

Chapter 4

Adults with a kidney transplant (Tx) in the UK at the end of 2022

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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 2022 (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.

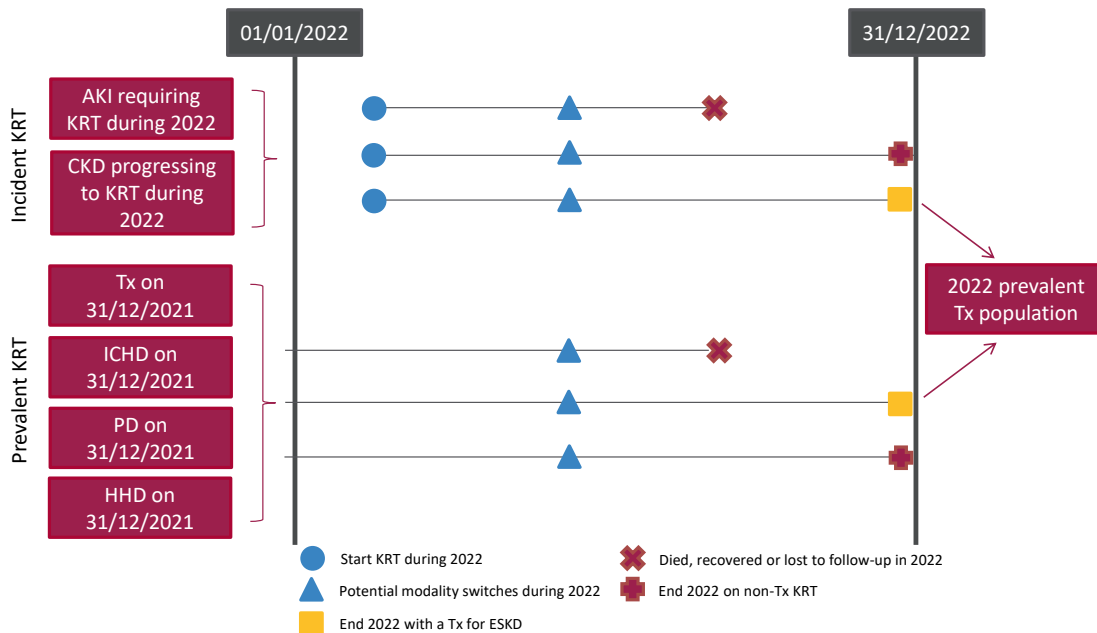


Figure 4.1 Pathways adult patients could follow to be included in the UK 2022 prevalent Tx population

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 2022 or if they had been on KRT for ≥ 90 days and were on Tx at the end of 2022

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 2022 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 2022 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 2022, 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 was unable to submit patient level data for 2022. Aggregate numbers by modality were provided, enabling inclusion in Tables 4.6 and 4.7. Exeter is excluded from all other analyses.

Manchester moved to a new Trust IT system, and as a result data were not submitted for the final quarter of 2022. For charts and tables in this chapter that use the December 2022 prevalent cohort, the data for Manchester are for patients who were on KRT as at 30th September 2022, rather than 31st December 2022.

Key findings

- 39,874 adult patients had a kidney Tx for ESKD in the UK on 31/12/2022, which represented 56.2% of the KRT population.
- The median age of kidney Tx patients was 56.7 years and 60.8% were male.
- There was a 7% increase in overall kidney Tx performed in 2022 compared to 2021, with a increase in kidney Tx from LKDs by 8%, DCDs by 21% and a 2% decrease in DBDs. Transplant activity has not yet recovered to pre-pandemic levels.
- The median eGFR for kidney Tx patients 1 year after transplantation was 56.6 mL/min/1.73m² from LKD, 51.8 mL/min/1.73m² from DBD and 46.9 mL/min/1.73m² from DCD.
- 16.3% of kidney Tx patients had eGFR <30 mL/min/1.73m².
- The median decline in eGFR slope beyond the first year after transplantation was 0.8 mL/min/1.73m²/year.
- This year for the first time, 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 26.0%.

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, 2019-2022 calendar years

Organ	2019	2020	2021	2022	% change 2021-2022
Kidney DBD ¹	1,417	1,220	1,208	1,185	-2
Kidney DCD ²	1,024	683	845	1020	21
Kidney LKD	1,042	588	801	863	8
Kidney and liver ³	18	5	9	6	-
Kidney and heart	1	0	2	0	-
Kidney and pancreas ⁴	157	97	111	120	8
Kidney and pancreas islets ⁵	7	4	7	5	-
Small bowel (inc kidney)	4	0	0	0	-
Total kidney Tx	3,670	2,597	2,983	3,199	7

¹ Includes en bloc kidney transplants (5 in 2019, 2 in 2020 and 2 in 2021) and double kidney transplants (5 in 2019, 10 in 2020, 10 in 2021 and 12 in 2022)

² Includes en bloc kidney transplants (3 in 2019, 2 in 2020, 5 in 2021 and 3 in 2022) and double kidney transplants (24 in 2019, 9 in 2020, 18 in 2021 and 13 in 2022)

³ Includes DCD transplants (1 in 2020 and 1 in 2022)

⁴ Includes DCD transplants (45 in 2019, 23 in 2020, 31 in 2021 and 41 in 2022)

⁵ Includes DCD transplants (2 in 2020, 2 in 2021 and 1 in 2022)

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.

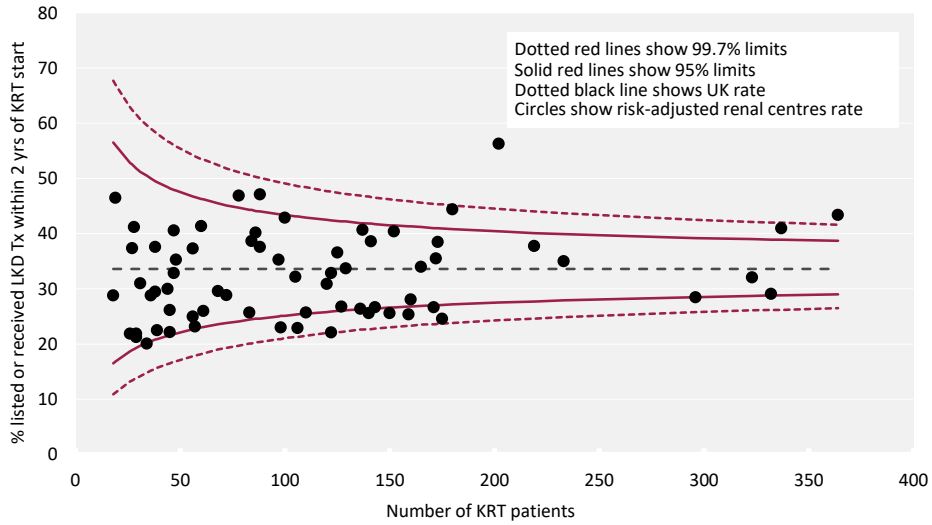


Figure 4.2 Percentage of adult patients incident to KRT in 2020 (adjusted to age 40-49 years, male, non-diabetic primary renal disease) who were waitlisted or received a living kidney donor (LKD) Tx within 2 years of KRT start by centre

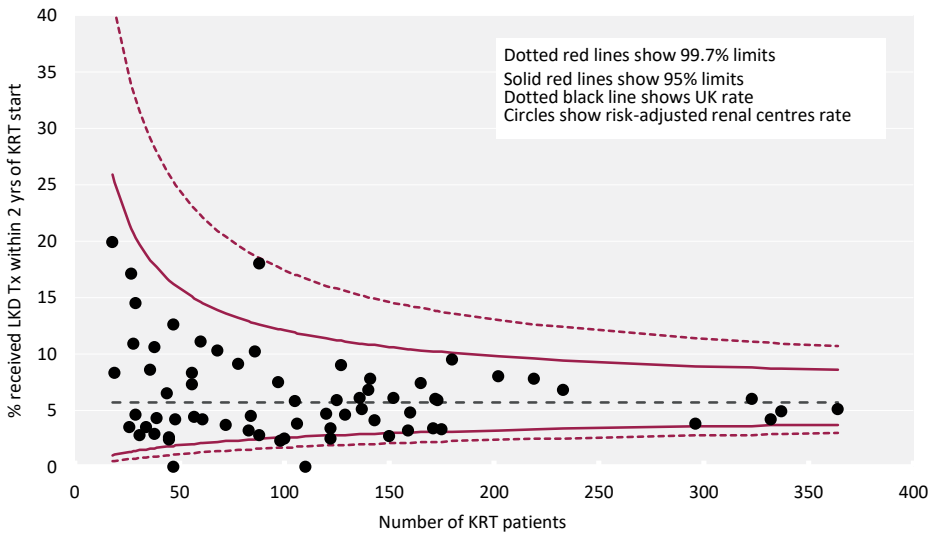


Figure 4.3 Percentage of adult patients incident to KRT in 2020 (adjusted to age 40-49 years, male, non-diabetic primary renal disease) who received a living kidney donor (LKD) Tx within 2 years of KRT start by centre

