

**Manchester Royal Infirmary
Renal & Pancreas Transplant Unit**

2011 / 2012 Activity Annual Report

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Copies of this report are freely available on request both in paper and electronic (pdf) format on contacting Vicki Bowman, Renal Transplant Data & Audit Manager, as above.

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Abbreviations

Abbreviation	Full	Explanation
DBD	Donation after brain death (Heartbeating Donor)	Referring to a donor with confirmed <i>brain death</i> .
DCD	Donation after Cardiac Death (Non Heartbeating Donor)	Referring to a donor with confirmed <i>cardiac death</i>
DBD Kidney	Donation after brain stem death – kidney	Kidney transplant from a donor with confirmed <i>brain death</i>
DCD Kidney	Donation after cardiac death – kidney	Kidney transplant from a donor with confirmed <i>cardiac death</i>
Living Donor	Living donor	Kidney transplant from a living donor.
DBD SPK	Donation after brain stem death – simultaneous pancreas & kidney	Simultaneous pancreas and kidney transplant from a donor with confirmed <i>brain death</i>
DCD SPK	Donation after cardiac death – simultaneous pancreas & kidney	Simultaneous pancreas and kidney transplant from a donor with confirmed <i>cardiac death</i>
DBD PAK	Donation after brain stem death – pancreas after kidney	Pancreas transplant from a donor with confirmed <i>brain death</i> with the recipient having previously received a kidney transplant
DCD PAK	Donation after cardiac death – pancreas after kidney	Pancreas transplant from a donor with confirmed <i>cardiac death</i> with the recipient having previously received a kidney transplant
DBD PTA	Donation after brain stem death – pancreas transplant alone	Pancreas alone transplant from a donor with confirmed <i>brain death</i>
DCD PTA	Donation after cardiac death – pancreas transplant alone	Pancreas Alone transplant from a donor with confirmed <i>cardiac death</i>
DBD SHK	Donation after brain stem death – simultaneous heart & kidney	Simultaneous heart and kidney transplant from a donor with confirmed <i>brain death</i>
Islets Cell Tx	Pancreatic islet transplantation	Transplantation of insulin-producing beta cells of the Islets of Langerhans extracted from deceased donor pancreata

Definitions

Adult recipient	A person receiving a transplant who is aged 19 years or over on the date of transplant.
Paediatric recipient	A person receiving a transplant who is aged under 19 years on the date of transplant.

Introduction & Acknowledgments

2011/12 was a record year for the transplant unit, with more transplants performed than any previous year since the inception of the unit.

The compilers of this report acknowledge the contributions from each and every member of the transplant team: Medical, Ward particularly Nursing, Outpatient staff, SNODs, Recipient Coordinators, Live donor coordinators, Specialist Nurses, Secretarial, Administrative, Clerical and Transplantation Laboratory staff of all grades, and others from associated dialysis centres who have contributed to make this another successful year.

Special thanks must also go to living donors and the families of deceased donors, without whom no transplants would have been possible.

All Transplants, 2011/12

Summary Table – by Financial Year, 2008/09 – 2011/12

	2008/09	2009/10	2010/11	2011/12
All transplants	178 [+ 11.9%]	210 [+18.0%]	207 [-1.4%]	233 [+12.6%]
Paediatric recipient transplants (<19 years)	17 (9.6%)	15 (7.1%)	18 (8.7%)	13 (5.6%)
All kidney alone transplants	147 (82.6%)	182 (86.7%)	181 (87.4%)	203 (87.1%)
Pancreas alone or pancreas and kidney transplants	31 (17.4%)	27 (12.9%)	25 (12.1%)	28 (12.0%)
Islet cell transplantation	0	1 (0.5%)	1 (0.5%)	2 (0.9%)
All DBD transplants	101 (56.7%)	86 (41.0%)	109 (52.7%)	109 (46.8%)
All DCD transplants*	23 (12.9%)	53 (25.2%)	19 (9.2%)	48 (20.6%)
Living donor transplants - ABO compatible	54 (30.3%)	68 (32.4%)	73 (35.3%)	71 (30.5%)
Living donor transplants – ABO incompatible	0	2 (1.0%)	5 (2.4%)	5 (2.2%)

*In 2010/11 both kidneys from a DCD donor were implanted in the same recipient. This is referred to throughout this report as a single transplant.

Summary Table – by Calendar Year, 2008 - 2011

	2008	2009	2010	2011
All transplants	184 [+11.5%]	173 [-6.0%]	212 [+22.5%]	232 [+9.4%]
Paediatric recipient transplants (<19 years)	16 (8.7%)	13 (7.5%)	16 (7.5%)	18 (7.8%)
All kidney alone transplants	151 (82.1%)	146 (84.4%)	191 (90.1%)	200 (86.2%)
Pancreas alone or pancreas and kidney transplants	33 (17.9%)	27 (15.6%)	20 (9.4%)	30 (12.9%)
Islet cell transplantation	0	0	1 (0.4%)	2 (0.9%)
All DBD transplants	105 (57.1%)	77 (44.5%)	100 (47.2%)	116 (50.0%)
All DCD transplants	25 (13.6%)	38 (22.0%)	33 (15.6%)	37 (16.0%)
Living donor transplants – ABO compatible	54 (29.3%)	56 (32.4%)	75 (35.4%)	73 (31.4%)
Living donor transplants – ABO incompatible	0	2 (1.1%)	3 (1.4%)	6 (2.6%)

() indicates % of total

[] indicates % change from previous year

All transplants by type

All transplants 2011/12 by quarter, by type

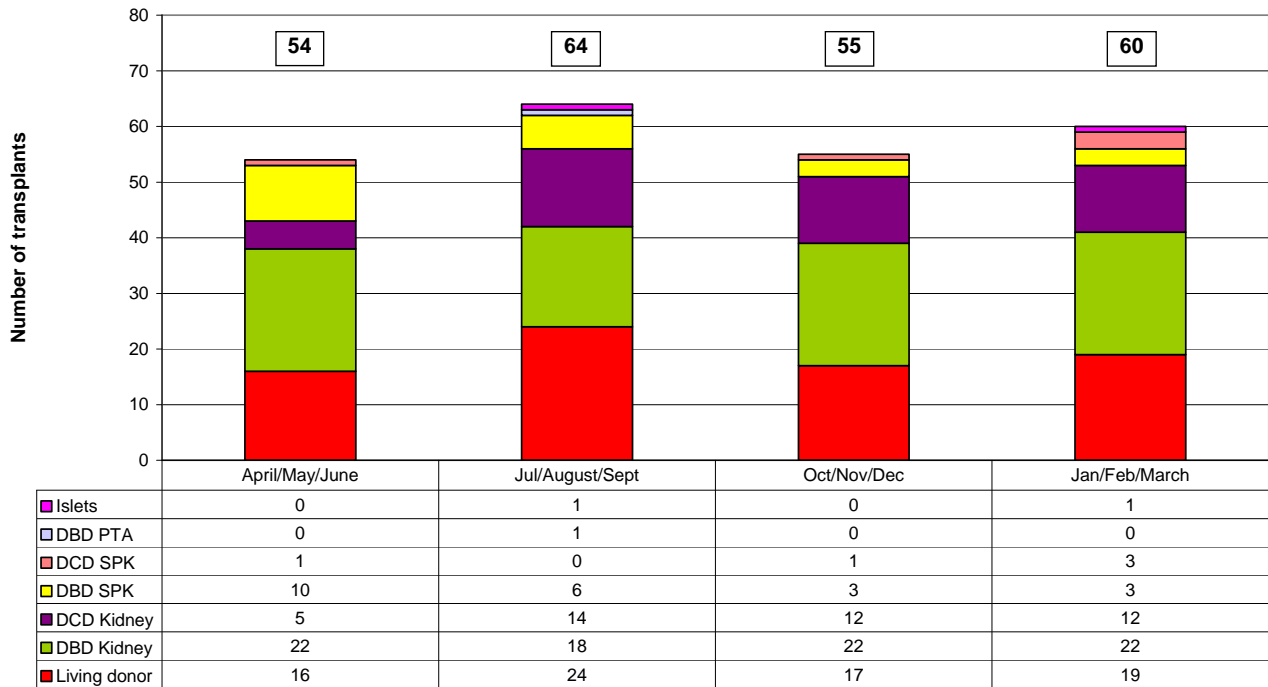


Fig.1: A summary of the year’s activity by transplant type.

Kidney and Pancreas transplants 2011/12 by type

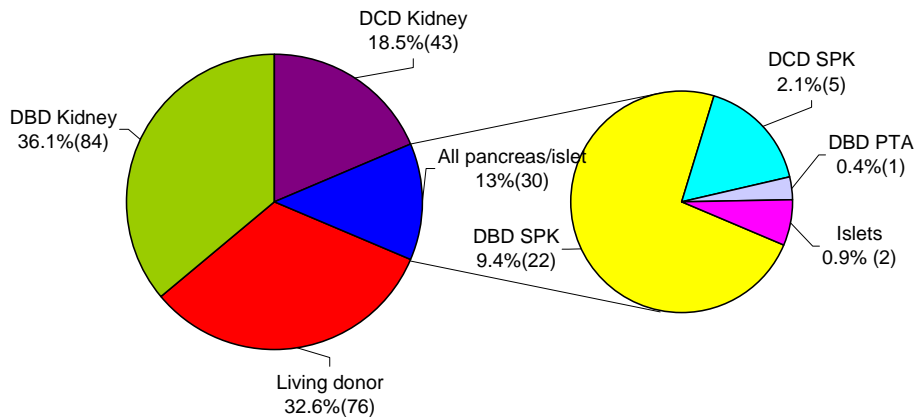


Fig 2: Kidney and pancreas transplant activity 2011/12 showing relative proportion of activity by transplant type. The “magnified” part of the pie chart details pancreas transplant activity.

