ANZIPTR Report 2024

Australia and New Zealand Islet and Pancreas Transplant Registry data 1984-2023

This report is a compilation of data provided by Pancreas transplant units in Australia and New Zealand. The registry is funded in part by the Organ and Tissue Authority
www.anziptr.org

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Introduction

This report is produced and edited by: Angela Webster and James Hedley

Chapters 1-3 are authored by: Angela Webster, Paul Robertson, Tia Mark, Helen Pilmore, Danielle Stephenson, James Hedley

We thank all contributors who have made the registry what it is and whose work has made this report possible.

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Governance structure

This report is a compilation of data provided by the four current solid-organ Pancreas transplant units in Australia and New Zealand: Auckland Renal Transplant Group, New Zealand; National Pancreas Transplant Unit Monash Medical Centre, Victoria; National Pancreas Transplant Unit, Westmead Hospital, NSW; South Australian/Northern Territory Transplant Service, Royal Adelaide Hospital, SA; The ANZIPTR registry is funded in part by the Organ and Tissue Authority.

Data release guidelines

The registry can provide de-identified data for at no cost to Transplant Physicians, Transplant Units, and Government Departments. Release of data for academic or clinical research projects is provisional on an agreed project plan and proof of ethical oversight. The registry will not provide any personally identifiable data.

The clinical data provided contains potentially sensitive information and should be used only within agreed guidelines. If data are further published elsewhere ANZIPTR permission is necessary prior to submission for publication, and ANZIPTR should be identified as the source of the data. If data provided by ANZIPTR is the primary source of data, then a copy of publication should be provided to ANZIPTR.

Data provided by ANZIPTR should be utilised by requesting parties only, further data sharing with other parties or projects is not permitted without prior approval from ANZIPTR. The data supplied will be in accordance with ANZIPTR data specifications. Please see www.anziptr.org for our data dictionary.

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Analysis and Methods

The aim of this report is to record all pancreas transplant activity in Australia and New Zealand. Data included in this report was locked on 3rd February 2025, for all people transplanted up to the end of 2023. Please note new data are added to the registry regularly, and corrections are made where previous data are missing or where errors are discovered. This year the report is for solid organ pancreas transplant activity only; there is no report for islet transplant activity.

Kaplan-Meier survival curves were used to illustrate the survival distributions, and these were generated using Stata software version 18.0 (StataCorp, College Station, TX USA). Transplant survival is analysed and presented both including and excluding death with a functioning pancreas transplant. For patients receiving a second transplant, in calculating mortality, time was measured from time of first transplant.

Definitions

Pancreas transplant

A functioning pancreas transplant is defined as a recipient free of exogenous insulin dependence; thus a pancreas transplant failure is declared when either a pancreatectomy is performed, or when the recipient returns to permanent insulin therapy. Kidney transplants are defined as functioning if recipients are dialysis free. All causes of death are included in the mortality analyses.

Glossary

SPK	Simultaneous Kidney Pancreas Transplant
PTA	Pancreas Transplant Alone
PAK	Pancreas after Kidney Transplant
DBD	Donor after Brain Death
DCD	Donor after Circulatory Death
CMV	Cytomegalovirus
EBV	Epstein-Barr Virus
SD	Standard Deviation
IQI	Interquartile Interval
NSW	New South Wales
VIC	Victoria
QLD	Queensland
SA	South Australia
WA	Western Australia
TAS	Tasmania
ACT	Australian Capital Territory
NT	Northern Territory
NZ	New Zealand

Synopsis

A total of 1,092 solid organ pancreas transplants have been performed in Australia and New Zealand, in 1,067 individuals from 1984-2023 (excluding islet transplants).

In 2023, 45 pancreas transplants were performed. By centre, the number of transplants performed were: Auckland (3); Monash (12); Westmead (27); and Adelaide (3). All 45 transplants were SPK, none were PAK or PTA.

Accessing report data

In 2015 ANZIPTR developed its own website: www.anziptr.org which describes the registry structure and function, outlines the procedure for data requests, and provides a download area for past reports. Since 2017, a slide set of key registry data tables and plots is available for download, to complement the ANZIPTR report.

The ANZIPTR welcomes suggestions for improvement or specific analyses you would like to see in the next annual report.

Chapter 1: Waiting List

Authors: Angela Webster, James Hedley.

Data contributed by: Paul Robertson, Tia Mark, Helen Pilmore, Danielle Stephenson

Overview of waiting list activity

Definitions

Patients join the waiting list on the date they are referred to the transplanting centre; however, this may occur sometime before their kidneys fail. Patients are therefore classified as "under consideration" until they medically require a kidney pancreas transplant (eGFR ≤15ml/min/1.72m^2 or dependant on dialysis). Once they require a kidney pancreas transplant, they are classified as "active" on the list while they remain medically fit. The "under consideration" classification also captures people recently referred to the transplant centre, who are still undergoing assessment about their medical fitness for pancreas transplant. People referred to a transplanting centre when they are already on dialysis become "active" on the list as soon as they are accepted as medically fit. People referred to a transplanting centre when their kidneys still function become active once their kidney disease progresses to such a level that dialysis is planned in the near future (eGFR ≤15ml/min/1.72m^2). Once active on the waiting list, a patient may be transplanted depending on multiple factors including waiting time, blood group, duration of dialysis and other considerations.

Patient waiting list flow

Patient referral and waiting list activity over the last three years is shown in Table 1.1 for Australia (Westmead, Monash and Royal Adelaide units), and Table 1.2 for New Zealand. In both Australia and New Zealand, the number of transplants performed annually has returned to pre-covid levels, and in Australia the backlog of patients under consideration is reducing.

Table 1.1: Referral and waiting list activity in Australia for the last three years

Activity	Patients (n)		
	2021	***2022***	***2023***
Referrals			
Under consideration (not yet active on list) at beginning of year	174	151	146
New referrals during the year	56	62	61
Added to active list during the year	72	59	60
Declined for pancreas transplantation	2	7	6
Died while under consideration	5	1	4
Under consideration (not yet active on list) at end of year	151	146	137
Waitlist			
Active on list at beginning of year	86	112	110
Added to active list during the year	72	59	60
Removed from active list during year	9	13	8
Pancreas transplants to patients on waiting list	34	45	42
Kidney only transplants to patients on waiting list	3	2	1
Transplants performed outside Australia/New Zealand	0	0	0
Died while active on list	0	1	4
On active waiting list at the end of year	112	110	115
Died within 12 months of removal from list	0	0	0

Table 1.2: Referral and waiting list activity in New Zealand for the last three years

Activity	Patients (n)		
	2021	***2022***	***2023***
Referrals			
Under consideration (not yet active on list) at beginning of year	3	7	8
New referrals during the year	10	7	9
Added to active list during the year	6	6	11
Declined for pancreas transplantation	0	0	0
Died while under consideration	0	0	1
Under consideration (not yet active on list) at end of year	7	8	5
Waitlist			
Active on list at beginning of year	8	8	8
Added to active list during the year	6	6	11
Removed from active list during year	0	1	3
Pancreas transplants to patients on waiting list	6	5	3
Kidney only transplants to patients on waiting list	0	0	0
Transplants performed outside Australia/New Zealand	0	0	0
Died while active on list	0	0	0
On active waiting list at the end of year	8	8	13
Died within 12 months of removal from list	0	0	0

Distribution of active patients by state

Figure 1.1 and Table 1.3 show the state and country of residence for people active on the pancreas waiting list, by year and the pancreas transplanting centre they were referred to (Australia only).

Figure 1.1: Distribution of people active on the waiting list by state or country of residence, as of December 2023

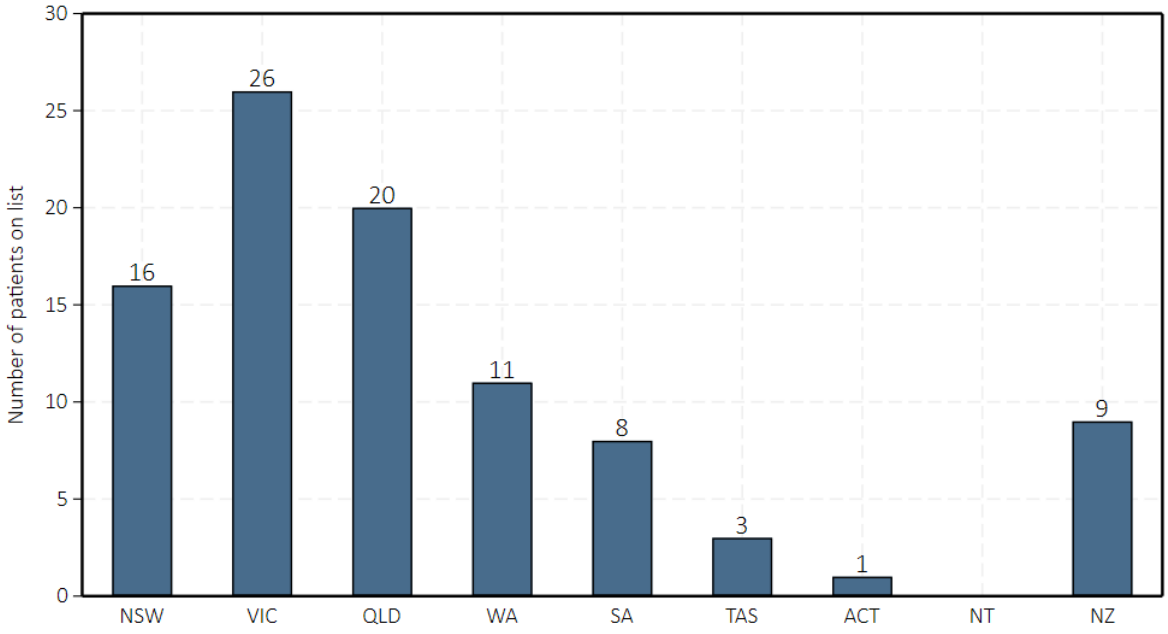


Table 1.3: Patient state of residence by Australian pancreas transplant unit for people active on the list at the end of the year for the past three years

	State of residence, n (row %)																
Year	*NSW*		*VIC*		*QLD*		*WA*		*SA*		*TAS*		*ACT*		*NT*		***Total***
Westmead (NSW)																	
2023	28	(42)	0	(0)	24	(36)	13	(19)	1	(1)	0	(0)	1	(1)	0	(0)	67
2022	21	(33)	0	(0)	26	(41)	14	(22)	1	(2)	0	(0)	1	(2)	0	(0)	63
2021	20	(30)	0	(0)	31	(47)	14	(21)	1	(2)	0	(0)	0	(0)	0	(0)	66
Monash (VIC)																	
2023	0	(0)	33	(85)	1	(3)	0	(0)	1	(3)	4	(10)	0	(0)	0	(0)	39
2022	0	(0)	33	(79)	1	(2)	0	(0)	2	(5)	6	(14)	0	(0)	0	(0)	42
2021	0	(0)	33	(79)	1	(2)	0	(0)	1	(2)	7	(17)	0	(0)	0	(0)	42
Royal Adelaide (SA)																	
2023	0	(0)	0	(0)	0	(0)	0	(0)	6	(86)	0	(0)	0	(0)	1	(14)	7
2022	0	(0)	0	(0)	0	(0)	0	(0)	5	(100)	0	(0)	0	(0)	0	(0)	5
2021	0	(0)	0	(0)	0	(0)	0	(0)	4	(100)	0	(0)	0	(0)	0	(0)	4

Table 1.4 shows the state of residence for people who are under consideration together with people who are active on the pancreas waiting list, by the pancreas transplanting centre they were referred to, in Australia. For New Zealand data, there is no breakdown beyond that seen in Table 1.2.