Table 4.3 Percentage of adult patients incident to KRT in 2020 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

Centre	N on KRT	Listing/LKD Tx by 2 years from KRT start			LKD Tx by 2 years from KRT start		
		Adjusted percentage	Limits for funnel plot		Adjusted percentage	Limits for funnel plot	
			Lower 95% limit	Upper 95% limit		Lower 95% limit	Upper 95% limit
TX CENTRES							
Belfast	78	46.9	24.1	44.7	9.1	2.3	13.2
Bham	332	29.1	28.8	38.9	4.2	3.7	8.7
Bristol	129	33.7	26.1	42.2	4.6	2.8	11.1
Camb	137	40.7	26.3	41.9	5.1	2.9	10.9
Cardff	136	26.4	26.3	41.9	6.1	2.9	10.9
Covnt	141	38.6	26.4	41.8	7.8	2.9	10.8
Edinb	88	47.1	24.6	44	18	2.5	12.6
Glasgw	180	44.4	27.2	40.8	9.5	3.1	10.1
L Barts	323	32.1	28.7	39	6	3.6	8.8
L Guys	160	28.1	26.8	41.3	4.8	3	10.4
L Rfree	233	35	27.9	39.9	6.8	3.4	9.4
L St.G	84	38.7	24.5	44.3	4.5	2.4	12.8
L West	364	43.4	29	38.7	5.1	3.7	8.6
Leeds	152	40.4	26.6	41.5	6.1	3	10.6
Leic	337	41	28.8	38.9	4.9	3.7	8.7
Liv UH	150	25.6	26.6	41.5	2.7	3	10.6
M RI	172	35.5	27	41	6	3.1	10.2
Newc	125	36.6	26	42.3	5.9	2.8	11.2
Nottm	122	32.9	25.9	42.4	2.5	2.8	11.3
Oxford	202	56.3	27.5	40.4	8	3.2	9.8
Plymth	60	41.4	23	46.3	11.1	2.1	14.6
Ports	219	37.8	27.7	40.1	7.8	3.3	9.6
Sheff	175	24.6	27.1	40.9	3.3	3.1	10.2
DIALYSIS CENTRES							
Abrdn	56	25	22.7	46.7	8.3	2	15.1
Airdrie	56	37.3	22.7	46.7	7.3	2	15.1
Antrim	29	21.3	19.3	51.8	4.6	1.4	20.3
Bangor	29	21.9	19.3	51.8	14.5	1.4	20.3
Bradfd	83	25.7	24.4	44.3	3.2	2.4	12.9
Brightn	143	26.7	26.4	41.7	4.1	2.9	10.8
Carlis	34	20.1	20.2	50.5	3.5	1.5	18.8
Carsh	296	28.5	28.5	39.2	3.8	3.6	8.9
Clwyd	26	21.9	18.7	52.8	3.5	1.3	21.5
Colchr	39	22.5	20.9	49.3	4.3	1.7	17.7
D&Gall	19	46.5	16.8	56	8.3	1.1	25.2
Derby	72	28.9	23.8	45.1	3.7	2.3	13.6
Donc	47	32.9	21.8	47.9	0	1.8	16.2
Dorset	88	37.6	24.6	44	2.8	2.5	12.6
Dudley	61	26	23.1	46.2	4.2	2.1	14.5
Dundee	27	37.4	18.9	52.5	17.1	1.3	21.1
EssexMS	127	26.8	26	42.2	9	2.8	11.2
Exeter	105	32.2	25.3	43.1	5.8	2.6	11.9
Glouc	86	40.2	24.6	44.1	10.2	2.4	12.7
Hull	106	22.9	25.4	43.1	3.8	2.6	11.8
Inverns	18	28.8	16.5	56.5	19.9	1	25.9
Ipswi	44	30	21.5	48.4	6.5	1.8	16.7
Kent	140	25.6	26.4	41.8	6.8	2.9	10.8
Klmarnk	57	23.2	22.8	46.6	4.4	2	14.9
Krkldy	36	28.8	20.5	50	8.6	1.6	18.3
L Kings	159	25.4	26.8	41.3	3.2	3	10.4

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		
		Adjusted percentage	Limits for funnel plot		Adjusted percentage	Limits for funnel plot	
			Lower 95% limit	Upper 95% limit		Lower 95% limit	Upper 95% limit
Middlbr	97	35.3	25	43.5	7.5	2.6	12.2
Newry	31	31	19.7	51.2	2.8	1.5	19.7
Norwch	98	23	25.1	43.5	2.3	2.6	12.2
Prestn	165	34	26.9	41.2	7.4	3.1	10.3
Redng	100	42.9	25.1	43.4	2.5	2.6	12.1
Salford	173	38.5	27	41	5.9	3.1	10.2
Shrew	45	22.2	21.6	48.2	2.4	1.8	16.5
Stevng	171	26.7	27	41	3.4	3.1	10.2
Stoke	120	30.9	25.8	42.5	4.7	2.8	11.4
Sund	68	29.6	23.6	45.5	10.3	2.2	13.9
Swanse	122	22.1	25.9	42.4	3.4	2.8	11.3
Truro	45	26.2	21.6	48.2	2.6	1.8	16.5
Ulster	28	41.2	19.1	52.2	10.9	1.4	20.7
West NI	38	37.6	20.8	49.5	10.6	1.6	17.9
Wirral	48	35.3	21.9	47.8	4.2	1.9	16.1
Wolve	110	25.7	25.5	42.9	0	2.7	11.7
Wrexm	38	29.5	20.8	49.5	2.9	1.6	17.9
York	47	40.6	21.8	47.9	12.6	1.8	16.2

LKD - Living kidney donor

Percentage adjusted to age 40-49 years, male, non-diabetic primary renal disease

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 centre¹ (cohorts detailed in footnote)

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

Cohorts for survival rate estimation: 1 year survival: 1/4/2018-31/03/2022; 5 year survival: 1/4/2014-31/3/2018; 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 5 year survival better than 1 year survival

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

¹Information 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://nhsbtbde.blob.core.windows.net/umbraco-assets-corp/29222/kidney-annual-report-2021-22update.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 2015-2021) was 97.0%.

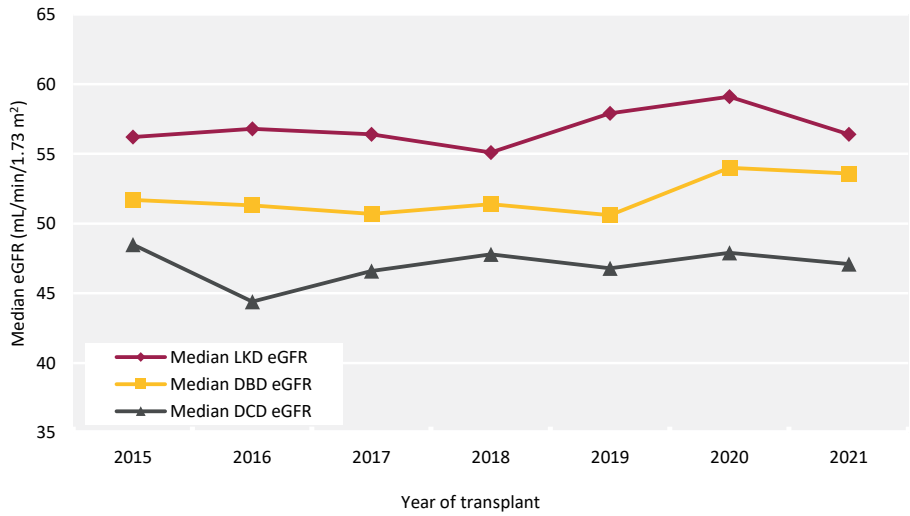


Figure 4.4 Median estimated glomerular filtration rate (eGFR) for kidney Tx at 1 year by donor type and year of transplantation between 2015 and 2021
 DBD – donor after brain death; DCD – donor after circulatory death; LKD – living kidney donor

