

# Australia & New Zealand Pancreas Transplant Registry Report 1984-2012

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*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 30<sup>th</sup> January, 2013. Please note some data fields were incomplete at the time of data extraction.



## Summary

- ▲ 577 Pancreas transplants have been performed in Australia and New Zealand (ANZ) from 1984-2012 (Excluding Islet transplants)
- ▲ In 2012, 41 transplants were performed:
  - Auckland (3)
  - Monash (9)
  - Westmead (28)
  - Austin (1).

Transplant by category: SPK (40), PTA (0), PAK (0), PLI (1)

- ▲ From 2002-2012, 52 Islet transplants have been performed in 22 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
- ▲ PLI - Pancreas Liver Intestine



## Introduction

The Australia and New Zealand (ANZ) Pancreas transplant data has been obtained from the transplant centers in Auckland Renal Transplant Group (Auckland), Monash Medical Center (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 597 pancreas transplants in Australia and New Zealand (ANZ) between the dates of November 1984 to December 2012 excluding Islet transplants. No activity was recorded in 1985 and 1986.

There have been 52 Islets transplants in Australia between the dates of January 2002 to December 2012.

## Analysis

A functioning pancreas graft is defined as insulin independent recipients. Kidney grafts 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 graft are censored for Patient survival for the first graft at the date of the second graft. The aim of this report is to record all pancreas transplant activity in Australia and New Zealand.

Kaplan-Meier survival curves were used to illustrate the survival distributions. The statistical software package, SPSS® for Windows Release 10.0 was used for all analyses.

The distribution of Patient survival, Kidney graft survival and Pancreas graft survival was analysed by four periods (1987-1996, 1997-2000, 2001-2004, 2005-2008 and 2009-2012), in pancreas and kidney (SPK) recipients.

In this year's report there are two new observations

The BMI of Donor is recorded as part of Donor review.

Primary Diagnosis of end Stage Kidney Failure is also captured in the recipient review section.

## Number of Pancreas transplants

Figure 1 illustrates the number of pancreas transplants (excluding islets) in ANZ between 1984 and 2012. The transplants were performed in Westmead (377), Monash (153), Auckland (43), RPA (1), RMH (1), QEH (1), Austin (1). In 2012, **41** transplants were performed: Auckland (3), Monash (9), and Westmead (28), Austin (1).

The number of transplants in 2012 increased by more than 30% compared to 2011 and is expected to grow in coming years with the success of the National Reform Plan for Organ Donation managed by The Organ & Tissue Authority. Individually growing by 40% (Westmead) & 28% (Monash).

The figure also show the variation in the number of transplants over last 11 years(2000-2012). The number of transplants has substantially increased in last decade compared to previous years.

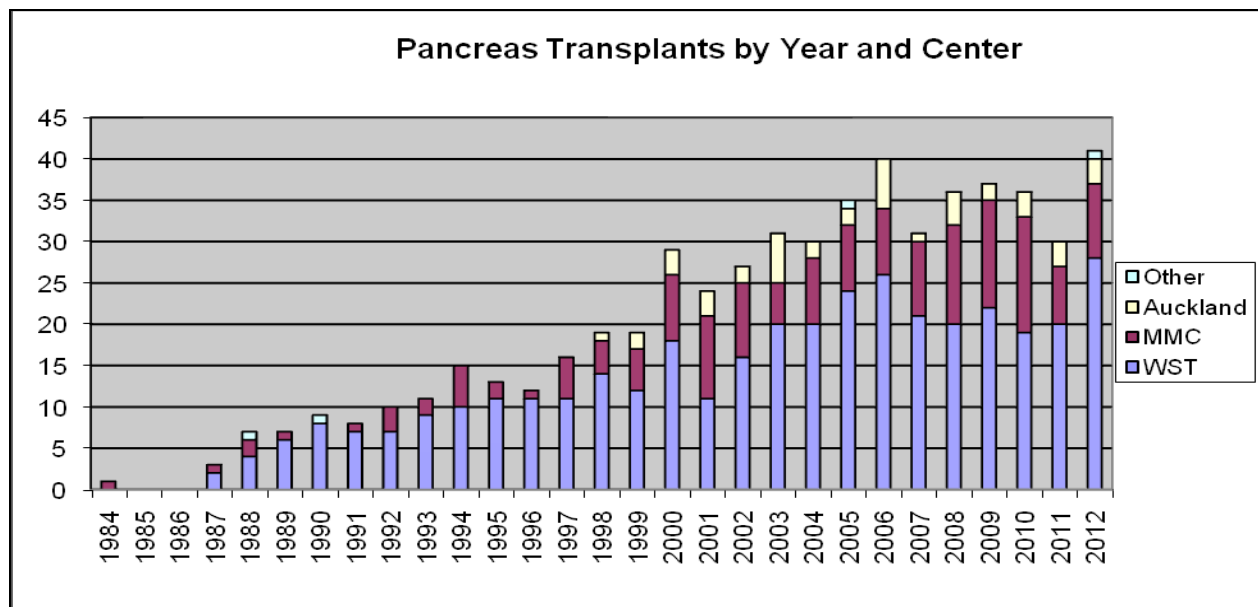


Figure 1. Number of Pancreas transplants by centre in Australia and New Zealand, 1984-2012

## 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 96% with one simultaneous Pancreas/Liver and Kidney which was performed in 2005 and one Liver/Pancreas/Intestine in 2012.

