UK Kidney Association
UK Renal Registry

Chapter 4

Adults with a kidney transplant (Tx) in the UK at the end of 2023

Contents

Introduction

This chapter describes the population of patients with end-stage kidney disease (ESKD) who had a functioning kidney transplant (Tx) in the UK at the end of 2023 (figure 4.1). Patients can receive their first Tx either pre-emptively, i.e. without spending any time on dialysis, or while on dialysis. Donors in both pathways may be either a living kidney donor (LKD) or a deceased kidney donor – receiving a kidney from a donor after brain death (DBD) or a donor after circulatory death (DCD). If a Tx begins to fail a patient may be considered for a second (or subsequent) Tx, which again can come from a living or deceased donor.

Potential Tx recipients who pass rigorous assessments are wait-listed, which can occur before or after they have started dialysis. The majority of kidneys received through wait-listing are from deceased donors. The cohort of patients living with a kidney Tx in a centre not only reflects differences in underlying population case-mix, but also differences in the rates of acceptance onto kidney replacement therapy (KRT).This includes wait-listing rates and live donor programmes, survival of the Tx graft and its recipient, as well as the care and survival of patients on dialysis therapies, as described in other chapters of this report.

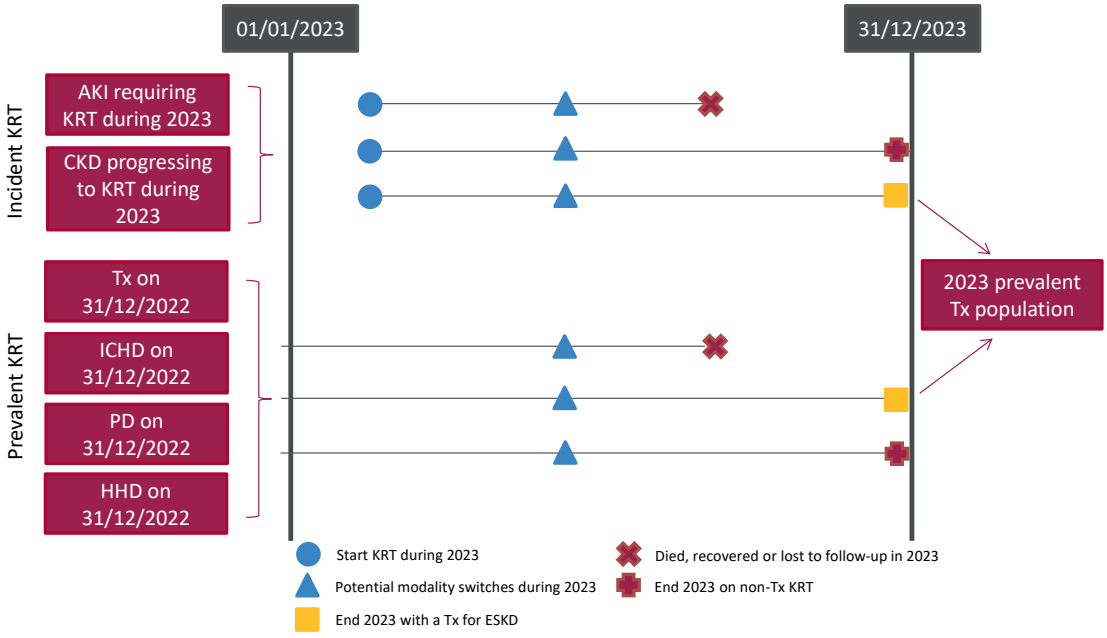

Figure 4.1 Pathways adult patients could follow to be included in the UK 2023 prevalent Tx population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for Tx at the end of 2023 or if they had been on KRT for ≥90 days and were on Tx at the end of 2023
AKI – acute kidney injury; CKD – chronic kidney disease; HHD – home haemodialysis; ICHD – in-centre haemodialysis; PD – peritoneal dialysis; Tx - Transplantation

Patient survival, graft survival and cause of death analyses were undertaken on historic incident and prevalent cohorts to allow sufficient follow-up time.

The analyses were undertaken using UK Renal Registry (UKRR) data combined with NHS Blood and Transplant (NHSBT) data through a data sharing agreement.

This chapter addresses the following key aspects of the care of patients with a functioning kidney Tx for which there are UK Kidney Association guidelines (table 4.1):

- **Complications associated with CKD and kidney transplantation:** these include anaemia, mineral bone disorders and dyslipidaemia.
- **Blood pressure:** attainment of blood pressure targets are reported, although data completeness does not allow differentiation based on levels of proteinuria.

Rationale for analyses

The analyses begin with a brief summary of the number and type of kidney Tx undertaken in recent years in the UK as well as early graft and patient survival. More detailed results are available at organdonation.nhs.uk/helping-you-to-decide/about-organ-donation/statistics-about-organ-donation. The 2023 prevalent adult Tx population is described, including the number transplanted per million population (pmp).

The UK Kidney Association guidelines (ukkidney.org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients with a Tx, and where data permit, their attainment by UK kidney centres in 2023 is reported in this chapter (table 4.1). Audit measures in guidelines that have been archived are not included.

Some audit measures in current guidelines cannot be reported because the completeness of the required data items is too low. Further detail about the completeness of data returned to the UKRR is available through the UKRR data portal (ukkidney.org/audit-research/data-portals). Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted. The chapter includes analyses carried out by Getting It Right First Time (GIRFT), a national programme designed to reduce unwarranted variation in medical care provided by the NHS by sharing best practice. The GIRFT metrics for kidney services, analysed in collaboration with the UKRR, were based on data derived from multiple sources and included equity of access to services, outcomes and pathways in nephrology, dialysis and transplantation.

Table 4.1 The UK Kidney Association audit measures relevant to Tx that are reported in this chapter

The UK Kidney Association guideline	Audit criteria	Related analysis/analyses
Post-operative care in the kidney Tx recipient (2017)	Proportion of patients receiving a target blood pressure of 140/90 mmHg or 130/80 mmHg in the presence of proteinuria – protein:creatinine ratio >100 mg/mmol or albumin:creatinine ratio >70 mg/mmol	Table 4.9, figures 4.13–4.14 (proteinuria was not adequately collected)
	Proportion of patients achieving dyslipidaemia targets	Table 4.9
	Incidence of hyperparathyroidism	Table 4.9
	Prevalence of anaemia	Table 4.9, figures 4.11–4.12
Anaemia (2020)	Treatment guidelines for anaemia in kidney Tx patients should be similar to those for CKD patients not on dialysis	Table 4.9, figures 4.11–4.12

In 2023, 23 of the 67 adult kidney centres in the UK were Tx centres – 19 in England, two in Scotland and one in each of Northern Ireland and Wales.

For definitions and methods relating to this chapter see appendix A. Centres were excluded from caterpillar plots and cells were blanked in tables where data completeness for a biochemical variable was <70% and/or the number of patients reported was <10. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

As Colchester kidney centre did not have any Tx patients they were excluded from some of the analyses, although their dialysis patients were included in the relevant dialysis population denominators.

Exeter and Manchester were unable to submit patient level data for 2023. Aggregate numbers by modality were provided, enabling inclusion in Tables 4.6 and 4.7. Exeter and Manchester are excluded from all other analyses, except where historical cohorts were used.

London Kings moved to a new Trust IT system, and as a result data were not submitted for the final quarter of 2023. For charts and tables in this chapter that use the December 2023 prevalent cohort, the data for London Kings are for patients who were on KRT as at 30th September 2023, rather than 31st December 2023.

Key findings

- 40,958 adult patients had a kidney Tx for ESKD in the UK on 31/12/2023, which represented 56.3% of the KRT population.
- The median age of kidney Tx patients was 57.0 years and 60.8% were male.
- There was a 5% increase in overall kidney Tx performed in 2023 compared to 2022, with a increase in kidney Tx from LKDs by 8%, DCDs by 11% and a 3% decrease in DBDs. Transplant activity has not yet recovered to pre-pandemic levels.
- The median eGFR for kidney Tx patients 1 year after transplantation, for transplants occurring in 2022, was 57.5 mL/min/1.73m^2 from LKD, 50.1 mL/min/1.73m^2 from DBD and 45.6 mL/min/1.73m^2 from DCD.
- 16.9% of kidney Tx patients had eGFR <30 mL/min/1.73m^2.
- The median decline in eGFR slope beyond the first year after transplantation was 0.9 mL/min/1.73m^2/year.
- Cause of death records from Civil Registration were used where the cause of death was missing in the UKRR data. This resulted in improved completeness and changes in proportions of causes of death. The leading cause of death for Tx patients was infection at 21.7%.

Analyses

Kidney Tx activity

NHSBT provided the UKRR with summary data on kidney Tx activity (table 4.2). More detailed results are available at organdonation.nhs.uk/helping-you-to-decide/about-organ-donation/statistics-about-organ-donation. The number of patients receiving a pre-emptive Tx is reported by centre in chapter 2.