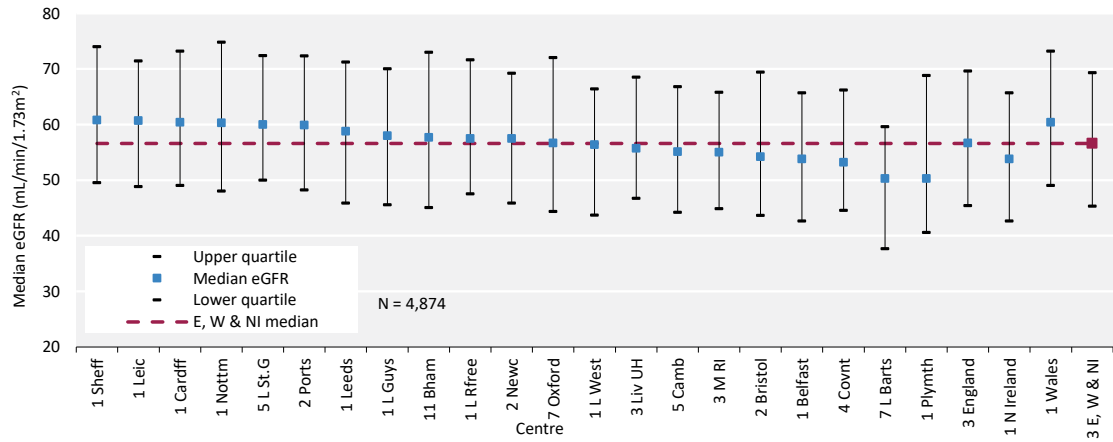


Figure 4.5 Median estimated glomerular filtration rate (eGFR) at 1 year post-living kidney donor (LKD) Tx by transplanting centre for transplantation that occurred between 2015 and 2021

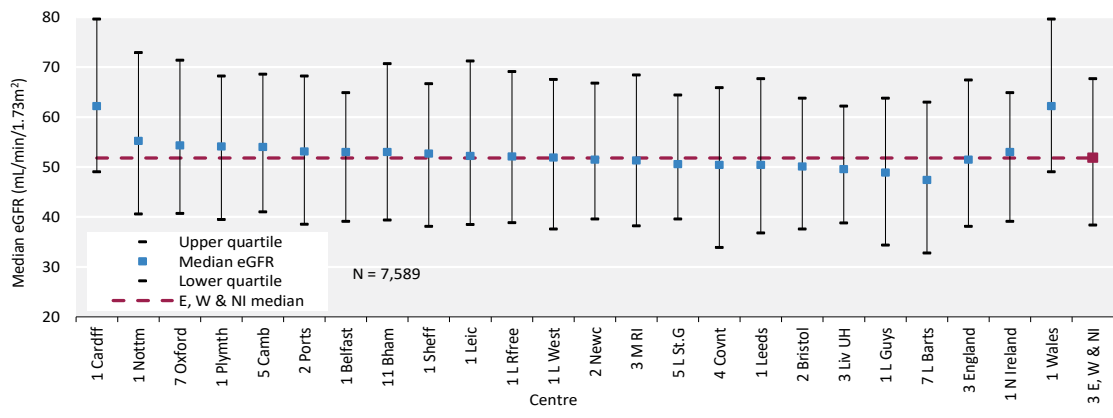


Figure 4.6 Median estimated glomerular filtration rate (eGFR) at 1 year post-donor after brain death (DBD) Tx by transplanting centre for transplantation that occurred between 2015 and 2021

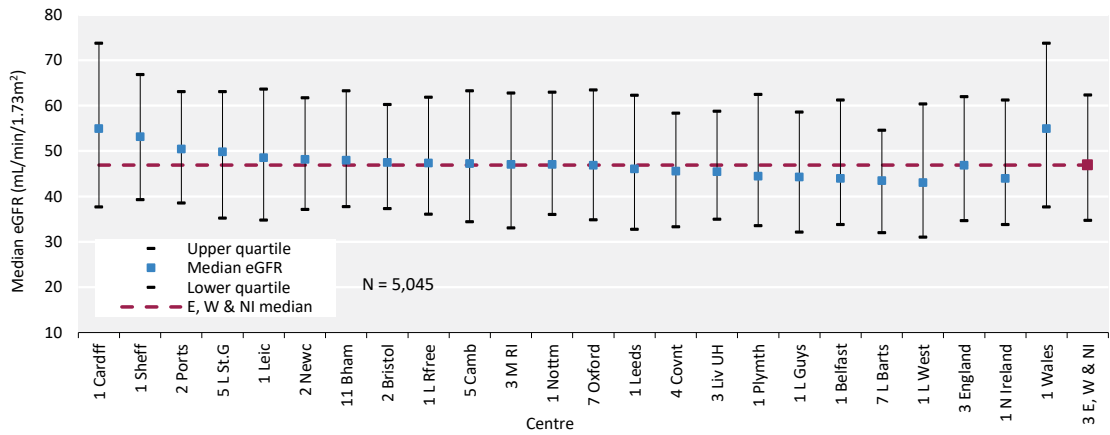


Figure 4.7 Median estimated glomerular filtration rate (eGFR) at 1 year post-donor after circulatory death (DCD) Tx by transplanting centre for transplantation that occurred between 2015 and 2021

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 31/12/2022

Centre	N with Tx	Data completeness (%)						
		eGFR	Blood pressure	Haemoglobin	Total cholesterol	Adjusted calcium	Phosphate	PTH
TX CENTRES								
Bham	1,579	93.1	81.3	92.8	86.3	92.5	92.2	2.5
Belfast	735	98.8	93.7	98.5	99.3	97.7	97.4	26.1
Bristol	922	99.5	88.3	99.4	93.8	99.1	98.5	98.3
Camb	1,209	93.1	0.0	93.3	78.4	85.4	84.4	78.3
Cardff	1,053	98.0	93.6	97.9	63.3	97.5	97.5	14.4
Covnt	641	96.6	53.7	95.6	66.3	95.2	39.5	33.1
L Barts	1,362	93.0	0.6	92.4	93.8	92.1	92.1	90.2
L Guys	1,462	92.2	0.0	91.5	58.0	89.1	89.4	32.4
L Rfree	1,448	96.3	80.8	96.0	72.4	94.5	94.6	73.4
L St.G	474	95.6	79.8	95.4	84.8	89.5	89.5	84.8
L West	2,022	91.5	0.0	91.4	47.6	90.9	91.4	55.7
Leeds	1,125	98.7	86.0	98.5	94.8	97.3	90.8	34.2
Leic	1,447	96.3	3.8	96.1	94.5	94.9	94.6	39.7
Liv UH	789	95.1	1.5	94.7	60.3	92.5	93.5	1.4
M RI	1,372	76.5	1.5	76.5	77.6	75.5	75.4	85.6
Newc	779	95.4	81.9	95.0	62.6	95.0	95.0	56.1
Nottm	712	98.5	94.0	98.3	70.4	97.2	96.9	78.7
Oxford	1,428	84.9	0.0	84.8	41.9	82.4	82.2	41.9
Plymth	327	97.3	92.1	96.6	86.9	96.0	93.9	79.2
Ports	1,112	92.1	12.7	92.0	48.8	91.1	84.4	37.5
Sheff	764	97.9	92.0	98.0	51.3	97.3	97.1	17.2
DIALYSIS CENTRES								
Antrim	168	99.4	47.6	98.8	100.0	97.0	96.4	44.6
Bangor	109	95.4	53.2	95.4	99.1	94.5	94.5	34.9
Bradfd	415	99.0	1.5	98.8	91.8	97.1	93.0	88.9
Brightn	566	98.6	24.0	98.6	77.6	97.4	97.5	66.6
Carlis	162	82.7	0.0	82.1	45.1	80.9	77.2	28.4
Carsh	875	77.8	3.9	77.7	42.3	75.1	74.7	26.3
Clwyd	97	99.0	21.7	99.0	99.0	99.0	99.0	94.9
Derby	296	98.0	93.2	97.3	97.3	97.3	97.6	97.3
Donc	146	98.6	93.8	98.6	69.9	98.6	98.6	17.8
Dorset	424	88.2	32.1	88.2	66.5	84.4	75.7	46.2
Dudley	124	96.8	30.7	96.8	87.9	95.2	85.5	55.7
EssexMS	344	96.5	0.3	95.9	71.2	90.4	84.9	14.5
Exeter								
Glouc	278	96.0	51.8	95.7	54.3	92.5	89.6	30.9
Hull	492	98.6	1.6	98.6	41.9	94.5	94.5	23.2
Ipswi	241	93.4	12.9	93.4	68.1	87.6	90.5	55.2
Kent	628	98.9	94.1	98.7	31.1	97.9	97.8	6.5
L Kings	539	98.3	0.0	98.3	80.2	98.1	98.1	81.8
Middlbr	557	82.6	0.0	80.8	44.7	77.6	75.9	11.7
Newry	176	98.3	80.1	97.2	100.0	97.7	97.7	50.6