Kidney alone transplants

Adult recipient kidney alone transplants by type, 2009/10 - 2011/12

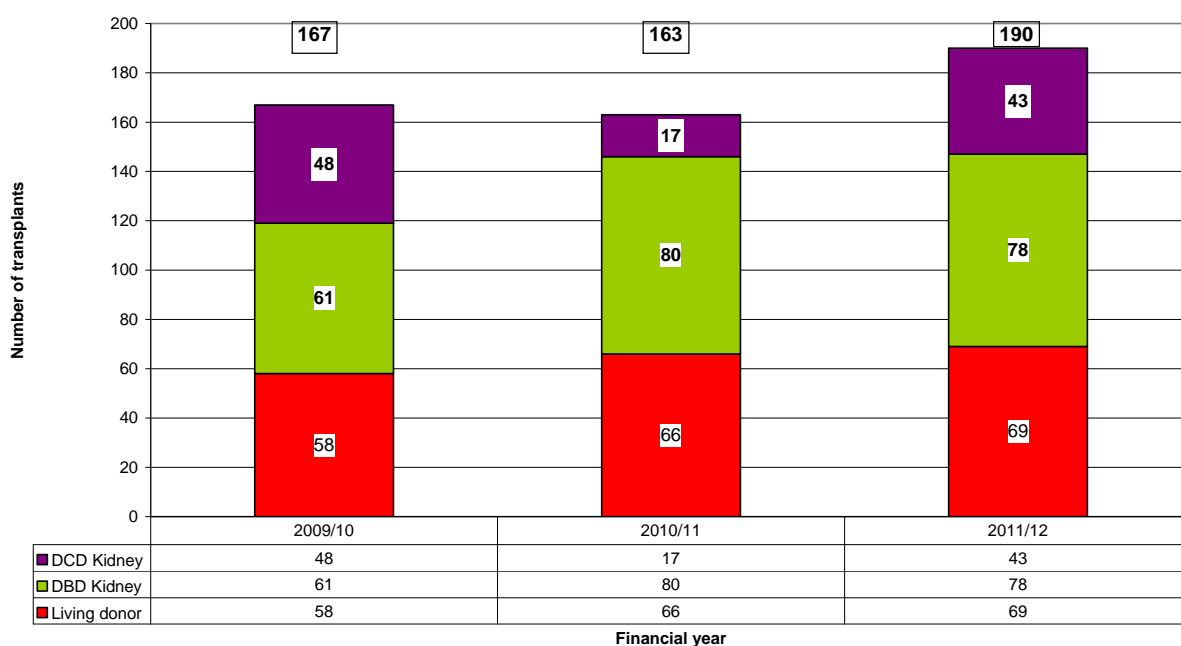


Fig 3: A summary of adult kidney alone transplant activity over the last 3 financial years.

Pancreas transplants

Adult pancreas/kidney and pancreas alone transplants, 2009/10 - 2011/12

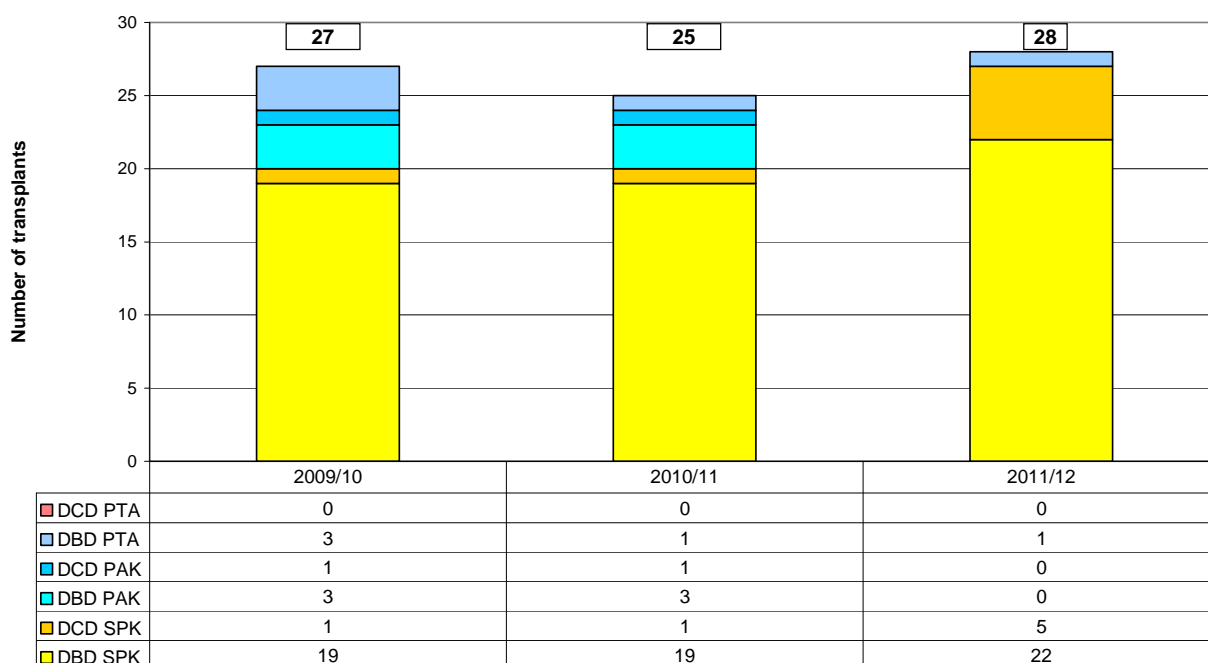


Fig 4: A summary of pancreas transplant activity over the last 3 financial years.

It is of note that a national allocation scheme for pancreas from DBD and DCD was introduced in December 2010.

Paediatric Transplants*

Paediatric transplants by type, 2009/10 - 2011/12

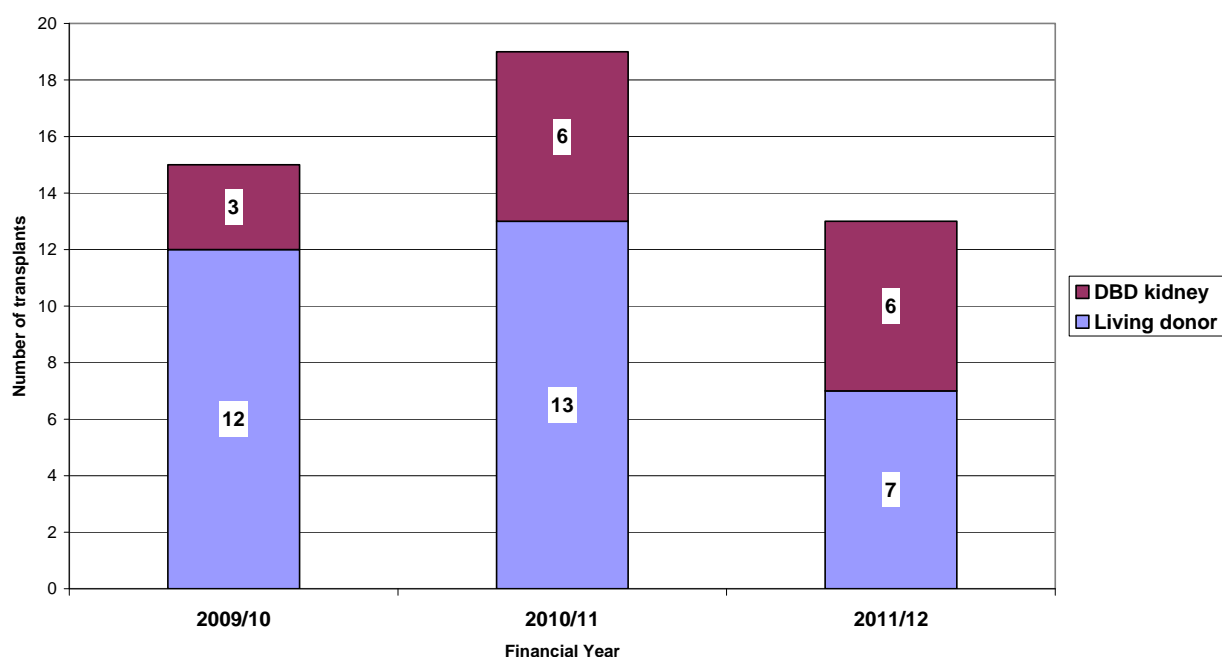


Fig 5: Paediatric kidney transplants over the last 3 financial years by type

Paediatric Recipients – Referral Origin

	2009/10	2010/11	2011/12
RMCH	8 (53%)	14 (73.7%)	9 (64.3%)
Alder Hey	5 (33%)	4 (21%)	1 (7.1%)
Adult Services	1 (7%)	1 (5.3%)	2 (14.3%)
Out of Region	1 (7%)	0	2 (14.3%)
TOTAL	15	19	13

* One patient aged 19 transplanted in 2010/11 is included as a paediatric transplant on this page for purposes of analysis. This patient was treated on a paediatric ward by the paediatric transplant team. This differs from the figures in the summary table at the beginning of this report which was calculated solely on age