Table 4.2 Number of kidney and kidney plus other organ Tx (adult and paediatric) in the UK, 2020-2023 calendar years

Organ	2020	2021	2022	2023	% change 2022-2023
Kidney DBD[1]	1,220	1,208	1,185	1,148	-3
Kidney DCD[2]	683	845	1020	1128	11
Kidney LKD	588	801	863	932	8
Kidney and liver[3]	5	9	6	11	-
Kidney and heart	0	2	0	0	-
Kidney and pancreas[4]	97	111	120	143	19
Kidney and pancreas islets[5]	4	7	5	8	-
Small bowel (inc kidney)	0	0	0	0	-
Total kidney Tx	**2,597**	**2,983**	**3,199**	**3,370**	**5**

[1] Includes en bloc kidney transplants (2 in 2021 and 2 in 2023) and double kidney transplants (10 in 2021, 12 in 2022 and 17 in 2023)

[2] Includes en bloc kidney transplants (5 in 2021, 3 in 2022 and 2 in 2023) and double kidney transplants (18 in 2021, 14 in 2022 and 18 in 2023)

[3] Includes DCD transplants (1 in 2022 and 3 in 2023)

[4] Includes DCD transplants (31 in 2021, 41 in 2022 and 61 in 2023)

[5] Includes DCD transplants (2 in 2021, 1 in 2022 and 5 in 2023)

DBD - donor after brain death; DCD - donor after circulatory death; LKD - living kidney donor

Variation in the proportion of patients who received an LKD Tx or were on the Tx waiting list within two years of KRT start, is shown for patients incident to KRT in 2020, adjusted by sex, age and primary renal disease (PRD) (figure 4.2). The analysis for LKD transplantation only is shown separately (figure 4.3). Centres can be identified in the funnel plots using the number of patients in the centre in table 4.3.

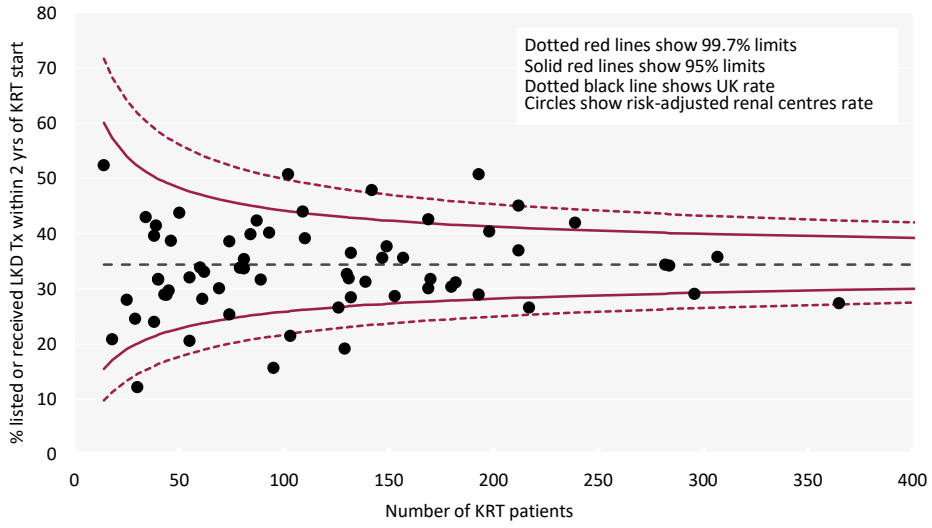

Figure 4.2 Percentage of adult patients incident to KRT in 2021 (analysis adjusted by age, sex, PRD) who were waitlisted or received a living kidney donor (LKD) Tx within 2 years of KRT start by centre

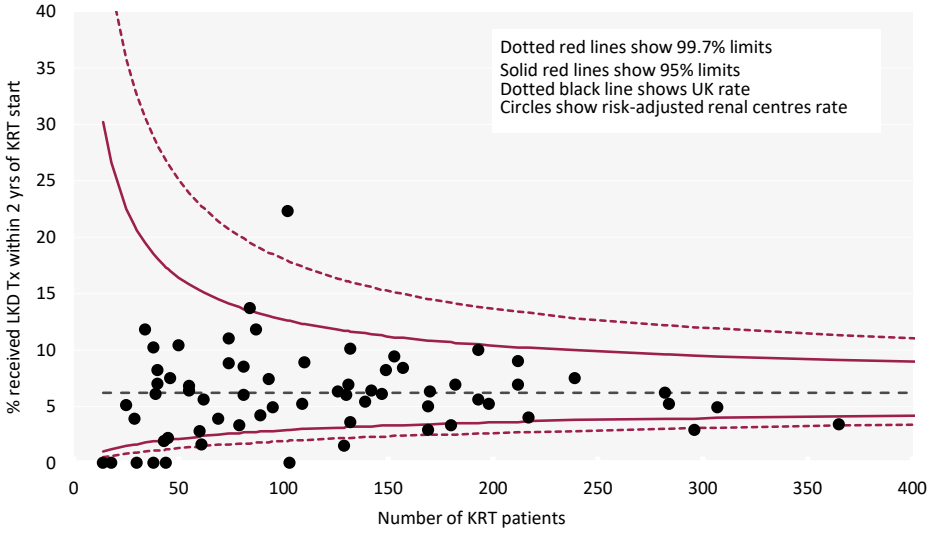

Figure 4.3 Percentage of adult patients incident to KRT in 2021 (analysis adjusted by age, sex, PRD) who received a living kidney donor (LKD) Tx within 2 years of KRT start by centre

Table 4.3 Percentage of adult patients incident to KRT in 2021 who were waitlisted or received a living kidney donor (LKD) Tx within 2 years of KRT start adjusted by age, sex and primary renal disease by centre

		Listing/LKD Tx by 2 years from KRT start			LKD Tx by 2 years from KRT start		
			Limits for funnel plot			Limits for funnel plot	
Centre	N on KRT	Adjusted percentage	Lower 95% limit	Upper 95% limit	Adjusted percentage	Lower 95% limit	Upper 95% limit
TX CENTRES							
Belfast	102	50.8	25.9	44.1	22.3	2.9	12.6
Bham	365	27.4	29.8	39.5	3.4	4.1	9.1
Bristol	157	35.6	27.5	42.2	8.4	3.3	11.1
Camb	149	37.7	27.3	42.4	8.2	3.3	11.2
Cardff	153	28.7	27.4	42.3	9.4	3.3	11.1
Covnt	147	35.6	27.2	42.4	6.1	3.3	11.3
Edinb	87	42.4	25.3	44.9	11.8	2.7	13.3
Glasgw	212	45.1	28.4	41.1	9	3.6	10.2
L Barts	284	34.2	29.2	40.1	5.2	3.9	9.6
L Guys	193	29	28.1	41.4	5.6	3.5	10.5
L Rfree	282	34.4	29.1	40.2	6.2	3.9	9.6
L St.G	93	40.2	25.6	44.5	7.4	2.8	13
L West	418	40	30.1	39.1	6.4	4.2	8.9
Leeds	169	42.6	27.7	41.9	5	3.4	10.8
Leic	307	35.8	29.4	39.9	4.9	4	9.4
Liv UH	169	30.1	27.7	41.9	2.9	3.4	10.8
M RI	212	37	28.4	41.1	6.9	3.6	10.2
Newc	132	36.5	26.9	42.9	10.1	3.2	11.6
Nottm	130	32.7	26.8	43	6	3.2	11.7
Oxford	193	50.8	28.1	41.4	10	3.5	10.5
Plymth	84	39.9	25.2	45.1	13.7	2.7	13.5
Ports	239	42	28.7	40.7	7.5	3.8	10
Sheff	170	31.8	27.7	41.9	6.3	3.4	10.8
DIALYSIS CENTRES							
Abrdn	55	32.1	23.3	47.6	6.8	2.2	15.8
Airdrie	74	38.6	24.6	45.8	11	2.6	14.1
Antrim	39	41.5	21.5	50.1	6.1	1.9	18.3
Bangor	18	20.9	17.1	57.3	0	1.2	26.6
Bradfd	81	35.4	25	45.3	6	2.7	13.6
Brightn	131	31.9	26.9	42.9	6.9	3.2	11.7
Carlis	43	29	22.1	49.4	1.9	2	17.5
Carsh	296	29.1	29.3	40	2.9	3.9	9.5
Clwyd	30	12.2	20.1	52.3	0	1.6	20.6
Colchr	38	24	21.4	50.3	0	1.9	18.5
D&Gall	14	52.4	15.5	60.1	0	1	30.2
Derby	89	31.7	25.4	44.8	4.2	2.8	13.2
Donc	44	28.9	22.2	49.2	0	2	17.3
Dorset	79	33.8	24.9	45.4	3.3	2.6	13.8
Dudley	61	28.2	23.8	47	1.6	2.4	15.2
Dundee	40	31.7	21.7	49.9	7	1.9	18.1
EssexMS	132	28.5	26.9	42.9	3.6	3.2	11.6
Exeter							
Glouc	81	33.7	25	45.3	8.5	2.7	13.6
Hull	95	15.7	25.7	44.4	4.9	2.8	12.9
Inverns	38	39.6	21.4	50.3	10.2	1.9	18.5
Ipswi	60	33.9	23.7	47.1	2.8	2.3	15.3
Kent	182	31.2	27.9	41.6	6.9	3.5	10.6
Klmarnk	46	38.7	22.4	48.9	7.5	2.1	17
Krkcldy	45	29.7	22.3	49.1	2.2	2	17.2
L Kings	217	26.6	28.4	41	4	3.7	10.2

Table 4.3 Continued

Centre	N on KRT	Listing/LKD Tx by 2 years from KRT start			LKD Tx by 2 years from KRT start		
			Limits for funnel plot			Limits for funnel plot	
		Adjusted percentage	Lower 95% limit	Upper 95% limit	Adjusted percentage	Lower 95% limit	Upper 95% limit
Middlbr	110	39.2	26.2	43.7	8.9	3	12.3
Newry	40	31.8	21.7	49.9	8.2	1.9	18.1
Norwch	103	21.5	26	44	0	2.9	12.6
Prestn	198	40.4	28.2	41.3	5.2	3.6	10.4
Redng	109	44	26.2	43.8	5.2	3	12.3
Salford	142	47.9	27.1	42.6	6.4	3.2	11.4
Shrew	62	33.1	23.8	46.9	5.6	2.4	15.1
Stevng	180	30.4	27.9	41.6	3.3	3.5	10.7
Stoke	139	31.3	27.1	42.7	5.4	3.2	11.5
Sund	74	25.4	24.6	45.8	8.8	2.6	14.1
Swanse	126	26.6	26.7	43.1	6.3	3.1	11.8
Truro	69	30.1	24.3	46.2	3.9	2.5	14.5
Ulster	25	28	19.1	54	5.1	1.5	22.5
West NI	34	43	20.8	51.2	11.8	1.8	19.5
Wirral	55	20.6	23.3	47.6	6.4	2.2	15.8
Wolve	129	19.2	26.8	43	1.5	3.1	11.7
Wrexm	29	24.6	19.9	52.6	3.9	1.6	21
York	50	43.8	22.8	48.3	10.4	2.1	16.4

LKD - Living kidney donor

Early kidney Tx outcomes

Kidney Tx recipient outcome data from NHSBT were reported against the Tx centre rather than the referring centre (table 4.4). Note that the survival rates were risk-adjusted and used financial year cohorts as per NHSBT methodology (see table footnote).