Table 4.5 Continued

Centre	N with Tx	Data completeness (%)						
		eGFR	Blood pressure	Haemoglobin	Total cholesterol	Adjusted calcium	Phosphate	PTH
Norwch	435	95.6	0.0	94.5	94.9	86.9	85.5	20.7
Prestn	774	91.3	0.4	90.3	65.6	86.4	83.3	29.2
Redng	507	98.8	70.0	98.0	60.4	98.0	97.8	34.1
Salford	690	98.0	0.0	98.1	97.0	97.7	97.7	0.0
Shrew	174	91.4	28.2	91.4	85.6	82.8	82.8	18.4
Stevng	400	97.5	80.3	97.0	42.5	94.3	92.0	50.5
Stoke	441	98.0	0.2	97.7	98.4	97.7	98.0	71.2
Sund	281	100.0	0.0	100.0	70.1	100.0	99.6	75.8
Swanse	353	100.0	95.8	99.2	66.0	99.2	99.2	74.8
Truro	244	99.2	0.0	99.2	75.4	99.2	98.8	77.5
Ulster	104	97.1	93.3	97.1	99.0	95.2	94.2	9.6
West NI	234	98.7	70.9	98.3	99.6	97.4	97.0	92.3
Wirral	186	95.2	3.2	95.2	79.6	70.4	79.6	10.2
Wolve	244	95.9	46.7	95.9	85.7	95.1	42.2	57.4
Wrexm	175	96.0	86.9	96.6	98.9	96.0	96.0	98.9
York	345	99.1	52.2	98.3	63.5	96.5	95.4	26.4
TOTALS								
England	31,782	93.4	31.7	93.1	69.9	91.2	88.7	47.7
N Ireland	1,417	98.7	82.8	98.2	99.5	97.4	97.0	41.1
Wales	1,787	98.1	87.0	97.9	71.5	97.6	97.6	40.2
E, W & NI	35,124	93.9	36.6	93.6	71.2	91.8	89.5	47.1

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

Exeter was unable to submit patient level data for 2022

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

Centre	N with Tx					% with Tx					Estimated catchment population (millions)	2022 crude rate (pmp)
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022		
TX CENTRES												
Belfast	673	692	720	743	757	76.7	78.6	81.0	81.7	81.8	0.53	1,415
Bham	1,575	1,630	1,603	1,608	1,625	48.5	49.2	49.2	48.7	48.1	2.03	802
Bristol	925	939	928	924	956	62.9	63.2	62.9	61.8	62.7	1.25	767
Camb	1,021	1,109	1,183	1,217	1,249	73.5	76.2	78.3	74.8	75.1	0.96	1,306
Cardff	1,073	1,083	1,068	1,061	1,087	62.4	62.6	63.5	62.4	61.8	1.17	927
Covnt	583	624	641	657	657	60.4	57.7	57.8	58.2	58.4	0.84	785
Edinb	522	546	565	604	635	60.6	61.7	63.5	65.1	65.1	0.84	753
Glasgw	1,156	1,216	1,241	1,256	1,253	63.8	65.6	67.1	67.1	65.2	1.37	917
L Barts	1,266	1,379	1,345	1,362	1,416	48.7	51.9	50.3	49.9	49.7	1.61	877
L Guys	1,458	1,550	1,513	1,482	1,518	65.4	66.8	65.3	63.7	65.7	1.00	1,518
L Rfree	1,374	1,426	1,425	1,467	1,496	61.5	60.8	61.0	61.3	61.9	1.33	1,128
L St.G	495	502	479	486	484	59.4	58.9	56.2	55.9	56.6	0.65	742
L West	1,975	2,042	2,026	2,016	2,080	55.5	56.6	57.4	56.7	57.4	1.97	1,057
Leeds	1,054	1,082	1,116	1,136	1,150	62.6	62.7	63.7	63.7	62.6	1.39	828
Leic	1,363	1,442	1,494	1,447	1,485	55.6	55.9	57.0	54.9	54.6	2.11	702
Liv UH	834	842	807	800	804	56.1	56.8	55.8	54.7	54.4	1.26	639
M RI	1,422	1,399	1,327	1,381	1,395	68.8	68.3	66.8	66.7	66.1	1.36	1,028
Newc	732	765	781	798	807	63.5	65.3	65.3	65.2	64.8	0.97	833
Nottm	743	751	732	723	725	62.1	61.7	60.6	59.4	59.9	0.94	770
Oxford	1,408	1,438	1,460	1,458	1,497	72.4	72.8	72.3	72.8	72.0	1.48	1,014
Plymth	362	360	359	345	339	67.0	67.3	66.2	63.5	62.1	0.41	836
Ports	1,070	1,133	1,108	1,116	1,143	60.7	60.2	58.3	57.5	57.2	1.77	646
Sheff	823	835	805	806	777	55.4	56.0	53.9	53.7	52.2	1.15	677
DIALYSIS CENTRES												
Abrdn	328	343	349	370	374	57.3	61.5	61.8	63.8	63.0	0.50	752
Airdrie	274	296	292	281	286	56.2	56.5	56.4	55.6	55.1	0.46	625
Antrim	131	145	161	160	170	47.8	50.9	56.1	54.2	55.6	0.25	689
Bangor	100	106	107	108	112	49.3	52.7	49.5	49.8	50.9	0.20	549
Bradfd	393	413	417	417	423	57.0	56.3	57.5	56.7	54.2	0.50	851
Brightn	510	545	556	568	586	48.3	51.2	51.6	52.1	53.3	1.08	540
Carlis	162	156	152	159	163	55.3	51.7	51.2	52.0	53.8	0.26	635
Carsh	766	834	842	862	898	43.7	46.8	45.5	45.3	46.4	1.64	549
Clwyd	98	104	107	102	97	51.6	50.7	52.5	50.5	47.6	0.18	533
D&Gall	83	87	89	92	88	57.2	58.4	57.1	59.7	59.5	0.12	723
Derby	258	296	299	307	305	44.0	45.3	44.3	44.4	42.6	0.56	548
Donc	119	132	140	146	153	36.1	38.6	41.1	43.1	40.7	0.38	405
Dorset	422	436	449	446	431	55.2	56.4	56.3	56.7	54.4	0.73	587
Dudley	106	111	124	130	127	29.4	30.3	33.2	32.3	33.2	0.34	369
Dundee	254	259	253	240	234	57.1	57.7	58.8	58.4	58.7	0.37	640
EssexMS	331	329	350	355	356	39.2	38.6	39.6	39.7	39.7	1.00	357
Exeter	537	541	535	512	541	49.6	49.7	49.0	47.5	48.0	0.98	553
Glouc	243	269	266	282	292	46.6	50.7	51.0	51.7	52.7	0.52	563
Hull	480	498	498	492	501	54.6	55.1	54.6	53.7	53.7	0.80	626
Inverns	169	171	170	172	178	60.6	60.6	62.7	61.9	63.6	0.23	791
Ipswi	232	240	255	248	242	54.2	56.1	59.9	58.8	61.3	0.31	770
Kent	633	650	639	644	653	56.9	57.0	55.9	54.0	53.4	1.08	606
Klmarnk	167	182	181	181	183	49.1	50.7	49.1	49.2	48.9	0.29	631
Krkldy	153	144	137	122	113	51.3	48.7	46.9	41.2	38.7	0.27	413
L Kings	480	525	513	529	554	40.6	42.1	40.9	39.7	39.7	0.93	598
Middlbr	539	558	573	572	569	58.0	58.6	60.6	59.7	59.6	0.82	696
Newry	152	162	173	179	179	60.3	64.0	65.5	63.7	66.5	0.24	757
Norwch	445	454	461	450	442	56.5	56.1	56.9	56.0	56.5	0.70	630

