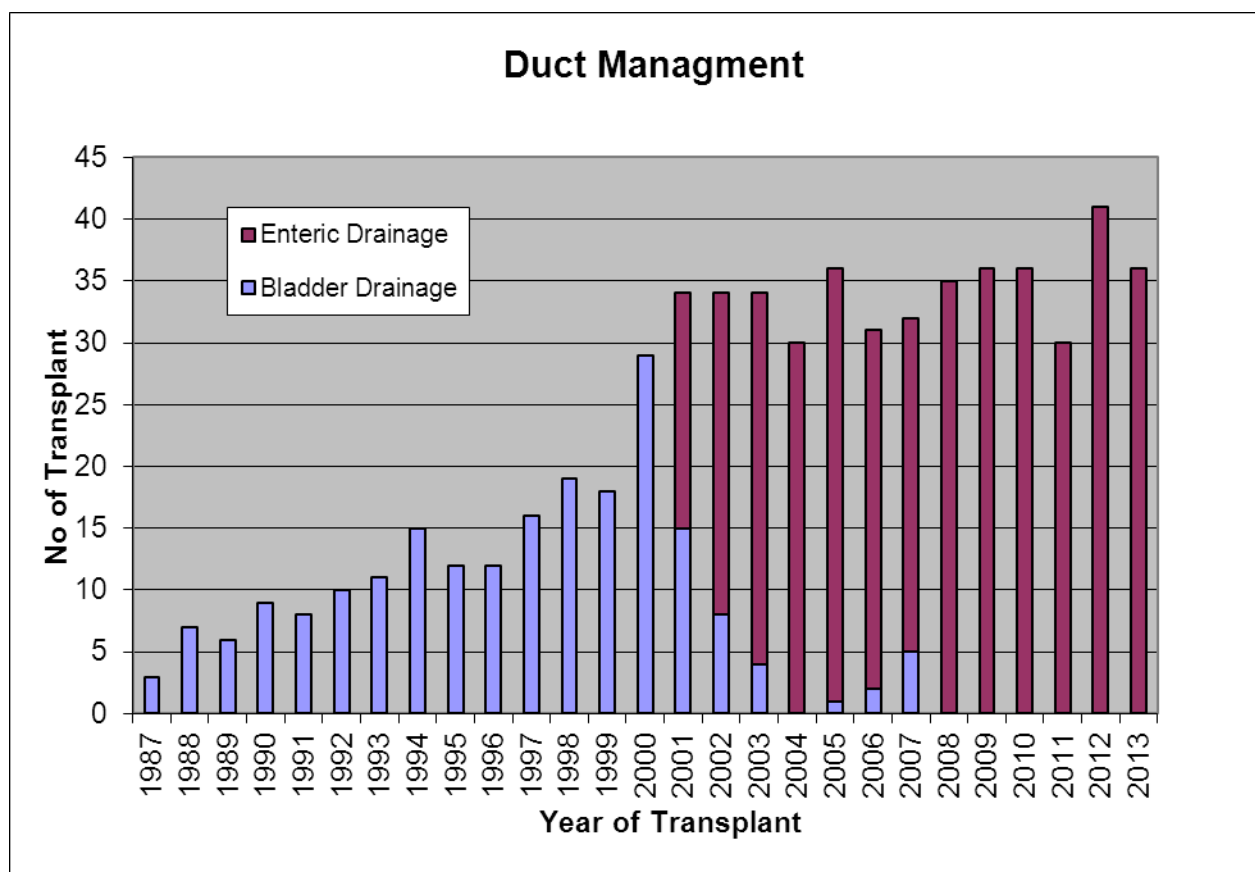


Figure 8: Pancreas duct management in ANZ, 1984-2013



Primary Diagnosis of End Stage Kidney Failure

The primary Diagnosis of end stage kidney failure was included in 2013 reporting.

The number of diabetic recipients with other cause of end stage kidney failure was small.
The number of Type II diabetes accepted for pancreas transplantation was also small.