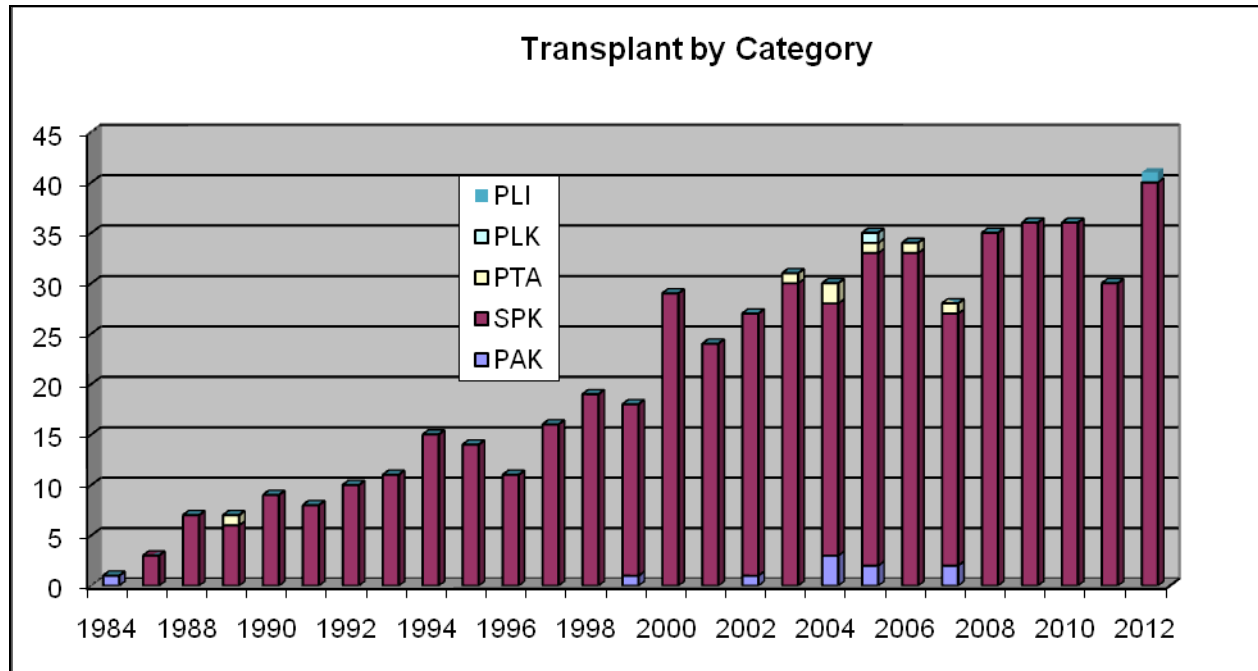


Figure 2. Pancreas transplant by category in Australia and New Zealand, 1984-2012

### By Pancreas duct management

Enteric Drainage of the pancreas was introduced in ANZ during 2001. Figure 3 illustrates the number of transplant by duct management. All pancreas transplants over last 5 years have duct management by Enteric Drainage.

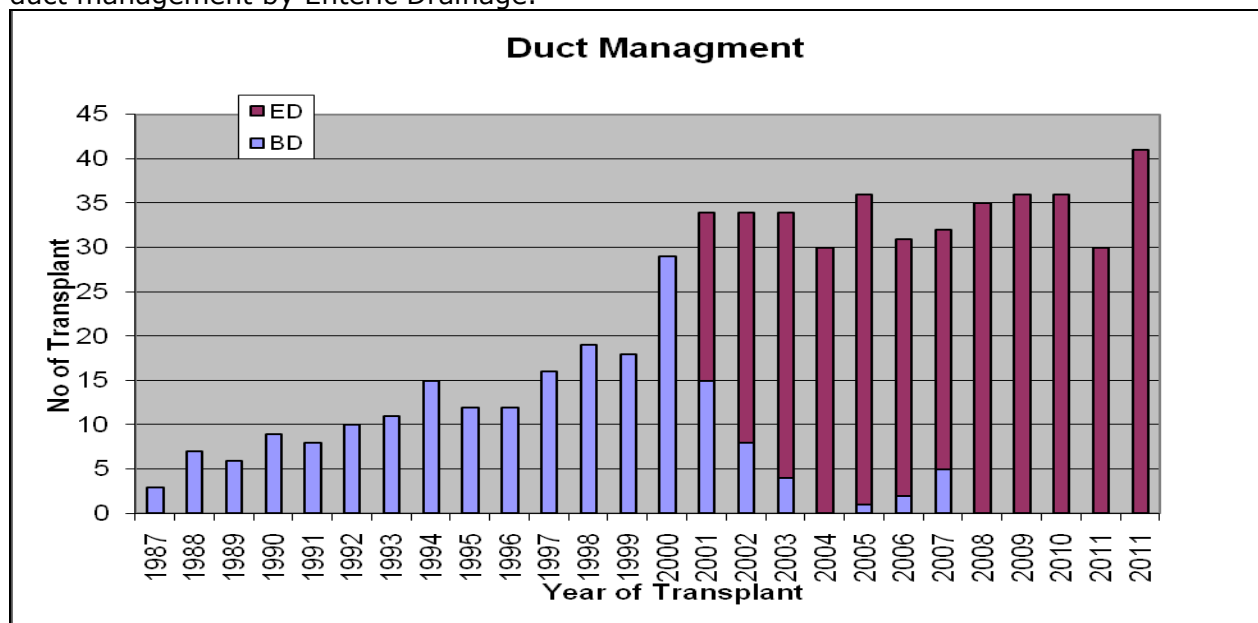


Figure 3. Pancreas duct management in ANZ, 1984-2012

## Number of Islets transplants

Figure 4 illustrates the number of islets transplants in Australia between 2002 and 2012. The transplants were performed in Westmead (31), St Vincent (12), RAH (8) and CNAR (1). In 2012, 4 transplants were performed: CNAR (1), St. V(Melbourne) (1) and Westmead (2).