Table 4.4 Risk-adjusted first adult kidney-only Tx, graft and patient survival by Tx type and Tx centre[1] (cohorts detailed in footnote)

	Deceased donor				Living donor			
	Adj 1 yr survival (%)		Adj 5 yr survival (%)		Adj 1 yr survival (%)		Adj 5 yr survival (%)	
Centre	Graft	Patient	Graft	Patient	Graft	Patient	Graft	Patient
Bham	93	97	81	89	98	100	94	89
Belfast	100	100	82	85	99	100	90	90
Bristol	97	96	85	81	97	100	95	95
Camb	95	97	87	86	99	100	95	91
Cardff	94	98	89	87	100	98	89	93
Covnt	94	96	100	100	97	100	93	89
Edin	97	98	89	92	99	98	96	99
Glasgw	94	95	86	83	99	98	93	94
L Barts	95	93	82	82	96	98	92	88
L Guy's	97	98	88	87	100	99	96	94
L Rfree	97	97	87	93	99	100	92	96
L St.G	95	96	83	88	99	99	94	96
L West	94	96	100	100	99	100	100	100
Leeds	96	96	83	85	98	100	95	98
Leic	98	96	90	80	100	100	88	90
Liv UH	94	94	86	83	100	100	90	91
M RI	94	93	87	84	98	97	94	92
Newc	97	97	81	82	99	99	98	94
Nottm	97	93	90	85	100	100	95	100
Oxford	96	96	89	87	99	99	95	95
Plymth	89	93	100	100	100	100	100	100
Ports	96	96	93	88	98	99	96	94
Sheff	96	94	100	100	100	100	100	100
UK total	**95**	**96**	**86**	**85**	**99**	**99**	**94**	**93**

Cohorts for survival rate estimation: 1 year survival: 1/4/2019-31/03/2023; 5 year survival: 1/4/2015-31/3/2019; first grafts only – re-grafts excluded for patient survival estimation

Since the cohorts to estimate 1 and 5 year survival are different, some centres may appear to have better 5 year survival than 1 year survival

Centres have been omitted where less than 75% of the data was reported

[1]Information courtesy of NHSBT: number of Tx, patients and 95% confidence intervals (CI) for each estimate; statistical methodology for computing risk-adjusted estimates can be obtained from NHSBT (https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/34295/nhsbt-kidney-transplantation-report-2324.pdf)

Kidney graft function at one year post-Tx was assessed using median eGFR by donor type and by centre using a seven year cohort (patients with graft failure including death with a functioning graft were excluded). The data completeness at one year after Tx (for Tx occurring 2016-2022) was 97.0%.

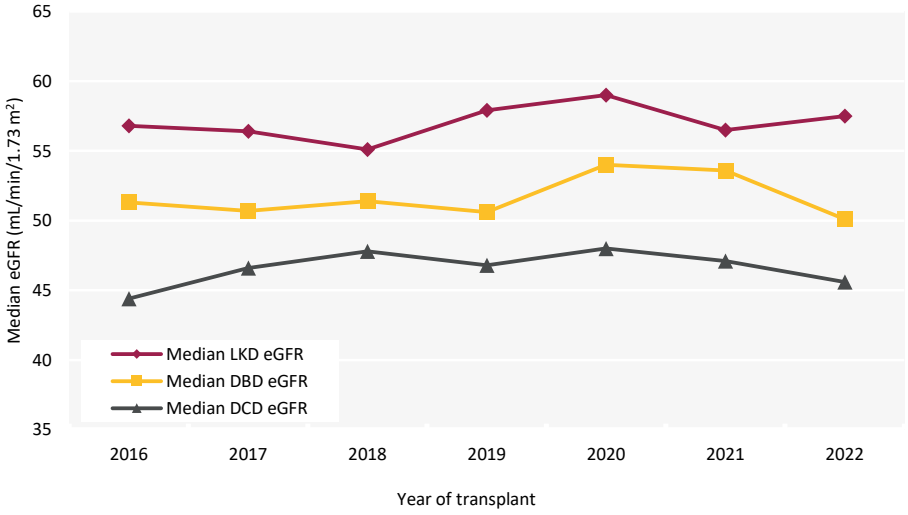

Figure 4.4 Median estimated glomerular filtration rate (eGFR) for kidney Tx at 1 year by donor type and year of transplantation between 2016 and 2022

DBD – donor after brain death; DCD – donor after circulatory death; LKD – living kidney donor

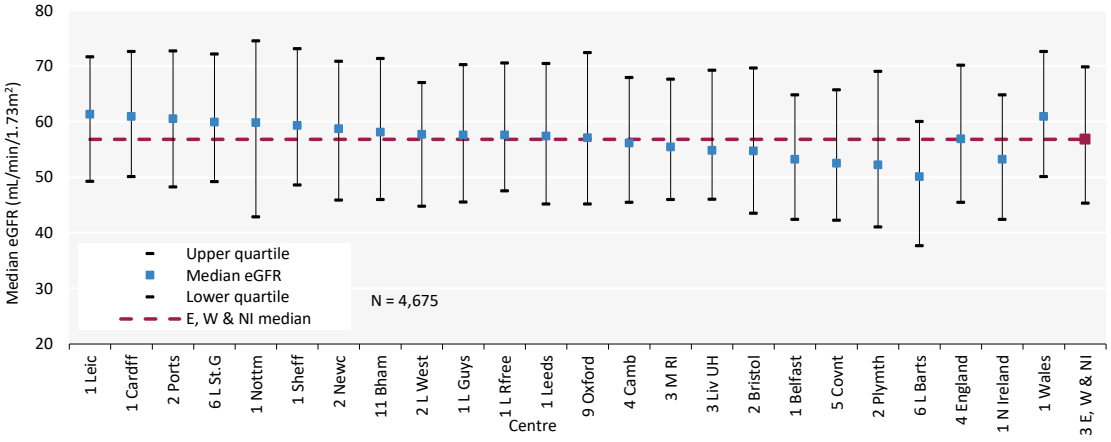

Figure 4.5 Median estimated glomerular filtration rate (eGFR) at 1 year post-living kidney donor (LKD) Tx by transplanting centre for transplantation that occured between 2016 and 2022

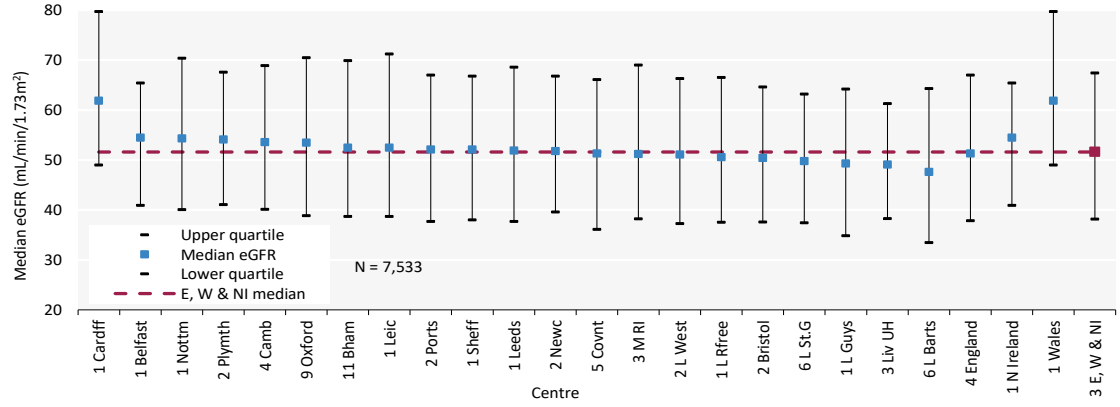

Figure 4.6 Median estimated glomerular filtration rate (eGFR) at 1 year post-donor after brain death (DBD) Tx by transplanting centre for transplantation that occured between 2016 and 2022

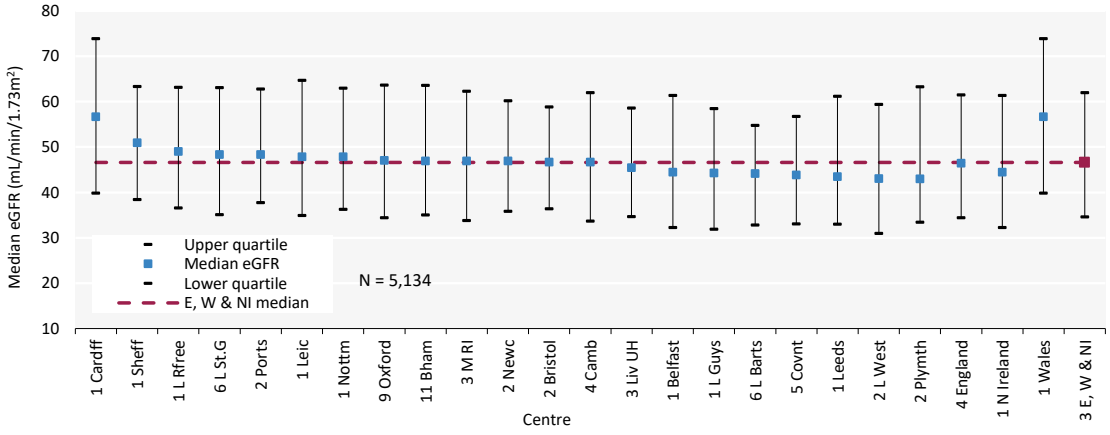

Figure 4.7 Median estimated glomerular filtration rate (eGFR) at 1 year post-donor after circulatory death (DCD) Tx by transplanting centre for transplantation that occured between 2016 and 2022

Changes to the prevalent adult kidney Tx population

Tx recipients are under the care of a Tx centre around the time of transplantation, but the policy of when to repatriate to the referring centre varies. When data entries for patients were received from more than one centre they were attributed to the referring centre.