Adult Living Donor Transplantation

Adult living donor transplants by quarter 2009/10 - 2011/12

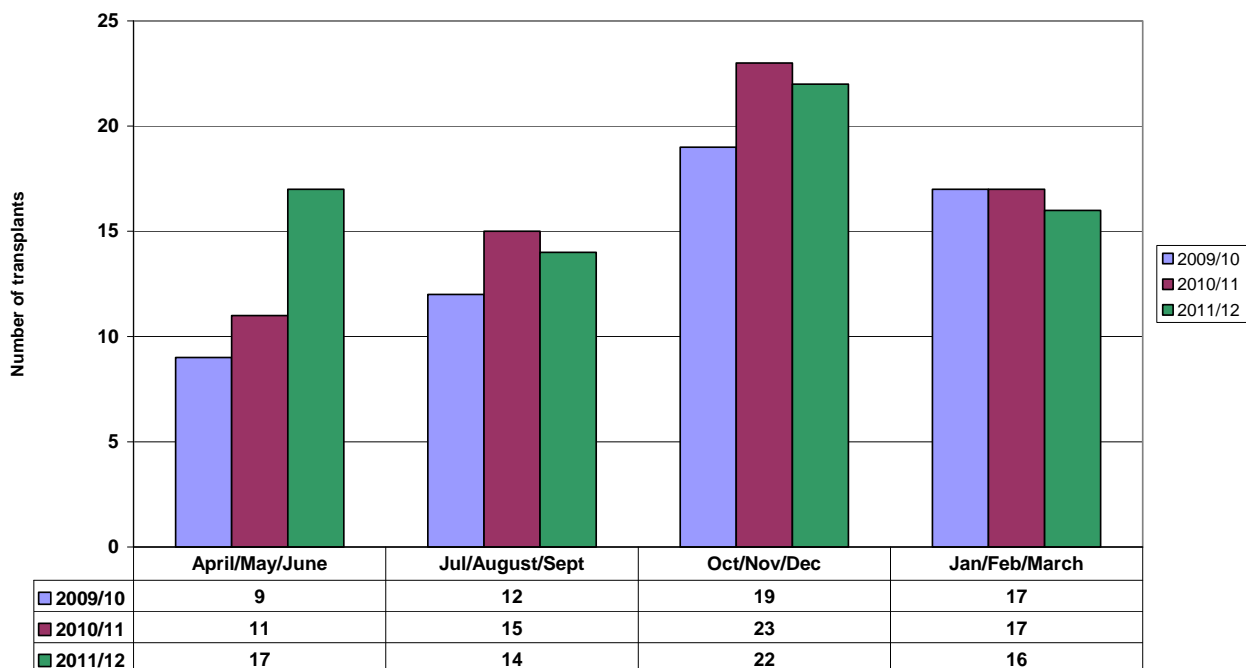


Fig 6: Adult living donor transplantation in 2011/12 by quarter.

Donor Relation

Adult living donor transplants 2011/12 by donor relation

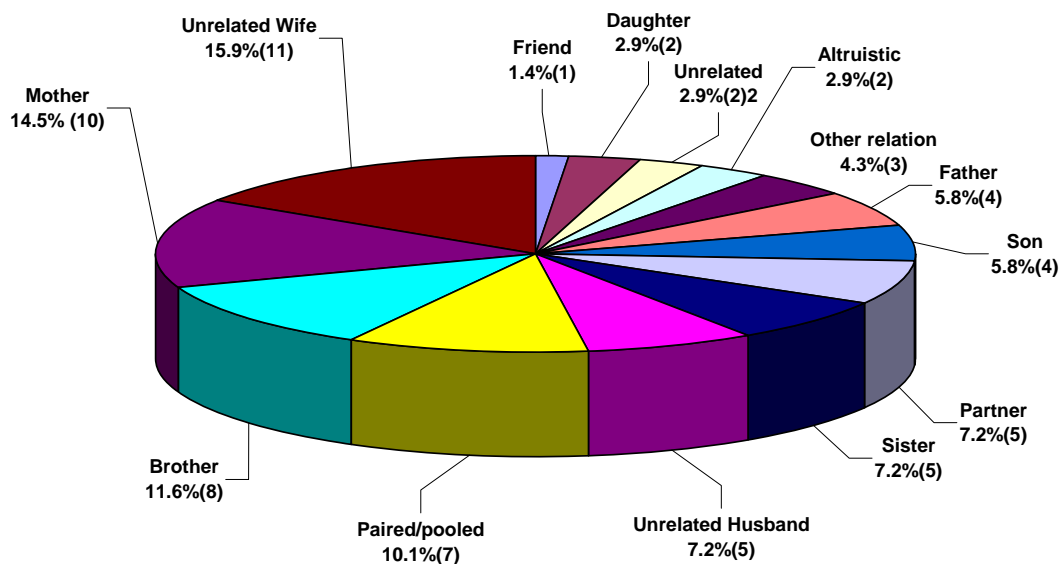


Fig 7: An illustration of relationships of living donors to recipients, 2011/12.

Pre-emptive Transplantation

Referral Network Sector	Pre-Transplant RRT					2011/12 Total
	Haemodialysis	Peritoneal Dialysis	Pre-emptive transplants			
			2009/10	2010/11	2011/12	
GM East	37	6	12 (23.5%)	15 (23.4%)	14 (24.6%)	57
GM West	39	15	20 (28.6%)	17 (32.7%)	17 (23.9%)	71
Cumbria & Lancashire	35	13	4 (11.1%)	10 (25.6%)	6 (11.1%)	54
ECR	6	2	2 (20%)	0	0	8
Total	117	36	38 (22.8%)	42 (25.8%)	37 (19.5%)	190

() indicates proportion of patients transplanted pre-emptively

Pre-transplant renal replacement therapy, adult kidney alone recipients transplanted
2009/10 - 2011/12

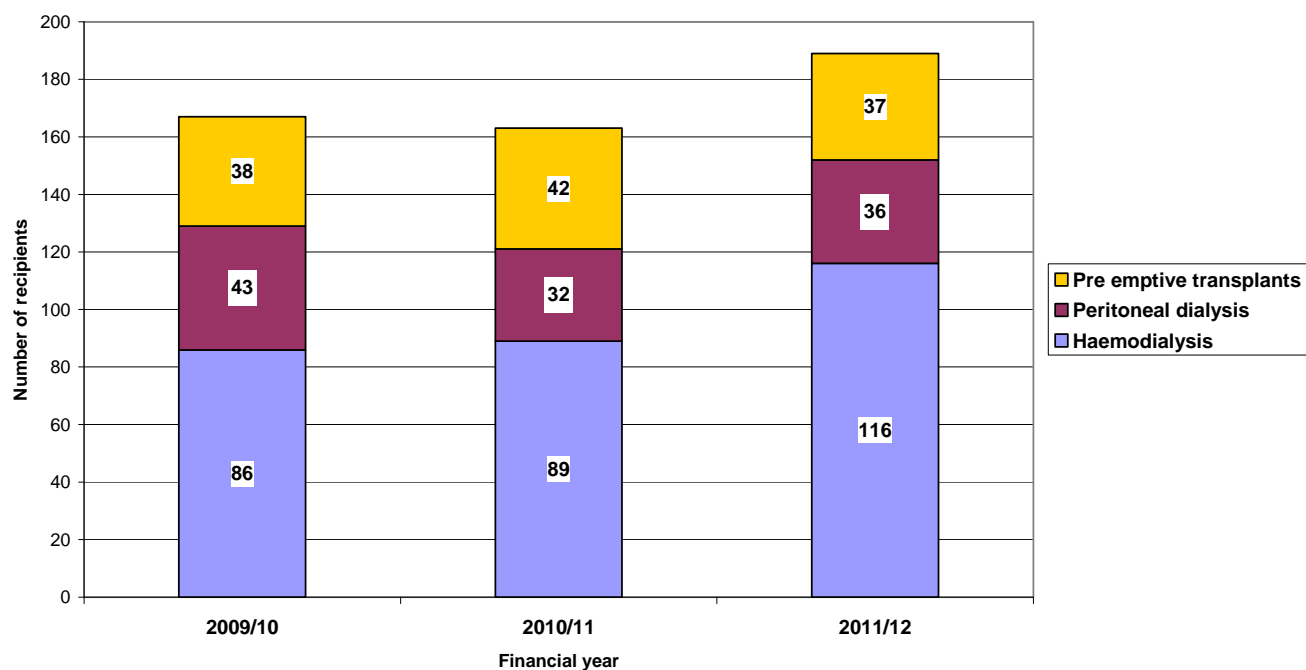


Fig 8: RRT type prior to transplant in adults. Pre-emptive transplantation accounted for 19.5% of kidney alone transplants in 2011/12.