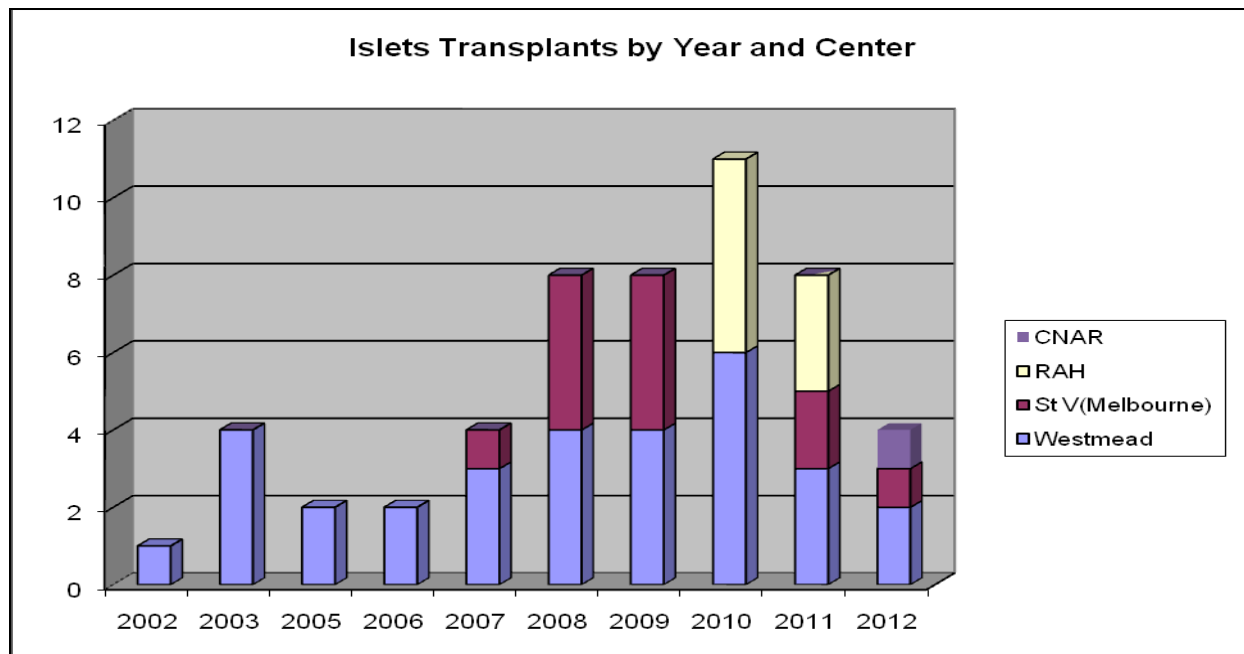


Figure 4. Number of Islets transplants by centre in Australia, 2002-2012

Publication of the results of the Australian Islet Transplant consortium has been accepted in the American Journal of Transplantation. In press 2013.

## Gender Comparison

### Donor and Recipient

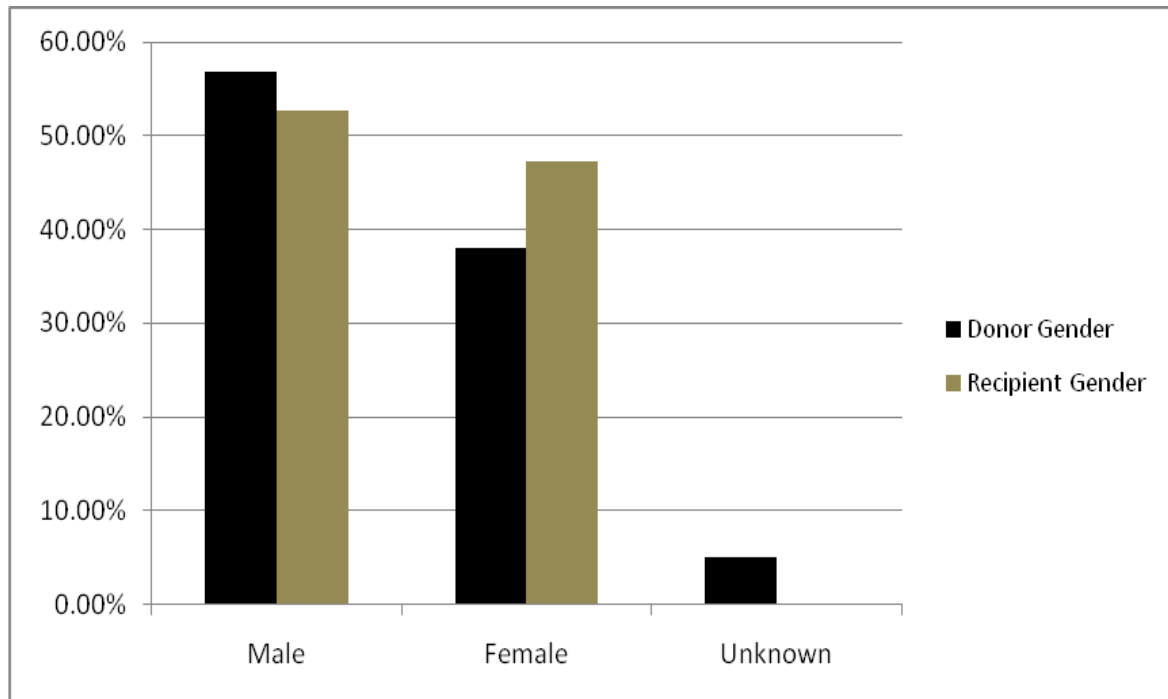


Figure 5. Gender comparison Donor and Recipient, 1984-2012

From the gender comparison it indicates that more Male donors were accepted than female. The percentage remains nearly the same compare to last year.

While Recipient gender showed little bias (52.73% Male vs 47.27% Female)



## SECTION 1: DONOR REVIEW

### Donor Demographics

#### *Donor Gender*

From 1984 – 2012, 56.86% of pancreas donors were males and 38.04% were females (the remaining 5.10% were unknown)

#### *Donor Age*

The mean donor age was 27.43yrs with the range from 4 yrs (minimum) to 61yrs (maximum). The median of donor age was 25 yrs.