Primary Diagnosis of End Stage Kidney Failure	Number	%
Diabetes Type I (Insulin Dependent)		98.5
Diabetes Type II (Insulin Requiring)		0.5
Haemolytic uraemic syndrome		0.2
Interstitial nephritis		0.2
Uncertain diagnosis		0.4
Wegener's Granulomatosis		0.2

SURGICAL TECHNIQUES

Site of anastomosis of recipient vein

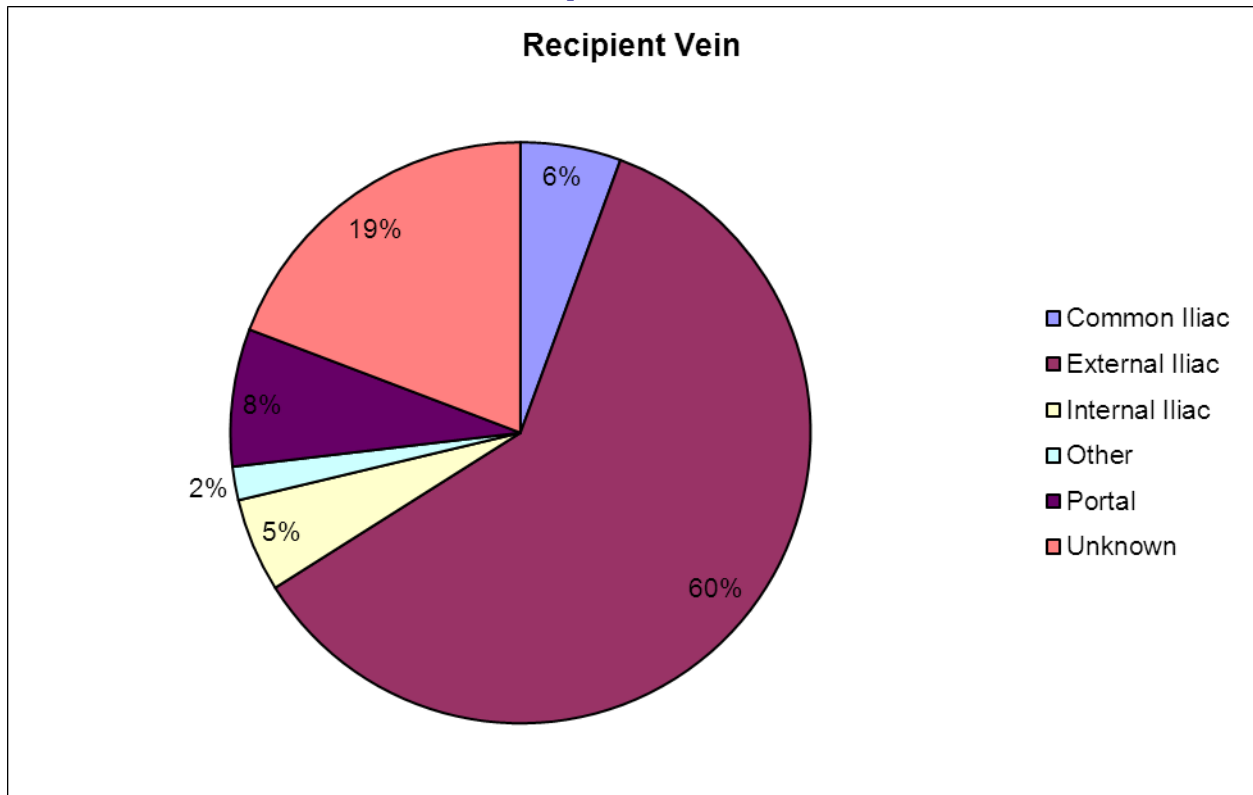


Figure 9: Recipient Vein, 1984-2013

Site of anastomosis of recipient artery

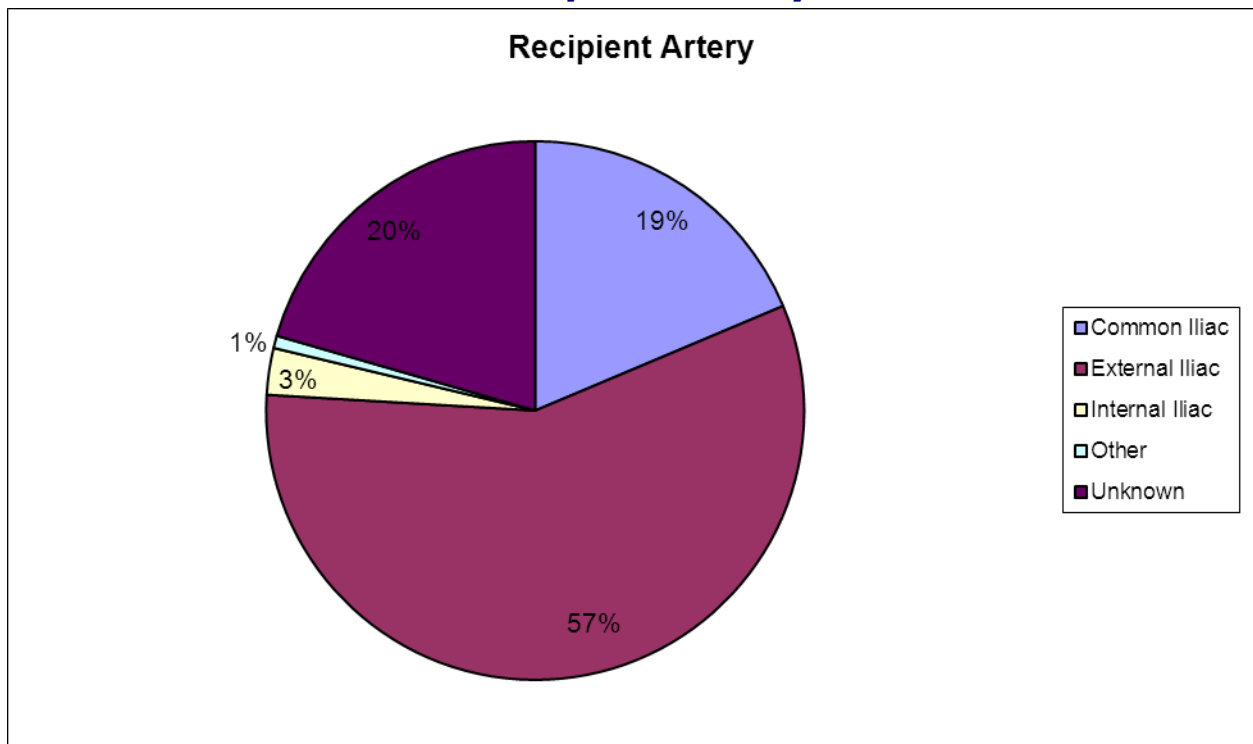


Figure 10: Recipient Artery, 1984-2013

SECTION 3: TRANSPLANT OUTCOMES REVIEW

Year of Transplant	Patient Survival*			Pancreas Graft Survival*			Kidney Graft Survival*		
	1	5	10	1	5	10	1	5	10
1984-1999	93 (2)	89 (3)	76 (4)	80 (3)	73 (4)	68 (4)	91 (2)	86 (3)	77 (3)
2000-2004	99 (1)	96 (2)	84 (3)	83 (3)	79 (3)	72 (4)	96 (2)	93 (2)	87 (3)
2005-2009	98 (1)	95 (2)	-	91 (2)	88 (3)	-	100	97 (1)	-
2010-2013	98 (1)			90 (3)	-	-	98 (1)	-	=

* Kaplan-Meier survivor function (with Standard Error)

- Not applicable

Patient survival

Of the 613 pancreas transplants, we have complete outcome data for 585 people transplanted since 1984. We have observed 5,174.7 years of follow-up. Since then 101 people have died. Over time, patient survival has improved, and this is a statistically significant trend ($P=0.0008$)