Pre-emptive living donor transplantation

Adult living donor transplants with number pre-emptive, 2009/10 - 2011/12

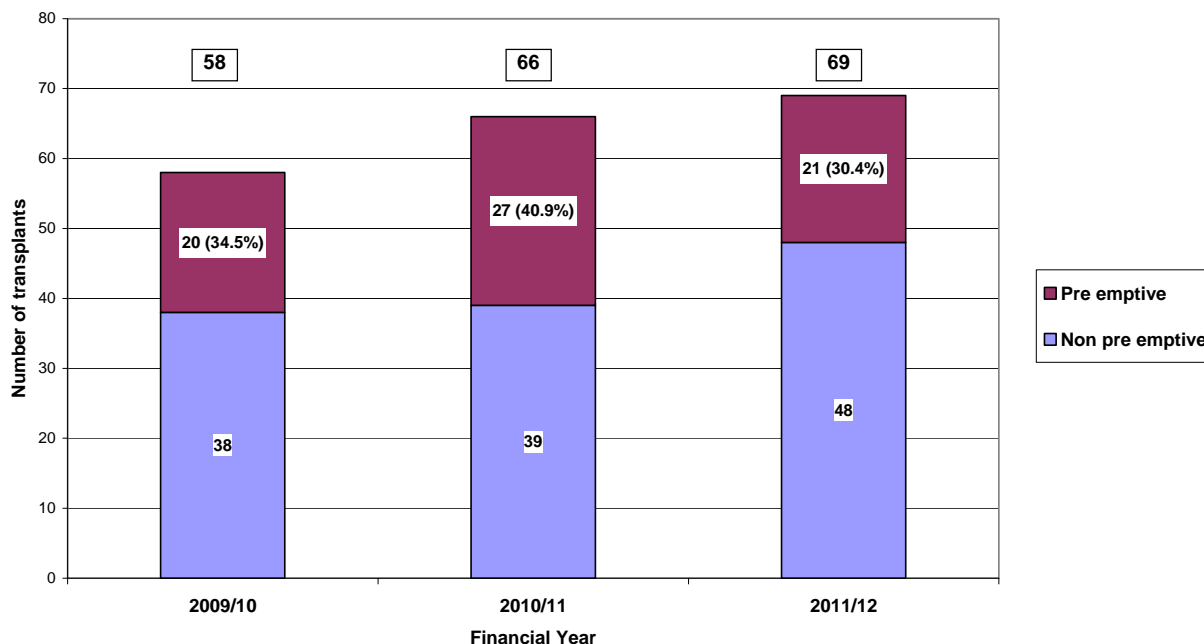


Fig 9: Living donor transplants with proportion performed pre-emptively. This will now be a CQUIN measure.

Deceased Donors 2011/12

Deceased kidney and pancreas donors by age range, 2011/12

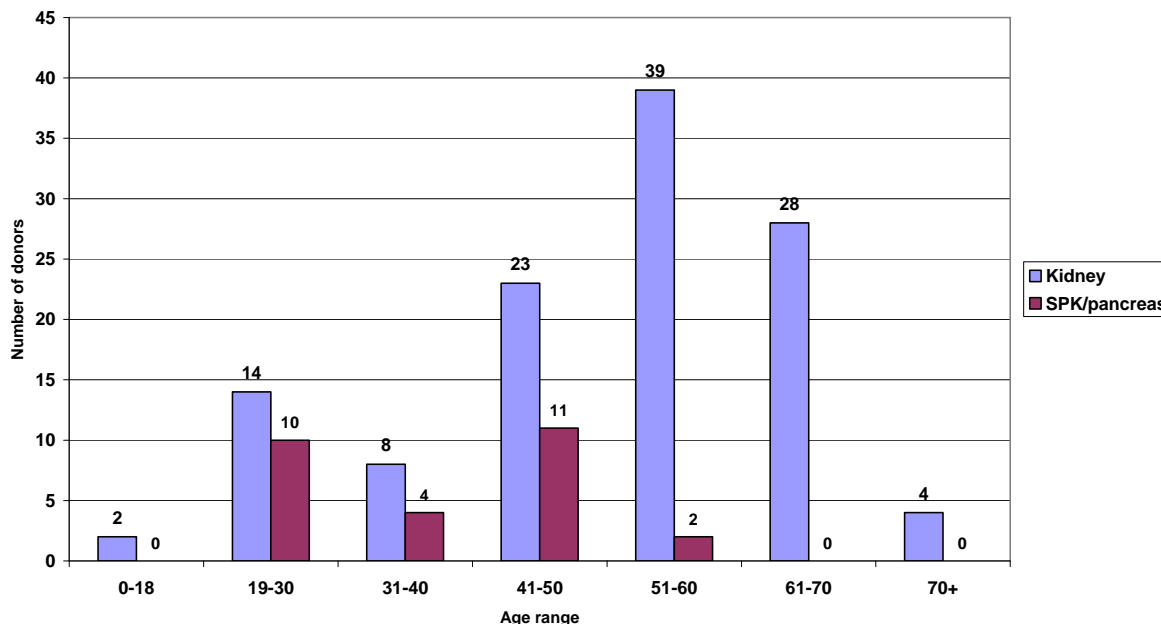


Fig 10: This graph illustrates the age of kidney and pancreas donors for transplants which took place during 2011/12. The median kidney donor age was 53.7 (47.6 in 2010/11) and the median pancreas donor age was 40.1 (40.4 in 2010/11).

Deceased Donors 2011/12

All DBD and DCD kidney and pancreas transplants by organ origin, 2010/11 and 2011/12

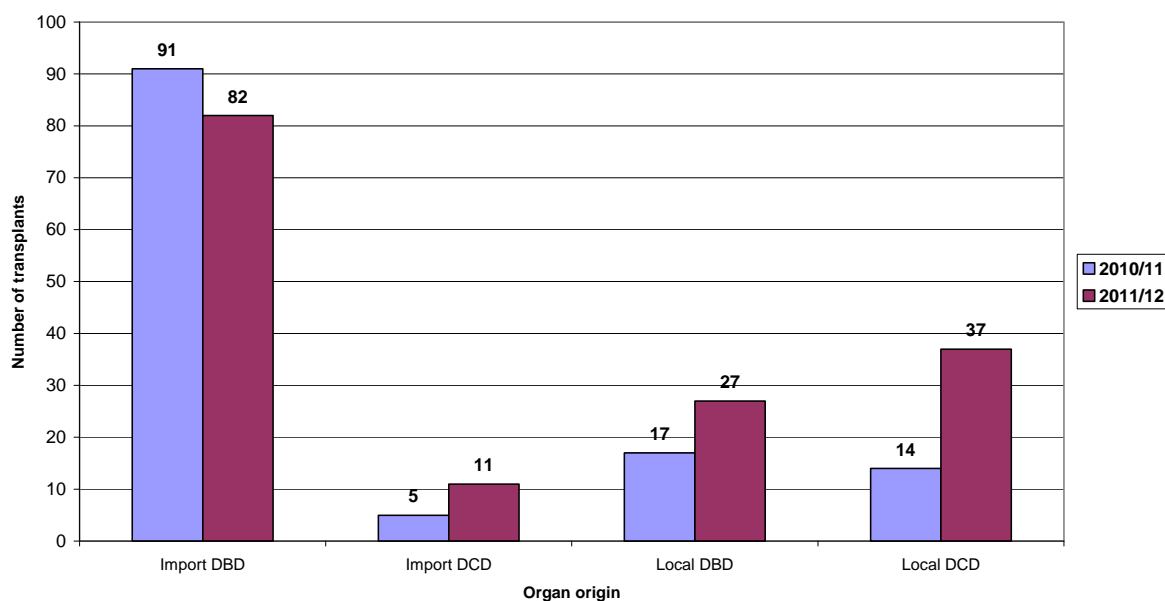


Fig 11: Donor organ origin by financial year.

During 2011/12 a considerably higher proportion of deceased donors, both DBD and DCD, were retrieved locally than during the previous year.

Cold Ischaemia Time

Cold Ischaemia Time, Deceased Donor Kidney Transplants 2008/09 to 2011/12 by crossmatch method

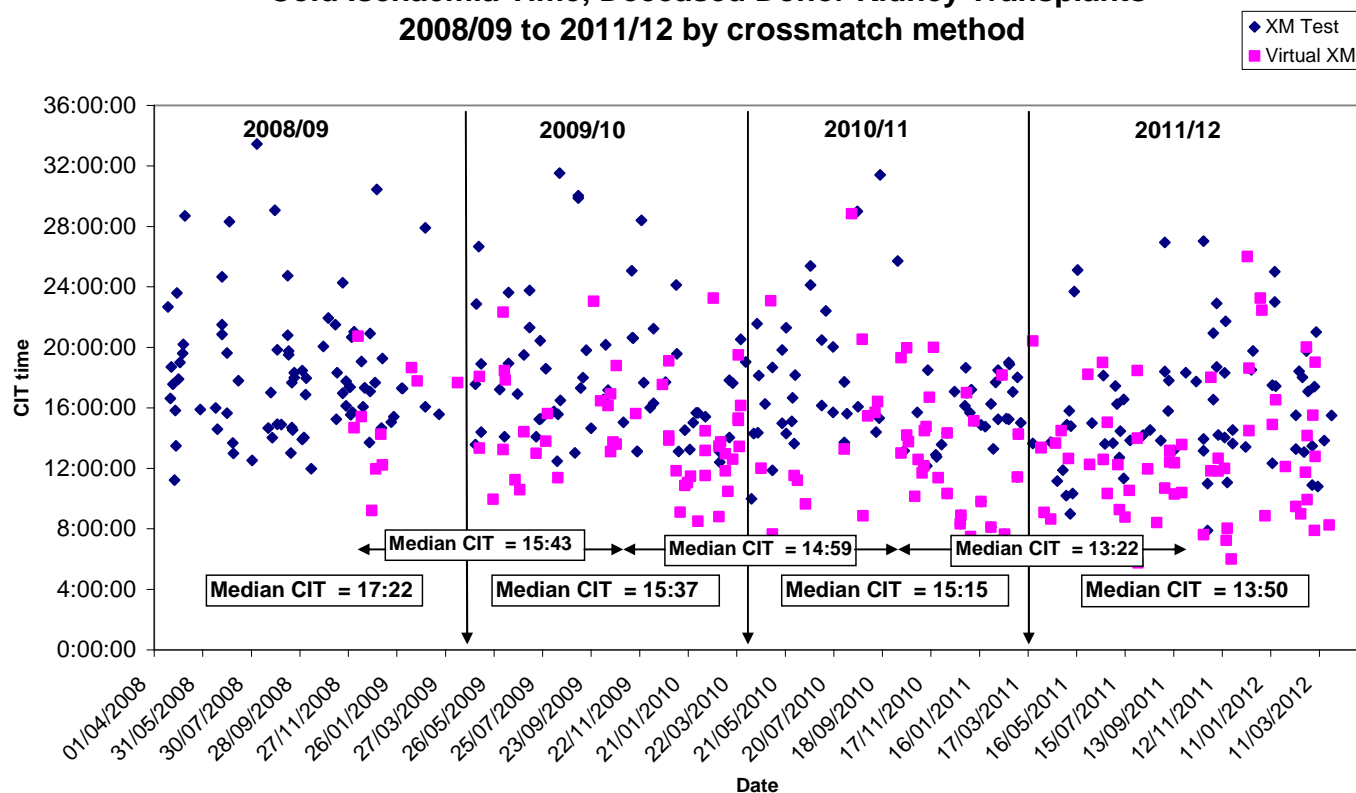


Fig 12: Cold ischaemia time for adult DBD and DCD kidney alone transplants, 2008/09 to 2011/12. The median CIT time is shown for each financial year, as well as annually following the introduction of virtual crossmatching in December 2008. The scatter plot and median CIT times show a significant reduction in median cold ischaemia times since this method was introduced. Once again a reduction was seen during the last financial year.