### Donor Statistics

#### *Donor Ventilation*

From 1984 – 2012 the average number of days donors were ventilated was 2.27 days

#### *Donor Blood Group*

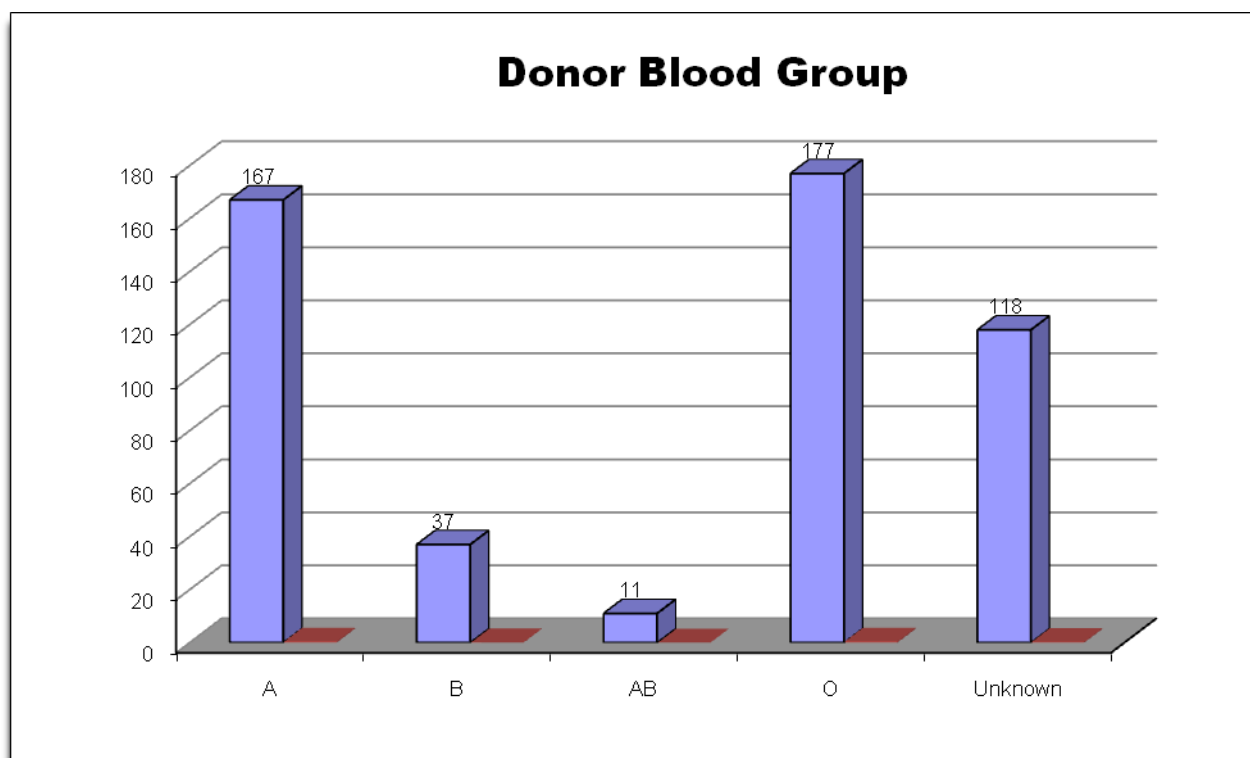


Figure 6. Donor Blood Group, 1984-2012

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

## Donor Kidney Side

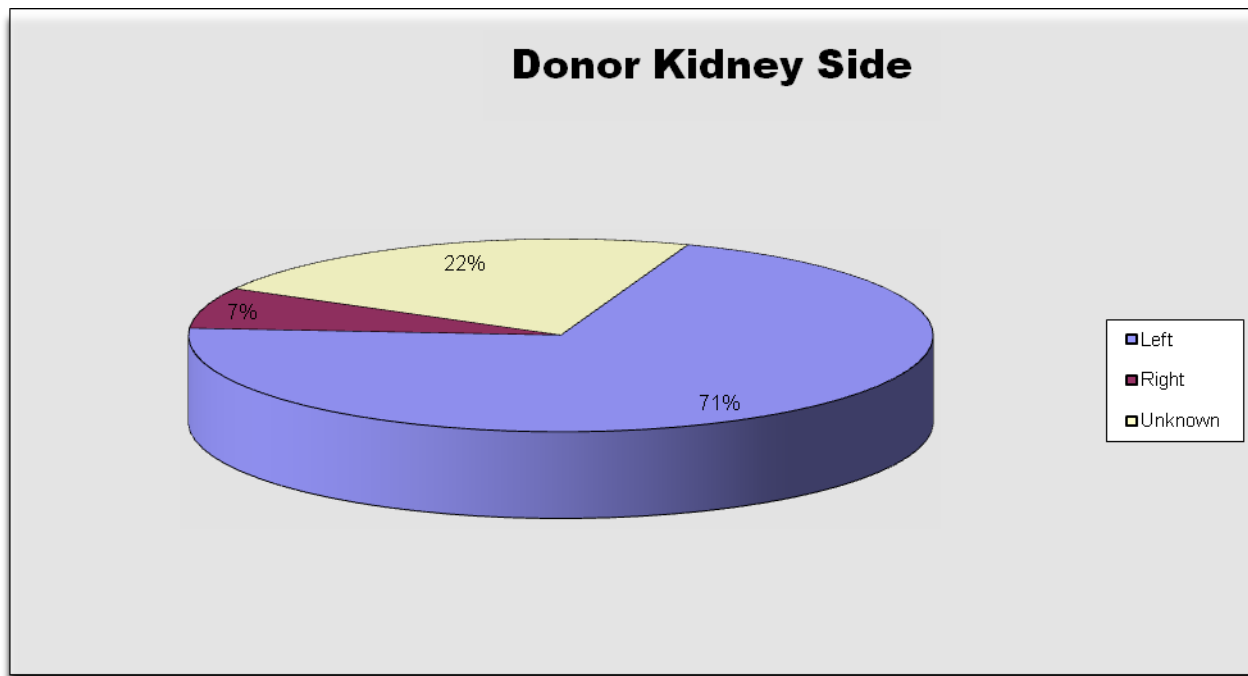


Figure 7. Donor Kidney Side, 1984-2012

## From 1984 – 2012;

### Donor Biopsies

Yes = 15.88%  
No = 82.55%  
Unknown = 1.57%

### Donor Height

172cm (Mean) 174cm (Median)

### Donor CMV Status

Ig G Pos = 58.63%  
Ig G Neg = 27.45%  
Unknown = 13.92%

### Average Donor Weight

71kg (Mean), 70kg (Median)

## Donor Glucose

The terminal donor **glucose** range from 1984 – 2012 was **2.8 to 20 mmol**

The **Mean** was 8.50 **mmol** and the **Median** was 7.5 **mmol**.

## Donor Amylase

The donor **amylase** range from 1984 – 2012 was **9 to 2550 units**

The **Mean** was 94.17 **units**.