Table 1.4: Patient state of residence by Australian pancreas transplant unit for people under consideration and active on the list at the end of the year for the past three years

	State of residence, n (row %)																
Year	*NSW*		*VIC*		*QLD*		*WA*		*SA*		*TAS*		*ACT*		*NT*		***Total***
Westmead (NSW)																	
2023	55	(39)	0	(0)	41	(29)	37	(26)	6	(4)	1	(<1)	1	(<1)	0	(0)	141
2022	55	(36)	0	(0)	45	(30)	41	(27)	6	(4)	1	(<1)	3	(2)	0	(0)	151
2021	54	(32)	0	(0)	60	(36)	44	(26)	6	(4)	1	(<1)	2	(1)	0	(0)	167
Monash (VIC)																	
2023	1	(1)	87	(88)	1	(1)	0	(0)	2	(2)	8	(8)	0	(0)	0	(0)	99
2022	1	(1)	81	(87)	1	(1)	0	(0)	2	(2)	8	(9)	0	(0)	0	(0)	93
2021	0	(0)	77	(88)	1	(1)	0	(0)	2	(2)	8	(9)	0	(0)	0	(0)	88
Royal Adelaide (SA)																	
2023	0	(0)	0	(0)	0	(0)	0	(0)	9	(90)	0	(0)	0	(0)	1	(10)	10
2022	0	(0)	0	(0)	0	(0)	0	(0)	12	(100)	0	(0)	0	(0)	0	(0)	12
2021	0	(0)	0	(0)	0	(0)	0	(0)	8	(100)	0	(0)	0	(0)	0	(0)	8

New referrals received over time

Table 1.5 shows the number of new referrals received by transplanting units in Australia and New Zealand over time, and by state of residence (for Australian units only).

Table 1.5: New referrals over time by pancreas transplant unit and state of residence

	State of residence, n (row %)																
Year	*NSW*		*VIC*		*QLD*		*WA*		*SA*		*TAS*		*ACT*		*NT*		***Total***
Westmead (NSW)																	
2023	12	(57)	0	(0)	7	(33)	2	(10)	0	(0)	0	(0)	0	(0)	0	(0)	21
2022	14	(61)	0	(0)	5	(22)	3	(13)	0	(0)	0	(0)	1	(4)	0	(0)	23
2021	8	(27)	0	(0)	17	(57)	4	(13)	0	(0)	0	(0)	1	(3)	0	(0)	30
Monash (VIC)																	
2023	0	(0)	31	(86)	0	(0)	0	(0)	1	(3)	4	(11)	0	(0)	0	(0)	36
2022	1	(3)	27	(82)	0	(0)	0	(0)	0	(0)	5	(15)	0	(0)	0	(0)	33
2021	0	(0)	19	(90)	0	(0)	0	(0)	1	(5)	1	(5)	0	(0)	0	(0)	21
Royal Adelaide (SA)																	
2023	0	(0)	0	(0)	0	(0)	0	(0)	1	(50)	0	(0)	0	(0)	1	(50)	2
2022	0	(0)	0	(0)	0	(0)	0	(0)	7	(100)	0	(0)	0	(0)	0	(0)	7
2021	0	(0)	0	(0)	0	(0)	0	(0)	5	(100)	0	(0)	0	(0)	0	(0)	5
Auckland (NZ)																	
2023	-		-		-		-		-		-		-		-		9
2022	-		-		-		-		-		-		-		-		7
2021	-		-		-		-		-		-		-		-		10

Excludes 1 patient referred for a liver-pancreas transplant at Royal Children's Hospital Melbourne in 2021

Patient characteristics for those active on the list in 2023

The following figures illustrate the distribution of other characteristics of those active on the waiting list in 2023, including the distribution of blood groups and patient ages.

Figure 1.2: Distribution of people active on the list by blood group, end of 2023

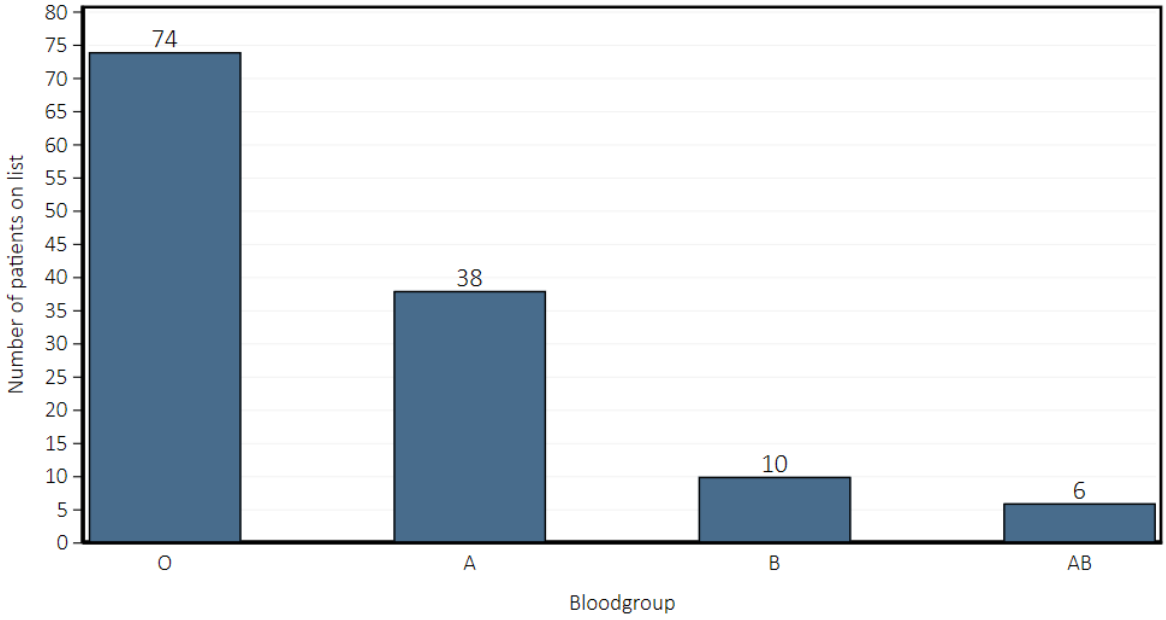
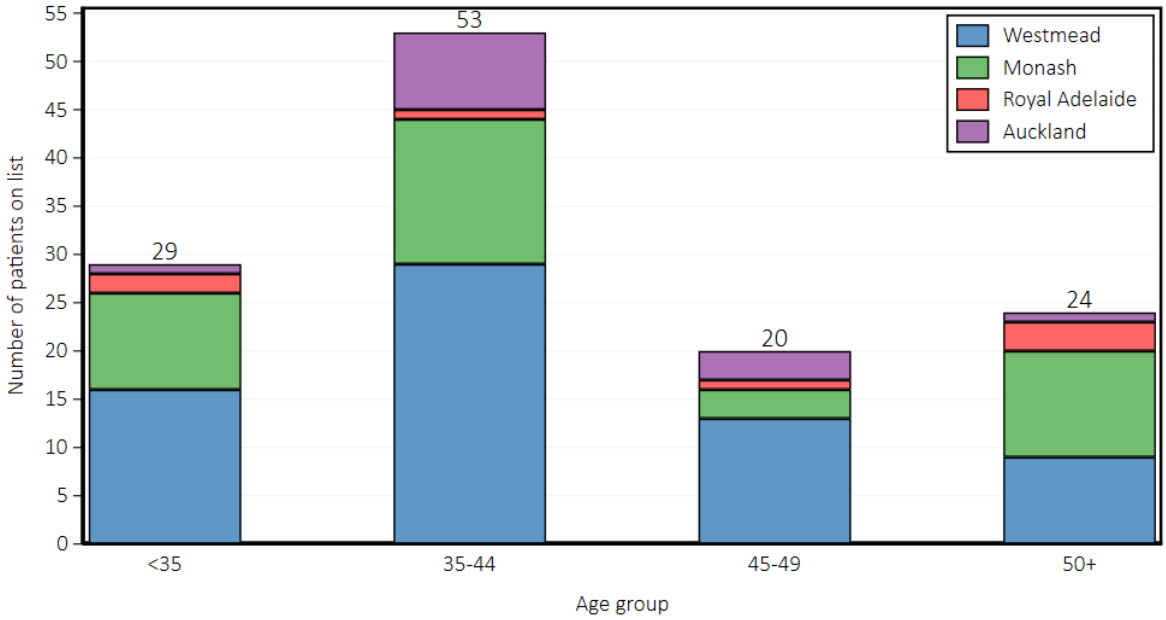


Figure 1.3: Distribution of people active on the list by age group, end of 2023



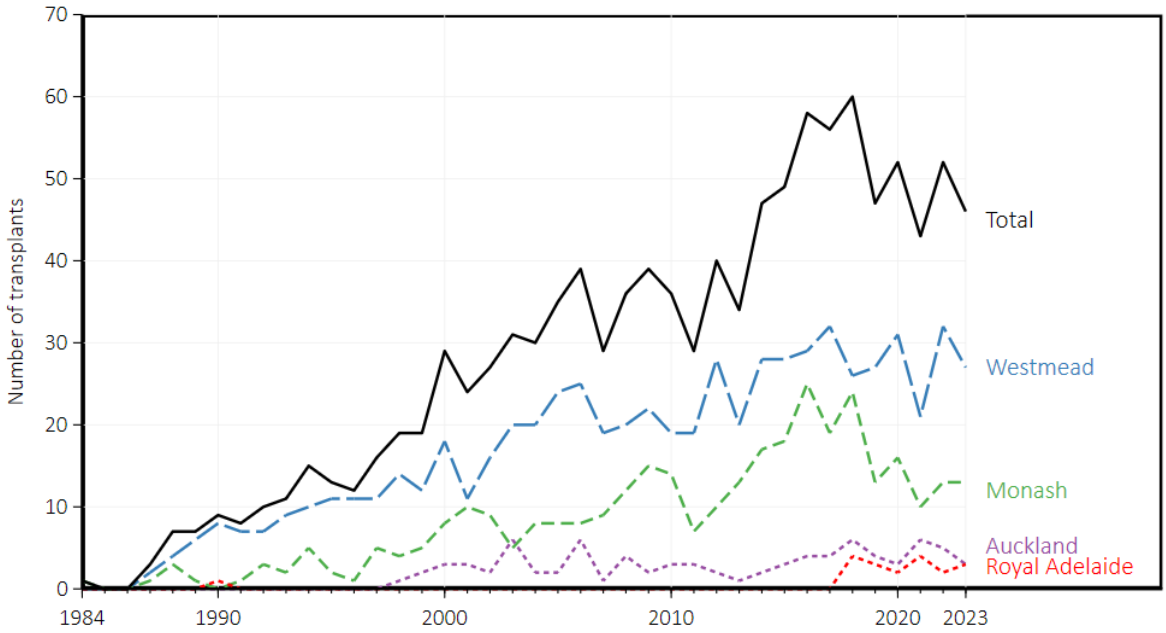
Chapter 2: Pancreas transplant recipients

Authors: Angela Webster, Paul Robertson, Tia Mark, Helen Pilmore, Danielle Stephenson, James Hedley

Pancreas transplant incidence

A total of 1,092 solid pancreas transplants have been performed in Australia and New Zealand from 1984-2023. Transplants have been performed in Westmead (671), Monash (314), Auckland (83), and Royal Adelaide (18). There have also been multi-organ transplants including pancreas in several locations over time. Since 1984 there have been a total of 3 SPK transplants conducted outside the main transplanting centres (1 at Royal Prince Alfred, 1 at Royal Melbourne Hospital, 1 at Queen Elizabeth Hospital), as well as 3 multi-organ transplants conducted at Austin Hospital (1 liver-pancreas, 1 liver-kidney-pancreas, 1 liver-kidney-pancreas-intestine). Figure 2.1 shows pancreas transplants over time, by transplant centre. There was a decrease in transplant activity due to the COVID-19 pandemic, and activity has still not returned to pre-pandemic levels.

Figure 2.1: Incidence of pancreas transplants over time, by transplant centre



Note: There have been six pancreas transplants performed in Australia, which were not conducted by either Westmead, Monash, or Royal Adelaide. These occurred in 1988, 1990, 2005, and 2017, and two in 2021.

In 2023, 45 people received a pancreas transplant, by centre this was; Monash (12), Westmead (27), Royal Adelaide (3), and Auckland (3). The number of transplants performed in 2023 decreased by 10% from the previous year 2022.