CMFT Kidney and Pancreas Transplant Waiting List

CMFT transplants by year with waiting list totals, 2001/02 to 2011/12

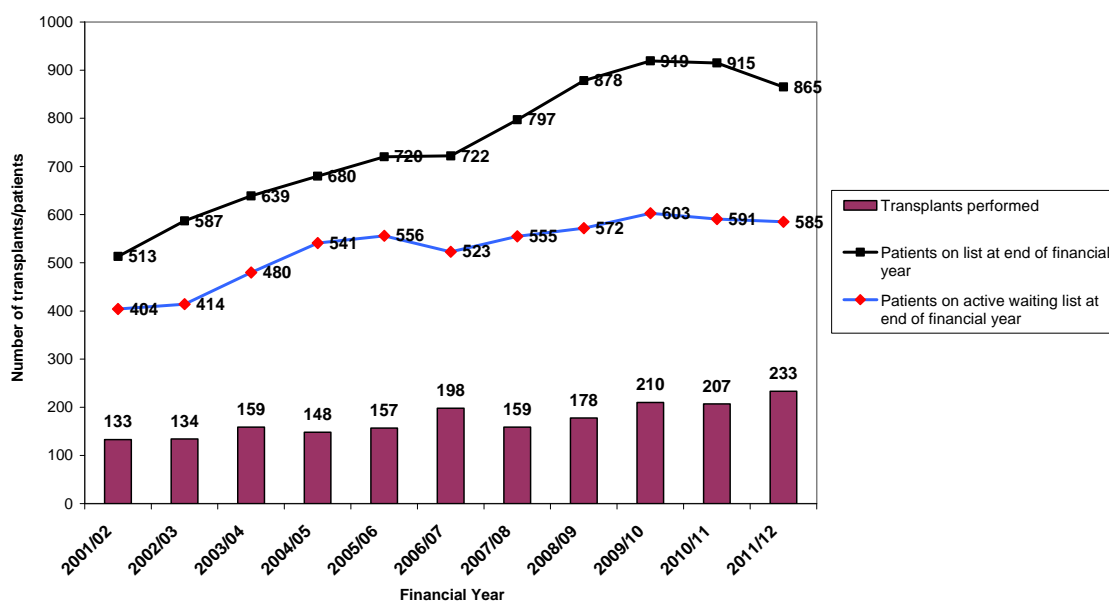


Fig 13: A graphical representation of the numbers of patients awaiting deceased donor transplant relative to transplants carried out each year over the last 10 years. During the last 2 years the number of active patients has remained static while the total number of patients on the waiting list has fallen. This suggests that long term suspended patients are being removed from the list.

Demographics and Summary Table

Data is based on all patients on the CMFT kidney and pancreas transplant waiting list at the end of each financial year

	2009/10	2010/11	2011/12
Patients on list at end of year	919	915	876 (-4.3%)
Male	500	509	505 (57.6%)
Age range (in years)	6-80	6-80	2-80
Time on transplant list range in months, active patients	0-307	0-319	0-290
Median time on transplant list in months, active patients	19	20	21
Patients active	603	607	590 (67.4%)
Patients suspended	316	309	286 (32.4%)
Patients waiting for kidney alone transplant	815	820	776 [-5.4%]
Patients waiting for simultaneous kidney and pancreas transplant	89	85	77[-9.4%]
Patients waiting for simultaneous heart and kidney transplant	1	1	1
Patients waiting for pancreas alone transplant	14	9	7 [-22.2%]
Patients waiting for islet transplant	5	7	11 (1.26%)

() indicates % of total

[] indicates % change from previous year

Paediatric patients on CMFT Kidney and Pancreas Transplant Waiting List

Demographics	2009/10	2010/11	2011/12
No of paediatric patients waiting	19	21	18
Active on list	11	15	10
Suspended on list	8	6	8
Male	12	14	12
Female	7	7	6
Age range (years)	6.1 – 17.9	6.5 – 18.9	2.5 - 18.1
Time on list range (months)	2 – 34	1. – 31	1 - 43
Median time on list (months)	8.2	11.5	8.7

CMFT Kidney and Pancreas Transplant List by Organ Required

CMFT Kidney and Pancreas transplant list by organ required

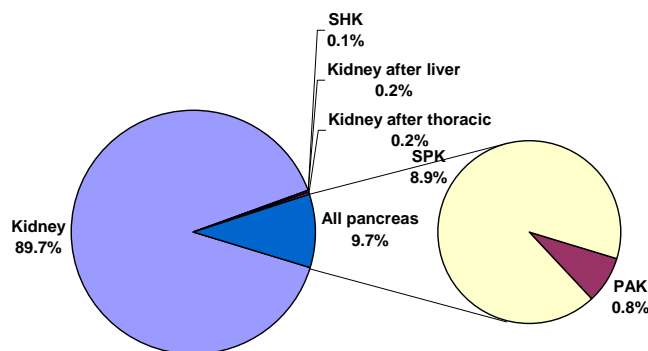


Fig 14: Organs required by patients listed on the CMFT kidney and pancreas transplant waiting list.

CMFT Kidney and Pancreas Transplant List, April 2012 by age

CMFT Kidney and Pancreas Transplant list by age range, April 2012

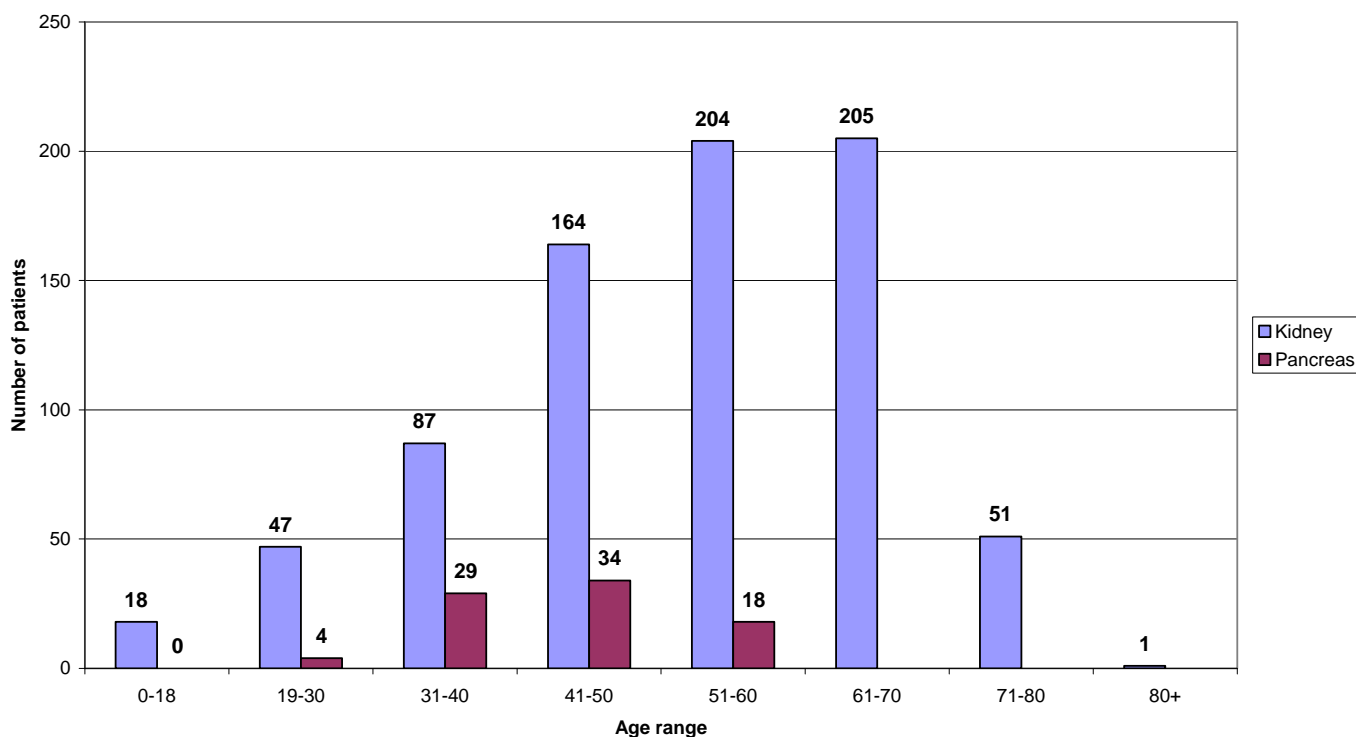


Fig 15: This graph illustrates the age distribution among potential recipients listed for kidney and pancreas transplantation. The median age for adult kidney patients was 54.5, which shows no change from 2010/11, and 44.3 for pancreas patients, a slight increase on last year's median of 41.8.