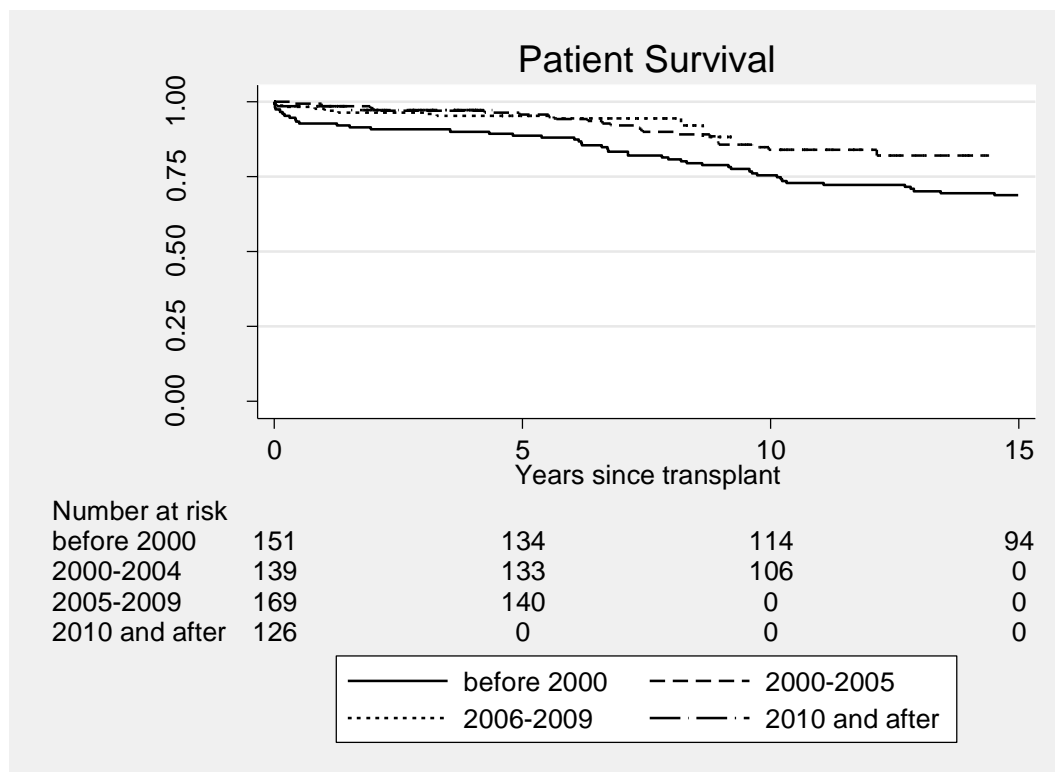


Figure 11: Patient Survival (by Era), 1984-2013

Kidney transplant survival

Of the 582 people with complete data, receiving a kidney with their pancreas transplant since 1984, there have been 82 kidney transplant losses. Over time, the survival of kidney transplants has significantly improved ($P=0.0002$)