Not all pancreas transplant operations are undertaken together with a kidney, however in 2023 all pancreas transplants were simultaneous pancreas-kidney transplant (SPK). Pancreas after kidney (PAK) operations are performed for type 1 diabetic people who either had a first kidney transplant without a pancreas (most commonly from a living donor relative) and subsequently opt for a pancreas, or for people who underwent an SPK and have good kidney transplant function, but had a pancreas transplant failure, so need a further pancreas transplant. Pancreas transplant alone (PTA) is a less common operation and occurs very rarely. Indications for PTA include management of patients with hypoglycaemic unawareness or brittle diabetes that have failed best medical therapy. On rarer occasions, a multi-organ transplant is undertaken which includes a pancreas transplant. There was 1 liver-pancreas transplant in 2022, 2 liver-pancreas transplants and 1 liver-kidney-pancreas transplant in 2021, 1 liver-pancreas transplant in 2020, 1 liver-kidney-pancreas transplant in 2017, 1 liver-pancreas in 2016, 1 liver-pancreas-intestine transplant in 2012, and 1 liver-kidney-pancreas transplant in 2005.

The distribution of operation types is shown in Figure 2.2 and the number of transplants by operation type is shown in Table 2.1.

Figure 2.2: Pancreas transplants over time, by type, in Australia and New Zealand

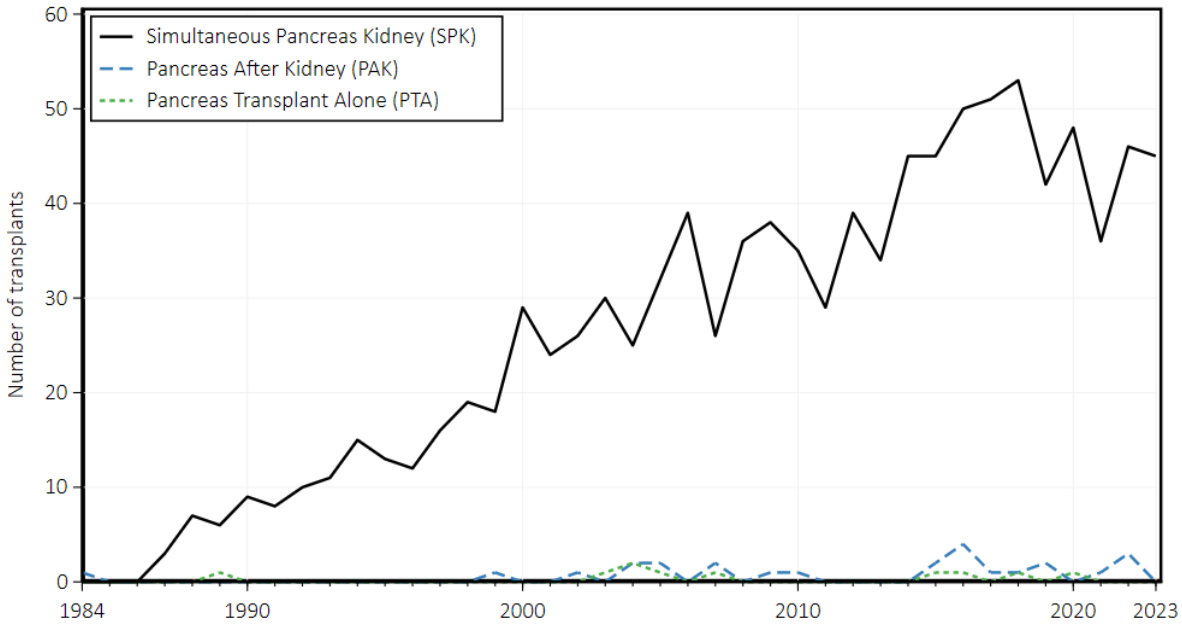


Table 2.1: Pancreas transplants over time, by transplant centre and operation type

Year	Hospital and transplant type, n (row %)								
	Westmead			***Monash***			**Royal Adelaide**	**New Zealand**	***Total***
	SPK	*PAK*	*PTA*	*SPK*	*PAK*	*PTA*	*All*	*All*	*All*
2023	27 (60)	0 (0)	0 (0)	12 (27)	0 (0)	0 (0)	3 (7)	3 (7)	45
2022	31 (62)	1 (2)	0 (0)	10 (20)	2 (4)	0 (0)	1 (2)	5 (10)	50
2021	21 (55)	0 (0)	0 (0)	6 (16)	1 (3)	0 (0)	4 (11)	6 (16)	38
2020	30 (60)	0 (0)	1 (2)	13 (26)	0 (0)	0 (0)	3 (6)	3 (6)	50
2019	26 (59)	1 (2)	0 (0)	10 (23)	0 (0)	0 (0)	3 (7)	4 (9)	44
2018	24 (44)	1 (2)	0 (0)	20 (36)	0 (0)	0 (0)	4 (7)	6 (11)	55
2017	31 (60)	0 (0)	0 (0)	16 (31)	1 (2)	0 (0)	0 (0)	4 (8)	52
2016	26 (47)	3 (5)	0 (0)	20 (36)	1 (2)	1 (2)	0 (0)	4 (7)	55
2015	27 (56)	1 (2)	0 (0)	16 (33)	1 (2)	0 (0)	0 (0)	3 (6)	48
2014	28 (62)	0 (0)	0 (0)	15 (33)	0 (0)	0 (0)	0 (0)	2 (4)	45
2013	20 (59)	0 (0)	0 (0)	13 (38)	0 (0)	0 (0)	0 (0)	1 (3)	34
2012	28 (72)	0 (0)	0 (0)	9 (23)	0 (0)	0 (0)	0 (0)	2 (5)	39
2011	19 (66)	0 (0)	0 (0)	7 (24)	0 (0)	0 (0)	0 (0)	3 (10)	29
2010	19 (53)	0 (0)	0 (0)	14 (39)	0 (0)	0 (0)	0 (0)	3 (8)	36
2009	22 (56)	0 (0)	0 (0)	14 (36)	1 (3)	0 (0)	0 (0)	2 (5)	39
2008	20 (56)	0 (0)	0 (0)	12 (33)	0 (0)	0 (0)	0 (0)	4 (11)	36
2007	16 (55)	2 (7)	1 (3)	9 (31)	0 (0)	0 (0)	0 (0)	1 (3)	29
2006	25 (64)	0 (0)	0 (0)	8 (21)	0 (0)	0 (0)	0 (0)	6 (15)	39
2005	21 (62)	2 (6)	1 (3)	8 (24)	0 (0)	0 (0)	0 (0)	2 (6)	34
2004	15 (52)	2 (7)	2 (7)	8 (28)	0 (0)	0 (0)	0 (0)	2 (7)	29
2003	19 (61)	0 (0)	1 (3)	5 (16)	0 (0)	0 (0)	0 (0)	6 (19)	31
2002	15 (56)	1 (4)	0 (0)	9 (33)	0 (0)	0 (0)	0 (0)	2 (7)	27
2001	11 (46)	0 (0)	0 (0)	10 (42)	0 (0)	0 (0)	0 (0)	3 (13)	24
'84-'00	128 (72)	1 (<1)	1 (<1)	40 (23)	1 (<1)	0 (0)	0 (0)	6 (3)	177
Total	649 (60)	15 (1)	7 (<1)	304 (28)	8 (<1)	1 (<1)	18 (2)	83 (8)	1,085

SPK, simultaneous pancreas-kidney; PAK, pancreas after kidney; PTA, pancreas alone. Excludes the six transplants performed in Australia outside of Westmead, Monash, or Royal Adelaide in 1988, 1990, 2005, 2017, two in 2021, and one in 2022. Also excludes one combined liver-pancreas transplant performed at Monash in 2016.

Patients transplanted by state

The state of origin of the people receiving pancreas transplants at each transplant unit in Australia over time are shown in Table 2.2.

Table 2.2: State of residence of people receiving pancreas transplants over time

	State of residence, n (row %)																
Year	*NSW*		*VIC*		*QLD*		*WA*		*SA*		*TAS*		*ACT*		*NT*		***Total***
Westmead (NSW)																	
2023	9	(33)	0	(0)	10	(37)	6	(22)	0	(0)	0	(0)	2	(7)	0	(0)	27
2022	11	(34)	0	(0)	17	(53)	4	(13)	0	(0)	0	(0)	0	(0)	0	(0)	32
2021	9	(43)	0	(0)	11	(52)	1	(5)	0	(0)	0	(0)	0	(0)	0	(0)	21
Monash (VIC)																	
2023	0	(0)	9	(75)	0	(0)	0	(0)	1	(8)	2	(17)	0	(0)	0	(0)	12
2022	0	(0)	8	(67)	0	(0)	0	(0)	0	(0)	4	(33)	0	(0)	0	(0)	12
2021	2	(29)	5	(71)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	7
Royal Adelaide (SA)																	
2023	0	(0)	0	(0)	0	(0)	0	(0)	3	(100)	0	(0)	0	(0)	0	(0)	3
2022	0	(0)	0	(0)	0	(0)	0	(0)	1	(100)	0	(0)	0	(0)	0	(0)	1
2021	0	(0)	0	(0)	0	(0)	0	(0)	4	(100)	0	(0)	0	(0)	0	(0)	4
Auckland (NZ)																	
2023	-		-		-		-		-		-		-		-		3
2022	-		-		-		-		-		-		-		-		5
2021	-		-		-		-		-		-		-		-		6

Excludes 1 patient who received a liver-kidney-pancreas transplant, and 1 patient who received a liver-pancreas transplant, both at Austin Hospital in 2021.

Demographics of new pancreas transplant recipients

The characteristics of pancreas transplant recipients in 2023 and in previous years are shown in Table 2.3. The primary diagnosis causing end stage kidney disease of recipients during 2023 and historically was type I diabetes. Type 2 diabetes is not regarded as an indication for SPK in Australia and New Zealand, though there may be rare exceptions. Consequently, the number of people with type II diabetes accepted for pancreas transplantation was also small, and none received a transplant in 2023.

Table 2.3: Demographics and characteristics of pancreas transplant recipients

Patients, n (column %)	2023		1984-2022		Total	
Total, N (row %)	45	(4)	1,047	(95)	1,092	(100)
Age, median (IQI)	38	(35, 47)	39	(33, 44)	39	(34, 44.5)
15-34	11	(24)	312	(29)	323	(29)
35-44	19	(42)	479	(45)	498	(45)
45-49	5	(11)	173	(16)	178	(16)
50+	10	(22)	83	(7)	93	(8)
Sex						
Female	20	(44)	484	(46)	504	(46)
Male	25	(55)	563	(53)	588	(53)
Cause of kidney failure						
Diabetes type 1	45	(100)	574	(54)	619	(56)
Diabetes type 2	0	(0)	2	(<1)	2	(<1)
Haemolytic uraemic syndrome	0	(0)	1	(<1)	1	(<1)
Interstitial nephritis	0	(0)	1	(<1)	1	(<1)
Wegener's granulomatosis	0	(0)	1	(<1)	1	(<1)
Focal segmental glomerulosclerosis	0	(0)	1	(<1)	1	(<1)
No kidney disease	0	(0)	20	(1)	20	(1)
Not reported	0	(0)	447	(42)	447	(40)
Ethnicity[1]						
Aboriginal & Torres Strait Islander	1	(2)	3	(<1)	4	(<1)
Māori	0	(0)	10	(<1)	10	(<1)
Pacific peoples	0	(0)	12	(1)	12	(1)
White	38	(84)	980	(93)	1018	(93)
North Asian	0	(0)	5	(<1)	5	(<1)
South-East Asian	0	(0)	1	(<1)	1	(<1)
Southern and Central Asian	2	(4)	21	(2)	23	(2)
North African and Middle Eastern	3	(6)	14	(1)	17	(1)
Other	0	(0)	1	(<1)	1	(<1)
Not reported	1	(2)	0	(0)	1	(<1)
Blood group						
O	13	(28)	469	(44)	482	(44)
A	20	(44)	432	(41)	452	(41)
B	10	(22)	98	(9)	108	(9)
AB	2	(4)	48	(4)	50	(4)

[1] Ethnicity classified according to the Australian Bureau of Statistics standard classification, 2nd Edition; http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1249.02011. White includes Australian, New Zealander, European, and North American.