Transplant list status

At any one time a proportion of patients on a transplant list will be temporarily suspended. On the CMFT Kidney and Pancreas Transplant list as at 1st April 2012 this proportion was 30.9% for adults awaiting kidney alone transplantation, with 11% of all patients on the list having been suspended for over 12 months. In 2010/11 these figures were 33.5% and 13% respectively.

Adult kidney alone patients on CMFT Kidney and Pancreas Transplant list April 2012
by transplant list status

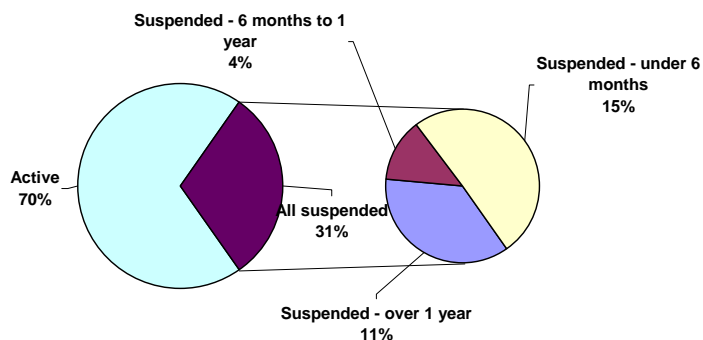


Fig 16: An overview of the CMFT Renal and Pancreas Transplant list, April 2012, by transplant list status.

Transplant list status of adults awaiting deceased donor kidney transplantation, CMFT kidney & pancreas transplant list, April 2012

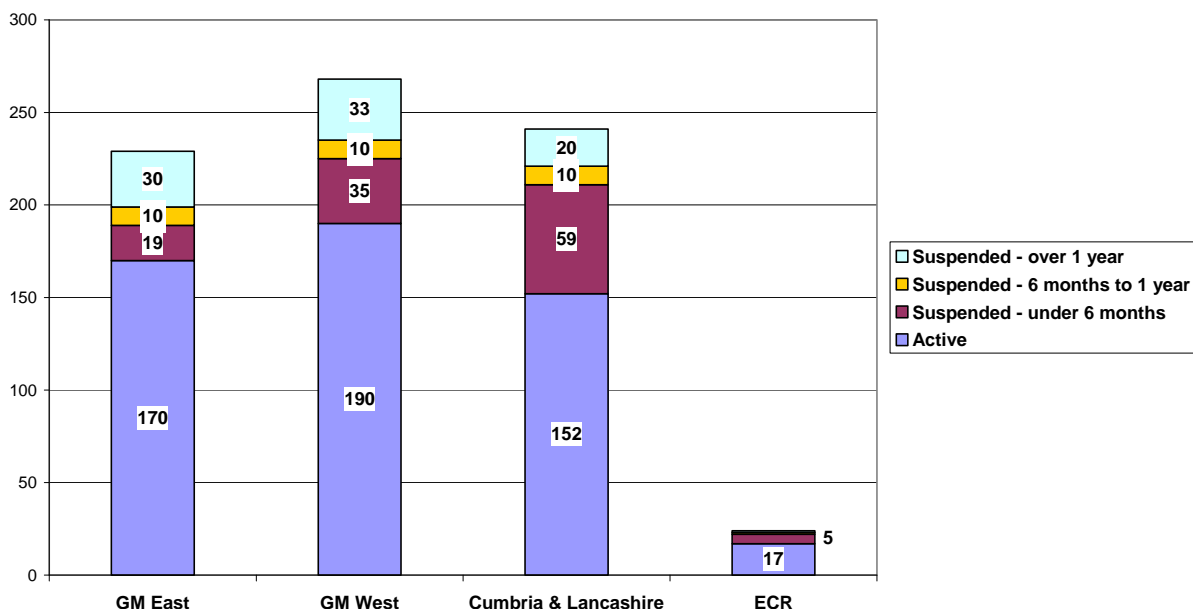


Fig 17: A breakdown of adults awaiting kidney only transplantation on 1st April 2012 by status on list. It can be seen that while Cumbria & Lancashire has the highest proportion of patients suspended for less than 6 months (24.5% of patients), the number of patients suspended for over a year is one of the lowest (8.3%). This reflects differing practices for listing and activation of patients between regions.

Time to enter CMFT Kidney and Pancreas Transplant Waiting list

The time taken to complete the transplant listing process is audited on an annual basis. This time period is measured by calculating the number of days elapsed between the date of the referring Nephrologist's signature on each patient's Request to List Form, the date this form is received by the Transplantation Laboratory and the date they enter the transplant list. The graph below illustrates median listing times for adult patients from each referral centre over the past year with a comparison to last year's median listing time.

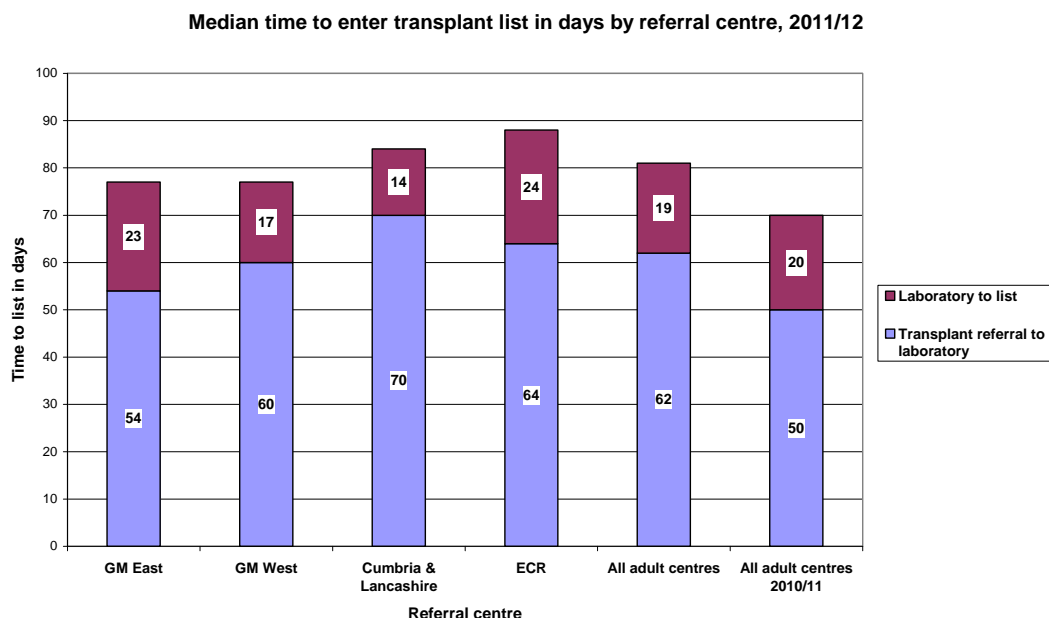


Fig 18: Median time to enter transplant list by referral centre. Overall median time to list this year was 81 days.

Waiting Time for patients on the transplant list

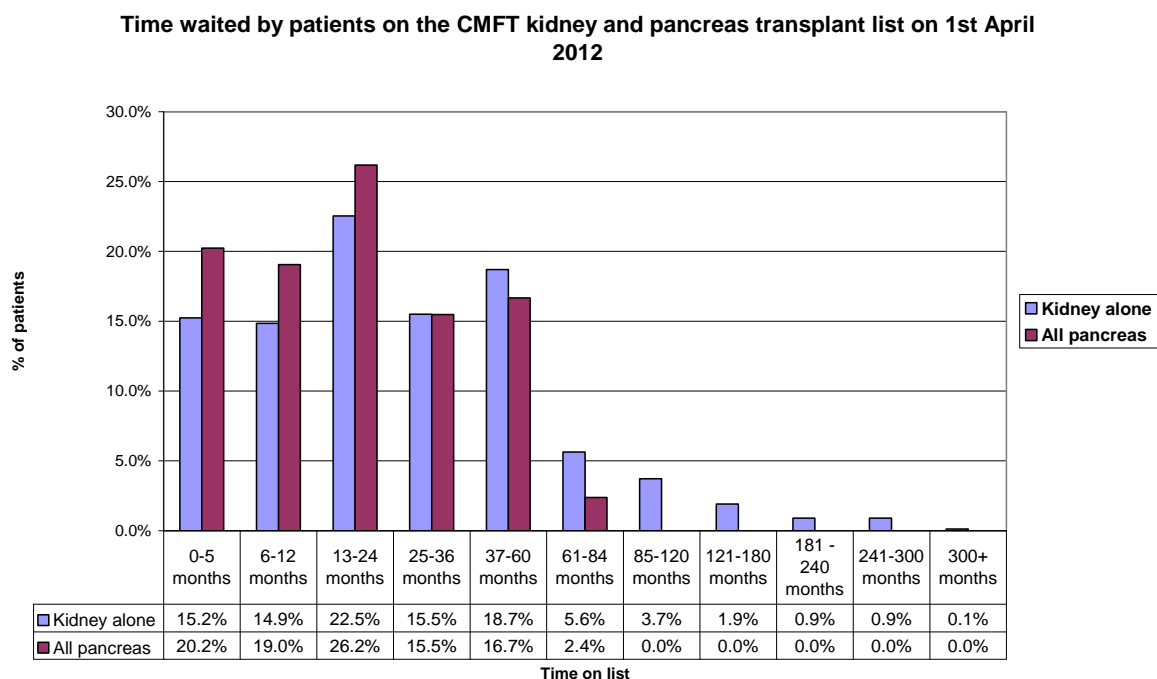


Fig 19: The median waiting time for kidney patients on the list is 22.5 months (23.4 months in 2010/11) and for pancreas recipients the median time on the list is 18 months (15.5 months in 2010/11).

