

Chapter 2

Adults starting kidney replacement therapy (KRT) for end-stage kidney disease (ESKD) in the UK in 2021

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Introduction

This chapter describes the population of patients who developed end-stage kidney disease (ESKD) and started kidney replacement therapy (KRT) in the UK in 2021 (figure 2.1). This includes patients starting dialysis therapies – haemodialysis (HD) and peritoneal dialysis (PD) – and patients who received a pre-emptive kidney transplant (Tx). Patients with a failed Tx who returned to dialysis are not included. Patients who received dialysis for acute kidney injury (AKI), as coded by their reporting kidney centre, were only included if their dialysis was subsequently recoded as being for ESKD, when they failed to recover native kidney function. Recoding is automatically applied at 90 days for individuals still on KRT (unless advised otherwise by the kidney centre – see appendix A for details), but can be applied earlier by reporting centres that identify ESKD before day 90. Individuals who commenced dialysis for AKI and subsequently recovered kidney function, died or withdrew from dialysis within the first 90 days of treatment are not included in this chapter (although they are shown in figure 2.1). Patients who died, or withdrew from dialysis after being coded as ESKD are included in this chapter, but patients who recovered kidney function are not included if they recovered before 90 days on dialysis.

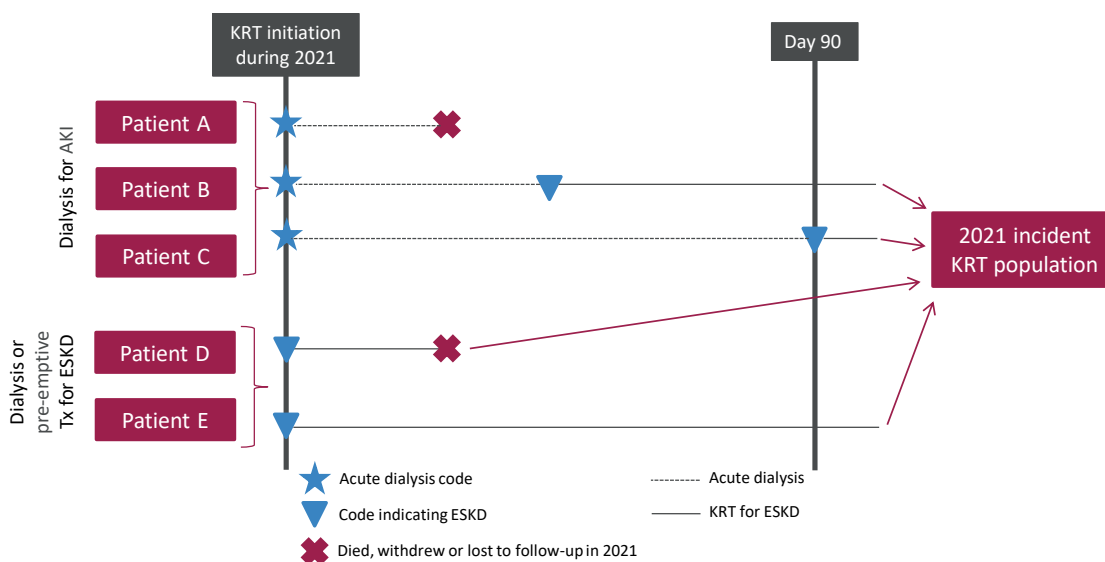


Figure 2.1 Example histories for patients starting KRT, illustrating the use of timeline codes to define dialysis as being ‘acute’ or for ESKD

Patients who recovered kidney function before 90 days on dialysis are not included in this chapter, whether they were coded as AKI or ESKD

Patients who followed patterns B–E received KRT for ESKD and are counted as ‘incident to KRT’ throughout this report Patients who followed pattern A are not counted as ‘incident to KRT’ and do not feature in this chapter

Survival and cause of death analyses were undertaken on historic incident cohorts to allow sufficient follow-up time and numbers of patients. Dialysis access data were collected separately to the main UKRR quarterly data returns via the 2021 Multisite Dialysis Access Audit. As of the 23rd annual report, fewer data items were collected to reduce the burden on centres and, in future years, the audit will be stopped entirely in centres that provide the data in their regular data returns to the UKRR.

This chapter addresses the following key aspects of the care of patients incident to KRT for which there are UK Kidney Association guidelines (table 2.1):

- **Modality selection, pre-emptive transplantation and Tx wait-listing:** the percentage of patients starting on each KRT modality, including a home therapy – home HD (HHD) or PD – or a kidney Tx, as well as the percentage of patients pre-emptively listed for a Tx, are reported in this chapter.
- **Late presentation:** a patient first seen by kidney services within 90 days of starting KRT for ESKD is defined as a 'late presentation' (in this report 'late presentation' is used interchangeably with 'late referral').
- **Complications associated with ESKD:** these include anaemia and mineral bone disorders.
- **Type of dialysis access:** definitive access – either a surgically created arteriovenous fistula (AVF) or arteriovenous graft (AVG), or a PD catheter. Alternatively, more temporary access can be provided through a central venous catheter – either a tunnelled line (TL) or a non-tunnelled line (NTL).

Rationale for analyses

The analyses begin with a description of the 2021 incident adult KRT population, including the incident number on KRT per million population (pmp). The inclusion of centre-specific reports on the survival of KRT patients reflects the need for transparency following the Francis and Keogh enquiries and the ongoing Care Quality Commission inspections of patient care and outcomes at a number of hospital trusts. Survival analyses have been adjusted for age, sex and comorbidity using kidney centre data. Comorbidity data have been augmented using Hospital Episode Statistics (HES) for English kidney centres and Patient Episode Database for Wales (PEDW) for Welsh kidney centres.

The UK Kidney Association guidelines (ukkidney.org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients incident to KRT and, where data permit, their attainment by UK kidney centres in 2021 is reported in this chapter (table 2.1). Audit measures in guidelines that have been archived are not included.

Some audit measures – for example, the target for glycated haemoglobin (HbA1c) in those on hypoglycaemia-inducing treatment – cannot be reported because the completeness of the required data is too low. Further detail about the completeness of data returned to the UK Renal Registry (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.

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 fell <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, unless specified to the contrary.

Exeter was unable to submit patient level data for 2021. Aggregate numbers by modality were provided, enabling inclusion in Tables 2.2 and 2.3. Exeter is excluded from all other analyses.