The type of pancreas transplants and the types of donors for transplants performed in 2022 is presented in Table 2.4, stratified by country and sex.

Table 2.4: Transplant and donor pathway in 2023 by country and donor sex

	Australia		New Zealand		Overall		
	Female	*Male*	*Female*	*Male*	*Female*	*Male*	**Total**
Simultaneous pancreas-kidney	21	19	1	2	22	21	43
Donation after brain death	21	17	1	2	22	19	41
Donation after circulatory death	0	2	0	0	0	2	2
Pancreas alone	0	0	0	0	0	0	0

Balance of donor and recipient characteristics in 2023

Cross tabulations of donor and recipient blood group and sex for people transplanted in 2023 are displayed in Table 2.5 and Table 2.6. These distributions remain similar to previous years.

Table 2.5: Cross tabulation of recipient and donor blood groups for 2023

Recipient blood group	Donor blood group, n (row %)								
	O		*A*		*B*		*AB*		**Total**
O	13	(100)	0	(0)	0	(0)	0	(0)	13
A	0	(0)	19	(100)	0	(0)	0	(0)	19
B	0	(0)	2	(20)	7	(70)	1	(10)	10
AB	0	(0)	2	(100)	0	(0)	0	(0)	2
Total	13	(29)	23	(52)	7	(15)	1	(2)	44

Excludes 1 blood group A recipient transplanted at Royal Adelaide where donor blood group was not reported

Table 2.6: Cross tabulation of recipient and donor sex for 2023

Recipient sex	Donor sex, n (row %)				Total
	Female		*Male*		
Female	10	(50)	10	(50)	20
Male	12	(50)	12	(50)	24
Total	22	(50)	22	(50)	44

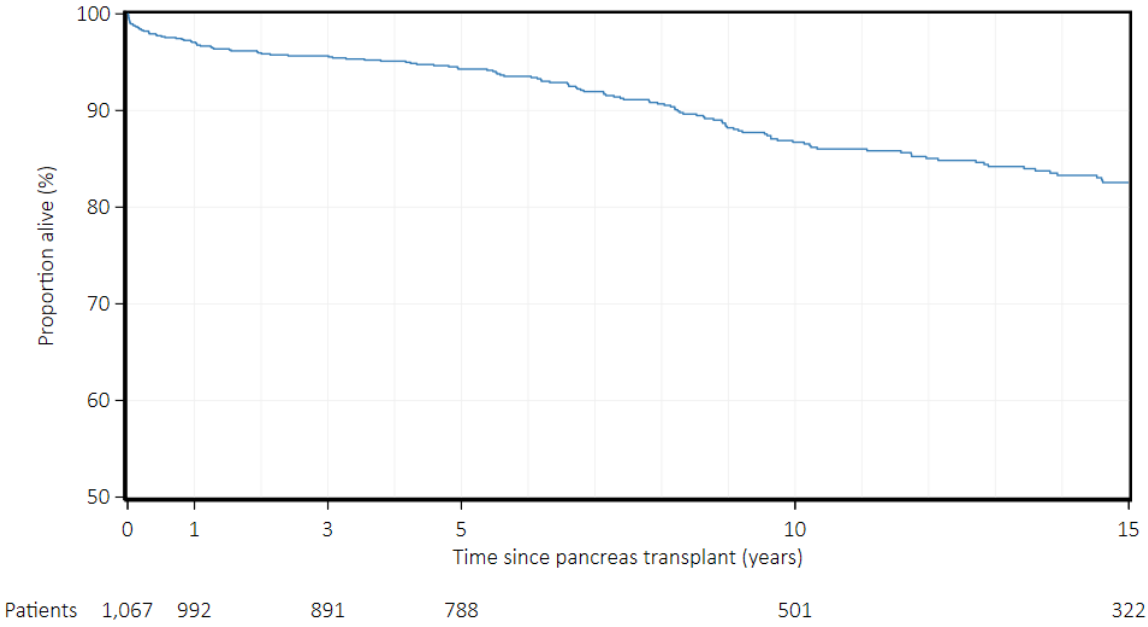
Excludes 1 male recipient transplanted at Royal Adelaide where donor sex was not reported

Patient survival

Patient survival is calculated from the date of transplantation until death. Patients still alive at the end of 2023 are censored. For people who had more than one transplant, their survival is calculated from the date of their first transplant. For these analyses we had survival data for 1,067 patients, 25 of whom have received a second pancreas transplant, for a total of 1,092 pancreas transplant procedures. Note that for the following survival plots survival proportion on the y-axes does not always start at zero; this is to better demonstrate some observed differences.

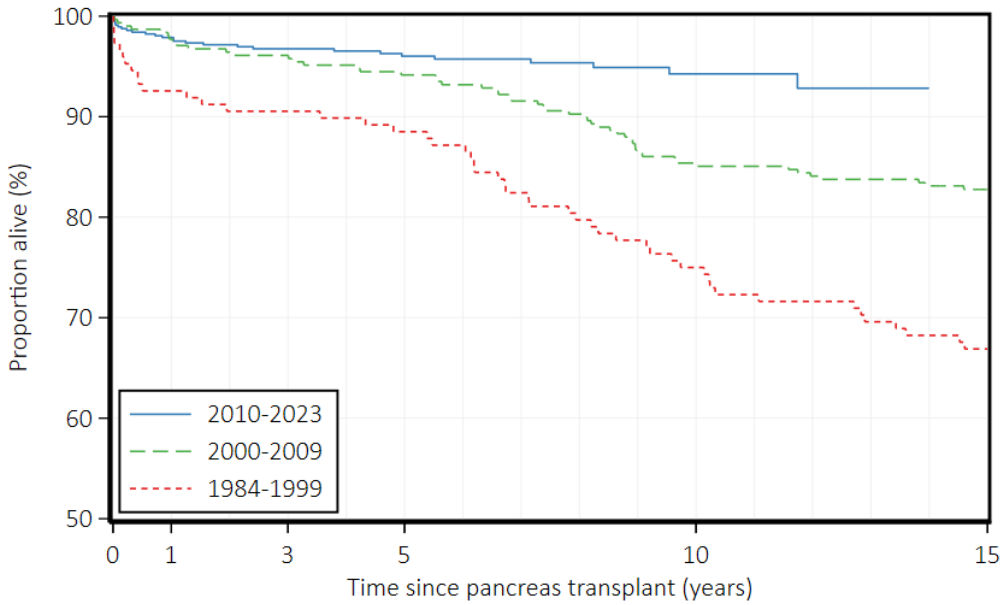
Figure 2.3 shows overall survival following pancreas transplant. There were 159 deaths over 11,852 years of follow-up. Survival at 1 year was 97.1%, at 5 years 94.3%, at 10 years 86.7%, and at 15 years 82.6%.

Figure 2.3: Patient survival after pancreas transplantation in Australia and New Zealand



Patient survival by era of transplantation is shown in Figure 2.4. Survival has improved over time ($p<0.001$). Survival at 1 year for people transplanted 1984-1999 was 92.6%; in recent years this has risen to 97.9%. Survival at 5 years was 88.5% for those transplanted 1984-1999, whereas for those transplanted in 2010 or later, 5-year survival was 96.0%.

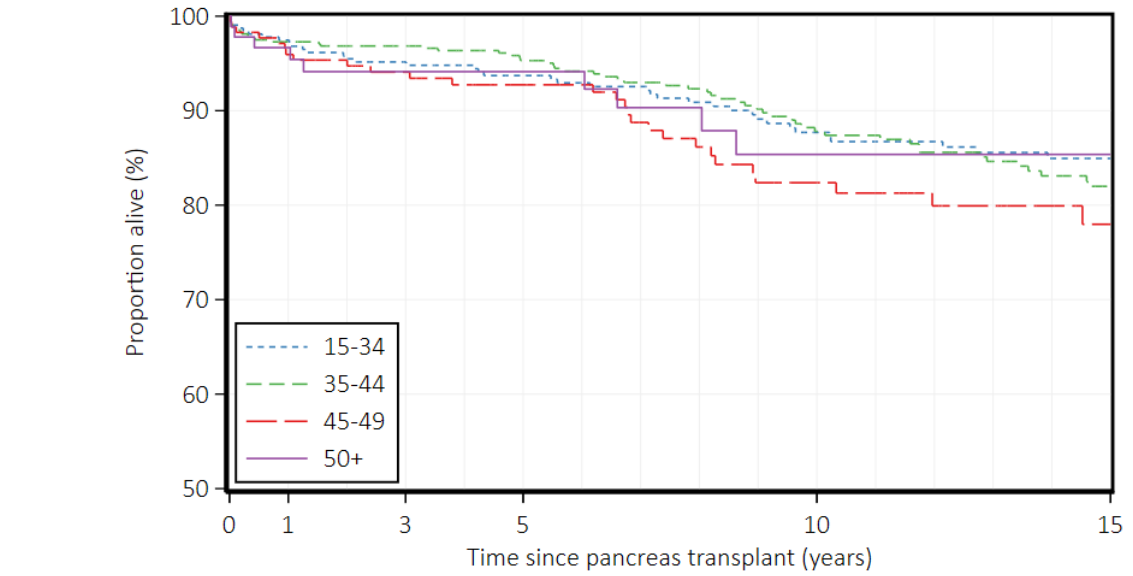
Figure 2.4: Patient survival by era of transplantation



Year of transplant						
2010-2023	566	554	461	367	128	0
2000-2009	308	301	296	290	262	223
1984-1999	148	137	134	131	111	99

Patient survival by age at transplantation is shown in Figure 2.5. Survival is generally similar across all age groups (p=0.2). There is slightly greater survival for those aged 50 and older, potentially because these recipients are a more highly selected population. However, even among those younger than 50, survival is still similar across age groups (p=0.09). Survival at 1 year was 97.5% for recipients aged 15-34, 97.3% for those aged 35-44, 95.9% for those aged 45-49, and 96.7% for those aged 50 or older. At 5 years, survival was 93.7% for those aged 15-34, 95.3% for those aged 35-44, 92.7% for those aged 45-49, and 94.1% for those aged 50 or older.

Figure 2.5: Patient survival by age at transplantation



Age at transplant						
15-34	319	300	273	251	182	126
35-44	482	450	412	356	214	143
45-49	175	163	144	126	78	38
50+	91	79	62	55	27	15

Pancreas survival

Pancreas transplant survival was calculated from the time of transplant until the time of permanent return to insulin therapy or pancreatectomy. We calculated both pancreas failure including death with a functioning pancreas and pancreas failure censored at death with a functioning transplant. For pancreas transplant survival we included all pancreas transplants undertaken, including those who had received a pancreas transplant more than once (25 patients received a second pancreas transplant). At the time of this report, we had survival records for 1,092 pancreas transplants.

Figure 2.6 shows pancreas transplant survival censored at death. There were 184 pancreas failures over 9,890 years of follow-up (excluding people who died with a functioning transplant). Overall, 1-year pancreas transplant survival was 89.7%, 5-year survival 85.8%, and 10-year survival 83.0%.