## Donor BMI

The BMI is one of the important factors determining the donor eligibility. Since obese donors have fatty pancreas, which provide more difficult surgery and increased post-operative complications

### Donor BMI 2012

Body Type	BMI Index	
Underweight	$\leq 18.5$	3.33%
Normal Weight	18.5 - 24.9	52.16%
Overweight	25 - 29.9	26.08%
Obese	$\geq 30$	5.49%
Unknown		12.94%

## Donor Smoking & Alcohol Status

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

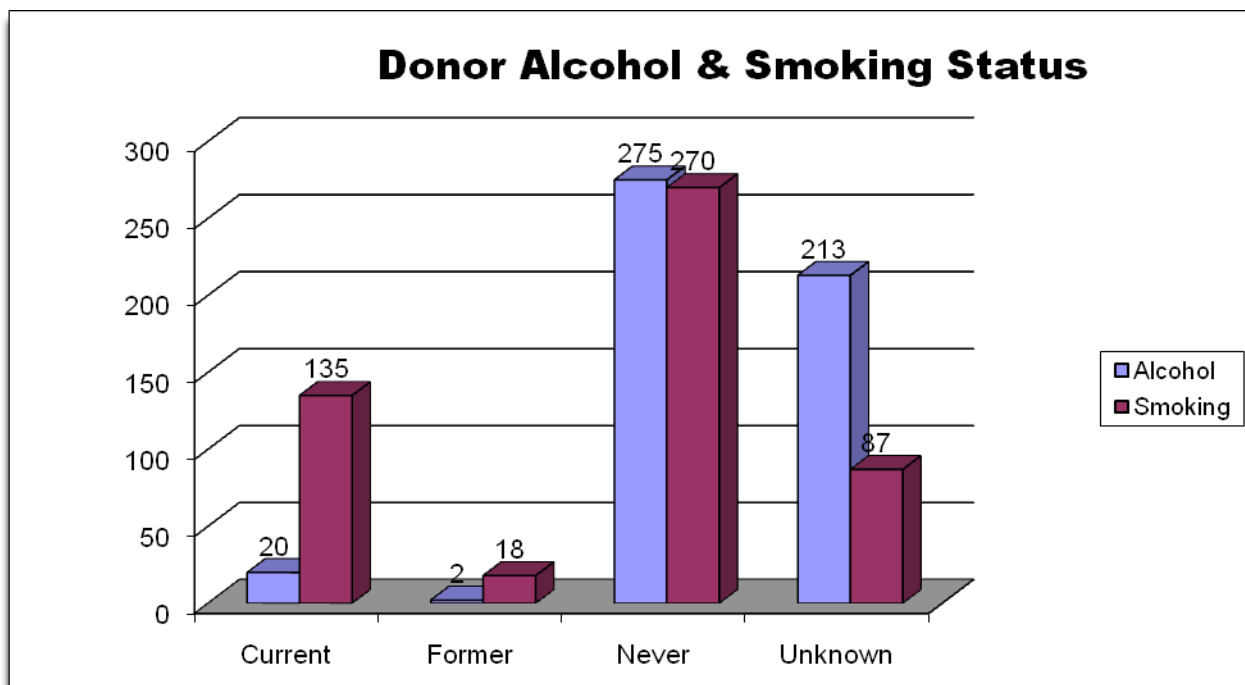


Figure 8. Donor Alcohol & Smoking Status, 1984-2012



## SECTION 2: RECIPIENT REVIEW

### *Anastomosis Time Range*

Anastomosis time for transplantation ranged from **14 to 70 mins** over 1984 - 2012

The **Mean** was 29 **mins** and **Median** is 30 **mins**.

### *Ischaemia Time Range*

**5hrs to 14hrs**

### *Exocrine Drainage*

54.10% of drainage was Enteric, 25.98% was Bladder and 19.92 is Unknown.

### *Primary Diagnosis of End Stage Kidney Failure*

The primary Diagnosis of end stage kidney failure was also analysed for 2012 reporting.

The number of diabetic recipient 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	
Diabetes Type I (Insulin Dependent)	98.44%
Diabetes Type II (Insulin Requiring)	0.59%
Haemolytic uraemic syndrome	0.20%
Interstitial nephritis	0.20%
Uncertain diagnosis	0.39%
Wegener's Granulomatosis	0.20%