Table 2.1 The UK Kidney Association audit measures relevant to KRT incidence that are reported in this chapter

The UK Kidney Association guideline	Audit criteria	Related analysis/analyses
Planning, initiating and withdrawing KRT (2014)	Proportion of patients commencing PD or HHD	Table 2.3
	Proportion of patients remaining on initial treatment modality 3 and 12 months post initiation of KRT	Tables 2.6–2.8, figures 2.6–2.7
	Percentage of patients commencing KRT referred <3 months and <12 months before date of starting KRT	Tables 2.9–2.12, figure 2.8
	Proportion of patients on UK Tx waiting list at KRT initiation	Table 2.3
	Proportion of KRT patients transplanted pre-emptively from living and deceased donors	Table 2.3, figure 2.5 (partly addressed)
	Estimated glomerular filtration rate (eGFR) at start of KRT and at time of pre-emptive Tx	Figure 2.9
	Proportion of planned initiations with established access or pre-emptive Tx	Table 2.16, figure 2.16
Anaemia (2020)	Number of patients withdrawing from dialysis as a proportion of all deaths on dialysis	Table 2.21
	Proportion of patients initiating KRT with haemoglobin <100 g/L not on erythropoiesis stimulating agent (ESA)	Table 2.13, figure 2.10-2.11 (ESA not included)
Chronic kidney disease (CKD) mineral bone disorder (2018)	Percentage of KRT patients with serum calcium above the normal reference range of 2.2–2.5 mmol/L	Table 2.14, figure 2.12
Vascular access (2015)	>60% of all patients with established ESKD commencing planned HD should receive dialysis via a functioning AVF or AVG	Table 2.16, figure 2.17
Peritoneal access (2009)	>80% of catheters should be patent at 1 year (censoring for death and elective modality change)	Figure 2.7 shows the KRT modality of PD patients at 1 year

AVF – arteriovenous fistula; AVG – arteriovenous graft

Key findings

- 8,175 adult patients started KRT for ESKD in the UK in 2021, an increase of 7.3% from 2020.
- KRT incidence in adults was 154pmp.
- The median age of incident KRT patients was 63.7 years, but this was dependent on ethnicity (White 65.6 years, Asian 61.8 years and Black 57.8years).
- 63.9% of incident KRT patients were male.
- Diabetes remained the most common identifiable primary renal disease (PRD) and continues to account for an increasing proportion of patients starting KRT (31.3%).
- By 90 days after KRT start 5.2% of patients had died or stopped treatment.
- In 2021 21% of patients started KRT on PD, compared to 21.8% in 2020. This is still a higher proportion than previous years.
- In 2021 only 5.8% of patients started KRT with a transplant, lower than previous years and likely due to ongoing COVID related disruption.
- The mean eGFR at the start of KRT was 7.0 mL/min/1.73m² (HD 6.9 mL/min/1.73m², PD 7.4 mL/min/1.73m² and pre-emptive Tx 10.5 mL/min/1.73m²) compared to 7.2 mL/min/1.73m² in 2020.
- Late presentation was 18.2% which is higher than previous years and 16.4% in 2020.
- Of the 7,004 incident dialysis patients with dialysis access data, 50.2% started dialysis with definitive access (23.3% PD and 26.9% HD with an AVF or AVG), 32.3% with a TL and 17.5% with an NTL.
- A higher proportion of patients started haemodialysis with definitive access this year at 35.1% compared to 26.8% in 2020 and despite an increase in late presentation.
- Short-term (90 day) age-adjusted survival of incident KRT patients in a combined 2 year cohort (2019–2020) was 96.4%, which was slightly lower than the analysis of the 2018–2019 cohort.
- 1 year after 90 day age-adjusted survival for incident KRT patients in a combined 2 year cohort (2019–2020) was 90.4% (compared to 90.6% in the previous analysis of the 2018–2019 cohort).
- There were 8 outlying centres in the funnel plot showing 1 year after 90 day case-mix-adjusted survival for incident KRT patients in a combined 4 year cohort (2017–2020): 3 centres below the lower 95% limit and 5 centres above the upper 95% limit. It is expected that 3 centres would be outside the limits by chance.
- There was no cause of death data available for 40.1% of deaths in the first 90 days of KRT. For those with data, the leading causes of death in the first 90 days were cardiac disease (23.9%) and infection (20.3%).

Analyses

Changes to the incident adult KRT population

For the 68 adult kidney centres, the number of incident patients on KRT was calculated as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

Table 2.2 Number of incident adult KRT patients by year and by centre; number of KRT patients as a proportion of the adult catchment population

Centre	N on KRT					Estimated catchment population (millions)	2021 crude rate (pmp)
	2017	2018	2019	2020	2021		
ENGLAND							
Bham	385	370	372	332	352	2.05	171
Bradfd	82	71	106	83	80	0.49	163
Brightn	154	176	153	143	130	1.08	121
Bristol	157	166	165	131	157	1.22	128
Camb	94	121	135	136	150	0.94	160
Carlis	41	33	40	34	45	0.26	176
Carsh	229	244	229	296	294	1.63	180
Colchr	45	38	40	39	35	0.29	120
Covnt	120	128	141	141	150	0.80	189
Derby	89	84	90	72	88	0.56	157
Donc	56	52	53	47	44	0.38	117
Dorset	103	106	91	88	79	0.73	108
Dudley	58	53	56	61	60	0.34	174
EssexMS	142	125	149	127	134	0.99	135
Exeter*	140	132	157	105	157	0.95	165
Glouc	82	71	63	86	81	0.51	159
Hull	106	105	105	106	94	0.80	117
Ipswi	53	58	57	44	61	0.31	195
Kent	140	137	154	141	180	1.07	168
L Barts	342	344	311	320	253	1.59	159
L Guys	167	181	208	162	196	1.01	195
L Kings	170	150	186	159	219	0.93	234
L Rfree	236	244	265	232	283	1.33	213
L St.G	92	84	101	84	92	0.67	138
L West	408	392	392	364	418	1.96	213
Leeds	176	181	162	152	168	1.37	122
Leic	291	313	367	337	307	2.09	147
Liv Ain	55	66	57	53	63	0.43	146
Liv Roy	136	103	107	97	103	0.81	127
M RI	225	189	209	172	205	1.33	154
Middlbr	117	118	110	97	110	0.81	136
Newc	145	136	114	125	129	0.95	135
Norwch	80	83	105	96	96	0.69	139
Nottm	134	125	128	121	127	0.93	137
Oxford	217	216	203	203	193	1.45	133
Plymth	91	64	62	59	85	0.40	212
Ports	219	222	224	219	237	1.75	135
Prestn	169	180	156	167	197	1.23	160
Redng	105	103	116	100	107	0.70	153
Salford	173	161	172	173	143	1.15	124
Sheff	160	184	160	174	170	1.13	150