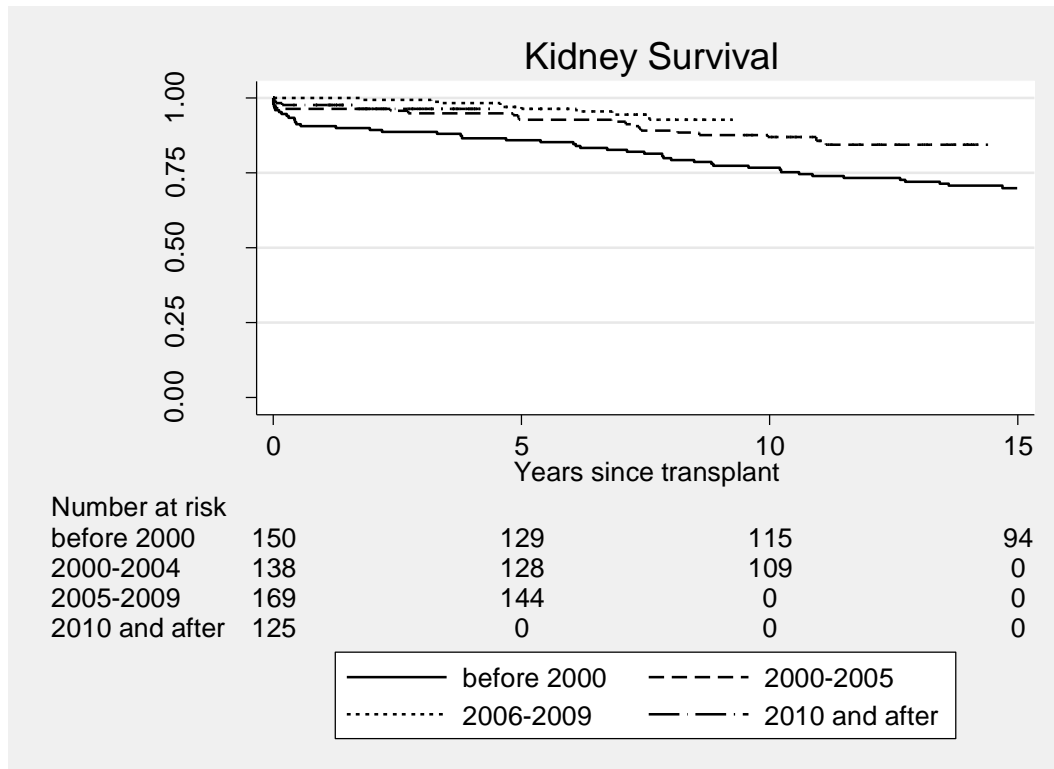


Figure 12: Kidney Graft Survival (by Era), 1984-2013

Pancreas transplant survival

Of the 584 people receiving a pancreas transplant since 1984 for whom we had complete data, there were 3 primary non-functioning grafts, and 139 subsequent graft failures. Over time, the survival of pancreas transplants has significantly improved ($P=0.002$)