Transplant

Table 4.6 Continued

Centre	N with Tx					% with Tx					Estimated catchment population (millions)	2022 crude rate (pmp)
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022		
Prestn	721	745	772	778	798	54.5	55.5	56.4	56.6	57.0	1.25	638
Redng	468	483	501	513	518	57.5	56.0	57.6	58.4	56.1	0.70	736
Salford	621	687	689	688	701	52.9	55.3	54.4	56.5	55.1	1.17	601
Shrew	146	151	166	170	186	34.0	34.6	38.9	38.6	41.8	0.42	444
Stevng	378	382	380	409	418	40.3	39.7	38.8	40.1	39.2	1.12	372
Stoke	419	439	430	433	451	52.0	54.5	52.9	51.3	49.9	0.74	612
Sund	278	280	296	285	289	49.6	49.1	53.2	52.1	51.4	0.55	524
Swanse	346	358	353	359	364	41.9	41.2	41.5	42.1	43.0	0.76	478
Truro	249	261	259	251	254	57.0	58.0	58.2	54.5	53.9	0.37	696
Ulster	75	81	102	102	105	39.3	43.8	50.8	50.3	50.0	0.20	514
West NI	202	207	224	226	241	61.8	63.1	63.8	66.7	67.7	0.25	959
Wirral	170	184	198	199	189	42.4	44.1	47.5	48.0	47.3	0.47	401
Wolve	204	229	239	246	248	33.5	37.3	36.5	35.4	34.4	0.55	451
Wrexm	171	175	177	181	178	54.5	56.3	54.8	59.5	58.0	0.21	858
York	340	349	338	347	349	59.8	60.0	59.1	59.7	57.4	0.50	704
TOTALS												
England	31,133	32,425	32,469	32,667	33,240	55.5	56.3	56.1	55.5	55.4	45.20	735
N Ireland	1,233	1,287	1,380	1,410	1,452	64.2	66.6	69.3	69.6	70.3	1.47	985
Scotland	3,106	3,244	3,277	3,318	3,344	59.3	60.6	61.4	61.5	60.8	4.44	753
Wales	1,788	1,826	1,812	1,811	1,838	55.0	55.1	55.4	55.3	55.1	2.53	727
UK	37,260	38,782	38,938	39,206	39,874	56.0	56.8	56.9	56.4	56.2	53.65	743

Country Tx populations were calculated by summing the Tx patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures (see appendix A for details on estimated catchment population by kidney centre)

Exeter was unable to submit 2021 and 2022 patient level data but 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 centre patients with no ethnicity data is shown separately.

Table 4.7 Demographics of adult patients prevalent to Tx on 31/12/2022 by centre

Centre	N on KRT	N with Tx	% with Tx	Median age (yrs)	% male	Ethnicity				% missing
						% White	% Asian	% Black	% Other	
TX CENTRES										
Belfast	926	757	81.7	56.3	60.2	97.4	2.1	0.3	0.3	3.3
Bham	3,378	1,625	48.1	53.5	58.3	59.5	29.3	7.8	3.5	0.6
Bristol	1,524	956	62.7	56.3	60.7	89.1	4.0	4.6	2.3	0.3
Camb	1,663	1,249	75.1	56.0	61.5	88.2	7.2	3.1	1.6	0.7
Cardff	1,758	1,087	61.8	56.2	63.2	91.8	5.5	0.9	1.8	2.0
Covnt	1,125	657	58.4	55.4	61.2	77.9	16.9	4.9	0.3	0.2
Edinb	976	635	65.1	57.3	64.4					
Glasgw	1,921	1,253	65.2	57.0	58.2					
L Barts	2,851	1,416	49.7	54.6	58.1	38.6	35.5	19.5	6.4	0.7
L Guys	2,309	1,518	65.7	54.9	60.4	64.7	10.8	19.9	4.7	1.6
L Rfree	2,418	1,496	61.9	56.3	60.5	45.9	23.2	18.5	12.4	4.4
L St.G	855	484	56.6	57.1	54.8	47.8	25.0	19.2	8.0	4.1
L West	3,626	2,080	57.4	58.4	63.1	42.1	35.5	15.0	7.4	0.1
Leeds	1,836	1,150	62.6	56.0	60.4	78.9	15.1	4.6	1.4	0.0
Leic	2,719	1,485	54.6	57.5	58.0	72.6	20.8	4.7	1.8	1.4
Liv UH	1,479	804	54.4	56.4	63.6	92.1	2.9	2.9	2.1	1.2
M RI	2,111	1,395	66.1	55.3	60.4	75.2	14.4	8.0	2.4	0.8
Newc	1,245	807	64.8	57.0	58.5	93.7	4.6	0.9	0.9	0.3
Nottm	1,211	725	59.9	55.8	59.3	84.7	6.8	5.3	3.3	0.1
Oxford	2,080	1,497	72.0	56.9	62.1	80.1	11.4	4.1	4.4	11.2
Plymth	546	339	62.1	58.6	65.8	96.5	1.5	0.3	1.8	0.0
Ports	2,000	1,143	57.2	57.1	56.6	93.1	4.0	0.8	2.1	3.9
Sheff	1,488	777	52.2	56.7	62.4	88.5	6.8	2.1	2.6	1.4
DIALYSIS CENTRES										
Abrdn	594	374	63.0	53.8	58.6					
Airdrie	519	286	55.1	55.9	58.7	95.8	2.3	0.4	1.5	9.1
Antrim	306	170	55.6	58.0	61.8	99.4	0.0	0.6	0.0	5.9
Bangor	220	112	50.9	57.5	65.2	99.1	0.0	0.0	0.9	4.5
Bradfd	781	423	54.2	52.4	60.8	52.5	43.7	2.8	1.0	0.0
Brightn	1,100	586	53.3	57.5	61.4	90.5	5.7	1.6	2.2	1.0
Carlisle	303	163	53.8	58.7	61.4	96.9	3.1	0.0	0.0	0.0
Carsh	1,936	898	46.4	58.5	62.0	68.6	18.4	9.2	3.8	0.3
Colchr	157	0								
Clwyd	204	97	47.5	59.0	61.9	96.8	2.1	1.1	0.0	2.1
D&Gall	148	88	59.5	58.1	63.6	97.0	1.5	0.0	1.5	23.9
Derby	716	305	42.6	58.8	63.3	83.2	10.9	3.3	2.6	0.3
Donc	376	153	40.7	56.5	64.7	94.7	2.6	1.3	1.3	0.7
Dorset	792	431	54.4	60.5	60.8	95.6	2.3	0.5	1.6	0.0
Dudley	383	127	33.2	56.8	66.9	81.1	14.2	3.2	1.6	0.0
Dundee	399	234	58.6	57.2	58.6					
EssexMS	897	356	39.7	58.0	62.9	85.6	5.9	5.4	3.1	0.3
Exeter	1,128	541	48.0							
Glouc	554	292	52.7	60.0	58.6	92.8	4.1	1.4	1.7	0.3
Hull	933	501	53.7	56.5	66.3	96.2	1.4	0.8	1.6	0.4
Inverns	280	178	63.6	56.6	58.4					
Ipswi	395	242	61.3	59.6	62.0	85.1	2.5	4.2	8.3	0.4
Kent	1,224	653	53.3	57.0	58.2	90.9	4.2	1.5	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	374	183	48.9	57.7	59.6					
Krkcldy	292	113	38.7	58.9	61.1					
L Kings	1,394	554	39.7	57.5	63.7	47.3	17.2	31.9	3.6	0.4
Middlbr	955	569	59.6	58.4	61.9	94.0	4.2	0.5	1.2	0.0
Newry	269	179	66.5	57.6	60.3	97.7	1.1	0.6	0.6	2.2
Norwch	783	442	56.4	58.9	61.1	97.5	1.1	0.7	0.7	0.0
Prestn	1,400	798	57.0	57.2	60.3	84.3	13.9	0.9	0.9	0.0
Redng	924	518	56.1	58.7	63.3	64.6	23.7	5.8	6.0	6.2
Salford	1,273	701	55.1	57.6	61.5	81.4	14.9	2.0	1.7	0.1
Shrew	445	186	41.8	56.8	61.8	92.4	2.7	1.6	3.2	0.5
Stevng	1,066	418	39.2	56.7	65.8	69.5	19.2	8.4	2.9	0.5
Stoke	903	451	49.9	54.5	63.9	90.7	6.6	1.6	1.1	2.4
Sund	562	289	51.4	56.7	60.2	94.8	3.5	1.0	0.7	0.0
Swanse	847	364	43.0	57.2	61.3	96.7	2.5	0.0	0.8	0.6
Truro	471	254	53.9	58.2	59.1	98.0	0.4	0.0	1.6	0.0
Ulster	210	105	50.0	58.3	60.0	92.4	4.8	2.9	0.0	0.0
West NI	356	241	67.7	56.2	60.6	98.7	0.8	0.4	0.0	0.8
Wirral	400	189	47.3	59.3	63.5	95.2	3.2	0.5	1.1	0.0
Wolve	722	248	34.3	56.4	57.7	65.3	26.2	6.9	1.6	0.0
Wrexm	307	178	58.0	55.1	66.3	95.5	1.7	0.6	2.3	1.1
York	608	349	57.4	58.4	62.8	96.3	1.4	0.3	2.0	0.0
TOTALS										
England	60,045	33,240	55.4	56.7	60.8	74.5	14.8	7.2	3.5	1.5
N Ireland	2,067	1,452	70.2	56.9	60.5	97.5	1.7	0.6	0.2	2.8
Scotland	5,503	3,344	60.8	56.5	59.8					
Wales	3,336	1,838	55.1	56.5	63.2	93.9	4.0	0.7	1.5	1.8
UK	70,951	39,874	56.2	56.7	60.8	76.4	13.8	6.6	3.2	1.5