Five Year Cohort Study on Waiting Time

In 2012, waiting time to transplant was audited by studying a cohort of patients listed in the same calendar year. The 216 adult patients who were listed for kidney alone transplantation at CMFT in 2007 were followed up 5 years later in August 2012 and their outcomes assessed. The aim of this audit was to provide both clinicians and patients with realistic expectations of waiting time.

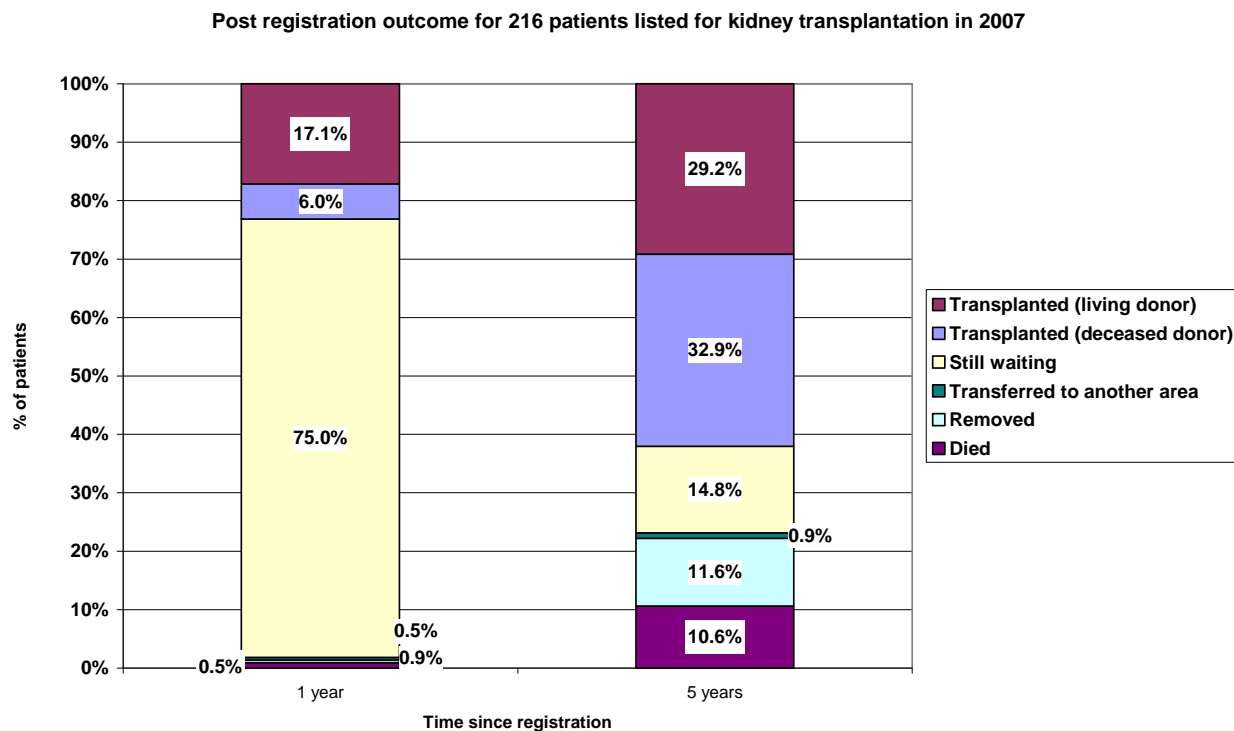


Fig 20: Patient outcome at 1 and 5 years following registration on the CMFT transplant list

Source of Transplant Referrals

Patients are referred to the CMFT Renal Transplant Unit from 3 network sectors, each encompassing a group of hospitals in the North West region. The Unit also receives Extra Contractual Referrals (ECRs) from outside these referral sectors. Paediatric patients aged 18 or under are referred from Alder Hey or Central Manchester Children's Hospitals, with occasional exceptions in special cases.

Full lists of hospitals covered by each network sector are given in the appendix. The tables overleaf detail the referral network origin of patients receiving kidney alone deceased donor transplants during 2011/12 and also those on the transplant list as at April 2012 for purposes of comparison. The bottom rows of the table express the number of patients from each area transplanted during 2011/12 as a percentage of the number listed from each area, and again as a percentage of the number active on the transplant list from each area.

	Referral Network Sector				
	GM East	GM West	Cumbria and Lancashire	ECR	All Areas
Adults transplanted* 2011/12 (2010/11)	37 (43)	44 (37)	36 (25)	4 (5)	(110)
Adults transplanted as % of total, 2011/12	30.6%	36.4%	29.8%	3.3%	
Adults listed, April 2012 (% of total)	229 (30.1%)	268 (35.2%)	241 (31.6%)	24 (3.1%)	762
Adults transplanted 2011/12 as percentage of number listed	24.9%	26.5%	22.4%	33.3%	24.9%
Adults transplanted 2011/12 as percentage of number active	33.5%	37.4%	35.5%	47.1%	35.9%
Adults newly listed for transplant, 2011/12	57	97	77	14	244
Adults permanently removed from the transplant list, 2011/12	20	32	10	1	63
Adult living donor transplants, 2011/12	20	27	18	4	69

*Kidney alone deceased donor transplant recipients, unless otherwise stated

Transplants and listings by referral network sector in a population context

The figures below detail the numbers of adults listed for kidney alone transplantation and those transplanted during 2010/11 relative to each referral network sector's total population. There is considerable variation between the areas, with the highest proportion of people both listed and and transplanted in the GM West sector, and the lowest in Cumbria and Lancashire. These differences may be due to a number of factors; demographic differences, epidemiological factors and referral patterns for transplantation. Figures in brackets denote the previous year's figures.

	Referral Network Sector				
	GM East	GM West	Cumbria & Lancashire	Overall	UK
Estimated area population, 2012*	1567156	1226200	1995700	4789056	62020000
Patients active on Manchester transplant list per million population, 2011/12	108.5 (118.7)	155.0 (146.0)	76.16 (76.7)	106.9 (111.1)	110.7 (106.8)
Patients transplanted in Manchester per million population, 2011/12	23.6 (24.1)	35.8 (26.9)	18.0** (10.5)	24.4 (20.3)	26.88 (23.2)

*Sources: Strategic Framework for Kidney Care in Greater Manchester 2008-2013
 Strategic Framework for Kidney Care in Cumbria and Lancashire 2008-2013
 ONS 2004 based population projections
 ONS mid-2006 population estimates
 ONS mid-2010 population estimates
 NHSBT Annual Activity Report 2011/12

**6 additional transplants for the Cumbria & Lancashire sector were Carlisle patients transplanted at Newcastle.

Transplant listings and deceased donor kidney transplants per million population by area, 2011/12

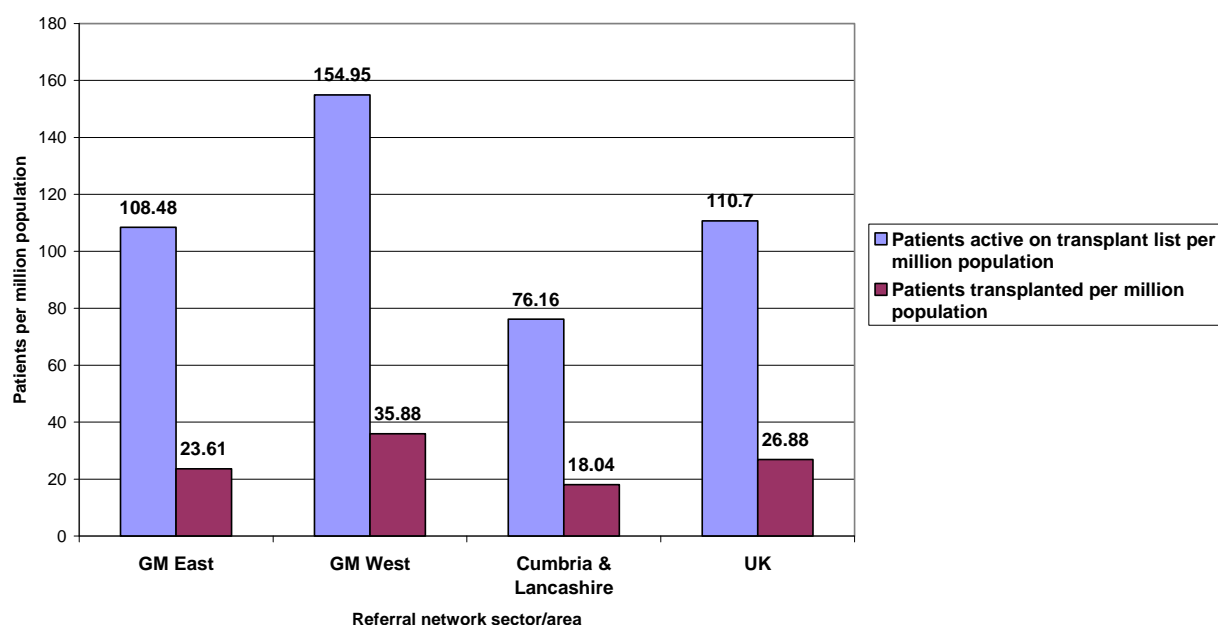


Fig 21: Adult kidney transplant listings and transplants undertaken relative to local population in three referral network sectors, showing UK figures for comparison.