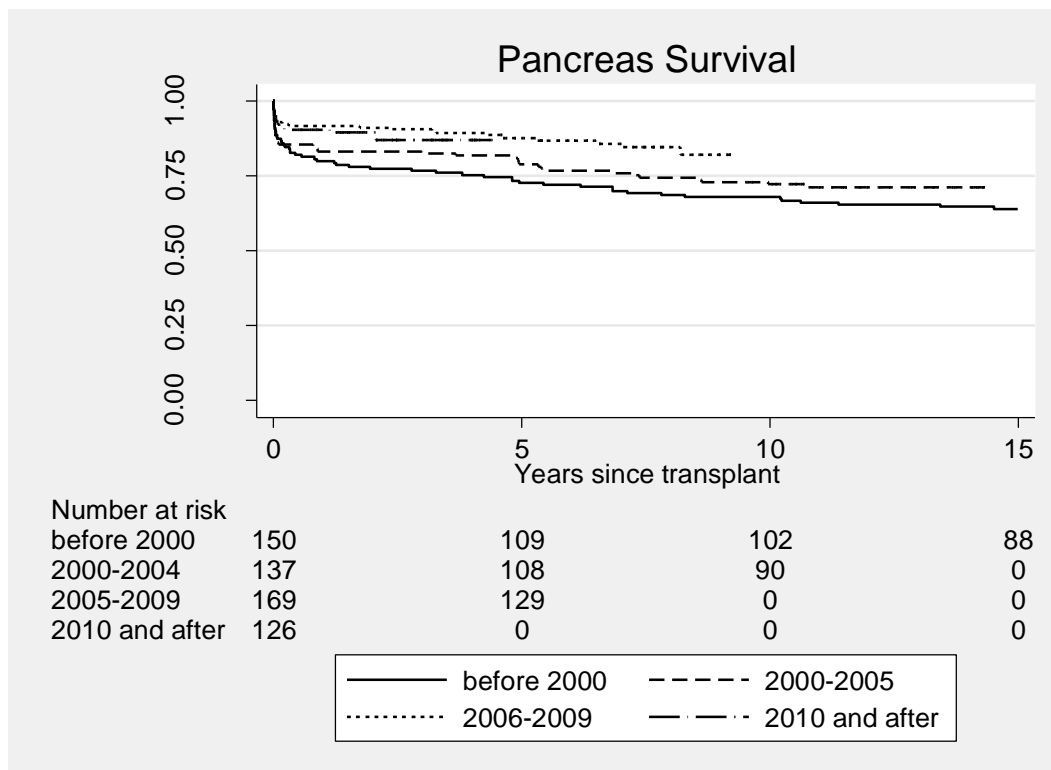


Figure 13: Pancreas Graft Survival (by Era), 1984-2012

SECTION 4: PANCREAS WAITLIST REVIEW

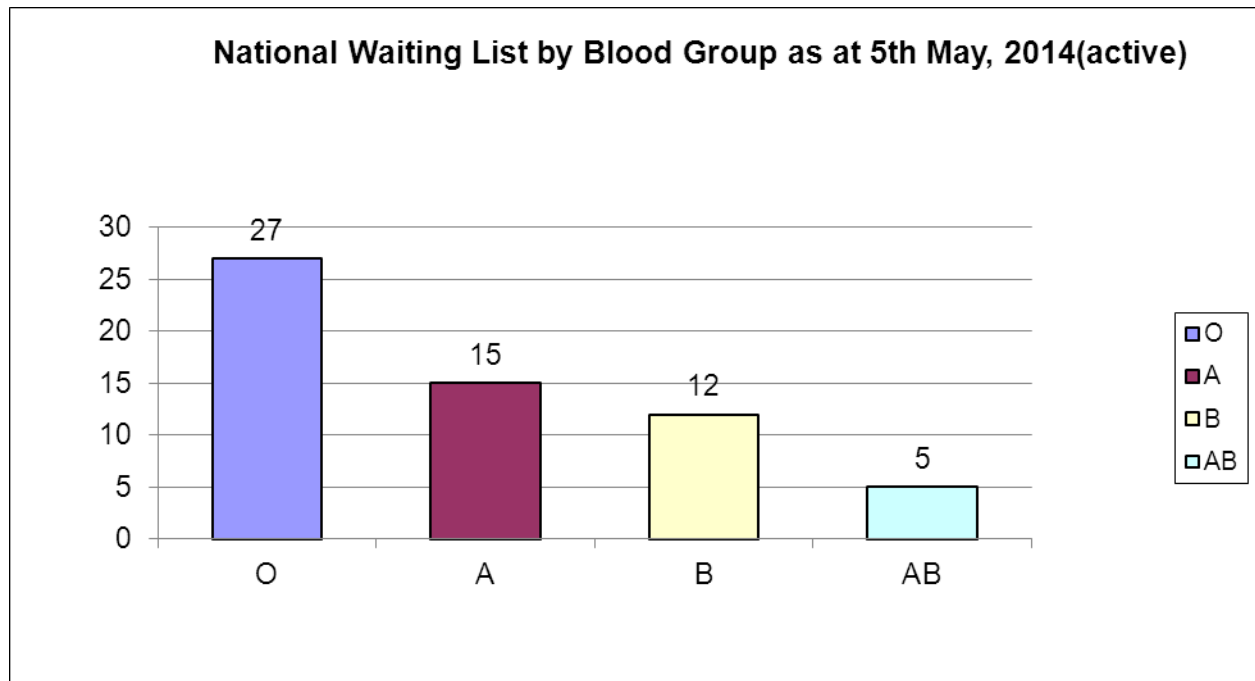


Figure 14: Pancreas Waitlist, as at May, 5th 2014

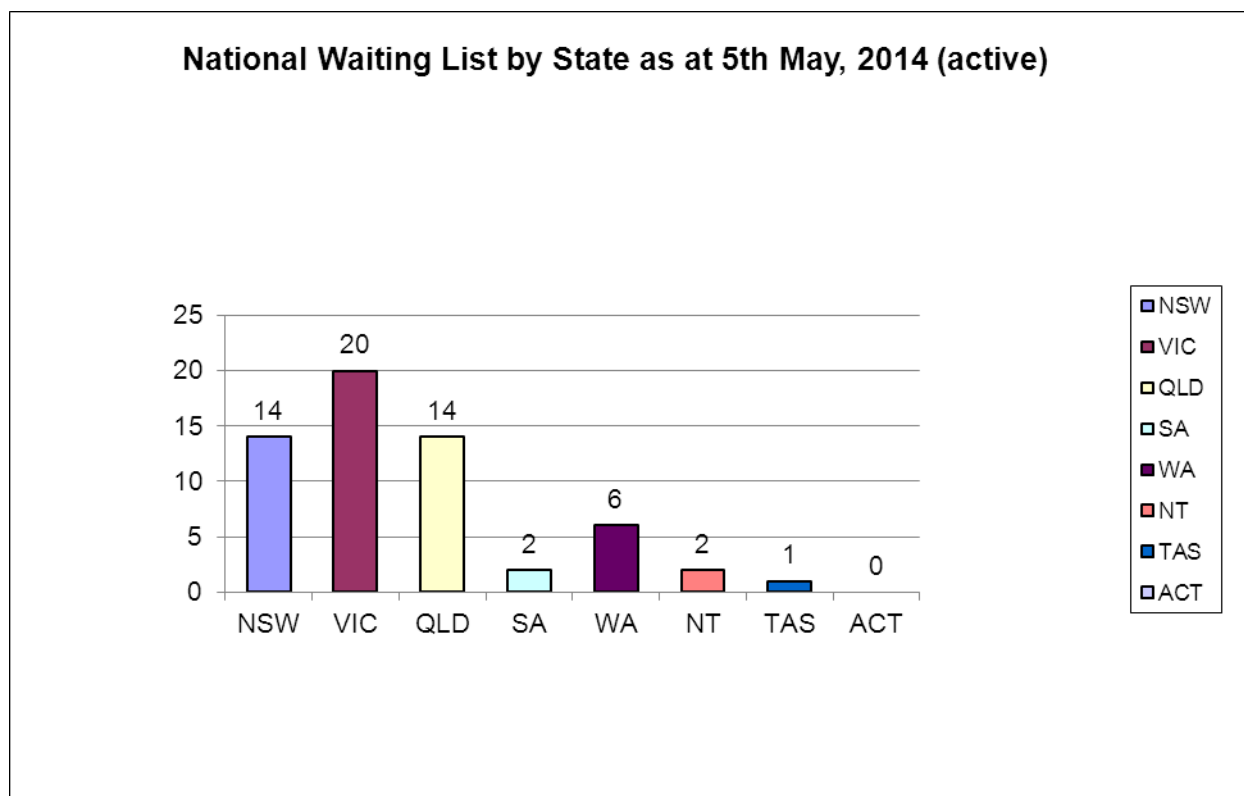


Figure 15: National Pancreas Waitlist (active), as at May, 5th 2014

**Patients transplanted by region****TRANSPLANTING UNIT: WESTMEAD NATIONAL PANCREAS TRANSPLANT UNIT (NSW)**

Patient Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	9	–	8	2	2	–	3	1		25
2011-2012	10	–	4	4	3	–	–	–		21
2010-2011	8	–	7	4	1	–	1	–		21
2009-2010	8	–	8	3	3	–	–	–		22
2008-2009	8	–	2	–	6	–	2	–		18
	43	0	29	13	15		6	1		107

TRANSPLANTING UNIT: MONASH NATIONAL PANCREAS TRANSPLANT UNIT (VIC)

Patient Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	–	10	1	1	–	2	–	–		14
2011-2012	–	3	–	1	–	2	–	–		6
2010-2011	1	8	–	1	–	2	–	–		12
2009-2010	–	14	–	1	–	1	–	–		16
2008-2009	–	11	–	–	–	–	–	–		11
	1	46	1	4	0	7	0	0		59

TRANSPLANTING UNIT: AUCKLAND NATIONAL PANCREAS TRANSPLANT UNIT (NZ)

Patient Region	NZ
2012-2013	3
2011-2012	1
2010-2011	1
2009-2010	1
2008-2009	5
	11

Source of donor organs by region:

TRANSPLANTING UNIT: WESTMEAD NATIONAL PANCREAS TRANSPLANT UNIT (NSW)