## SURGICAL TECHNIQUES

### Recipient Vein

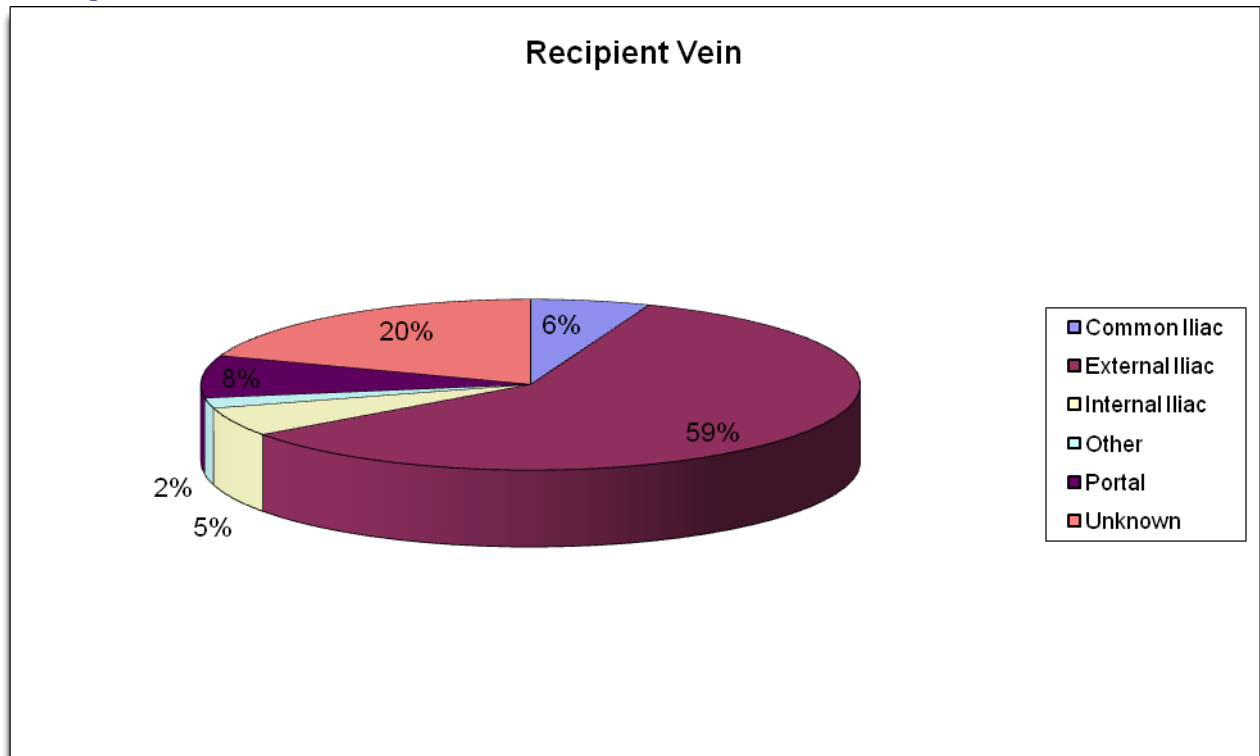


Figure 9. Recipient Vein, 1984-2012

### Recipient Artery

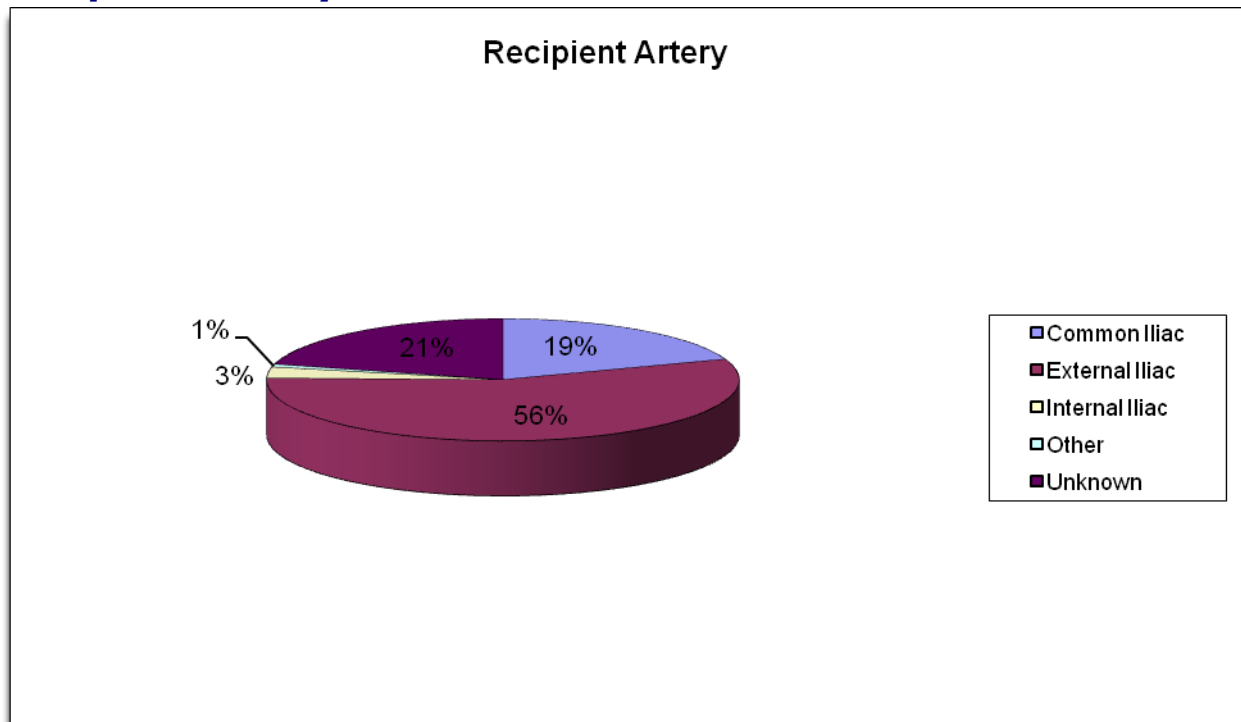


Figure 10. Recipient Artery, 1984-2012

## SECTION 3: TRANSPLANT OUTCOMES REVIEW

Year of Transplant	Patient Survival*			Pancreas Graft Survival*			Kidney Graft Survival*		
	1 Yr	5 Yrs	10 Yrs	1 Yr	5 Yrs	10 Yrs	1 Yr	5 Yrs	10 Yrs
1987-1996	92(2)	88(3)	72(4)	75(4)	68(4)	53(5)	87(3)	80(4)	60(5)
1997-2000	93(2)	89(3)	79(4)	80(4)	72(5)	61(5)	92(2)	84(4)	72(5)
2001-2004	99(0)	97(1)	83(3)	86(3)	80(3)	66(4)	94(2)	86(3)	75(4)
2005-2008	96(1)	92(2)	NA**	88(2)	83(3)	NA**	96(1)	90(2)	NA**
2009-2012	98(1)	NA**	NA**	93(2)	NA**	NA**	97(1)	NA**	NA**

\* Actuarial Survival percentage (with Standard Error)

\*\* Not applicable

Actuarial Patient Survival, Kidney Graft Survival and Pancreas graft Survival by Era (Year of transplant)