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 was unable to submit 2022 patient level data but provided aggregate numbers of patients on KRT at the end of 2022 by treatment modality

UK ethnicity distribution and completeness does not include Scotland

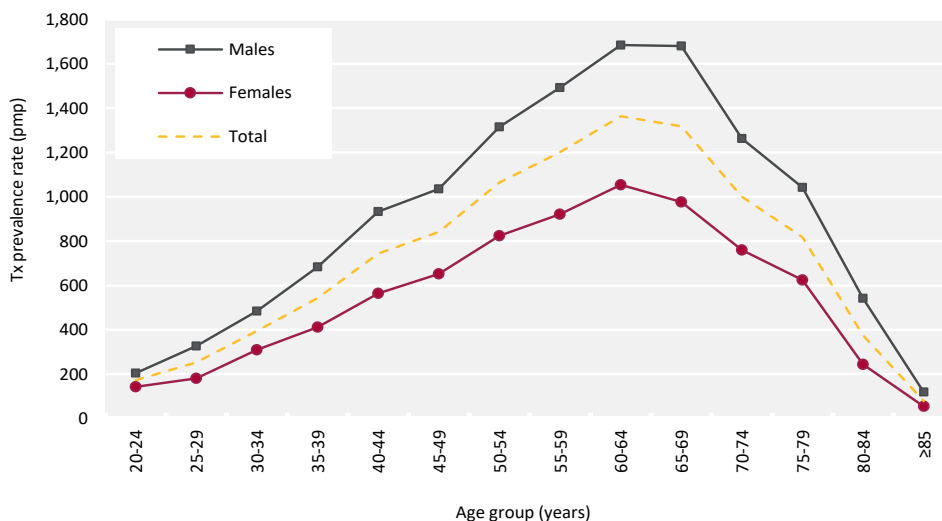


Figure 4.8 Adult Tx prevalence rate on 31/12/2022 by age group and sex
pmp – per million population

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 2022 and adult patients prevalent to Tx on 31/12/2022

PRD	Incident Tx		Prevalent Tx	
	N	%	N	%
Diabetes	477	16.7	4,455	11.9
Glomerulonephritis	688	24.1	8,973	24.0
Hypertension	179	6.3	2,071	5.5
Polycystic kidney disease	359	12.6	5,117	13.7
Pyelonephritis	202	7.1	4,108	11.0
Renal vascular disease	44	1.5	466	1.2
Other	555	19.4	7,437	19.9
Uncertain aetiology	356	12.4	4,766	12.7
Total (with data)	2,860	100.0	37,393	100.0
Missing	146	4.9	545	1.4

Graft function and anaemia in prevalent adult kidney Tx patients

Accepting the limitations of interpreting eGFR in the post-Tx population, analyses by centres were divided into the proportion of patients with eGFR greater than or equal to 30 mL/min/1.73m², the proportion with less than 30 mL/min/1.73m², and the proportion of patients achieving an adequate haemoglobin level (defined as a haemoglobin ≥100 g/L).

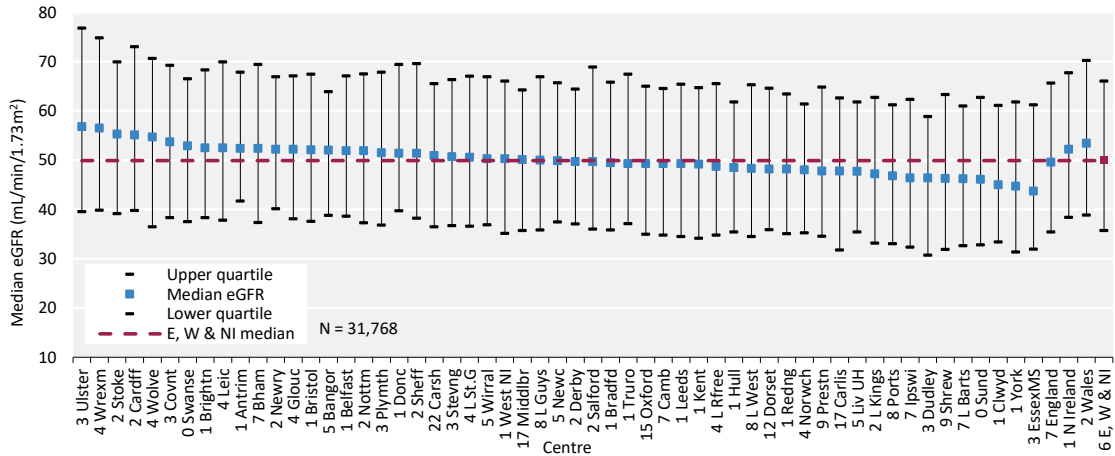


Figure 4.9 Median estimated glomerular filtration rate (eGFR) in adult patients prevalent to Tx on 31/12/2022 by centre

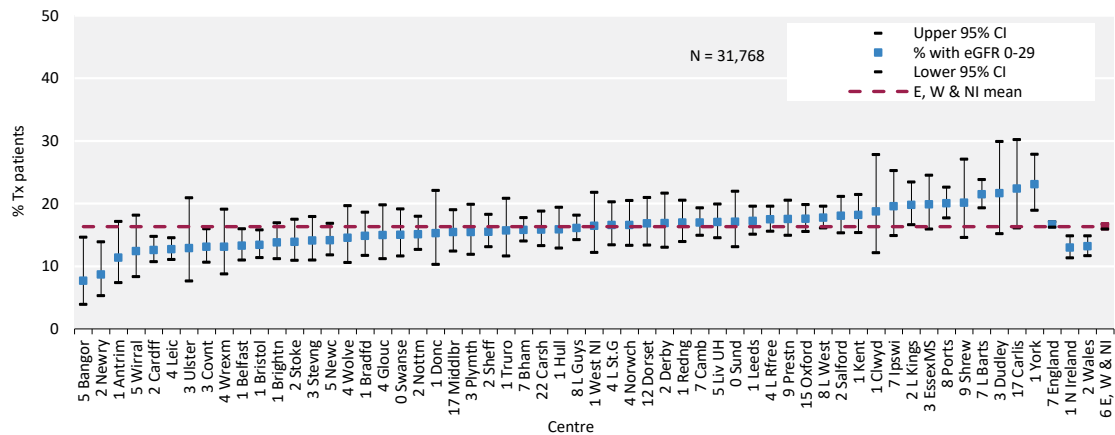


Figure 4.10 Percentage of adult patients prevalent to Tx on 31/12/2022 with an estimated glomerular filtration rate (eGFR) <30mL/min/1.73m² by centre
CI – confidence interval