Figure 2.6: Pancreas transplant survival (censored at death)

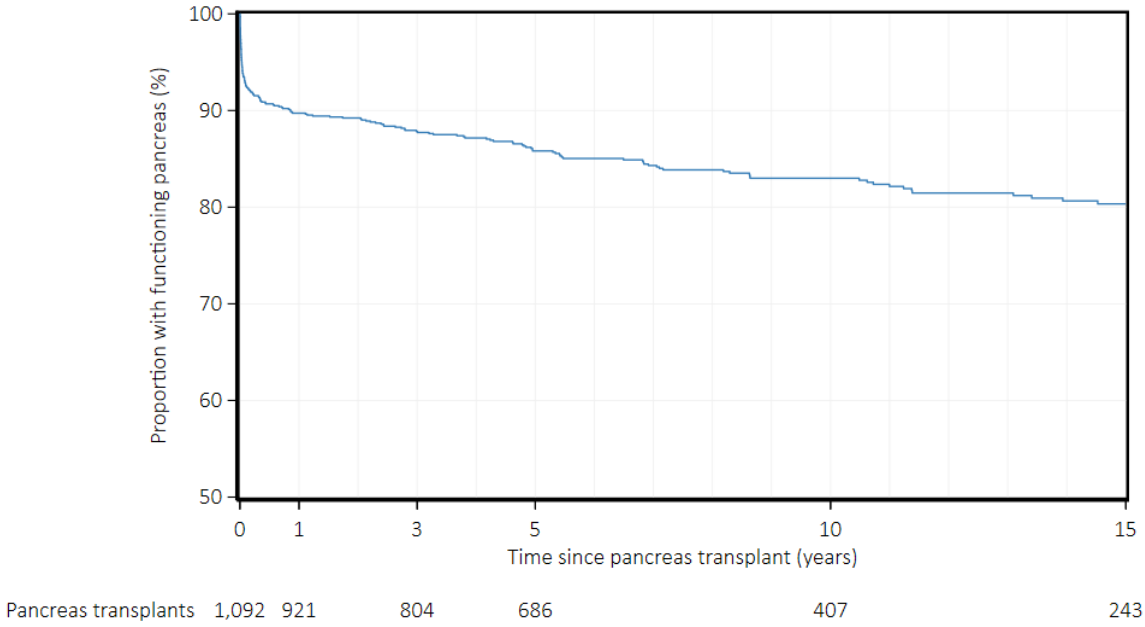
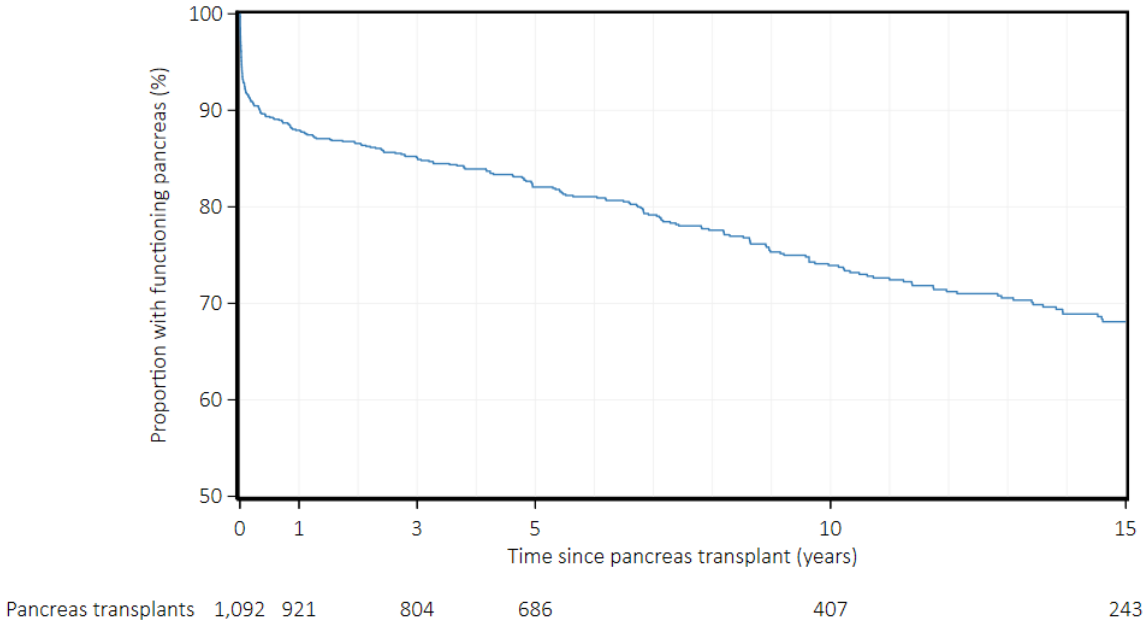


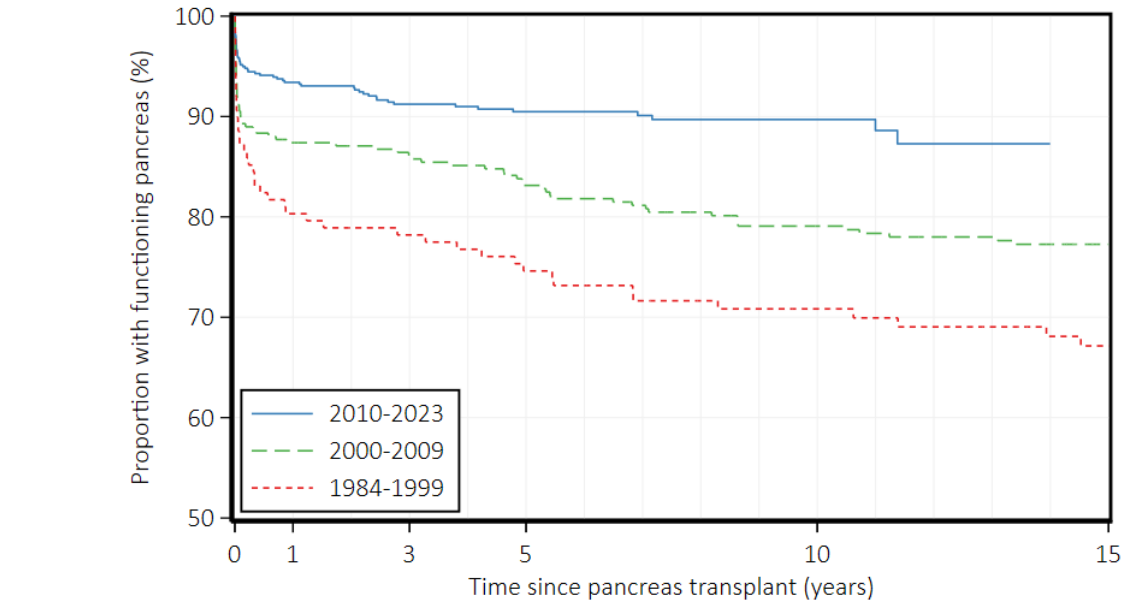
Figure 2.7 shows pancreas transplant survival including death with a functioning pancreas. Over the same observation time there were 298 recipients who either died or experienced pancreas transplant failure. Survival at 1, 5 and 10 years was 87.9%, 82.1% and 73.9% respectively.

Figure 2.7: Pancreas transplant survival (including death as transplant failure)



Survival of pancreas transplants has changed over time, as shown in Figure 2.8. Survival improved markedly over time (p<0.001). For those transplanted 1984-1999, 1-year pancreas transplant survival was 80.3%, and 5-year survival 74.6%. For those transplanted 2010-2023, 1-year survival was 93.4% and 5-year survival 90.5%.

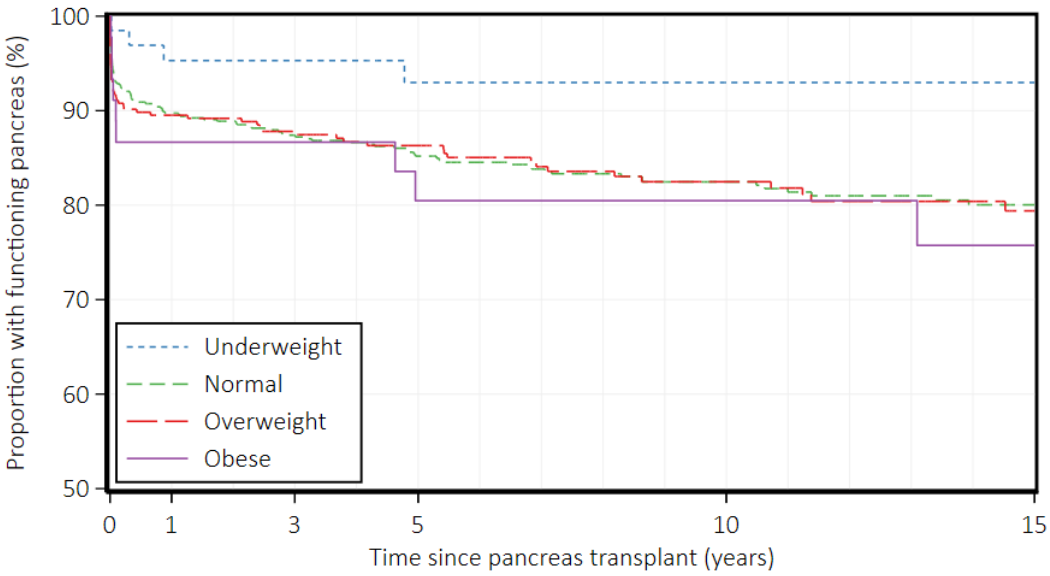
Figure 2.8: Pancreas transplant survival over time (censored at death)



Year of transplant						
2010-2023	579	532	428	332	105	0
2000-2009	318	274	266	251	219	173
1984-1999	150	115	110	103	83	70

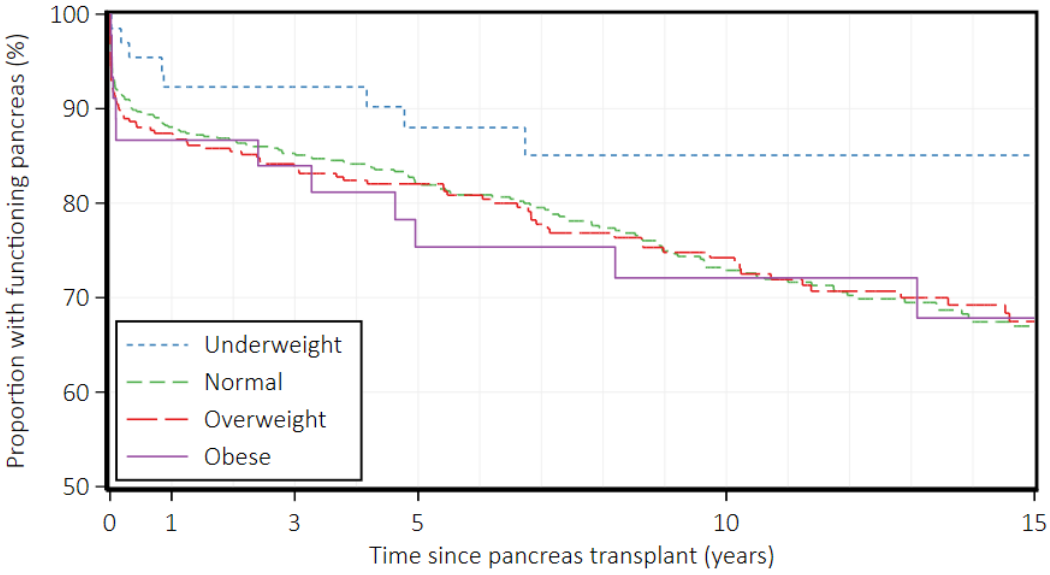
Pancreas transplant survival by donor BMI is presented in Figure 2.9 (censored at death) and Figure 2.10 (including death as pancreas failure). Most donors (59%) were normal weight (BMI 18.5-24.9). However, 6% were underweight (BMI <18.5), 30% were overweight (BMI 25-29.9) and 4% were obese (BMI 30+). While Figures 2.9 and 2.10 show slightly higher survival from underweight donors, there was no statistically significant association between donor BMI and pancreas survival either censored at death (p=0.3) or including death as pancreas failure (p=0.3). Pancreas transplant survival at 1 year (censored at death) was 89.7% for transplants where the donor was normal BMI, 95.3% for underweight donors, 89.5% for overweight donors, and 86.7% for obese donors. Including death as pancreas failure, pancreas survival at 1-year was 88.6% for normal BMI donors, 92.3% for underweight donors, 87.4% for overweight donors, and 86.7% for obese donors.