Graft Survival

The two graphs and table below illustrate graft survival for first deceased donor kidney alone transplants at CMFT, with patient survival given overleaf. Percentage survival for both CMFT and the UK by transplant type is given in the table at the bottom of the page. Graft survival is censored for death with functioning graft.

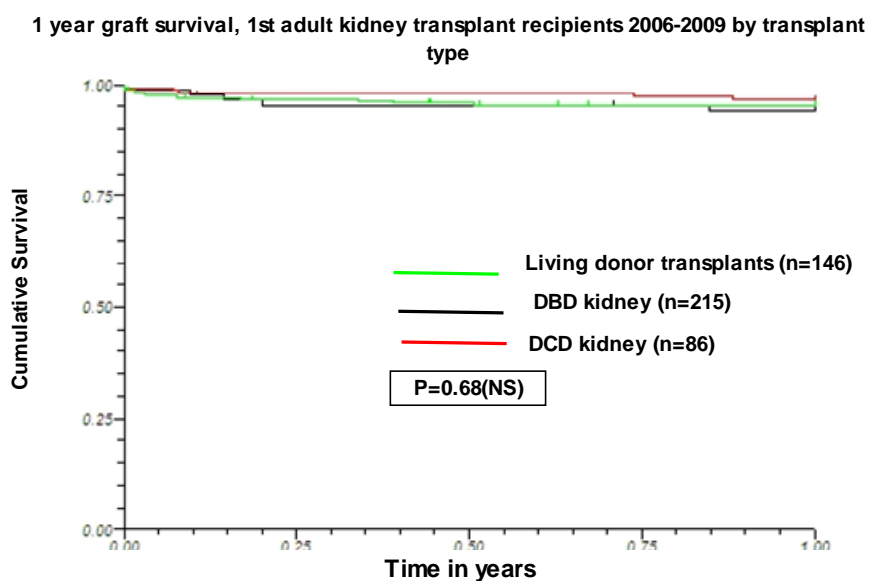


Fig 22: 1 year graft survival by transplant type. There is no significant difference between living donor, DBD and DCD graft survival

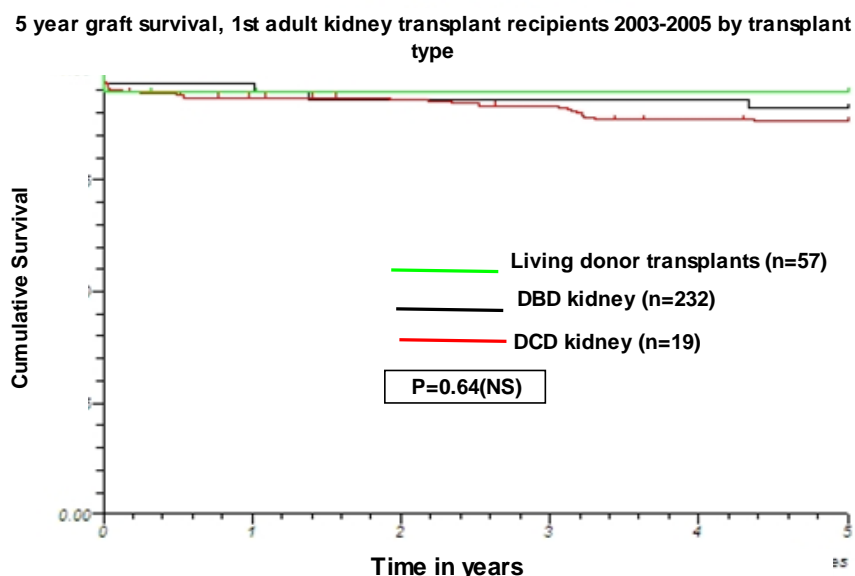


Fig 23: 5 year graft survival by transplant type. There is no significant difference between living donor, DBD and DCD graft survival

Transplant Type	1 year graft survival Recipients transplanted 2006-2009		5 year graft survival, Recipients transplanted 2003-2005	
	CMFT	UK*	CMFT	UK*
Living donor kidney	97%	99%	91%	92%
DBD kidney	95%	94%	88%	84%
DCD kidney	94%	95%	95%	86%

* Source: NHSBT ODT Activity Report 2010/11

Patient Survival

1 year patient survival, 1st adult kidney transplant recipients 2006-2009 by transplant type

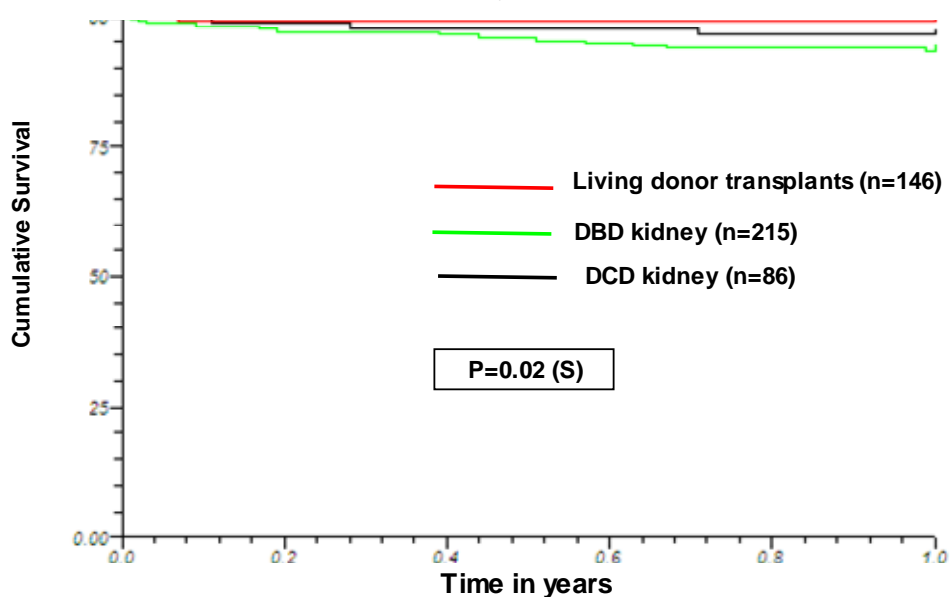


Fig 24: 1 year patient survival by transplant type. There is a significant difference in patient survival between transplant types for this period.

5 year patient survival, 1st adult kidney transplant recipients 2003-2005 by transplant type

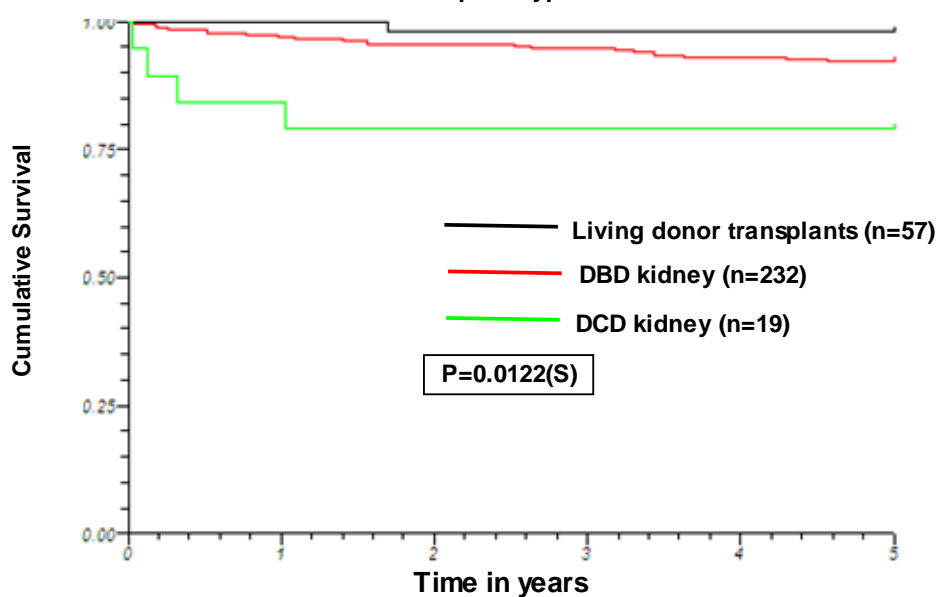


Fig 25: 5 year patient survival by transplant type. There is a significant difference in patient survival between types for this period.

Transplant Type	1 year patient survival Recipients transplanted 2006-2009		5 year patient survival, Recipients transplanted 2003-2005	
	CMFT	UK*	CMFT	UK*
Living donor kidney	99%	99%	98%	96%
DBD kidney	93%	96%	92%	89%
DCD kidney	97%	95%	79%	88%

* Source: NHSBT ODT Activity Report 2010/11

Appendix: Referral Network Sectors

(Adults only)

This is a division of patients by grouping of referring hospital and satellite units.

Referral Network	Main Hospital	Satellite Hospitals
GM East Sector	Manchester Royal Infirmary	North Manchester General Hospital Wythenshawe Hospital Tameside Hospital Macclesfield General Hospital
GM West Sector	Hope Hospital	Birch Hill Hospital Rochdale Infirmary Wigan Infirmary Royal Bolton Hospital
Cumbria & Lancashire	Royal Preston Hospital	Chorley and South Ribble Hospital Royal Blackburn Hospital Burnley General Hospital Westmorland General Hospital Blackpool Victoria Hospital Furness General Hospital Royal Lancaster Infirmary
ECR - Extra Contractual Referrals	All other hospitals/trusts outside these areas	