Table 2.2 Continued

Centre	N on KRT					Estimated catchment population (millions)	2021 crude rate (pmp)
	2017	2018	2019	2020	2021		
Shrew	62	77	66	45	62	0.41	151
Stevng	140	175	194	170	171	1.11	154
Stoke	100	105	100	117	131	0.73	179
Sund	95	89	88	68	69	0.55	126
Truro	59	61	55	45	71	0.36	198
Wirral	61	62	63	48	52	0.47	111
Wolve	90	94	95	109	121	0.55	220
York	59	51	58	47	49	0.49	101
N IRELAND							
Antrim	47	57	42	29	39	0.25	159
Belfast	78	73	74	78	102	0.53	191
Newry	30	32	30	30	39	0.24	166
Ulster	31	32	28	28	25	0.20	123
West NI	34	41	38	38	34	0.25	135
SCOTLAND							
Abrdn	54	58	29	56	54	0.50	108
Airdrie	66	64	70	55	65	0.46	142
D&Gall	16	18	17	19	13	0.12	106
Dundee	55	36	27	27	37	0.37	100
Edinb	126	106	108	87	91	0.84	108
Glasgw	202	210	203	180	207	1.37	151
Inverns	25	37	18	18	36	0.22	161
Klmarnk	49	38	44	57	39	0.29	133
Krkldy	41	38	45	37	43	0.27	157
WALES							
Bangor	27	25	19	29	20	0.16	122
Cardff	180	189	165	137	154	1.16	133
Clwyd	24	32	28	26	30	0.18	166
Swanse	130	140	159	123	126	0.76	166
Wrexm	25	29	31	38	23	0.21	111
TOTALS							
England	6,850	6,823	6,990	6,527	6,998	44.77	156
N Ireland	220	235	212	203	239	1.47	163
Scotland	634	605	561	536	585	4.45	131
Wales	386	415	402	353	353	2.49	142
UK	8,090	8,078	8,165	7,619	8,175	53.19	154

Country KRT populations were calculated by summing the KRT 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 patient level data. Numbers of incident patients in 2019 were used as estimate for 2021
pmp – per million population

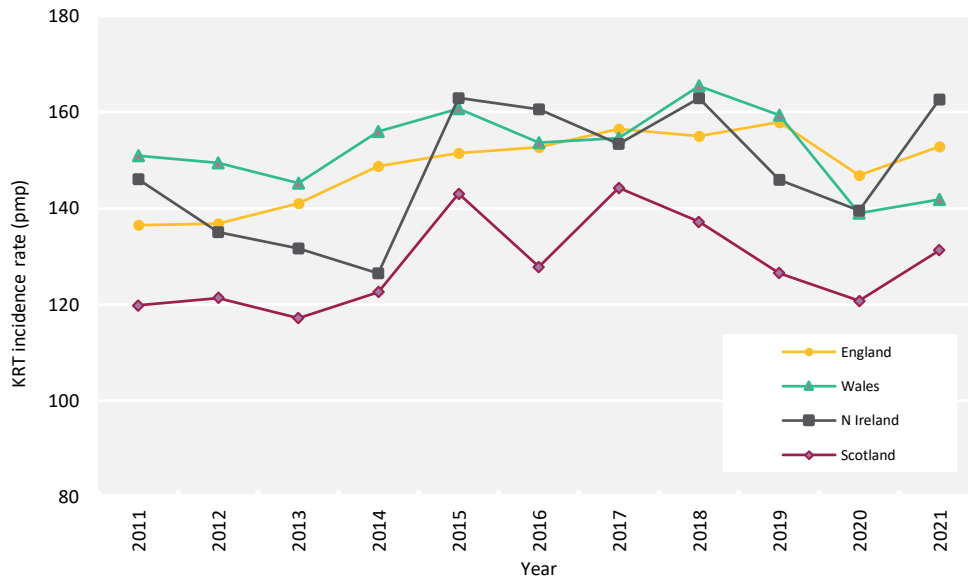


Figure 2.2 Adult KRT incidence rates by country between 2011 and 2021
pmp – per million population

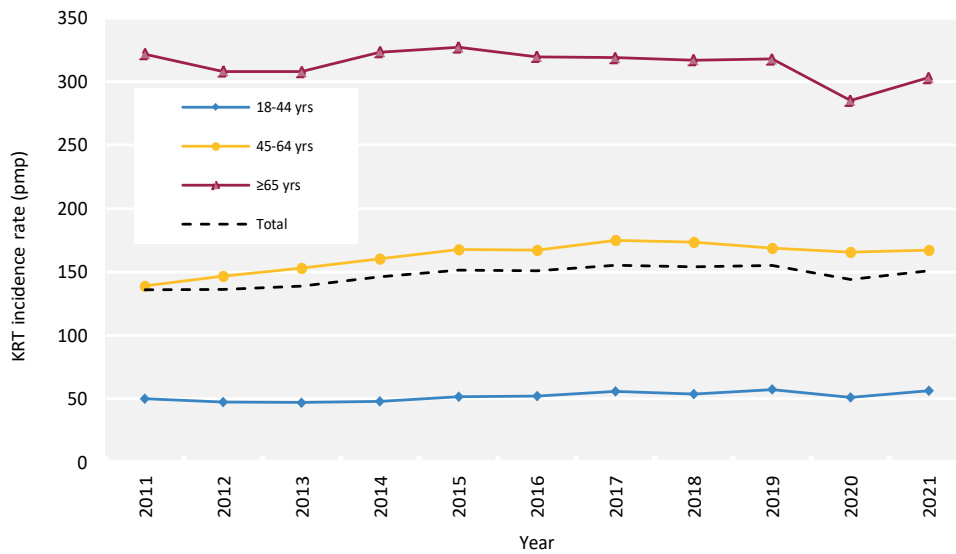


Figure 2.3 Adult KRT incidence rates by age group between 2011 and 2021
pmp – per million population

Demographics and start modality of incident adult KRT patients

The proportion of KRT 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 2.3 Demographics and start modality of adult patients incident to KRT in 2021 by centre