Table 4.5 Percentage completeness of estimated glomerular filtration rate (eGFR), blood pressure, haemoglobin, total cholesterol, adjusted calcium, phosphate and parathyroid hormone (PTH) by centre for adult patients prevalent to Tx on 31/12/2023

		Data completeness (%)						
Centre	N with Tx	eGFR	Blood pressure	Haemoglobin	Total cholesterol	Adjusted calcium	Phosphate	PTH
TX CENTRES								
Bham	1,648	92.9	84.3	92.5	87.6	92.5	92.4	2.0
Belfast	757	98.9	95.1	98.8	99.2	97.8	97.6	24.0
Bristol	951	99.2	86.3	99.1	92.2	98.7	98.4	98.0
Camb	1,206	93.2	0.0	93.0	84.0	87.7	87.2	86.8
Cardff	1,099	97.7	94.5	97.9	55.3	97.6	97.6	15.7
Covnt	650	90.5	68.3	90.0	61.7	89.9	32.9	26.8
L Barts	1,435	95.1	0.2	95.1	55.4	94.8	94.8	92.8
L Guys	1,487	89.2	0.0	66.1	45.9	63.7	63.9	29.3
L Rfree	1,485	96.0	83.2	95.8	67.8	93.3	93.2	76.5
L St.G	486	97.1	79.6	96.3	73.5	89.5	89.5	67.7
L West	2,028	91.4	0.0	91.5	37.4	91.3	91.3	47.5
Leeds	1,150	98.8	88.1	98.4	94.5	97.1	91.9	36.3
Leic	1,518	95.3	2.5	94.9	93.3	93.9	93.5	46.3
Liv UH M RI	819	95.2	1.6	95.1	72.0	93.9	94.4	1.1
Newc	790	97.1	88.6	97.0	78.5	96.8	96.7	65.8
Nottm	704	99.4	94.9	99.3	79.0	98.4	97.3	83.5
Oxford	1,460	70.1	58.8	96.2	43.2	95.9	95.8	38.5
Plymth	335	96.1	91.6	96.1	80.6	94.0	93.7	69.3
Ports	1,133	91.1	11.9	90.4	45.8	89.4	83.1	40.0
Sheff	765	96.0	85.9	96.0	39.4	95.4	95.4	20.0
DIALYSIS CENTRES								
Antrim	172	98.3	39.0	97.7	100.0	97.1	97.1	39.5
Bangor	114	95.6	38.6	94.7	99.1	94.7	94.7	23.7
Bradfd	431	99.3	1.9	99.1	92.3	97.5	94.9	80.5
Brightn	577	98.1	21.7	97.9	84.1	96.4	95.8	60.7
Carlis	164	81.1	0.0	80.5	45.7	80.5	80.5	36.6
Carsh	897	73.8	3.7	73.8	44.2	72.6	72.4	32.7
Clwyd	95	96.8	17.9	96.8	99.0	96.8	96.8	93.7
Derby	316	98.1	92.4	97.8	95.3	97.2	97.2	94.9
Donc	147	99.3	97.3	99.3	95.9	98.6	98.6	37.4
Dorset	433	87.8	17.1	86.8	75.8	83.4	71.1	58.2
Dudley	121	98.4	23.1	96.7	90.1	98.4	85.1	90.9
EssexMS Exeter	357	96.1	0.0	95.5	67.0	90.2	83.5	18.8
Glouc	301	95.7	58.8	95.4	64.5	92.0	89.0	44.5
Hull	497	98.0	2.4	97.2	51.5	93.0	93.0	25.0
Ipswi	234	95.7	30.3	93.2	69.2	91.0	89.7	58.6
Kent	662	98.9	93.5	98.8	64.4	97.9	98.0	6.5
L Kings	568	93.5	0.0	93.7	58.5	93.1	93.1	58.5
Middlbr	554	86.6	0.0	85.7	49.6	83.9	82.7	12.5
Newry	181	97.8	85.6	97.8	100.0	96.7	96.7	2.2

Table 4.5 Continued

Centre	N with Tx	Data completeness (%)						
		eGFR	Blood pressure	Haemoglobin	Total cholesterol	Adjusted calcium	Phosphate	PTH
Norwch	423	93.6	0.0	92.0	92.2	87.0	86.8	27.0
Prestn	795	95.4	0.4	94.0	72.5	90.7	88.8	17.5
Redng	540	98.5	74.3	98.3	85.7	98.0	97.8	56.5
Salford	725	97.8	0.0	97.8	97.0	97.2	97.1	0.1
Shrew	187	91.4	37.4	90.9	85.6	88.8	88.2	20.3
Stevng	416	96.6	82.2	95.9	37.7	93.3	91.8	18.5
Stoke	450	97.8	1.6	97.8	97.8	97.8	97.6	61.8
Sund	298	99.3	0.0	99.0	85.6	99.0	99.3	89.9
Swanse	377	98.9	95.2	98.1	65.8	97.9	97.9	80.9
Truro	255	99.2	0.0	99.2	85.5	98.8	98.8	77.3
Ulster	109	99.1	88.1	99.1	100.0	99.1	99.1	77.1
West NI	234	98.3	75.6	96.6	98.7	96.6	96.6	88.9
Wirral	193	95.9	3.6	95.9	79.8	68.9	77.2	9.3
Wolve	260	98.5	46.5	97.7	85.8	97.7	68.1	70.0
Wrexm	175	97.1	76.0	97.1	99.4	97.1	97.1	100.0
York	350	98.6	49.4	98.9	68.0	94.3	93.4	30.6
TOTALS								
England	31,201	93.2	36.5	93.0	68.7	91.3	89.0	46.2
N Ireland	1,453	98.6	83.6	98.2	99.4	97.5	97.4	37.6
Wales	1,860	97.7	85.6	97.6	66.5	97.4	97.4	41.3
E, W & NI	**34,514**	**93.6**	**41.1**	**93.4**	**69.8**	**91.9**	**89.8**	**45.6**

Blank cells – no data returned by the centre
Patients who had been on Tx for <3 months were excluded from this analysis, including N with Tx

For the 66 adult kidney centres, the number of prevalent patients with a Tx was calculated as both a proportion of the prevalent patients on KRT and as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

Table 4.6 Number of prevalent adult Tx patients and proportion of adult KRT patients with a Tx by year and by centre; number of Tx patients as a proportion of the catchment population