Figure 2.9: Pancreas transplant survival by donor BMI, censored at death



Donor BMI						
Underweight	67	58	46	40	19	15
Normal	632	533	464	404	240	144
Overweight	326	277	248	215	130	73
Obese	45	36	31	26	18	11

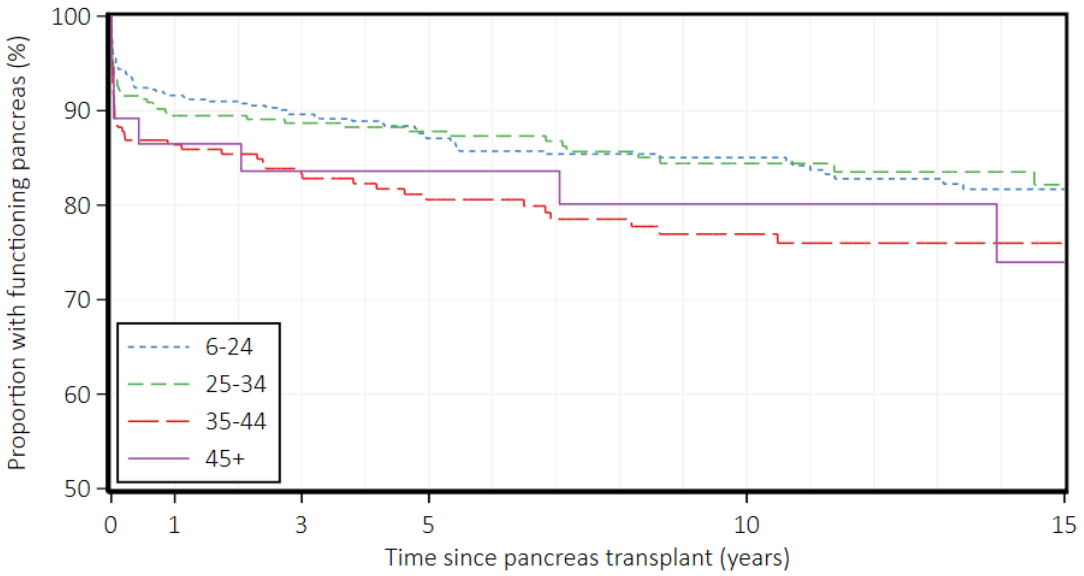
Figure 2.10: Pancreas transplant survival by donor BMI, including death as pancreas failure



Donor BMI						
Underweight	67	58	46	40	19	15
Normal	632	533	464	404	240	144
Overweight	326	277	248	215	130	73
Obese	45	36	31	26	18	11

Pancreas transplant survival by donor age is presented in Figure 2.11. The survival curves are similar across all donor age groups (p=0.1), although there appears to be some evidence of a survival advantage from younger donors. Pancreas transplant survival at 1 year was 91.6% for transplants from donors aged 6-24 years, 89.5% for donors aged 25-34 years, 86.4% for donors aged 35-44 years, and 86.5% for donors aged 45 years or older.

Figure 2.11: Pancreas transplant survival by donor age (censored at death)



Donor age						
6-24	518	446	384	331	204	133
25-34	298	252	221	187	105	57
35-44	224	179	160	140	80	42
45+	37	31	27	26	18	11

Pancreas transplant survival at 1 year and 5 years post-transplant, censored at death and stratified by country and era of transplantation is presented in Table 2.7.

Table 2.7: Pancreas transplant survival censored at death, by country and era

	Australia					New Zealand				
		1-year		*5-year*			*1-year*		*5-year*	
Year	Transplants	*n*	*%*	*n*	*%*	*Transplants*	*n*	*%*	*n*	*%*
2014-2019	278	253	93.1%	209	91.7%	23	22	95.7%	16	87.0%
2015-2020	282	264	95.4%	176	94.2%	24	24	100.0%	15	91.7%
2016-2021	271	256	96.3%	135	95.4%	27	26	96.3%	13	91.9%
2017-2022	264	252	97.0%	88	96.6%	28	27	96.4%	10	96.4%
2018-2023	257	209	96.8%	46	96.8%	27	23	96.3%	6	96.3%

Prevalence of functioning pancreas transplants

We calculated the point prevalence of people living in Australia and New Zealand who were alive with a functioning transplant on 31st December each year for the last five years (Table 2.8). The below numbers exclude people still alive, but whose pancreas transplant has failed. The number of functioning transplants is increasing over time, possibly because of increased survival of pancreas transplants while the number of new transplants performed remains relatively steady over time.

Table 2.8: People alive with a functioning pancreas transplant in Australia and New Zealand by year and residence, at year end

Location	2019	2020	2021	2022	2023
Australia	**594**	**640**	**677**	**722**	**761**
New South Wales	162	178	189	200	208
Victoria	184	198	208	216	225
Queensland	124	134	145	162	172
Western Australia	31	34	35	39	45
South Australia	49	52	56	58	60
Tasmania	28	28	28	31	33
Australian Capital Territory	12	12	12	12	14
Northern Territory	4	4	4	4	4
New Zealand	**47**	**48**	**53**	**57**	**59**
Total	**641**	**688**	**730**	**779**	**820**

Kidney transplant survival

Kidney transplant survival was calculated for those who received SPK transplants, from the time of transplantation until return to dialysis. We calculated both kidney failure including death with a functioning kidney and kidney failure censored at death with a functioning graft. For kidney transplant survival we included only SPK transplants and excluded PAK transplant recipients. We had survival records for 1,050 SPK transplants.

Figure 2.12 shows kidney survival censored at death. There were 90 kidney failures over 10,750 years of observation (excluding people who died with a functioning kidney transplant). Overall, 1-year kidney transplant survival was 97.5%, 5-year survival 95.2%, and 10-year survival 91.6%.

Figure 2.12: Kidney transplant survival for people receiving SPK transplants (censored at death)

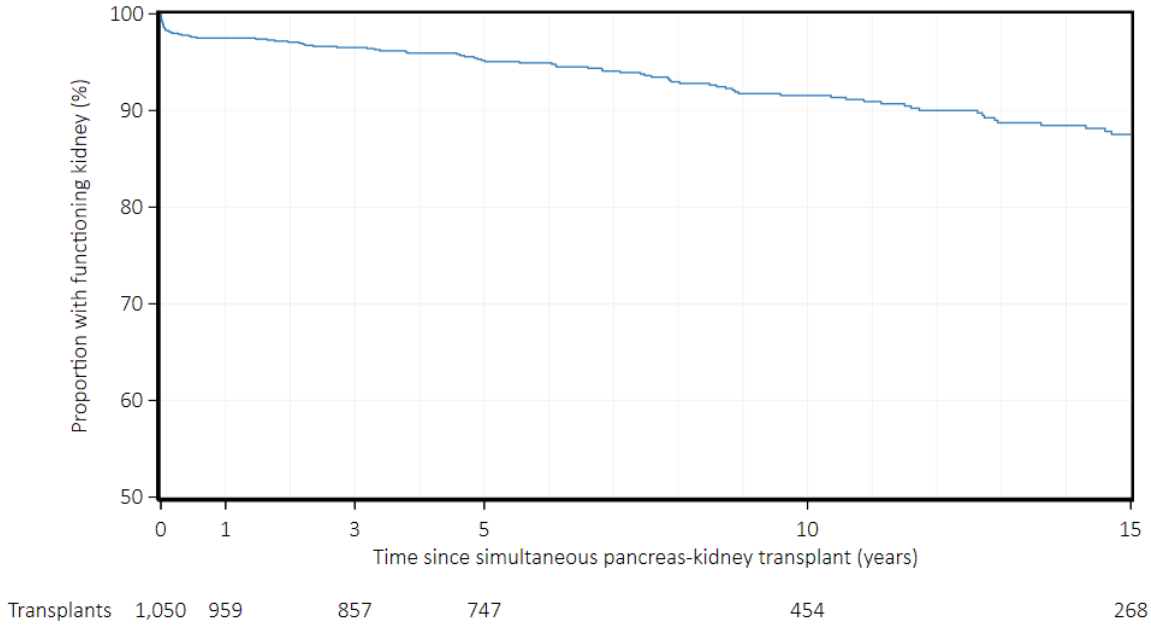
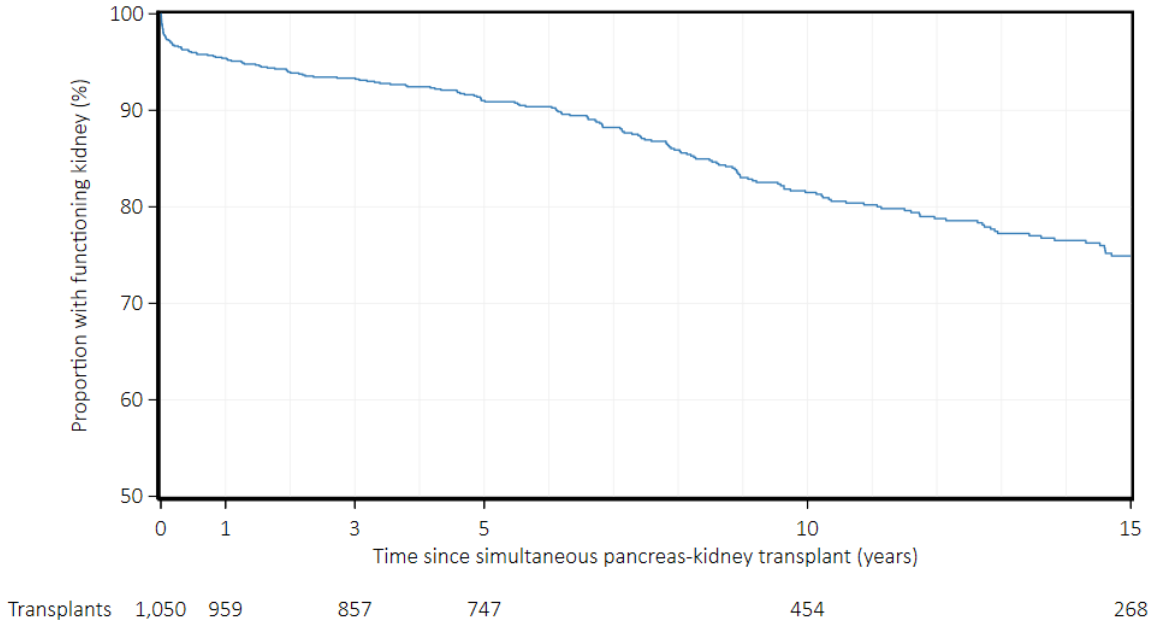


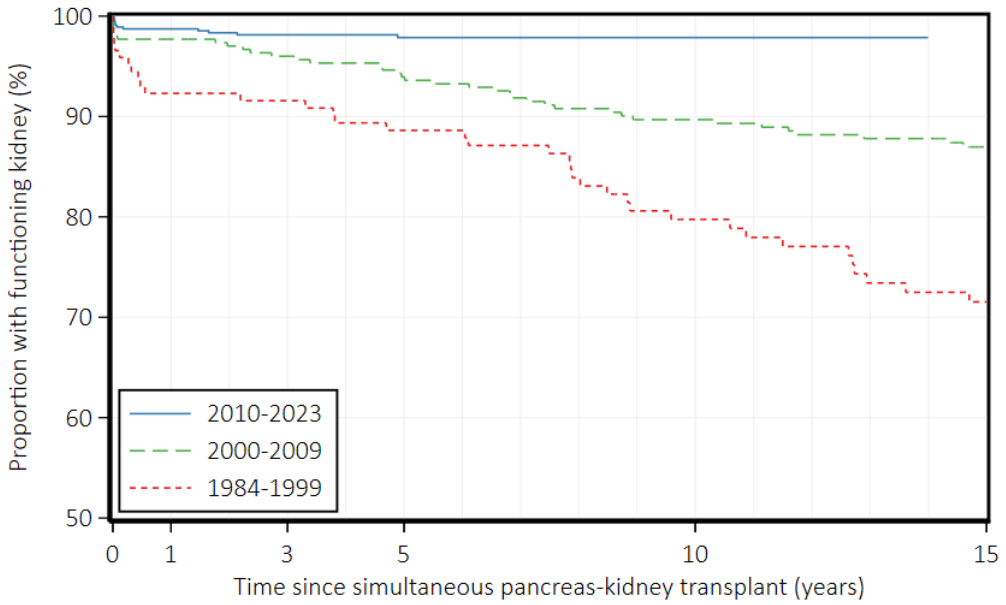
Figure 2.13 shows kidney survival including death with a functioning kidney. Over the same observation time there were 209 recipients who either died with kidney transplant function or experienced kidney transplant failure. Kidney transplant survival at 1, 5 and 10 years was 95.4%, 91.0% and 81.5% respectively.