Centre	N on KRT	% on ICHD	% on PD	% on HHD	% on Tx	% pre-emptive listing/tx	Median age (yrs)	% male	Ethnicity				
									% White	% Asian	% Black	% Other	% missing
ENGLAND													
Bham	352	67.6	29.0	0.6	2.8	12.8	64.1	65.9	60.6	26.7	10.3	2.4	6.3
Bradfd	80	72.5	27.5	0.0	0.0	11.3	62.1	52.5	57.5	35.0	1.3	6.3	0.0
Brightn	130	77.7	16.9	0.0	5.4	19.2	61.6	58.5	88.7	3.5	4.3	3.5	11.5
Bristol	157	71.3	22.9	0.0	5.7	17.2	59.9	60.5	81.0	8.5	8.5	2.1	9.6
Camb	150	72.7	8.7	0.0	18.7	22.0	64.8	64.0	94.5	3.9	0.8	0.8	15.3
Carlis	45	66.7	28.9	0.0	4.4	11.1	60.1	64.4	100.0	0.0	0.0	0.0	2.2
Carsh	294	79.6	20.1	0.0	0.3	4.8	64.1	61.2	66.7	18.4	8.0	6.9	11.2
Colchr	35	100.0	0.0	0.0	0.0	2.9	67.6	68.6	100.0	0.0	0.0	0.0	20.0
Covnt	150	75.3	19.3	0.7	4.7	13.3	67.6	68.0	82.7	12.7	4.7	0.0	0.0
Derby	88	62.5	27.3	6.8	3.4	13.6	66.5	60.2	83.5	12.7	1.3	2.5	10.2
Donc	44	79.6	20.5	0.0	0.0	13.6	63.2	61.4	97.7	2.3	0.0	0.0	2.3
Dorset	79	77.2	13.9	0.0	8.9	16.5	70.1	68.4	94.9	3.8	1.3	0.0	1.3
Dudley	60	83.3	16.7	0.0	0.0	13.3	61.0	75.0	76.7	18.3	3.3	1.7	0.0
EssexMS	134	67.2	29.9	0.0	3.0	5.2	67.6	73.9	86.3	3.4	7.7	2.6	12.7
Exeter*	157	77.7	18.5	0.6	3.2								
Glouc	81	80.3	16.1	0.0	3.7	16.0	67.5	64.2	86.8	5.3	5.3	2.6	6.2
Hull	94	80.9	18.1	0.0	1.1	3.2	61.0	62.8	96.8	3.2	0.0	0.0	1.1
Ipswi	61	85.3	8.2	0.0	6.6	14.8	72.9	62.3	84.2	1.8	5.3	8.8	6.6
Kent	180	77.8	20.0	0.0	2.2	10.6	65.5	66.1	91.4	2.9	2.3	3.4	3.3
L Barts	253	49.0	45.5	0.0	5.5	17.8	58.7	58.9	28.4	41.4	22.8	7.3	8.3
L Guys	196	78.6	14.3	0.0	7.1	15.3	63.2	59.7	51.0	11.1	32.7	5.2	21.9
L Kings	219	79.0	18.3	0.9	1.8	7.3	61.9	62.6	42.4	13.2	41.5	2.9	6.4
L Rfree	283	68.2	24.4	0.0	7.4	15.9	63.5	65.0	40.5	23.2	23.6	12.7	22.3
L St.G	92	63.0	28.3	0.0	8.7	25.0	60.3	70.7	36.0	20.0	16.0	28.0	18.5
L West	418	73.7	22.3	0.0	4.1	17.5	62.8	63.9	41.0	37.9	18.9	2.2	0.2
Leeds	168	79.2	13.7	0.6	6.6	25.6	61.3	65.5	76.2	15.5	6.0	2.4	0.0
Leic	307	78.8	18.6	0.0	2.6	13.7	66.1	66.5	72.6	20.7	4.4	2.2	12.1
Liv Ain	63	81.0	17.5	0.0	1.6	6.3	62.1	58.7	89.7	0.0	3.4	6.9	7.9
Liv Roy	103	68.0	16.5	2.9	12.6	18.4	58.3	68.0	93.6	3.2	1.1	2.1	8.7
M RI	205	62.0	22.0	6.3	9.8	20.5	62.8	62.4	60.5	16.2	20.4	3.0	18.5
Middlbr	110	85.5	9.1	0.0	5.5	12.7	63.2	59.1	93.1	3.9	2.0	1.0	7.3
Newc	129	69.8	19.4	0.0	10.9	24.0	62.9	67.4	89.8	4.7	2.3	3.1	0.8
Norwch	96	79.2	20.8	0.0	0.0	3.1	69.2	58.3	92.8	1.4	1.4	4.3	28.1
Nottm	127	58.3	36.2	0.0	5.5	19.7	63.6	73.2	85.5	8.1	5.6	0.8	2.4
Oxford	193	64.3	25.4	0.0	10.4	30.6	62.3	64.8					43.5
Plymth	85	70.6	17.7	0.0	11.8	23.5	63.1	70.6	98.8	0.0	0.0	1.2	2.4
Ports	237	74.7	17.3	3.4	4.6	13.5	66.1	58.7					30.4
Prestn	197	72.1	17.8	1.0	9.1	24.4	62.5	67.5	81.1	17.9	1.0	0.0	0.5
Redng	107	66.4	25.2	0.0	8.4	15.9	59.7	72.0	68.6	19.8	2.3	9.3	19.6
Salford	143	81.8	9.8	0.0	8.4	21.7	59.0	59.4	70.6	18.9	7.7	2.8	0.0
Sheff	170	70.0	24.1	0.6	5.3	14.1	62.0	62.9	89.1	4.8	4.2	1.8	2.9
Shrew	62	59.7	35.5	1.6	3.2	17.7	64.0	62.9	91.4	0.0	1.7	6.9	6.5
Stevng	171	79.0	16.4	1.2	3.5	11.7	63.0	69.6	66.7	21.3	8.0	4.0	12.3
Stoke	131	57.3	39.7	0.0	3.1	10.7	65.0	58.8	81.2	6.8	6.8	5.1	10.7

Table 2.3 Continued

Centre	N on KRT	% on ICHD	% on PD	% on HHD	% on Tx	% pre-emptive listing/tx	Median age (yrs)	% male	Ethnicity				
									% White	% Asian	% Black	% Other	% missing
Sund	69	59.4	37.7	0.0	2.9	5.8	70.2	59.4	92.8	2.9	0.0	4.3	0.0
Truro	71	87.3	9.9	0.0	2.8	9.9	67.6	56.3	97.2	1.4	0.0	1.4	0.0
Wirral	52	71.2	28.9	0.0	0.0	5.8	67.4	67.3	98.1	0.0	1.9	0.0	0.0
Wolve	121	74.4	18.2	6.6	0.8	6.6	64.5	63.6	58.7	28.1	6.6	6.6	0.0
York	49	69.4	16.3	0.0	14.3	28.6	64.5	49.0	95.9	4.1	0.0	0.0	0.0
N IRELAND													
Antrim	39	71.8	25.6	0.0	2.6	12.8	66.9	59.0					69.2
Belfast	102	52.9	18.6	0.0	28.4	38.2	64.4	58.8	98.6	1.4	0.0	0.0	29.4
Newry	39	74.4	23.1	0.0	2.6	12.8	72.7	53.8	100.0	0.0	0.0	0.0	17.9
Ulster	25	88.0	12.0	0.0	0.0	12.0	68.4	64.0	96.0	4.0	0.0	0.0	0.0
West NI	34	85.3	8.8	0.0	5.9	23.5	72.7	70.6	100.0	0.0	0.0	0.0	5.9
SCOTLAND													
Abrdn	54	77.8	16.7	0.0	5.6	13.0	66.5	70.4					
Airdrie	65	81.5	18.5	0.0	0.0	18.5	61.7	53.8					
D&Gall	13	69.2	7.7	0.0	23.1	38.5	69.0	53.8					
Dundee	37	73.0	27.0	0.0	0.0	13.5	67.6	67.6					
Edinb	91	58.2	28.6	0.0	13.2	33.0	60.3	68.1					
Glasgw	207	76.3	11.6	0.0	12.1	31.9	61.7	60.4					
Inverns	36	61.1	22.2	0.0	16.7	33.3	63.5	69.4					
Klmarnk	39	66.7	33.3	0.0	0.0	17.9	65.4	56.4					
Krkldy	43	95.4	4.7	0.0	0.0	7.0	68.3	65.1					
WALES													
Bangor	20	60.0	40.0	0.0	0.0	5.0	67.4	60.0	100.0	0.0	0.0	0.0	30.0
Cardff	154	79.2	11.0	1.3	8.4	15.6	62.8	70.8	93.1	4.6	2.3	0.0	15.6
Clwyd	30	83.3	16.7	0.0	0.0	3.3	68.0	60.0					36.7
Swanse	126	80.2	14.3	0.0	5.6	12.7	63.2	68.3	97.6	1.6	0.8	0.0	0.8
Wrexm	23	91.3	4.4	0.0	4.4	13.0	64.6	69.6	100.0	0.0	0.0	0.0	4.3
TOTALS													
England	6,998	72.4	21.7	0.7	5.2	15.1	63.6	63.9	72.1	15.0	9.2	3.7	9.8
N Ireland	239	67.8	18.4	0.0	13.8	25.1	66.8	60.3	98.8	1.2	0.0	0.0	27.6
Scotland	585	73.7	18.0	0.0	8.4	25.1	63.3	62.7					
Wales	353	79.6	13.9	0.6	6.0	12.7	64.0	68.3	96.1	2.6	1.3	0.0	12.2
UK	8,175	72.6	21.0	0.7	5.7	16.1	63.7	63.9	74.0	14.0	8.6	3.4	10.5