	N with Tx					% with Tx					Estimated catchment population (millions)	2023 crude rate (pmp)
Centre	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023		
TX CENTRES												
Belfast	692	720	742	758	769	78.6	81.0	81.7	81.9	82.0	0.54	1,428
Bham	1,630	1,603	1,608	1,626	1,697	49.2	49.2	48.7	48.0	49.7	2.10	810
Bristol	939	928	925	957	975	63.2	62.9	61.8	62.8	64.1	1.27	769
Camb	1,109	1,183	1,217	1,246	1,259	76.2	78.3	74.8	75.1	77.3	0.99	1,273
Cardff	1,083	1,068	1,061	1,087	1,139	62.6	63.5	62.4	61.8	62.2	1.16	984
Covnt	624	641	657	660	670	57.7	57.8	58.2	58.4	57.9	0.81	831
Edinb	547	564	603	630	654	61.8	63.7	65.5	65.4	66.1	0.85	772
Glasgw	1,212	1,238	1,242	1,235	1,283	65.5	67.2	67.0	65.2	66.3	1.38	928
L Barts	1,378	1,339	1,358	1,409	1,484	51.9	50.2	49.9	49.6	50.2	1.62	919
L Guys	1,550	1,513	1,482	1,514	1,545	66.8	65.3	63.7	65.5	66.7	1.01	1,534
L Rfree	1,427	1,425	1,467	1,493	1,523	60.9	61.0	61.2	61.6	61.5	1.27	1,195
L St.G	502	480	488	485	504	58.9	56.2	56.0	56.7	57.4	0.67	754
L West	2,043	2,023	2,006	2,056	2,079	56.6	57.3	56.5	56.9	56.5	2.03	1,023
Leeds	1,082	1,118	1,137	1,154	1,177	62.7	63.8	63.7	62.7	61.8	1.40	838
Leic	1,442	1,494	1,447	1,486	1,557	55.9	57.0	54.9	54.6	55.2	2.18	714
Liv UH	842	806	800	804	845	56.8	55.7	54.7	54.4	56.2	1.27	667
M RI	1,399	1,327	1,381	1,393	1,483	68.3	66.8	66.7	66.1	65.7	1.37	1,086
Newc	765	781	799	808	813	65.3	65.3	65.2	64.9	63.2	0.96	850
Nottm	751	732	723	723	722	61.7	60.6	59.4	59.9	60.4	0.93	774
Oxford	1,441	1,461	1,461	1,497	1,511	72.8	72.3	72.8	72.1	70.9	1.54	981
Plymth	360	359	345	336	353	67.3	66.2	63.5	61.8	64.3	0.41	854
Ports	1,133	1,108	1,117	1,141	1,163	60.2	58.3	57.5	57.1	57.3	1.79	651
Sheff	835	805	804	775	781	56.0	53.9	53.6	52.1	52.8	1.12	695
DIALYSIS CENTRES												
Abrdn	343	350	369	371	378	61.6	62.0	63.8	63.0	62.2	0.50	758
Airdrie	297	295	285	290	310	56.6	57.2	56.6	56.1	54.9	0.47	664
Antrim	145	161	160	170	174	50.9	56.1	54.2	55.6	56.0	0.25	700
Bangor	106	107	108	112	118	52.7	49.5	49.8	50.9	54.1	0.16	747
Bradfd	413	417	417	423	441	56.3	57.5	56.7	54.2	53.5	0.51	869
Brightn	545	556	568	583	594	51.2	51.6	52.1	53.1	51.9	1.08	549
Carlis	156	152	159	163	170	51.7	51.2	52.0	53.8	55.7	0.26	656
Carsh	835	844	864	900	927	46.9	45.6	45.3	46.4	46.3	1.68	552
Clwyd	104	107	102	97	98	50.7	52.5	50.5	47.6	44.1	0.18	539
D&Gall	89	91	94	89	91	59.3	58.0	60.7	61.0	62.8	0.12	753
Derby	296	299	307	305	325	45.3	44.3	44.4	42.5	44.2	0.58	564
Donc	132	140	148	156	159	38.6	41.1	43.4	41.1	41.1	0.38	418
Dorset	436	449	446	432	444	56.4	56.3	56.7	54.6	54.4	0.75	592
Dudley	111	124	130	127	122	30.3	33.2	32.3	33.2	33.2	0.35	347
Dundee	257	250	236	228	215	57.5	58.8	58.6	58.8	56.0	0.37	584
EssexMS	329	350	355	353	365	38.6	39.6	39.7	39.6	37.5	1.01	361
Exeter	541	535	512	541	555	49.7	49.0	47.5	48.0	49.2	0.99	562
Glouc	269	266	282	294	305	50.7	51.0	51.7	52.8	54.5	0.53	579
Hull	498	498	492	503	506	55.1	54.6	53.7	53.9	52.8	0.81	623
Inverns	171	170	171	178	182	60.4	62.5	62.0	63.6	58.7	0.23	807
Ipswi	240	255	248	242	238	56.1	59.9	58.8	61.3	60.0	0.32	748
Kent	650	639	644	651	686	57.0	55.9	54.0	53.3	55.3	1.08	632
Klmarnk	185	183	183	190	185	51.1	49.5	49.6	50.1	47.0	0.29	634
Krkcldy	143	136	120	110	103	48.5	47.1	41.2	38.6	35.8	0.28	375
L Kings	525	513	529	554	591	42.1	40.9	39.7	39.7	42.6	0.94	626
Middlbr	558	573	571	569	573	58.6	60.6	59.6	59.5	59.0	0.82	699
Newry	162	173	179	179	189	64.0	65.5	63.7	66.5	68.2	0.24	794
Norwch	454	460	450	448	425	56.1	56.8	56.3	55.9	52.6	0.71	602

Table 4.6 Continued

Centre	N with Tx					% with Tx					Estimated catchment population (millions)	2023 crude rate (pmp)
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023		
Prestn	745	772	778	792	813	55.5	56.4	56.6	56.6	56.6	1.27	640
Redng	483	501	513	516	552	56.0	57.6	58.4	56.0	55.5	0.74	743
Salford	687	689	688	699	745	55.3	54.4	56.5	54.9	54.3	1.19	627
Shrew	151	166	173	187	190	34.6	38.9	39.1	41.9	41.2	0.42	449
Stevng	383	380	410	418	431	39.8	38.8	40.1	39.1	38.6	1.15	374
Stoke	439	430	433	452	460	54.3	52.7	51.2	49.9	50.0	0.75	615
Sund	280	296	285	290	309	49.1	53.2	52.1	51.3	52.4	0.54	567
Swanse	358	353	359	365	388	41.2	41.5	42.1	43.0	43.1	0.75	516
Truro	261	259	251	254	256	58.0	58.3	54.3	53.9	54.7	0.37	701
Ulster	81	102	102	105	109	43.8	50.8	50.3	50.2	51.9	0.21	531
West NI	207	224	226	240	244	63.1	63.8	66.7	67.6	68.4	0.25	964
Wirral	184	198	199	189	199	44.1	47.5	47.8	46.9	51.4	0.48	413
Wolve	229	239	246	248	269	37.2	36.5	35.4	34.2	34.5	0.55	486
Wrexm	174	177	181	178	179	56.1	55.0	59.7	58.0	54.7	0.21	856
York	349	338	348	351	359	60.0	59.1	59.9	57.6	58.9	0.49	729
TOTALS												
England	32,431	32,464	32,668	33,203	34,150	56.3	56.1	55.5	55.3	55.5	45.78	746
N Ireland	1,287	1,380	1,409	1,452	1,485	66.6	69.3	69.6	70.3	71.0	1.48	1,001
Scotland	3,244	3,277	3,303	3,321	3,401	60.6	61.6	61.7	61.0	60.6	4.48	760
Wales	1,825	1,812	1,811	1,839	1,922	55.1	55.4	55.3	55.1	55.0	2.46	782
UK	**38,787**	**38,933**	**39,191**	**39,815**	**40,958**	**56.8**	**56.9**	**56.4**	**56.1**	**56.3**	**54.20**	**756**

Country Tx populations were calculated by summing the Tx patients from centres in each country. Estimated country populations were derived from publicly available sources (see appendix A for details on estimated catchment population by kidney centre)
Exeter was unable to submit 2021 to 2023 patient level data, Manchester was unable to submit 2023 patient level data, but both provided aggregate numbers of patients on KRT at the end of each year by treatment modality
pmp – per million population

Demographics of prevalent adult kidney Tx patients

The proportion of Tx patients from each ethnic group is shown for patients with ethnicity data – the proportion of patients at each centre with no ethnicity data is shown separately.

Table 4.7 Demographics of adult patients prevalent to Tx on 31/12/2023 by centre

						Ethnicity				
Centre	N on KRT	N with Tx	% with Tx	Median age (yrs)	% male	% White	% Asian	% Black	% Other	% missing
TX CENTRES										
Belfast	938	769	82.0	57.1	61.0	97.1	2.0	0.3	0.5	4.6
Bham	3,417	1,697	49.7	54.3	57.8	58.3	29.8	8.2	3.7	0.4
Bristol	1,522	975	64.1	57.0	60.3	88.3	4.4	5.0	2.3	0.3
Camb	1,629	1,259	77.3	56.5	62.6	88.2	7.3	2.9	1.6	0.4
Cardff	1,830	1,139	62.2	56.5	63.8	91.9	5.5	1.1	1.6	3.4
Covnt	1,158	670	57.9	56.0	61.2	76.7	17.5	5.4	0.5	0.3
Edinb	989	654	66.1	57.2	64.4					
Glasgw	1,934	1,283	66.3	57.1	58.6					
L Barts	2,959	1,484	50.2	54.5	59.2	37.5	35.6	20.4	6.5	0.7
L Guys	2,318	1,545	66.7	54.9	60.5	63.0	10.7	21.0	5.4	0.9
L Rfree	2,475	1,523	61.5	56.7	61.1	44.0	22.8	19.0	14.2	3.3
L St.G	878	504	57.4	57.3	54.6	46.6	23.8	19.7	9.9	3.4
L West	3,681	2,079	56.5	58.4	62.5	40.5	36.2	15.6	7.7	0.0
Leeds	1,906	1,177	61.8	56.0	60.0	78.1	15.1	4.9	1.9	0.2
Leic	2,820	1,557	55.2	58.1	57.6	72.6	20.3	5.0	2.0	1.4
Liv UH	1,503	845	56.2	56.3	63.2	91.6	2.8	3.5	2.2	1.7
M RI	2,258	1,483	65.7							
Newc	1,287	813	63.2	57.0	58.6	93.4	4.8	1.0	0.9	0.1
Nottm	1,195	722	60.4	55.8	59.0	84.9	5.6	5.0	4.6	0.1
Oxford	2,132	1,511	70.9	56.7	61.0	79.8	11.5	4.8	3.9	4.8
Plymth	549	353	64.3	58.2	64.6	96.3	1.1	0.6	2.0	0.3
Ports	2,030	1,163	57.3	58.0	57.4	92.6	4.4	1.0	2.0	4.9
Sheff	1,478	781	52.8	57.0	63.1	87.8	6.7	2.3	3.1	1.0
DIALYSIS CENTRES										
Abrdn	608	378	62.2	54.5	59.3					
Airdrie	565	310	54.9	56.2	57.4					
Antrim	311	174	55.9	58.6	62.1	99.4	0.0	0.6	0.0	7.5
Bangor	218	118	54.1	57.0	64.4	99.1	0.0	0.0	0.9	6.8
Bradfd	824	441	53.5	53.0	59.4	51.3	45.4	2.3	1.1	0.0
Brightn	1,145	594	51.9	58.1	60.8	89.8	5.8	2.1	2.4	1.4
Carlis	305	170	55.7	58.8	64.1	95.8	4.2	0.0	0.0	1.2
Carsh	2,001	927	46.3	59.1	62.2	67.8	19.5	9.1	3.6	0.4
Clwyd	222	98	44.1	58.5	66.3	97.9	2.1	0.0	0.0	3.1
Colchr	164	0								
D&Gall	145	91	62.8	58.4	63.7					
Derby	735	325	44.2	59.0	61.5	83.9	10.2	2.8	3.1	0.6
Donc	387	159	41.1	57.0	65.4	94.3	2.5	1.3	1.9	0.6
Dorset	816	444	54.4	61.1	60.4	95.5	2.5	0.5	1.6	0.0
Dudley	368	122	33.2	57.5	66.4	80.3	14.8	3.3	1.6	0.0
Dundee	384	215	56.0	58.2	59.1					
EssexMS	974	365	37.5	57.7	61.9	85.1	7.2	5.0	2.8	0.6
Exeter	1,127	555	49.2							
Glouc	560	305	54.5	60.0	58.0	90.8	4.9	2.0	2.3	0.3
Hull	959	506	52.8	56.9	64.8	96.2	1.4	1.0	1.4	0.6
Inverns	310	182	58.7	57.6	57.7					
Ipswi	397	238	59.9	59.8	61.8	81.9	2.5	3.8	11.8	0.0
Kent	1,240	686	55.3	57.1	58.6	91.1	3.8	1.8	3.4	0.3