Figure 2.13: Kidney transplant survival for people receiving SPK transplants (including death as kidney failure)



Kidney transplant survival has improved over time, with longer survival for those transplanted in more recent years (p<0.001). For those transplanted 1984-1999, kidney transplant survival was 92.3% at 1 year and 88.6% at 5 years, but was 98.7% at 1 year and 97.9% at 5 years for those transplanted 2010-2023 (Figure 2.14).

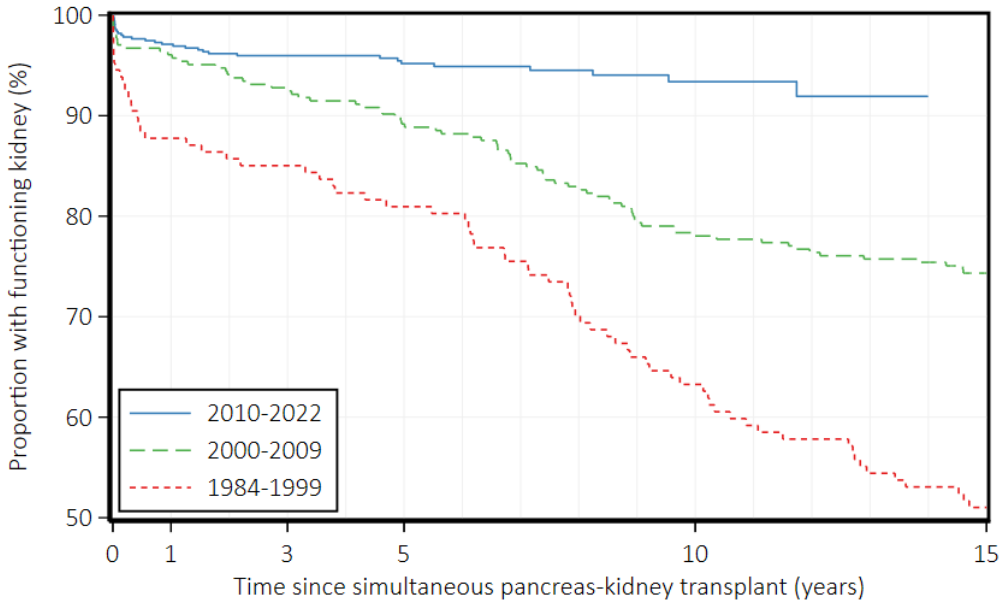
Figure 2.14: Kidney transplant survival for SPK recipients by era (censored at death)



Year of transplant						
2010-2023	553	537	449	356	123	0
2000-2009	305	293	283	272	238	193
1984-1999	147	129	125	119	93	75

The era effect was even stronger when considering kidney failure including death with kidney function (p<0.001). For those transplanted 1984-1999, survival was 87.8% at 1 year and 81.0% at 5 years but was 97.1% at 1 year and 95.2% at 5 years for those transplanted in 2010-2023 (Figure 2.15).

Figure 2.15: Kidney transplant survival for SPK recipients by era (including death as a kidney transplant failure)



Year of transplant						
2010-2022	553	537	449	356	123	0
2000-2009	305	293	283	272	238	193
1984-1999	147	129	125	119	93	75

Pancreas transplant operative data

Characteristics of the pancreas transplant operations for 2023, previous years, and overall are shown in Table 2.9 below.

Table 2.9: Descriptive characteristics of pancreas transplant operations

	2023		1984-2022		Overall	
Pancreas						
Pancreas transplants, n (row %)	45	(4)	1,047	(96)	1,092	(100)
Cold ischaemic time (hours)						
N (%)	44	(98)	860	(82)	904	(83)
Mean (SD)	9.0	(2.8)	10.8	(17.8)	10.7	(17.3)
Median (IQI)	9.0	(7.0, 11.0)	10.3	(7.8, 12.5)	10.2	(7.7, 12.4)
Anastomosis time (minutes)[1]						
N (%)	32	(71)	795	(76)	827	(76)
Mean (SD)	20.5	(4.3)	28.5	(8.6)	28.2	(8.6)
Median (IQI)	20.0	(18.0, 22.5)	29.0	(23.0, 34.0)	28.0	(23.0, 33.0)
Exocrine drainage						
Enteric, n (%)	45	(100)	811	(77)	856	(78)
Bladder, n (%)	0	(0)	164	(16)	164	(15)
Not reported, n (%)	0	(0)	72	(7)	72	(7)
Kidney						
SPK transplants, n (row %)	45	(4)	1,005	(96)	1,050	(100)
Cold ischaemic time (hours)						
N (%)	44	(98)	829	(79)	873	(80)
Mean (SD)	9.0	(2.8)	10.8	(18.1)	10.8	(17.6)
Median (IQI)	9.0	(7.0, 11.0)	10.3	(7.8, 12.5)	10.2	(7.7, 12.4)
Anastomosis time (minutes)[1]						
N (%)	32	(71)	765	(73)	797	(73)
Mean (SD)	20.5	(4.3)	28.6	(8.4)	28.3	(8.5)
Median (IQI)	20.0	(18.0, 22.5)	29.0	(23.0, 34.0)	28.0	(23.0, 33.0)
Kidney donor arteries						
None, n (%)	0	(0)	2	(<1)	2	(<1)
One, n (%)	25	(56)	739	(74)	764	(73)
Two, n (%)	5	(11)	84	(8)	89	(8)
Three, n (%)	0	(0)	5	(<1)	5	(<1)
Not reported, n (%)	15	(33)	175	(17)	190	(18)

SPK, simultaneous pancreas-kidney

[1] Anastomosis time is not routinely recorded in New Zealand

To investigate variations in total cold ischaemic time in Australia by donor state and distance travelled to the transplanting centre, Table 2.10 displays a cross tabulation of donor state of origin with transplanting centre.

Table 2.10: Comparison of cold ischaemic time of pancreas transplants by donor state, for Australian pancreas transplants 2023

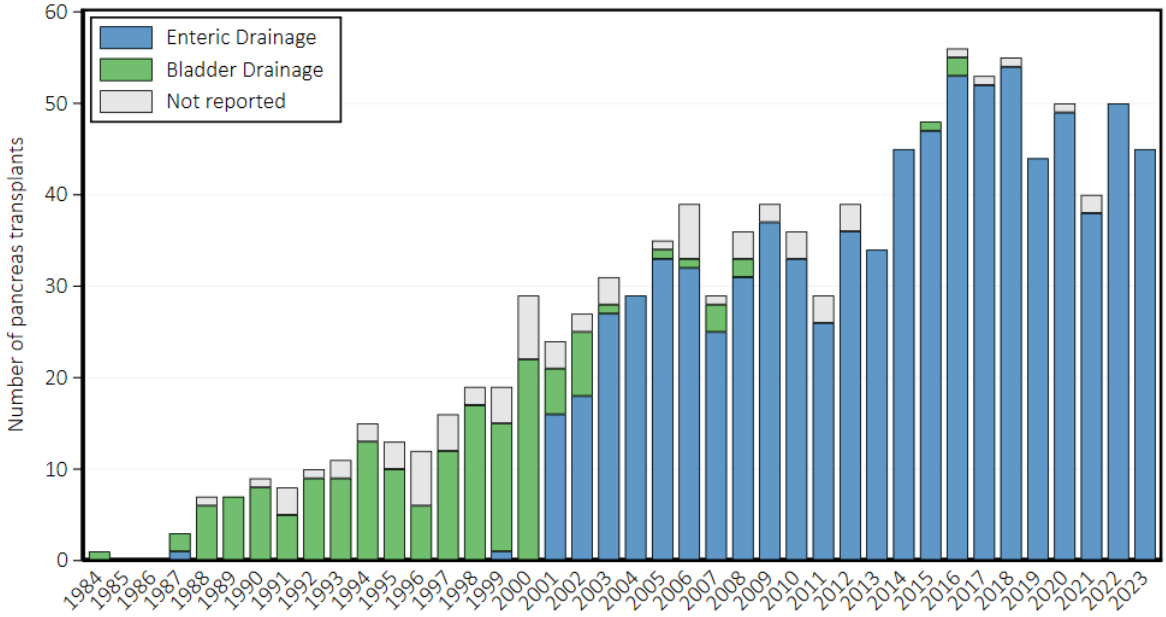
	Cold ischaemic time (hours)								
	Westmead (NSW)			***Monash (VIC)***			***Royal Adelaide (SA)***		
Donor state/territory	*N*	*Mean*	*(SD)*	*N*	*Mean*	*(SD)*	*N*	*Mean*	*(SD)*
New South Wales	12	6.8	(1.4)	2	13.5	(2.1)	0	-	
Victoria	1	10.0	-	6	6.8	(1.3)	0	-	
Queensland	8	11.3	(1.0)	1	9.5	-	0	-	
Western Australia	2	10.0	(2.8)	0	-		0	-	
South Australia	3	10.7	(1.5)	1	12.0	-	2	8	(1.4)
Tasmania	0	-		2	8.0	(1.4)	0	-	
Australian Capital Territory	1	6.0	-	0	-		0	-	
Northern Territory	0	-		0	-		0	-	
Total	27	8.9	(2.5)	12	8.8	(2.9)	2	8	(1.4)

Note: Data is incomplete for cold ischaemic times, hence data in this table may not be representative of all pancreas transplants. We are seeking to address data completeness.

Surgical technique

Exocrine drainage of the pancreas transplant has changed over time. Enteric drainage of the pancreas was first used in Australia and New Zealand during 2001. Figure 2.16 illustrates the number of transplants by pancreas duct management. Since 2001, most pancreas transplants have used enteric drainage of the pancreas duct.

Figure 2.16: Change in management of exocrine drainage of the pancreas over time



The site of donor vessel anastomoses onto the recipient vessels is dependent on many things, including but not limited to surgeon's preference, surgical ease of access, length and relative calibre of donor vessels. The sites of anastomosis for donor arteries and veins are displayed in Figure 2.17 and Figure 2.18 below.