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 2021 patient level data, numbers of incident patients in 2019 were used as estimate for 2021

UK ethnicity distribution and completeness does not include Scotland

Table 2.4 Demographics, primary renal diseases (PRDs), referral time and start modality of adult patients incident to KRT in 2021 by age group

Characteristic	Age group (yrs)							Total	Median age (yrs)
	18-34	35-44	45-54	55-64	65-74	75-84	≥85		
Total									
N	593	718	1,200	1,707	2,038	1,546	216	8,018	63.7
%	7.4	9.0	15.0	21.3	25.4	19.3	2.7		
Sex (%)									
Male	60.7	61.1	64.4	63.0	64.0	65.7	71.8	63.9	64.1
Female	39.3	38.9	35.6	37.0	36.0	34.3	28.2	36.1	63.1
Ethnicity (%)									
White	72.7	66.7	65.2	69.8	77.2	83.9	80.2	74.0	65.6
Asian	15.0	17.5	16.5	15.0	14.6	9.1	8.9	14.0	61.8
Black	8.6	11.5	13.2	10.7	5.4	5.7	6.8	8.6	57.8
Other	3.6	4.3	5.0	4.5	2.8	1.3	4.2	3.4	58.5
Missing	10.4	10.1	9.7	10.8	10.6	11.1	8.6	10.5	64.2
PRD (%)									
Diabetes	20.0	25.8	30.2	37.4	36.1	26.8	23.0	31.3	63.7
Glomerulonephritis	27.4	17.3	15.8	14.0	11.1	7.3	3.7	13.3	56.7
Hypertension	5.6	7.7	7.2	6.5	5.5	7.9	11.8	6.8	63.3
Polycystic kidney disease	2.9	10.1	13.3	7.2	4.2	2.9	1.9	6.4	55.1
Pyelonephritis	6.4	3.7	4.7	4.2	5.0	5.0	9.3	4.9	64.7
Renal vascular disease	0.6	1.3	2.1	2.4	6.3	9.4	10.6	4.6	73.7
Other	22.7	20.5	15.9	15.6	17.0	19.3	12.4	17.6	63.3
Uncertain aetiology	14.4	13.8	10.8	12.7	14.7	21.4	27.3	15.1	67.4
Missing	13.2	13.0	13.4	12.3	15.1	16.1	25.5	14.4	66.1
Referral time (%)									
<90 days	24.0	24.3	17.4	17.4	16.9	16.8	16.0	18.2	61.8
≥90 days	76.0	75.7	82.6	82.6	83.1	83.2	84.0	81.8	64.2
Missing	7.4	6.2	5.6	5.7	5.8	5.5	7.6	5.9	63.8
Start modality (%)									
ICHD	59.5	61.7	67.3	71.2	75.2	82.6	87.0	72.5	65.6
HHD	0.8	1.1	0.7	0.6	0.7	0.3	0.5	0.6	57.1
PD	27.7	28.1	22.6	21.4	20.1	16.0	12.5	21.0	60.4
Tx	12.0	9.1	9.5	6.8	4.0	1.0	0.0	5.8	53.8

Scotland was excluded from analysis of ethnicity and referral time as these two data items are not available from the Scottish registry

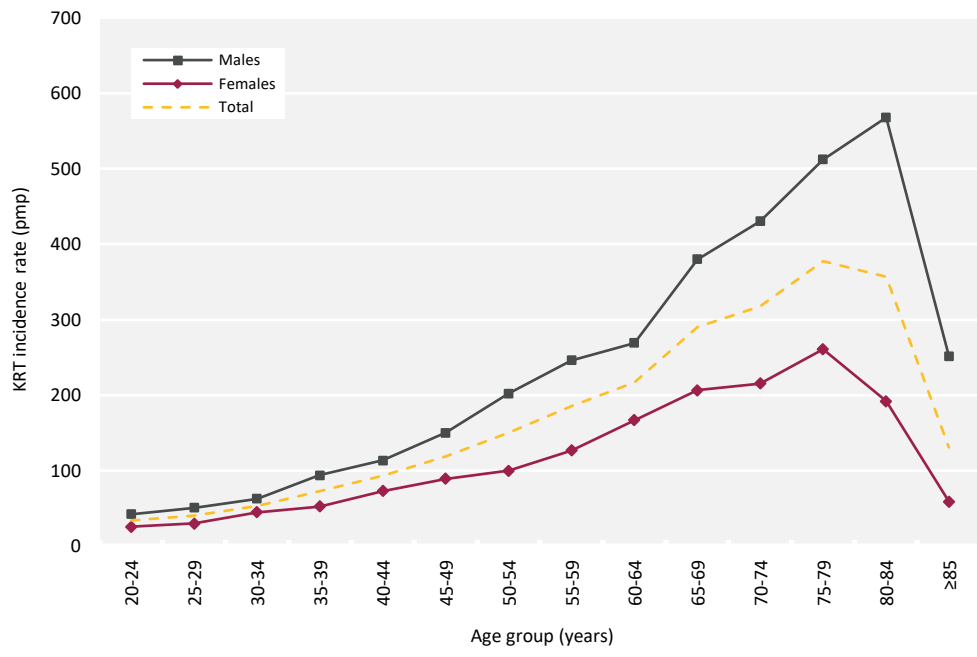


Figure 2.4 Incidence rates for adult patients starting KRT in 2021 by age group and sex
pmp – per million population

Table 2.5 Change in primary renal disease (PRD) of adult patients incident to KRT from 2012 to 2021