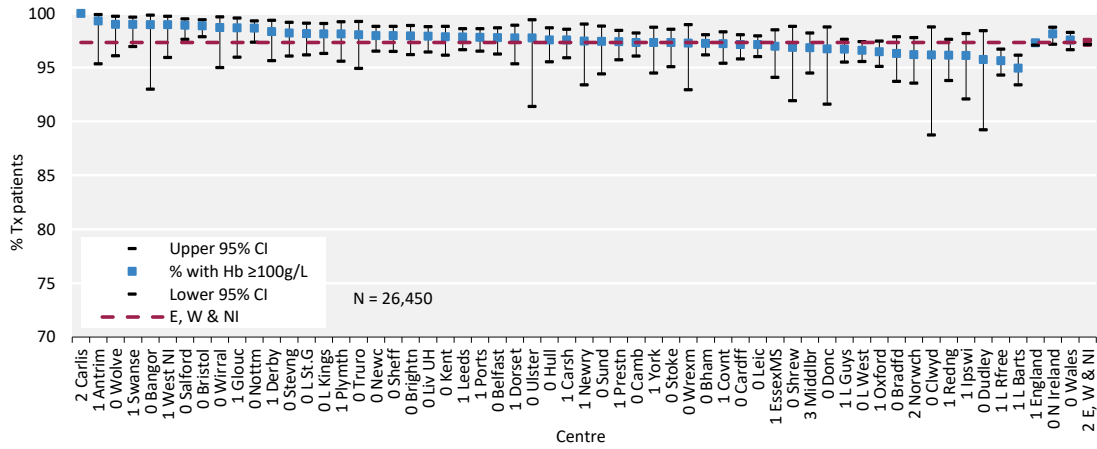


Figure 4.11 Percentage of adult patients prevalent to Tx on 31/12/2022 with an estimated glomerular filtration rate (eGFR) $\geq 30\text{mL}/\text{min}/1.73\text{m}^2$ achieving haemoglobin (Hb) $\geq 100\text{g}/\text{L}$ by centre
 CI – confidence interval

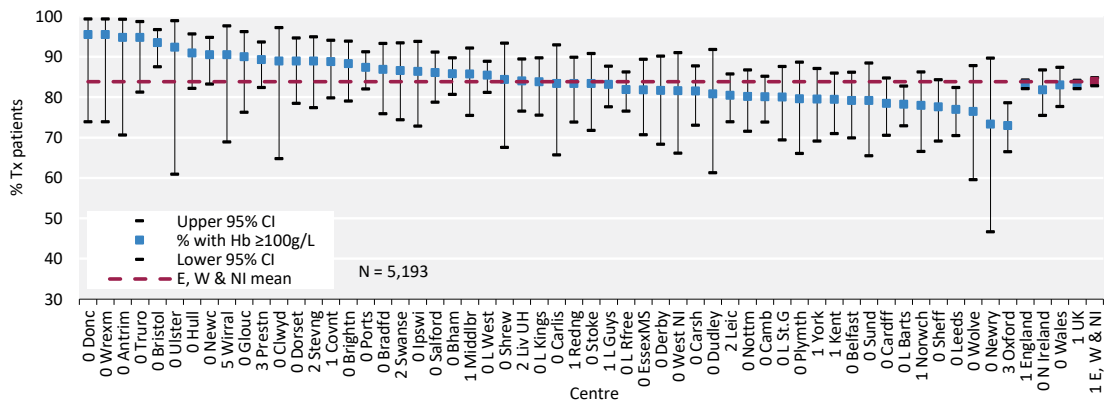


Figure 4.12 Percentage of adult patients prevalent to Tx on 31/12/2022 with an estimated glomerular filtration rate (eGFR) $< 30\text{mL}/\text{min}/1.73\text{m}^2$ achieving haemoglobin (Hb) $\geq 100\text{g}/\text{L}$ by centre
 CI – confidence interval

Blood pressure in prevalent adult kidney Tx patients

Blood pressure data completeness was variable (table 4.5) and only centres with $\geq 70\%$ 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.

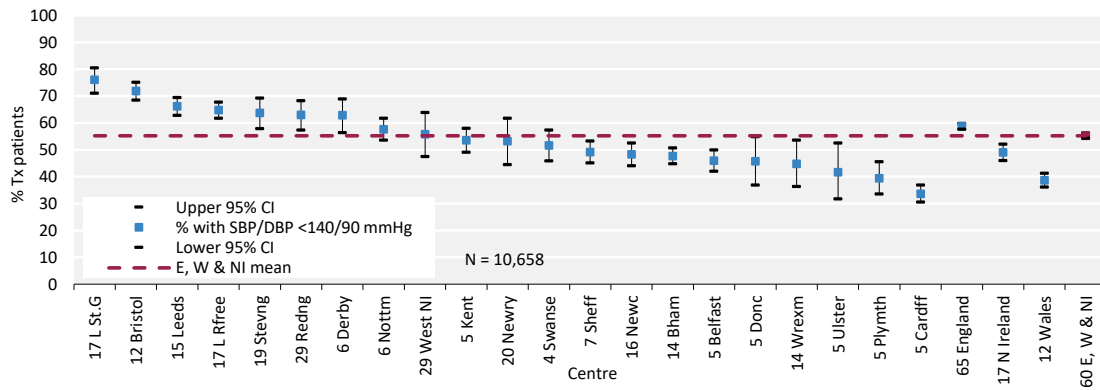


Figure 4.13 Percentage of adult patients prevalent to Tx on 31/12/2022 with estimated glomerular filtration rate (eGFR) ≥ 30 mL/min/1.73m² achieving blood pressure of <140/90 mmHg by centre
CI – confidence interval; DBP – diastolic blood pressure; SBP – systolic blood pressure

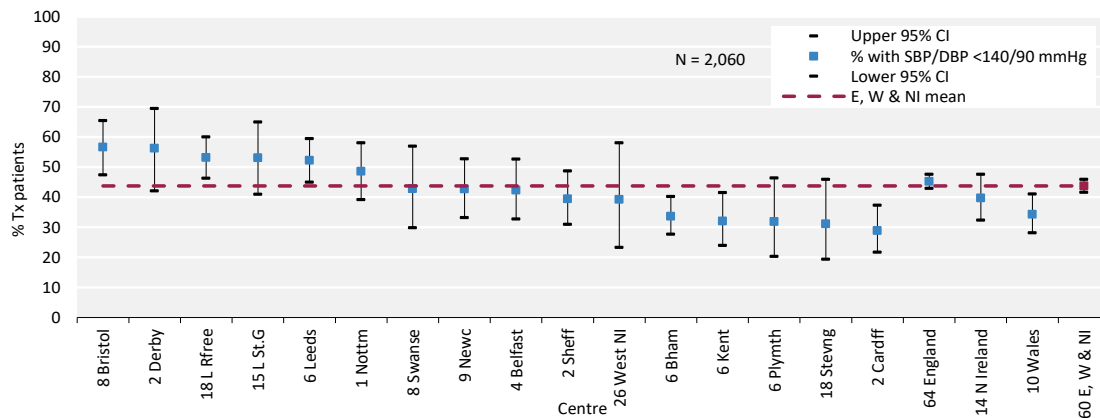


Figure 4.14 Percentage of adult patients prevalent to Tx on 31/12/2022 with estimated glomerular filtration rate (eGFR) <30 mL/min/1.73m² achieving blood pressure of <140/90 mmHg by centre
CI – confidence interval; DBP – diastolic blood pressure; SBP – systolic blood pressure

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 31/12/2022 compared with adult patients prevalent to dialysis on 31/12/2022 by CKD stage