Figure 2.17: Site of donor artery anastomosis onto recipient vessel

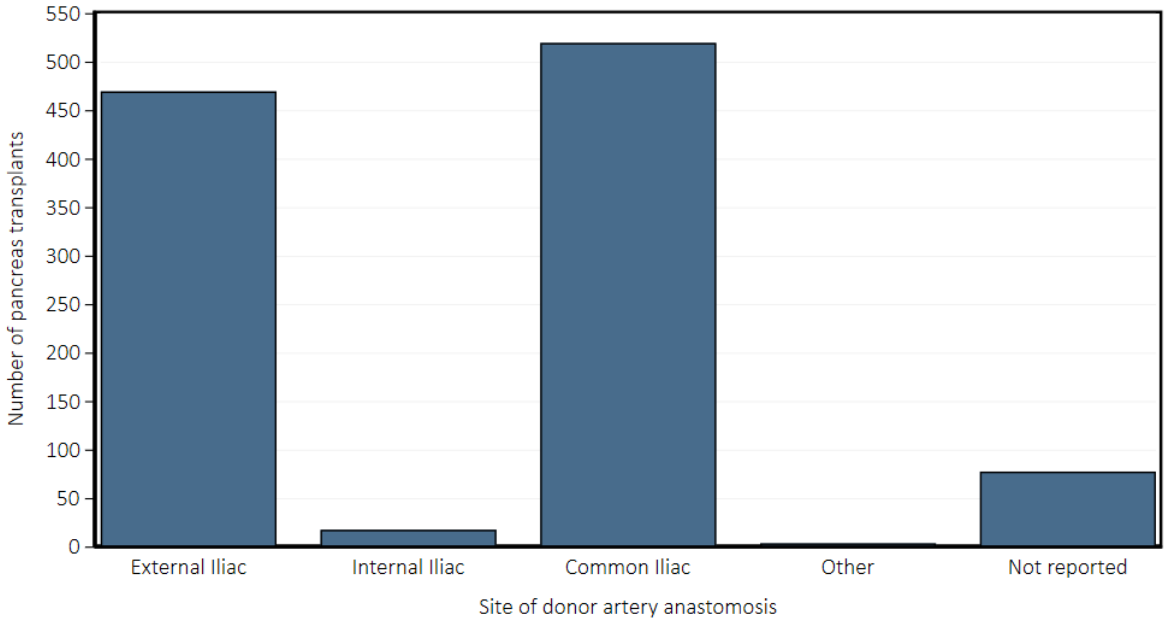
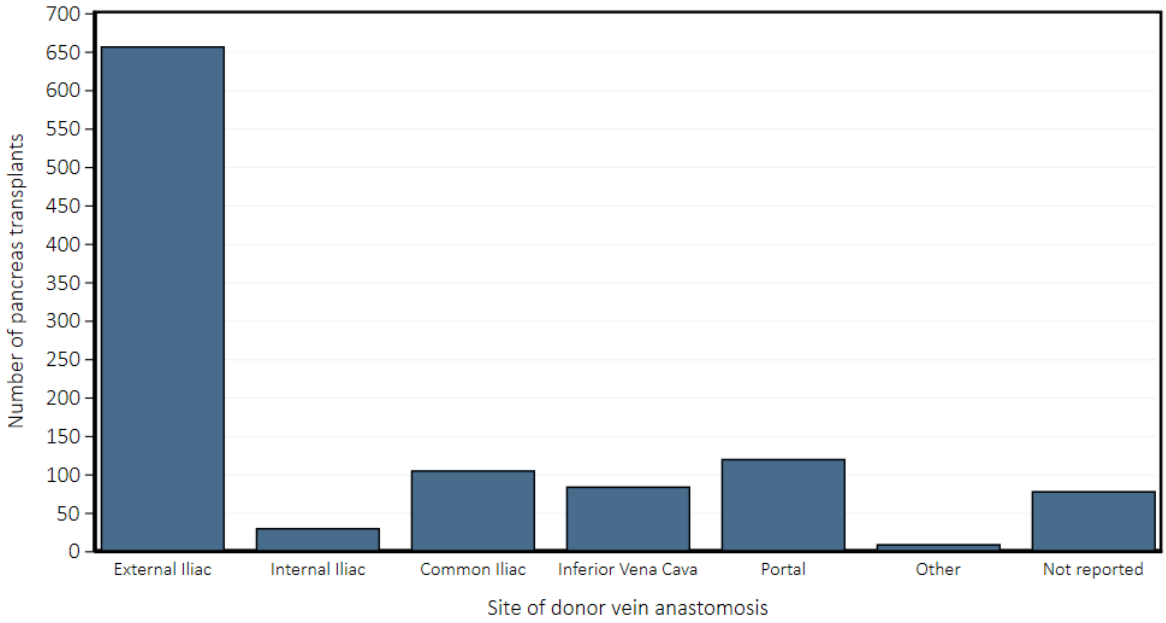


Figure 2.18: Site of donor vein anastomosis onto recipient vessel



The immunological matching of donor-recipient pairs is shown in Table 2.11, and the cytomegalovirus (CMV) and Epstein-Barr virus (EBV) matching is illustrated in Table 2.12.

Table 2.11: Immunological cross-matching of donor recipient pairs

	Donor-recipient pairs, n (column %)			
	Current		Peak	
Crossmatch				
T and B cell Negative	873	(80)	832	(76)
T-cell Positive	0	(0)	3	(<1)
B-cell Positive	7	(<1)	8	(<1)
DTT Negative	*3*	*(<1)*	*4*	*(<1)*
None	4	(<1)	8	(<1)
Not reported	208	(19)	241	(22)
Recipient Panel Reactive Antibodies (%)				
0-49	149	(14)	145	(13)
50+	3	(<1)	11	(1)
Not reported	940	(86)	936	(86)

Table 2.12: Infectious disease serology cross-tabulation of donor-recipient pairs

Recipient serology	Donor serology, n (column %)					
	Positive		*Negative*		*Not reported*	
Cytomegalovirus (CMV)						
Positive	211	(31)	74	(20)	5	(10)
Negative	35	(5)	20	(5)	3	(6)
Not reported	431	(64)	270	(74)	43	(84)
Epstein-Barr virus (EBV)						
Positive	254	(37)	32	(33)	42	(13)
Negative	13	(2)	1	(1)	4	(1)
Not reported	416	(61)	64	(66)	266	(85)

Chapter 3: Pancreas donors

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This chapter gives an overview of donors in 2023 and over time. Donor eligibility criteria guidelines are available in the TSANZ consensus statement https://tsanz.com.au/guidelinesethics-documents/tsanz-clinical-guidelines.htm, but briefly require donors to be over 25kg, and up to the age of 45, without known diabetes mellitus, or history of alcoholism, or pancreatic trauma. Donation after circulatory death may be considered up to the age of 35. As these are guidelines, there may be occasions when there is minor deviation from these criteria.

Donor BMI is perceived as impacting recipient outcomes. Obese donors are more likely to have a fatty pancreas, which results in more difficult surgery and increased postoperative complications, and suboptimal insulin secretion. Alcohol consumption is defined by a history of consumption of more than 40g/day. Table 3.1 describes pancreas donor characteristics in Australia and New Zealand to date.

Pancreas donor characteristics

Table 3.1: Demographics and characteristics of pancreas transplant donors

	Donors, n (column %)					
	2023		1984-2022		Overall	
Total (row %)	45	(4)	1,047	(96)	1,092	(100)
Age						
0-24	19	(42)	499	(48)	518	(47)
25-34	14	(31)	284	(27)	298	(27)
35-44	9	(20)	215	(21)	224	(21)
45+	2	(4)	35	(3)	37	(3)
Not reported	1	(2)	14	(1)	15	(1)
Sex						
Female	22	(49)	576	(55)	598	(55)
Male	22	(49)	460	(44)	482	(44)
Not reported	1	(2)	11	(1)	12	(1)
BMI (kg/m2)						
Underweight/Normal (<24.9)	30	(67)	669	(64)	699	(64)
Overweight (25-29.9)	9	(20)	317	(30)	326	(30)
Obese (30+)	3	(7)	42	(4)	45	(4)
Not reported	3	(7)	19	(2)	22	(2)
Pathway						
Brain death (DBD)	42	(93)	1,019	(97)	1,061	(97)
Circulatory death (DCD)	2	(4)	25	(2)	27	(2)
Not reported	1	(2)	3	(<1)	4	(<1)
Mode of death						
Cerebral hypoxia/ischaemia	19	(42)	178	(17)	197	(18)
Cerebral infarct	1	(2)	21	(2)	22	(2)
Intracranial haemorrhage	9	(20)	266	(25)	275	(25)
Non-neurological condition	0	(0)	195	(19)	195	(18)
Other neurological condition	1	(2)	22	(2)	23	(2)
Traumatic brain injury	13	(29)	350	(33)	363	(33)
Not reported	2	(4)	15	(1)	17	(2)
Blood group						
O	14	(31)	508	(49)	522	(48)
A	22	(49)	410	(39)	432	(40)
B	7	(16)	98	(9)	105	(10)
AB	1	(2)	26	(2)	27	(2)
Not reported	1	(2)	5	(<1)	6	(<1)
Alcohol consumption						
Never	32	(71)	766	(73)	798	(73)
Former	0	(0)	10	(<1)	10	(<1)
Current	10	(22)	94	(9)	104	(10)
Not reported	3	(7)	177	(17)	180	(16)
Smoking history						
Never	30	(67)	621	(59)	651	(60)
Former	4	(9)	45	(4)	49	(4)
Current	8	(18)	264	(25)	272	(25)
Not reported	3	(7)	117	(11)	120	(11)
Kidney biopsy						
Not performed	13	(29)	759	(72)	772	(71)
Performed	24	(53)	250	(24)	274	(25)
Not reported	8	(18)	38	(4)	46	(4)

	Donors, n (column %)					
	2023		1984-2022		Overall	
Cytomegalovirus (CMV)						
Positive	32	(71)	645	(62)	677	(62)
Negative	11	(24)	353	(34)	364	(33)
Not reported	2	(4)	49	(5)	51	(5)
Epstein-Barr virus (EBV)						
Positive	37	(82)	646	(62)	683	(63)
Negative	3	(7)	94	(9)	97	(9)
Not reported	5	(11)	307	(29)	312	(29)

The distribution of donor state/territory by transplanting unit for Australian pancreas donors is shown in Table 3.2.

Table 3.2: Distribution of state of residence of pancreas donors in Australia over time, by national pancreas transplant unit

State	Donors, n (column %)									
	2023		***2022***		***2021***		***2020***		***2019***	
Westmead (NSW)	27		32		21		31		27	
NSW	12	(44)	12	(38)	7	(33)	15	(48)	14	(52)
VIC	1	(4)	2	(6)	1	(5)	1	(3)	3	(11)
QLD	8	(30)	7	(22)	8	(38)	8	(26)	4	(15)
WA	2	(7)	7	(22)	2	(10)	5	(16)	4	(15)
SA	3	(11)	2	(6)	2	(10)	0	(0)	1	(4)
TAS	0	(0)	0	(0)	0	(0)	1	(3)	0	(0)
ACT	1	(4)	2	(6)	1	(5)	1	(3)	1	(4)
NT	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
Monash (VIC)	12		12		7		14		10	
NSW	2	(17)	0	(0)	1	(14)	0	(0)	0	(0)
VIC	6	(50)	10	(83)	5	(71)	7	(50)	9	(90)
QLD	1	(8)	0	(0)	0	(0)	1	(7)	0	(0)
WA	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
SA	1	(8)	0	(0)	1	(14)	1	(7)	1	(10)
TAS	2	(17)	2	(17)	0	(0)	4	(29)	0	(0)
ACT	0	(0)	0	(0)	0	(0)	1	(7)	0	(0)
NT	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
Royal Adelaide (SA)	3		1		4		2		3	
NSW	1	(33)	0	(0)	0	(0)	0	(0)	0	(0)
VIC	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
QLD	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
WA	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
SA	2	(67)	1	(100)	4	(100)	2	(100)	2	(67)
TAS	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
ACT	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
NT	0	(0)	0	(0)	0	(0)	0	(0)	1	(33)

Donor and recipient state/territory

Table 3.3 shows the distribution of donor organs according to state of origin, cross-tabulated with the state of origin of the recipients who received those organs, for 2023, and from inception of the pancreas program. Note, these tables include Australian donors and recipients only.

Table 3.3: Number of pancreas transplants by donor and recipient state of residence in Australia for 2023 only and all years

	Donor state, n (row %)									
Recipient state	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	Not reported	**Total**
2023 only	15	7	9	2	6	2	1	0	0	42
NSW	4	1	2	0	1	0	1	0	0	9
VIC	2	4	1	0	1	1	0	0	0	9
QLD	5	0	3	1	1	0	0	0	0	10
WA	3	0	3	0	0	0	0	0	0	6
SA	1	1	0	0	2	0	0	0	0	4
TAS	0	1	0	0	0	1	0	0	0	2
ACT	0	0	0	1	1	0	0	0	0	2
NT	0	0	0	0	0	0	0	0	0	0
1984-2023	367	283	110	75	92	32	44	3	1	1,007
NSW	175	15	38	23	24	5	20	0	0	300
VIC	24	214	4	6	9	21	3	0	1	282
QLD	92	12	45	22	26	0	13	1	0	211
WA	25	5	16	15	5	1	3	0	0	70
SA	18	21	3	5	23	1	5	2	0	78
TAS	16	15	1	0	1	4	0	0	0	37
ACT	16	1	3	2	3	0	0	0	0	25
NT	1	0	0	2	1	0	0	0	0	4

Appendices

Previous ANZIPTR Reports, other abstracts, and publications

We have not been notified of any publications or abstracts using ANZIPTR data within the past year.