PRD	Year of KRT start									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Diabetes	25.3	25.3	26.3	26.9	27.5	28.7	29.8	30.7	30.6	31.3
Glomerulonephritis	13.7	14.3	12.9	13.4	13.3	13.6	13.0	13.1	12.3	13.3
Hypertension	7.4	7.5	6.4	6.6	6.2	6.5	6.7	7.5	7.2	6.8
Polycystic kidney disease	6.7	7.6	6.5	7.2	6.7	6.8	7.0	6.9	6.7	6.4
Pyelonephritis	6.7	6.6	5.7	6.2	6.2	5.7	5.1	5.4	5.4	4.9
Renal vascular disease	6.2	5.3	6.1	5.9	6.1	5.7	5.6	5.5	4.9	4.6
Other	17.4	18.1	19.8	18.7	18.6	18.7	18.7	16.8	18.1	17.6
Uncertain aetiology	16.6	15.4	16.2	15.0	15.3	14.5	14.1	14.1	14.9	15.1
Missing	2.1	3.2	1.7	2.7	3.2	5.5	4.4	6.9	9.4	14.4

The percentages in each PRD category add up to 100% in each year; the percentages with missing PRD data are shown separately

The audit of pre-emptive listing and pre-emptive transplantation was merged as a single metric. Figure 2.5 shows the percentage of patients at each centre who were either pre-emptively listed or pre-emptively transplanted on day one of their KRT treatment in 2021. Please visit the UKRR data portal (ukkidney.org/audit-research/data-portals) to identify individual kidney centres.

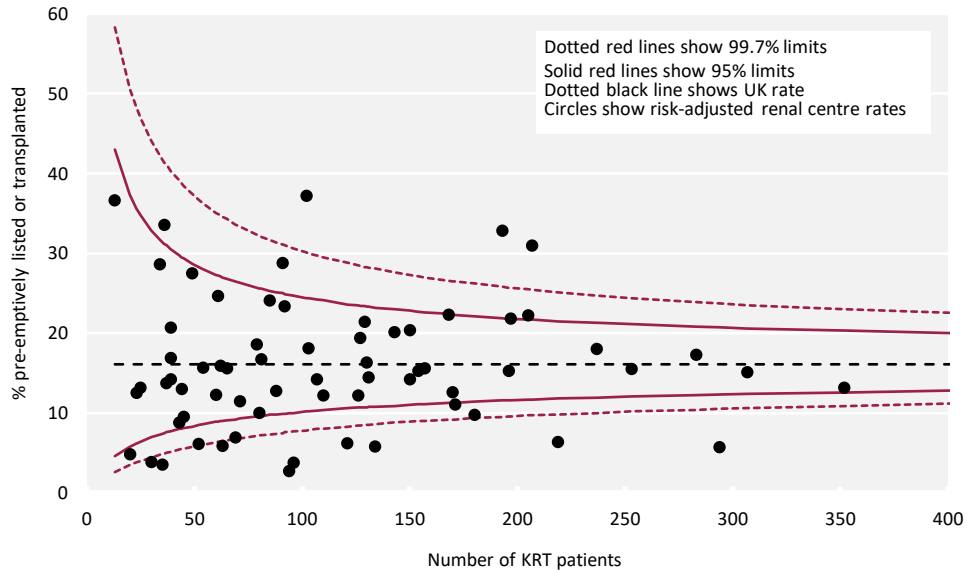


Figure 2.5 Transplant-status (listed or transplanted) at the start of KRT for adult patients incident to KRT in 2021 by centre
Analysis is adjusted for age, sex and PRD (diabetes versus non-diabetes)

Modality changes of incident adult KRT patients

Many patients start on HD, but then switch to other modalities, so the modality in use at 90 days may be more representative of the first elective modality. The analysis of the proportion of patients by treatment modality at three months post-KRT initiation is shown over time (table 2.6) and by UK country (table 2.7). Changes from start modality and deaths during the first five years are shown by start modality (table 2.8). Due to small numbers, the percentage of incident patients on HHD and ICHD at start and 90 days after start of KRT is shown at a UK level (table 2.6), but all HD patients are combined for other analyses.

Table 2.6 KRT modality at start and 90 days after start of KRT for incident adult KRT patients by year of start

KRT start year	% on ICHD	% on HHD	% on PD	% with Tx
Day 0 modality				
2016	71.7	0.5	20.0	7.8
2017	71.5	0.4	19.2	9.0
2018	71.7	0.4	19.6	8.3
2019	71.0	0.4	20.1	8.4
2020	71.9	0.4	21.8	6.0
2021	72.5	0.7	21.0	5.8
Day 90 modality				
Oct 2015 - Sept 2016	68.5	0.9	20.4	10.2
Oct 2016 - Sept 2017	68.5	0.8	20.0	10.7
Oct 2017 - Sept 2018	69.1	1.0	19.8	10.2
Oct 2018 - Sept 2019	68.3	1.1	20.8	9.9
Oct 2019 - Sept 2020	69.8	1.0	21.5	7.7
Oct 2020 - Sept 2021	70.5	1.1	21.4	7.1

For 90 day analyses, the incident cohort from the 12 months starting 1 October of the previous year was used, so that follow-up to 90 days was possible for all patients

Table 2.7 KRT modality at 90 days for adult patients incident to KRT between 01/10/2020 and 30/09/2021 by country

Country	N	Patients who started KRT					Patients still on RRT at 90 days		
		% on HD ¹	% on PD	% with Tx	% discontinued ²	% died	% on HD ¹	% on PD	% with Tx
England	6,778	67.3	21.1	6.3	0.8	4.6	71.1	22.3	6.6
N Ireland	235	66.4	14.9	13.2	4.7	0.9	70.3	15.8	14.0
Scotland	561	71.5	16.0	9.5	0.0	3.0	73.7	16.5	9.7
Wales	348	74.4	14.7	6.3	0.9	3.7	78.0	15.4	6.6
UK	7,922	67.9	20.3	6.7	0.9	4.3	71.5	21.4	7.1

¹HD includes ICHD and HHD

²Discontinued did not include patients who recovered function within 90 days, because by definition they were not included in the incident cohort

Table 2.8 Start and subsequent KRT modalities for adult patients incident to KRT in 2016 by time after start

Start modality	N	Later modality	Time after start (%)			
			90 days	1 yr	3 yrs	5 yrs
HD	5,639	HD	90.3	73.2	44.1	24.5
		PD	2.2	2.7	1.2	0.4
		Tx	1.2	6.0	15.5	18.2
		Other	1.0	2.1	2.4	2.3
		Died	5.2	15.9	36.9	54.6
PD	1,564	HD	5.9	16.4	20.5	14.5
		PD	89.3	58.6	18.5	6.7
		Tx	2.9	16.3	36.3	40.0
		Other	0.6	1.5	1.3	1.5
		Died	1.2	7.2	23.4	37.3
Tx	608	HD	0.5	0.8	1.0	1.6
		PD	0.0	0.3	0.5	0.3
		Tx	99.2	97.2	93.4	87.8
		Other	0.2	0.5	1.3	1.8
		Died	0.2	1.2	3.8	8.4

Shading indicates proportion of individuals maintained on their initial modality

HD included ICHD and HHD

Other is discontinued, recovered, moved away or currently transferring between centres

The modality at one year after KRT initiation is shown in figure 2.6 for all KRT starters and in figure 2.7 for those starting on PD by centre, using incident patients starting KRT in 2020 to allow one year follow-up time.