Table 4.7 Continued

Centre	N on KRT	N with Tx	% with Tx	Median age (yrs)	% male	Ethnicity				
						% White	% Asian	% Black	% Other	% missing
Klmarnk	394	185	47.0	58.0	57.3					
Krkcldy	288	103	35.8	58.5	62.1					
L Kings	1,389	591	42.5	58.0	63.3	46.0	18.5	31.8	3.7	0.3
Middlbr	971	573	59.0	58.5	60.6	94.1	4.5	0.4	1.1	0.0
Newry	277	189	68.2	57.7	63.0	97.8	1.1	0.6	0.6	3.2
Norwch	808	425	52.6	59.0	59.8	96.5	1.7	1.2	0.7	0.2
Prestn	1,436	813	56.6	57.8	60.3	83.6	14.5	0.9	1.0	0.1
Redng	994	552	55.5	59.2	64.3	62.8	24.8	5.4	7.0	6.5
Salford	1,371	745	54.3	58.0	61.1	80.5	15.0	2.4	2.0	0.8
Shrew	461	190	41.2	57.5	62.1	91.5	3.2	2.1	3.2	0.5
Stevng	1,117	431	38.6	57.1	67.3	67.4	20.8	7.9	4.0	0.5
Stoke	921	460	49.9	55.0	63.3	89.7	6.7	2.0	1.6	2.6
Sund	590	309	52.4	57.6	59.6	94.2	3.9	1.0	1.0	0.0
Swanse	901	388	43.1	57.5	61.3	96.1	2.9	0.3	0.8	0.5
Truro	468	256	54.7	57.6	58.2	98.1	0.4	0.0	1.6	0.0
Ulster	210	109	51.9	58.6	63.3	92.7	4.6	2.8	0.0	0.0
West NI	357	244	68.3	56.0	62.7	98.3	1.7	0.0	0.0	1.6
Wirral	387	199	51.4	58.4	60.8	94.5	3.0	0.5	2.0	0.0
Wolve	780	269	34.5	57.0	56.9	63.6	26.4	7.8	2.2	0.0
Wrexm	327	179	54.7	55.7	65.9	95.5	1.7	0.6	2.3	1.7
York	610	359	58.9	58.8	64.4	95.8	1.7	0.3	2.2	0.3
TOTALS										
England	61,500	34,150	55.5	57.0	60.7	73.6	15.1	7.5	3.8	1.2
N Ireland	2,093	1,485	71.0	57.3	61.8	97.3	1.8	0.5	0.4	3.9
Scotland	5,617	3,401	60.5	57.0	59.8					
Wales	3,498	1,922	54.9	56.8	63.7	93.8	4.1	0.8	1.3	2.9
UK	**72,708**	**40,958**	**56.3**	**57.0**	**60.8**	**75.6**	**14.0**	**6.9**	**3.6**	**1.4**

Blank cells – no data returned by the centre or data completeness <70%
Breakdown by ethnicity is not shown for centres with <70% data completeness, but these centres were included in national averages
Exeter and Manchester were unable to submit 2023 patient level data but provided aggregate numbers of patients on KRT at the end of 2023 by treatment modality
UK ethnicity distribution and completeness does not include Scotland

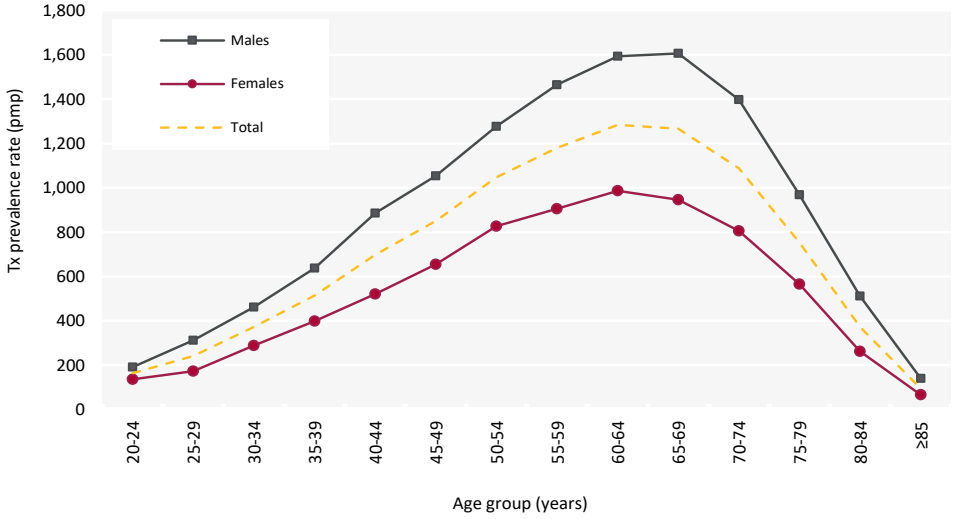

Figure 4.8 Adult Tx prevalence rate on 31/12/2023 by age group and sex
pmp – per million population

The distribution of primary renal diseases (PRDs) as a cause of ESKD in the incident Tx population is compared to the prevalent Tx population (table 4.8). Comparison to dialysis populations is shown in chapter 3. PRDs were grouped into categories, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of Tx patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

Table 4.8 Primary renal diseases (PRDs) of adult patients incident to Tx in 2023 and adult patients prevalent to Tx on 31/12/2023

	Incident Tx		Prevalent Tx	
PRD	N	%	N	%
Diabetes	505	17.6	4,485	11.9
Glomerulonephritis	637	22.1	8,837	23.5
Hypertension	216	7.5	1,971	5.2
Polycystic kidney disease	349	12.1	5,101	13.6
Pyelonephritis	161	5.6	3,108	8.3
Renal vascular disease	55	1.9	464	1.2
Other	526	18.3	7,300	19.4
Uncertain aetiology	428	14.9	6,353	16.9
Total (with data)	**2,877**	**100.0**	**37,619**	**100.0**
Missing	137	4.5	710	1.9

Graft function and anaemia in prevalent adult kidney Tx patients

Accepting the limitations of interpreting eGFR in the post-Tx population, four centre-specific analyses are presented: median eGFR, the percentage of patients with eGFR <30 mL/min/1.73m², and the proportion of patients achieving an adequate haemoglobin level (defined as a haemoglobin ≥100 g/L) separately for those with eGFR <30 mL/min/1.73m² and those with eGFR ≥30mL/min/1.73m².

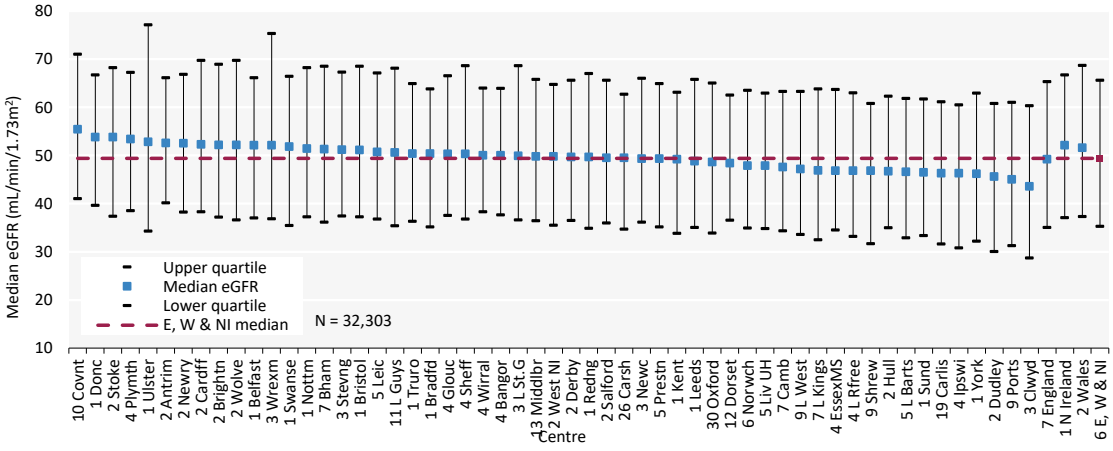

Figure 4.9 Median estimated glomerular filtration rate (eGFR) in adult patients prevalent to Tx on 31/12/2023 by centre