Patient Survival Estimates (Kaplan-Meier)  
Transplants between 1987-2012

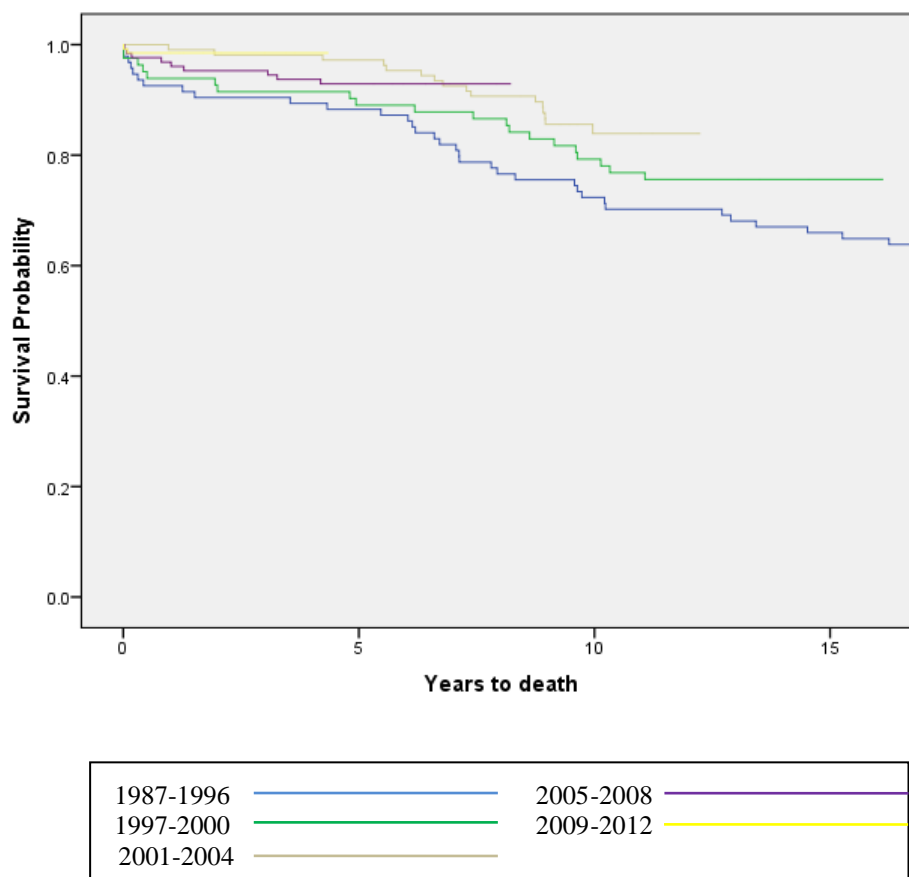


Figure 11. Patient Survival (by Era), 1987-2012

## Pancreas Graft Survival Estimates (Kaplan-Meier) Transplants between 1987-2012

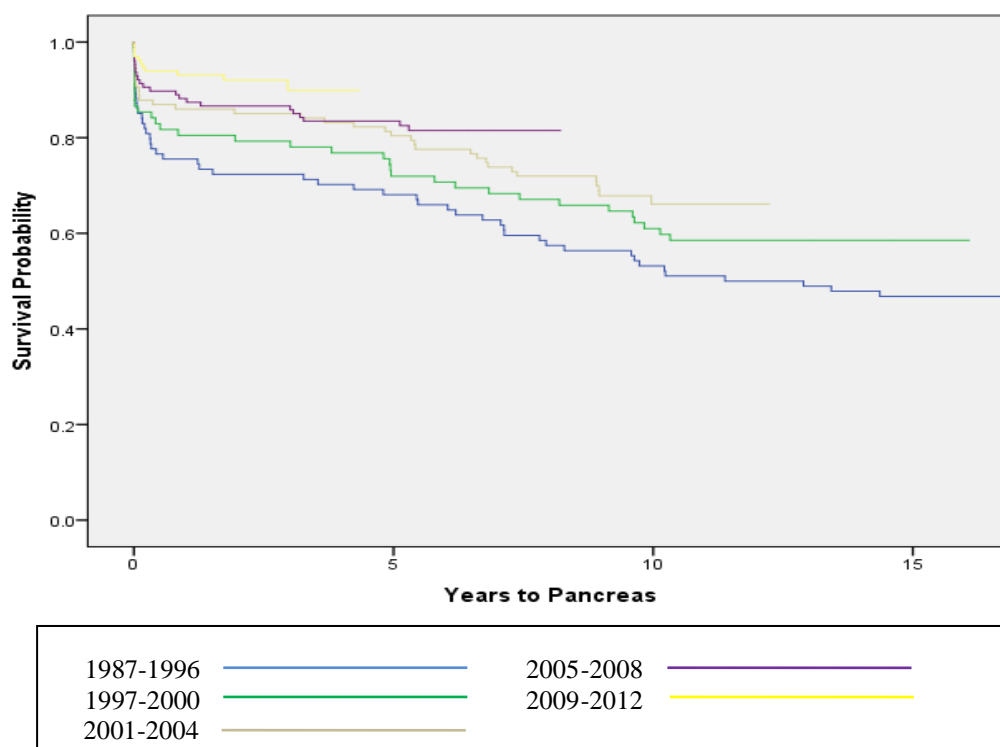


Figure 12. Pancreas Graft Survival (by Era), 1987-2012

## Kidney Graft Survival Estimates (Kaplan-Meier) Transplants between 1987-2012

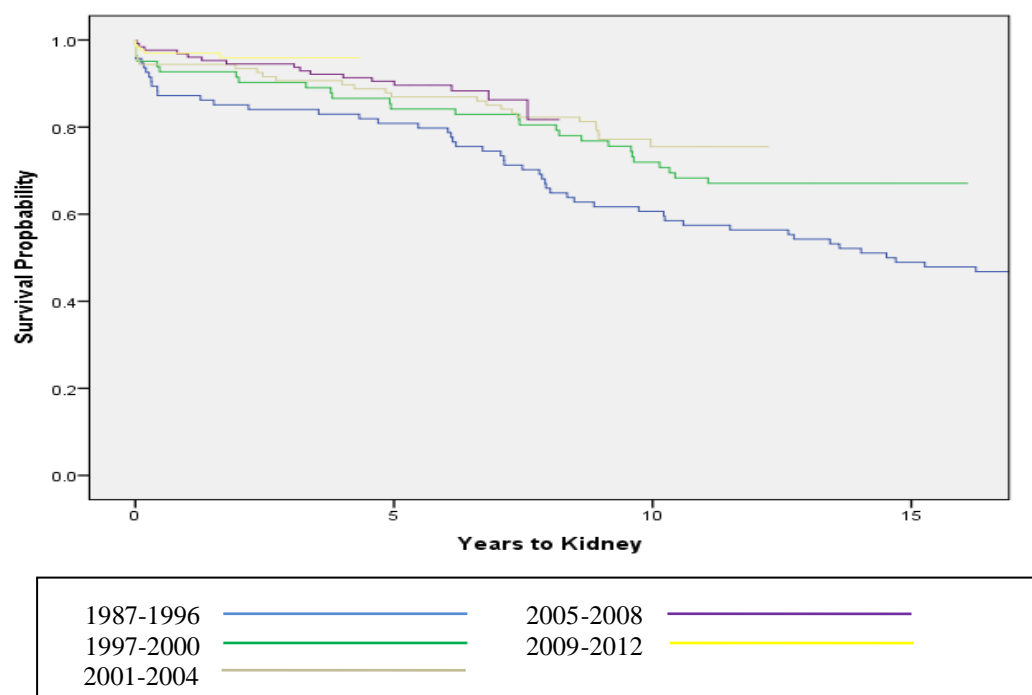


Figure 13. Kidney Graft Survival (by Era), 1987-2012