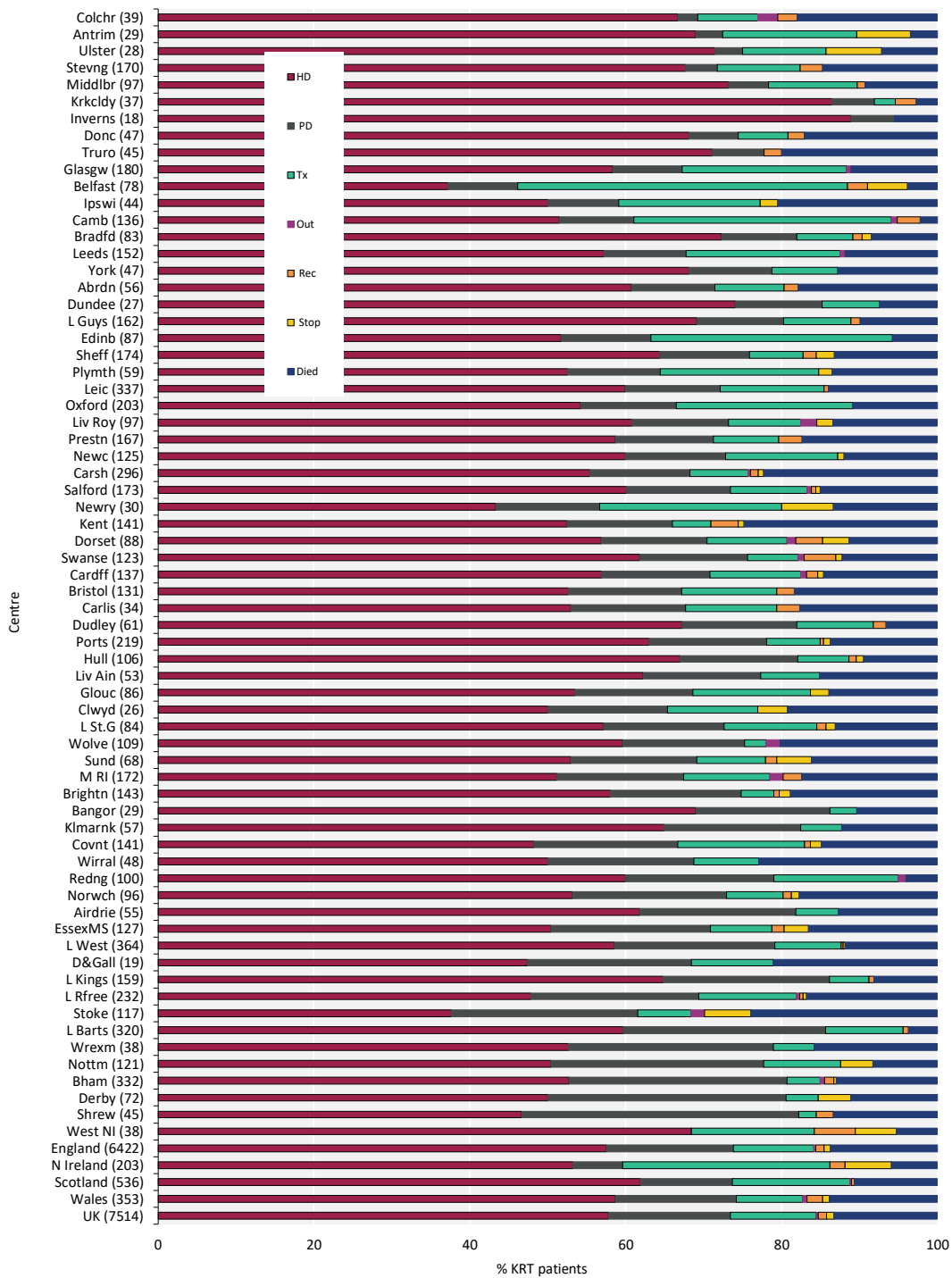


Figure 2.6 KRT modality at 1 year for incident adult KRT patients who started KRT in 2020 by centre

Number of patients in a centre in brackets

Out – moved out of a centre but did not reappear in another centre; Rec – recovered kidney function; Stop – treatment withdrawal