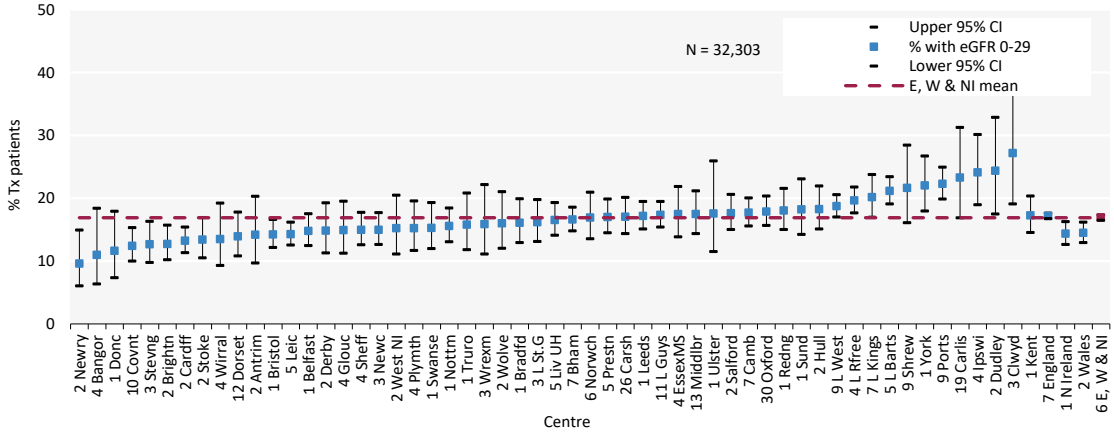

Figure 4.10 Percentage of adult patients prevalent to Tx on 31/12/2023 with an estimated glomerular filtration rate (eGFR) <30mL/min/1.73m² by centre
CI – confidence interval

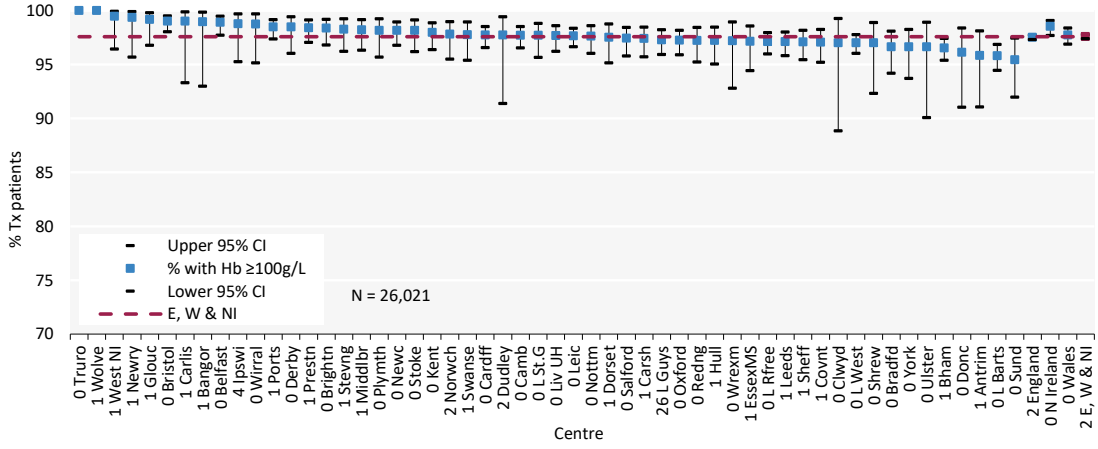

Figure 4.11 Percentage of adult patients prevalent to Tx on 31/12/2023 with an estimated glomerular filtration rate (eGFR) ≥30mL/min/1.73m^2 achieving haemoglobin (Hb) ≥100g/L by centre
CI – confidence interval

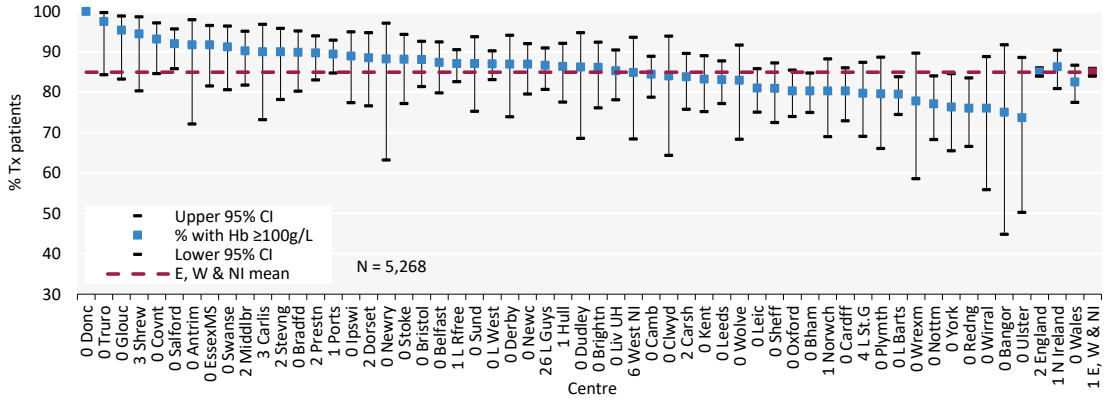

Figure 4.12 Percentage of adult patients prevalent to Tx on 31/12/2023 with an estimated glomerular filtration rate (eGFR) <30mL/min/1.73m^2 achieving haemoglobin (Hb) ≥100g/L by centre
CI – confidence interval

Blood pressure in prevalent adult kidney Tx patients

Blood pressure data completeness was variable (table 4.5) and only centres with ≥70% data completeness were included in the analysis. It is possible that bias may be introduced if blood pressure readings in particular ranges were more frequently reported. A lack of data on proteinuria did not allow differentiation for the purposes of reporting against the audit measure.

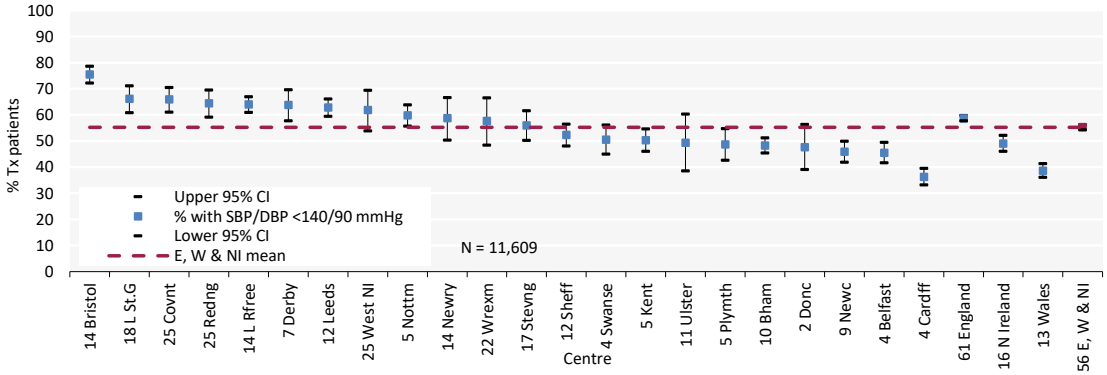

Figure 4.13 Percentage of adult patients prevalent to Tx on 31/12/2023 with estimated glomerular filtration rate (eGFR) ≥30 mL/min/1.73m^2 achieving blood pressure of <140/90 mmHg by centre
CI – confidence interval; DBP – diastolic blood pressure; SBP – systolic blood pressure

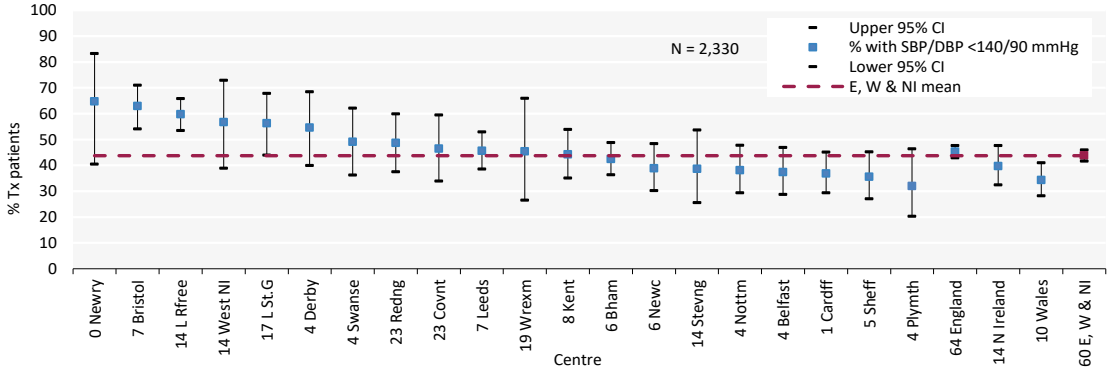

Figure 4.14 Percentage of adult patients prevalent to Tx on 31/12/2023 with estimated glomerular filtration rate (eGFR) <30 mL/min/1.73m^2 achieving blood pressure of <140/90 mmHg by centre
CI – confidence interval; DBP – diastolic blood pressure; SBP – systolic blood pressure

Biochemistry parameters in prevalent adult kidney Tx patients

The attainment of audit standards is shown by stage of Tx kidney function in the prevalent Tx population and by comparing to the prevalent dialysis population.