Characteristic	Tx CKD stage (eGFR)				Prevalent dialysis Stage 5D
	Stage 1-2T (≥ 60 mL/min/1.73 m ²)	Stage 3T (30-59 mL/min/1.73 m ²)	Stage 4T (15-29 mL/min/1.73 m ²)	Stage 5T (<15 mL/min/1.73 m ²)	
N	10,623	15,971	4,407	783	22,532
%	33.4	50.3	13.9	2.5	
eGFR (mL/min/1.73m²)					
mean \pm SD	76.7 \pm 13.3	45.1 \pm 8.4	23.6 \pm 4.2	11.5 \pm 2.5	
median	73.6	45.0	24.1	11.9	
SBP (mmHg)					
mean \pm SD	136 \pm 17	138 \pm 18	142 \pm 19	145 \pm 21	137 \pm 25
% ≥ 140 mmHg	35.6	42.7	51.5	58.8	44.0
DBP (mmHg)					
mean \pm SD	81 \pm 10	81 \pm 11	80 \pm 12	82 \pm 13	71 \pm 15
% ≥ 90 mmHg	18.9	19.0	19.9	27.7	11.1
Total cholesterol (mmol/L)					
mean \pm SD	4.4 \pm 1.0	4.4 \pm 1.1	4.5 \pm 1.2	4.4 \pm 1.2	3.8 \pm 1.1
% ≥ 4.0 mmol/L	63.7	65.2	64.9	60.2	39.8
Haemoglobin (g/L)					
mean \pm SD	137 \pm 16	129 \pm 17	116 \pm 16	105 \pm 16	110 \pm 14
% <100 g/L	1.6	3.4	13.7	34.8	21.0
Phosphate (mmol/L)					
mean \pm SD	0.9 \pm 0.2	1.0 \pm 0.2	1.1 \pm 0.3	1.4 \pm 0.4	1.7 \pm 0.5
% >1.7 mmol/L	0.1	0.3	1.8	19.7	43.6
Adjusted Ca (mmol/L)					
mean \pm SD	2.4 \pm 0.1	2.5 \pm 0.1	2.4 \pm 0.1	2.4 \pm 0.2	2.4 \pm 0.2
% >2.5 mmol/L	28.4	29.9	23.4	15.2	17.3
% <2.2 mmol/L	1.8	2.2	4.9	15.2	15.6
PTH (pmol/L)					
median	8.4	10.0	14.9	29.3	34.8
% >72 pmol/L	0.6	0.7	3.8	12.8	20.1

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 01/01/2012 and 31/12/2020 were considered for inclusion. 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 01/01/2012 and 31/12/2020

Characteristic	N	Median slope	Lower quartile	Upper quartile
Age at Tx (yrs)				
<40	4,819	-1.40	-4.62	0.77
40-55	8,482	-0.71	-3.00	1.09
>55	7,177	-0.67	-3.06	1.09
Ethnicity				
White	14,264	-0.73	-3.11	1.03
Asian	2,912	-1.17	-4.00	0.91
Black	1,625	-1.37	-4.21	0.76
Other	640	-0.79	-3.87	0.81
Sex				
Male	12,646	-0.61	-3.03	1.19
Female	7,832	-1.24	-3.92	0.71
Diabetes				
No Diabetes	16,660	-0.73	-3.18	1.06
Diabetes	3,492	-1.37	-4.31	0.80
Tx donor				
Deceased	14,250	-0.84	-3.41	1.07
Living	6,228	-0.80	-3.23	0.95
Year of Tx				
2012	2,178	-1.08	-3.00	0.25
2013	2,398	-1.06	-3.10	0.44
2014	2,328	-0.89	-2.98	0.59
2015	2,312	-0.78	-2.86	0.74
2016	2,393	-0.80	-3.21	0.97
2017	2,552	-0.77	-3.43	1.19
2018	2,480	-0.52	-3.35	1.88
2019	2,276	-0.59	-4.36	2.34
2020	1,561	-0.63	-5.81	3.89
Status of Tx patients at end of follow-up				
Died	2,398	-1.37	-4.17	0.97
Graft failed	1,912	-6.06	-11.72	-3.01
Re-transplanted	75	-3.39	-7.06	-1.31
Graft functioning	16,168	-0.46	-2.47	1.23
Total	20,478	-0.83	-3.36	1.02

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 31/12/2021 and followed-up for one year in 2022, 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 31/12/2021 followed-up in 2022 by modality

Cause of death	All modalities		Dialysis		Tx	
	N	%	N	%	N	%
Cardiac disease	1,159	20.7	933	22.0	226	16.6
Cerebrovascular disease	203	3.6	163	3.9	40	2.9
Infection	1,092	19.5	739	17.5	353	26.0
Malignancy	479	8.6	277	6.5	202	14.9
Treatment withdrawal	470	8.4	447	10.6	23	1.7
Other	1,773	31.7	1,375	32.5	398	29.3
Uncertain aetiology	416	7.4	299	7.1	117	8.6
Total (with data)	5,592	100.0	4,233	100.0	1,359	100.0
Missing	623	10.0	452	9.6	171	11.2

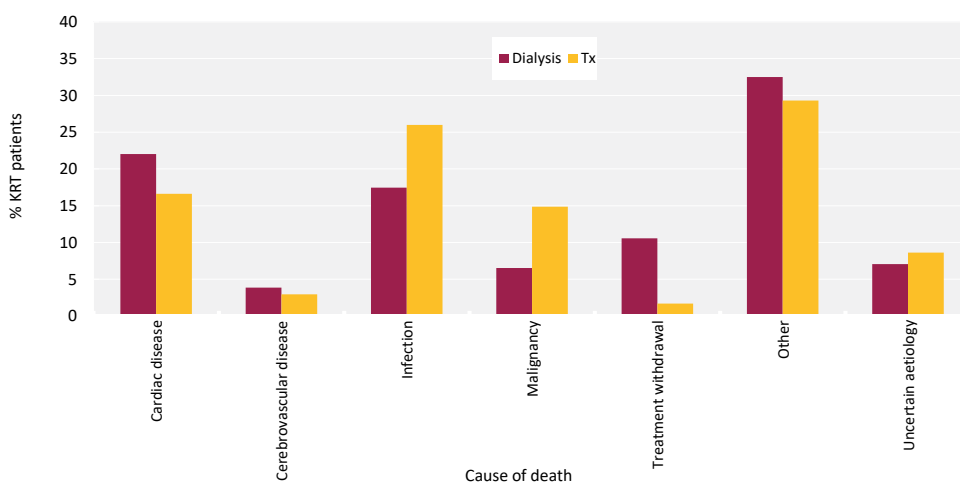


Figure 4.15 Cause of death for adult patients prevalent to KRT on 31/12/2021 followed-up in 2022 by modality

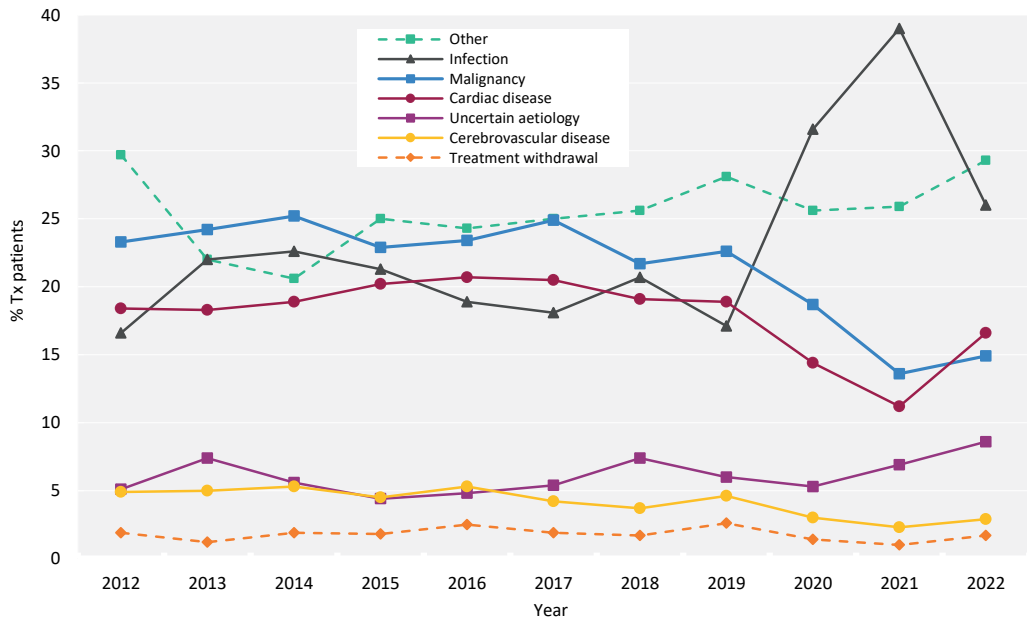


Figure 4.16 Cause of death between 2012 and 2022 for adult patients prevalent to Tx at the beginning of the year