Donor Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	9	1	3	8	4	–	–	–		25
2011-2012	10	2	3	2	4	–	–	–		21
2010-2011	10	3	1	6	1	–	–	–		21
2009-2010	11	1	3	2	5	–	–	–		22
2008-2009	8	–	3	5	2	–	–	–		18
	48	7	13	23	16	0	0	0		107

TRANSPLANTING UNIT: MONASH NATIONAL PANCREAS TRANSPLANT UNIT (VIC)

Donor Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	6	7	–	–	–	1	–	–		14
2011-2012	1	3	–	–	–	2	–	–		6
2010-2011	–	12	–	–	–	–	–	–		12
2009-2010	2	11	–	–	–	3	–	–		16
2008-2009	1	7	–	–	–	3	–	–		11
	10	40	0	0	0	9	0	0		59

TRANSPLANTING UNIT: AUCKLAND NATIONAL PANCREAS TRANSPLANT UNIT (NZ)

Donor Region	NZ
2012-2013	3
2011-2012	1
2010-2011	1
2009-2010	1
2008-2009	5
	11



Active waiting list by region (ready to receive transplants):

TRANSPLANTING UNIT: WESTMEAD NATIONAL PANCREAS TRANSPLANT UNIT (NSW)

Patient Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	12	–	9	1	4	–	1	2		29
2011-2012	9	–	11	3	6	–	3	1		33

TRANSPLANTING UNIT: MONASH NATIONAL PANCREAS TRANSPLANT UNIT (VIC)

Patient Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	–	12	–	1	–	–	–	–		13
2011-2012	1	15	1	1	–	2	–	–		20

TRANSPLANTING UNIT: AUCKLAND NATIONAL PANCREAS TRANSPLANT UNIT (NZ)

Patient Region	NZ
2012-2013	3
2011-2012	4



All patients under consideration for transplant by region (includes all patients under current assessment as well as listed):

TRANSPLANTING UNIT: WESTMEAD NATIONAL PANCREAS TRANSPLANT UNIT (NSW)

Patient Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	43	–	36	8	24	1	3	2		117
2011-2012	45	–	45	12	22	1	4	1		130

TRANSPLANTING UNIT: MONASH NATIONAL PANCREAS TRANSPLANT UNIT (VIC)

Patient Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	1		–	7	–	10	–	–		67
2011-2012	2		1	4	1	6	–	–		55

TRANSPLANTING UNIT: AUCKLAND NATIONAL PANCREAS TRANSPLANT UNIT (NZ)

Patient Region	NZ
2012-2013	6
2011-2012	5

**New referrals received by region:****TRANSPLANTING UNIT: WESTMEAD NATIONAL PANCREAS TRANSPLANT UNIT (NSW)**

Patient Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	16	–	16	4	9	–	1	1		47
2011-2012	14	–	13	6	12	–	3	2		50
2010-2011	11	–	14	4	9	–	2	1		41
2009-2010	15	–	12	4	7	–	1	–		39
2008-2009	12	–	15	3	9	–	1	–		40

TRANSPLANTING UNIT: MONASH NATIONAL PANCREAS TRANSPLANT UNIT (VIC)

Patient Region	NSW	VIC	QLD	SA	WA	TAS	ACT	NT		TOTAL
2012-2013	–	30	–	5	–	3	–	–		38
2011-2012	–	26	–	1	–	5	–	–		32
2010-2011	–	28	–	3	–	2	–	–		33
2009-2010	1	29	1	1	–	2	–	–		34
2008-2009	–	28	–	–	1	2	–	–		31

TRANSPLANTING UNIT: AUCKLAND NATIONAL PANCREAS TRANSPLANT UNIT (NZ)

Patient Region	NZ
2012-2013	4
2011-2012	5+
2010-2011	5+
2009-2010	2+



Stock and flow: movement of waiting list over the year

TRANSPLANTING UNIT: WESTMEAD NATIONAL PANCREAS TRANSPLANT UNIT (NSW)

	2011	2012
Number of patients included on the waiting list for the first time in the course of the year	40	85
Total number of patients ever active on the waiting list during the year	76	128
Number of patients awaiting a transplant (only active candidates) on 31st December	43	85
Number of patients dead while on the waiting list during the year	3	2