## SECTION 4: PANCREAS WAITLIST REVIEW

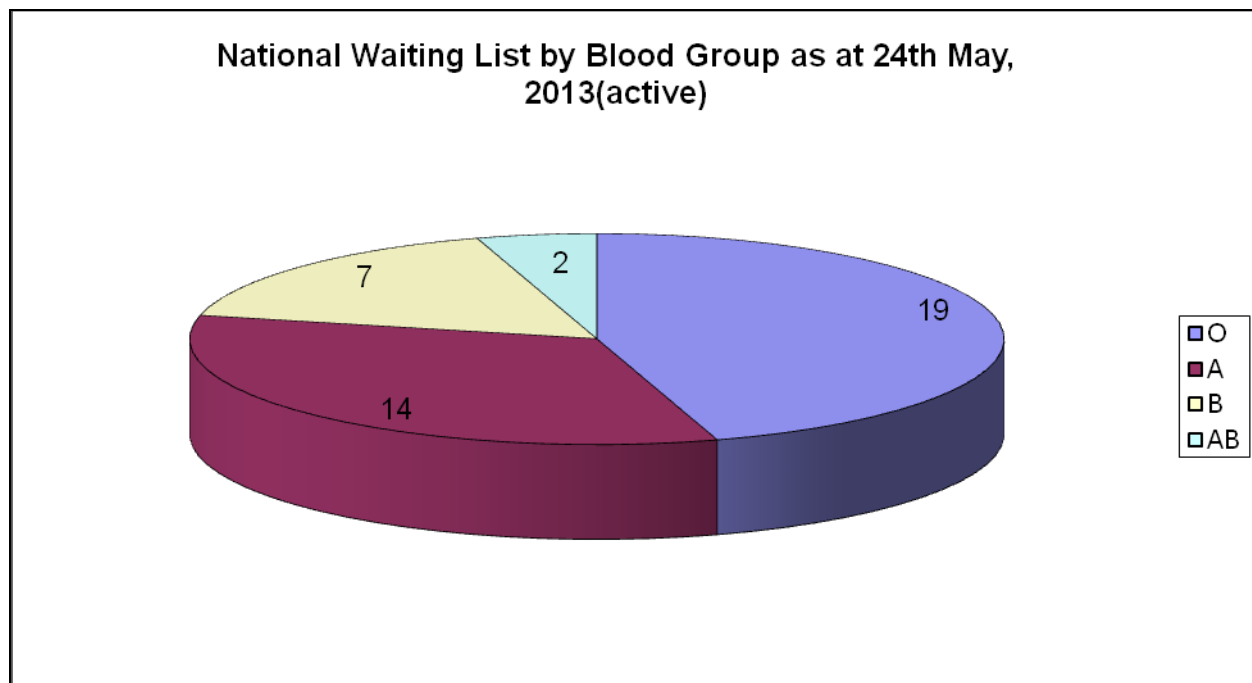


Figure 14. Pancreas Waitlist, as at May, 24<sup>th</sup> 2013

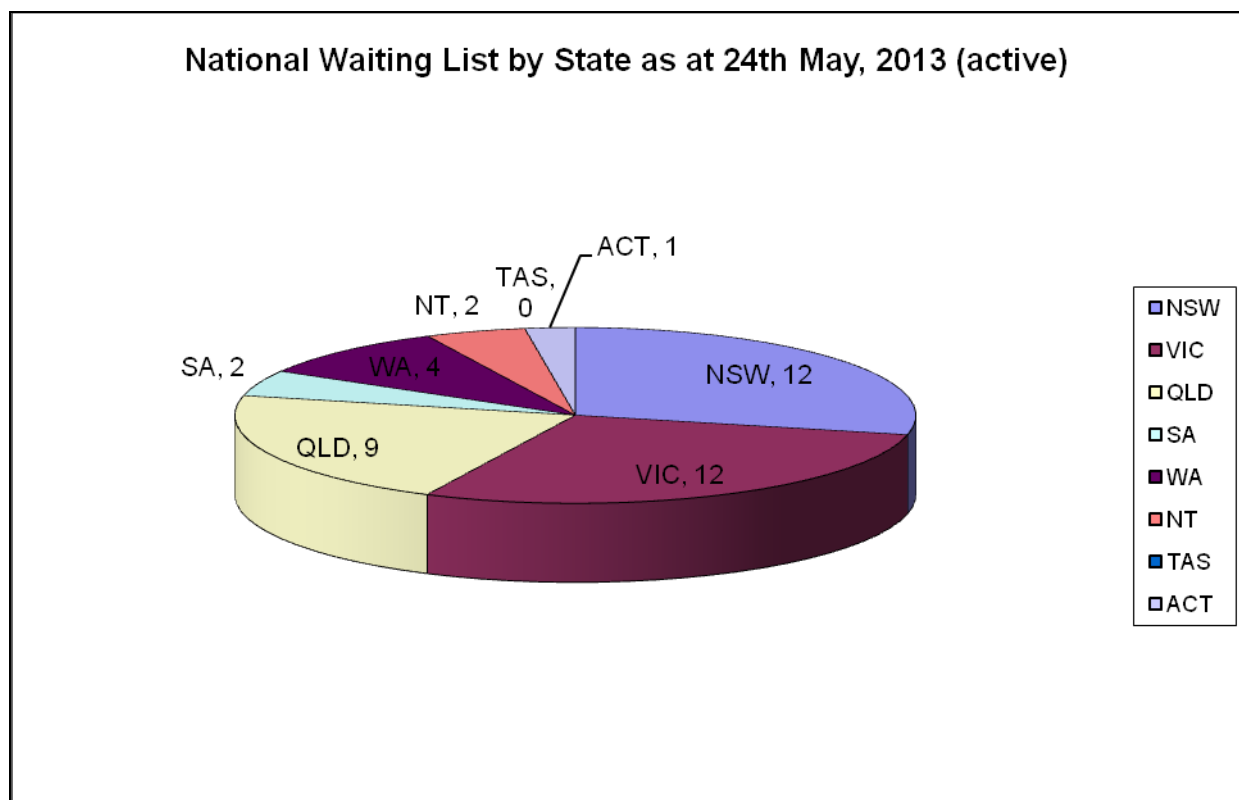


Figure 15. National Pancreas Waitlist (active), as at May, 24th 2013



**TABLE 1. 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

**TABLE 2. 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

**TABLE 3. 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



**TABLE 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

**TABLE 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+