Table 4.9 Estimated glomerular filtration rate (eGFR), blood pressure and biochemical parameters in adult patients prevalent to Tx on 31/12/2023 compared with adult patients prevalent to dialysis on 31/12/2023 by CKD stage

	Tx CKD stage (eGFR)				
Characteristic	Stage 1-2T (≥60 mL/min/1.73 m²)	Stage 3T (30-59 mL/min/1.73 m²)	Stage 4T (15-29 mL/min/1.73 m²)	Stage 5T (<15 mL/min/1.73 m²)	Prevalent dialysis Stage 5D
N	10,367	16,064	4,541	811	22,357
%	32.6	50.5	14.3	2.6	
eGFR (mL/min/1.73m²)					
mean ± SD	76.7 ± 13.1	45.0 ± 8.4	23.6 ± 4.2	11.6 ± 2.5	
median	73.7	45.0	24.2	12.0	
SBP (mmHg)					
mean ± SD	135 ± 17	138 ± 18	140 ± 19	145 ± 21	137 ± 25
% ≥140 mmHg	35.5	41.7	47.5	57.8	43.0
DBP (mmHg)					
mean ± SD	80 ± 10	80 ± 11	79 ± 12	81 ± 12	71 ± 15
% ≥90 mmHg	17.5	18.0	17.8	22.6	12.1
Total cholesterol (mmol/L)					
mean ± SD	4.4 ± 1.1	4.4 ± 1.1	4.4 ± 1.2	4.4 ± 1.2	3.8 ± 1.1
% ≥4.0 mmol/L	63.0	63.0	61.5	62.4	39.4
Haemoglobin (g/L)					
mean ± SD	138 ± 16	129 ± 17	117 ± 16	106 ± 16	110 ± 14
% <100 g/L	1.2	3.2	12.2	31.2	21.0
Phosphate (mmol/L)					
mean ± SD	0.9 ± 0.2	1.0 ± 0.2	1.1 ± 0.2	1.4 ± 0.4	1.7 ± 0.5
% >1.7 mmol/L	0.1	0.2	1.7	20.4	44.4
Adjusted Ca (mmol/L)					
mean ± SD	2.4 ± 0.1	2.4 ± 0.1	2.4 ± 0.1	2.3 ± 0.2	2.3 ± 0.2
% >2.5 mmol/L	26.4	27.1	20.9	13.3	14.8
% <2.2 mmol/L	1.7	2.2	5.3	16.3	17.0
PTH (pmol/L)					
median	8.5	10.2	15.9	30.8	36.7
% >72 pmol/L	0.4	0.9	3.0	15.8	20.7

Ca – adjusted calcium; DBP – diastolic blood pressure; PTH – parathyroid hormone; SBP – systolic blood pressure; SD – standard deviation

Differences in the median eGFR slope in Tx patients is reported by patient and Tx graft characteristics. All UK patients aged at least 18 years receiving their first kidney Tx between 01/01/2013 and 31/12/2021 were considered for inclusion in the analysis. A minimum duration of 18 months graft function was required and three or more creatinine measurements from the second year of graft function onwards were used to plot eGFR slope. If a Tx failed, but there were at least three creatinine measurements between one year post-Tx and graft failure, the patient was included, but no creatinine measurements after the quarter preceding the recorded date of Tx failure were analysed.

Table 4.10 Differences in median estimated glomerular filtration rate (eGFR) slope between demographic subgroups of adult patients who received their first kidney Tx between 01/01/2013 and 31/12/2021

Characteristic	N	Median slope	Lower quartile	Upper quartile
Age at Tx (yrs)				
<40	4,717	-1.44	-4.74	0.72
40-55	8,455	-0.80	-3.12	1.03
>55	6,906	-0.74	-3.14	1.07
Ethnicity				
White	13,934	-0.82	-3.19	0.97
Asian	2,947	-1.16	-3.84	0.89
Black	1,630	-1.45	-4.33	0.86
Other	664	-1.02	-4.13	0.83
Sex				
Male	12,394	-0.68	-3.13	1.14
Female	7,684	-1.26	-3.95	0.68
Diabetes				
No Diabetes	16,245	-0.80	-3.22	1.01
Diabetes	3,482	-1.48	-4.35	0.79
Tx donor				
Deceased	14,170	-0.91	-3.48	1.03
Living	5,908	-0.90	-3.28	0.88
Year of Tx				
2013	2,398	-1.08	-3.09	0.35
2014	2,330	-0.94	-2.91	0.50
2015	2,317	-0.83	-2.88	0.57
2016	2,396	-0.93	-3.24	0.74
2017	2,557	-0.88	-3.33	0.91
2018	2,501	-0.73	-3.28	1.39
2019	2,301	-0.86	-3.76	1.49
2020	1,600	-0.92	-4.18	2.26
2021	1,678	-0.90	-6.63	3.94
Status of Tx patients at end of follow-up				
Died	2,390	-1.35	-4.11	0.95
Graft failed	1,906	-6.02	-11.33	-2.92
Re-transplanted	79	-3.07	-6.65	-1.09
Graft functioning	15,782	-0.51	-2.57	1.17
Total	**20,078**	**-0.90**	**-3.43**	**0.98**

Survival of adult kidney Tx patients

Survival of incident and prevalent KRT patients is described in detail in chapters 2 and 3, respectively. Survival of incident Tx patients is reported in table 4.4. NHSBT reports the survival of Tx recipients.

Cause of death in adult kidney Tx patients

Cause of death was analysed in patients prevalent to KRT on 31/12/2022 and followed-up for one year in 2023, with comparisons between Tx and dialysis presented in table 4.11. The proportion of KRT patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line. Where the cause of death was missing in the UKRR data, cause of death from Civil Registration records was used.

Table 4.11 Cause of death in adult patients prevalent to KRT on 31/12/2022 followed-up in 2023 by modality

	All modalities		Dialysis		Tx	
Cause of death	N	%	N	%	N	%
Cardiac disease	1,054	19.2	868	20.1	186	15.7
Cerebrovascular disease	193	3.5	147	3.4	46	3.9
Infection	1,039	18.9	782	18.1	257	21.7
Malignancy	480	8.7	262	6.1	218	18.4
Treatment withdrawal	480	8.7	458	10.6	22	1.9
Other	1,733	31.5	1,408	32.7	325	27.4
Uncertain aetiology	517	9.4	387	9.0	130	11.0
Total (with data)	**5,496**	**100.0**	**4,312**	**100.0**	**1,184**	**100.0**
Missing	630	10.3	472	9.9	158	11.8

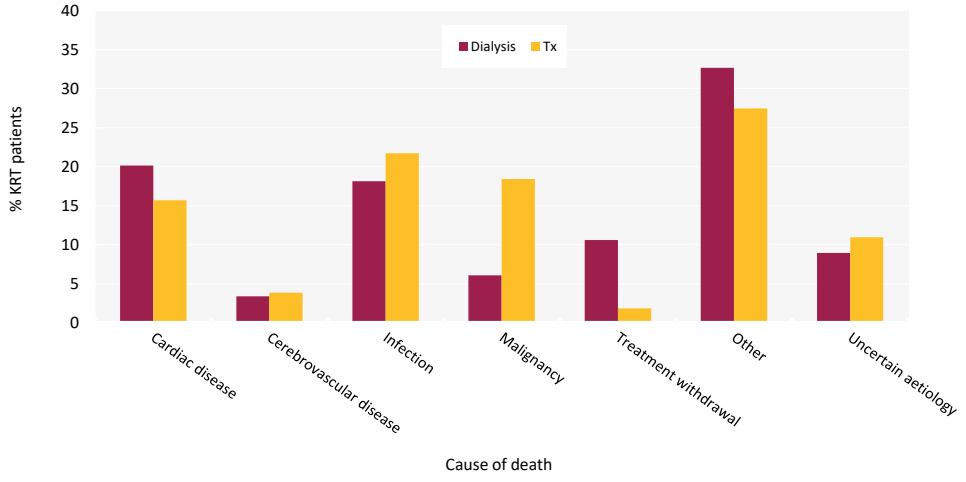

Figure 4.15 Cause of death for adult patients prevalent to KRT on 31/12/2022 followed-up in 2023 by modality

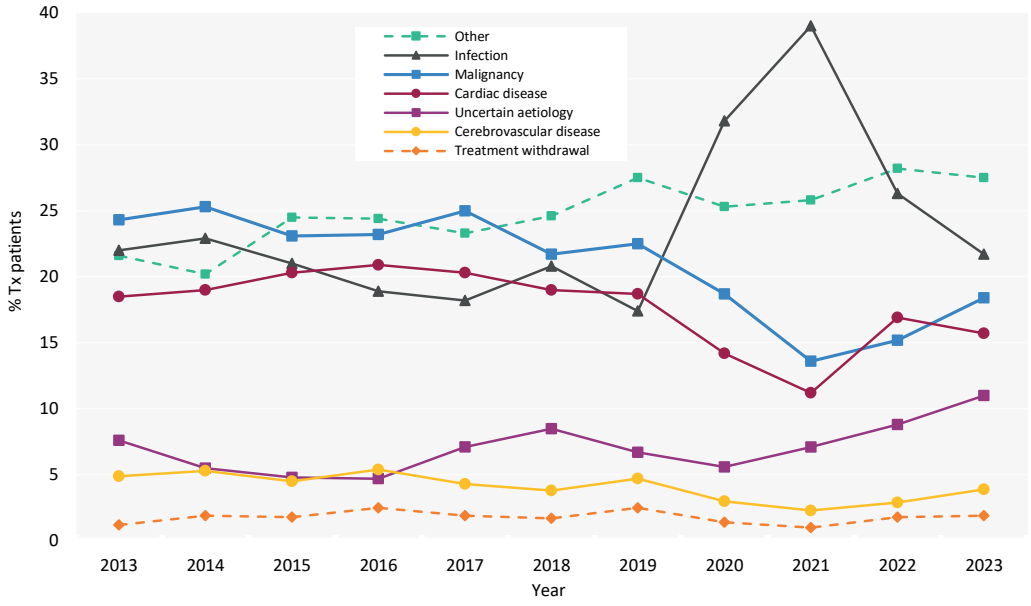

Figure 4.16 Cause of death between 2013 and 2023 for adult patients prevalent to Tx at the beginning of the year