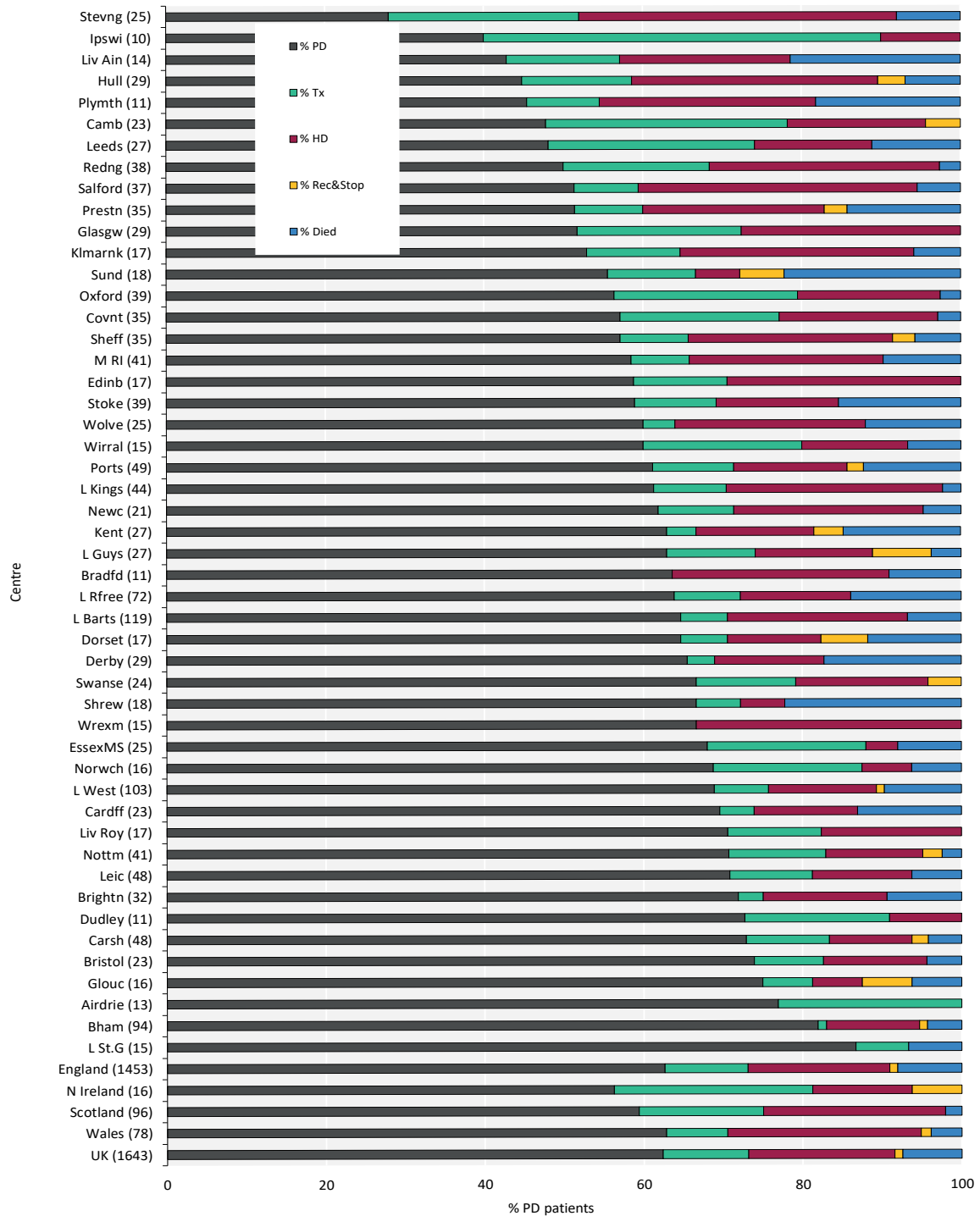


Figure 2.7 KRT modality at 1 year for incident adult PD patients who started KRT in 2020 by centre

Number of patients in a centre in brackets

Rec – recovered kidney function; Stop – treatment withdrawal

Late presentation to nephrology services of incident adult KRT patients

Late presentation to a nephrologist is defined as a patient being seen by the kidney service for the first time within 90 days of starting KRT and is used interchangeably with referral time in this report. Due to small numbers, a two year cohort (2020–2021) was used at a centre level to estimate late referral to a nephrologist and centres with a completeness of <70% were excluded. A seven year cohort was used to show national longitudinal trends (table 2.12).

Table 2.9 Referral times of incident adult KRT patients by centre (2020–2021 2 year cohort)

Centre	N on KRT		N with referral data	% data completeness		% presenting <90 days before KRT start		% presenting <1 yr before KRT start
	2020	2021		2020	2021	All PRDs	Non-diabetes PRDs	All PRDs
ENGLAND								
Bham	332	352	684	100.0	100.0	17.1	23.3	28.9
Bradfd	83	80	163	100.0	100.0	11.7	15.3	20.2
Brightn	143	130	272	99.3	100.0	14.7	17.0	27.6
Bristol	131	157	263	82.4	98.7	18.6	23.6	28.1
Camb	136	150	285	100.0	99.3	21.8	22.9	38.6
Carlis	34	45	79	100.0	100.0	13.9	20.8	22.8
Carsh	296	294	578	99.3	96.6	23.0		36.0
Colchr	39	35		10.3	8.6			
Covnt	141	150	289	99.3	99.3	14.9	19.2	25.6
Derby	72	88	160	100.0	100.0	18.8	21.4	28.8
Donc	47	44	89	97.9	97.7	9.0	11.5	24.7
Dorset	88	79	166	100.0	98.7	15.7	19.8	24.7
Dudley	61	60	121	100.0	100.0	17.4	16.7	27.3
EssexMS	127	134	247	98.4	91.0	23.9	28.0	39.3
Exeter	105	0	105	100.0		13.3	20.8	21.9
Glouc	86	81	163	98.8	96.3	16.0	18.1	27.0
Hull	106	94	199	99.1	100.0	30.2	34.2	42.7
Ipswi	44	61	84	90.9	72.1	15.5		32.1
Kent	141	180	320	99.3	100.0	10.0	12.1	15.9
L Barts	320	253		60.9	47.8			
L Guys	162	196	345	98.8	94.4	15.9	16.7	33.6
L Kings	159	219	369	99.4	96.3	21.4	25.0	30.6
L Rfree	232	283	505	98.3	97.9	16.6	16.7	27.9
L St.G	84	92	176	100.0	100.0	23.3	26.9	44.9
L West	364	418	778	99.5	99.5	16.7	18.7	33.0
Leeds	152	168	320	100.0	100.0	17.2	19.1	27.8
Leic	337	307	641	99.7	99.3	17.0	14.0	24.3
Liv Ain	53	63	116	100.0	100.0	19.8	23.8	29.3
Liv Roy	97	103	200	100.0	100.0	21.0		31.0
M RI	172	205	319	84.9	84.4	20.4		27.3
Middlbr	97	110	203	99.0	97.3	18.2	20.3	33.5
Newc	125	129	254	100.0	100.0	16.1	20.9	25.6
Norwch	96	96	81	84.4	37.5	32.1	33.9	44.4
Nottm	121	127	248	100.0	100.0	11.7	15.5	23.0
Oxford	203	193	394	99.5	99.5	13.5	19.2	24.6
Plymth	59	85	144	100.0	100.0	27.8	33.0	41.0
Ports	219	237	436	97.3	94.1	15.1		26.1
Prestn	167	197	358	100.0	97.0	17.0	20.4	31.0
Redng	100	107	206	99.0	100.0	16.0	21.3	21.8
Salford	173	143	316	100.0	100.0	15.8	20.9	30.7
Sheff	174	170	342	98.9	100.0	14.9	17.1	25.4
Shrew	45	62	105	97.8	98.4	16.2	19.8	32.4
Stevng	170	171	331	98.8	95.3	14.5	18.3	21.8

Table 2.9 Continued

Centre	N on KRT		N with referral data	% data completeness		% presenting <90 days before KRT start		% presenting <1 yr before KRT start
	2020	2021		2020	2021	All PRDs	Non-diabetes PRDs	All PRDs
Stoke	117	131		61.5	57.3			
Sund	68	69	136	100.0	98.6	13.2	15.7	25.7
Truro	45	71	116	100.0	100.0	14.7	20.5	24.1
Wirral	48	52	100	100.0	100.0	14.0	19.7	26.0
Wolve	109	121	226	98.2	98.3	15.5	18.6	24.3
York	47	49	96	100.0	100.0	15.6	17.8	21.9
N IRELAND								
Antrim	29	39	68	100.0	100.0	14.7	10.0	20.6
Belfast	78	102	169	96.2	92.2	24.3	23.0	30.8
Newry	30	39	67	100.0	94.9	16.4	7.9	26.9
Ulster	28	25	53	100.0	100.0	17.0	22.2	20.8
West NI	38	34	72	100.0	100.0	26.4	33.3	30.6
WALES								
Bangor	29	20	49	100.0	100.0	12.2	16.2	28.6
Cardff	137	154	287	99.3	98.1	11.5	12.2	20.2
Clwyd	26	30	56	100.0	100.0	8.9	11.4	19.6
Swanse	123	126	249	100.0	100.0	15.7	19.7	25.7
Wrexm	38	23	59	97.4	95.7	25.4	26.7	35.6
TOTALS								
England	6,527	6,841	12,634	95.3	93.8	17.3	19.6	28.8
N Ireland	203	239	429	98.5	95.8	21.0	20.7	27.3
Wales	353	353	700	99.4	98.9	14.0	16.6	24.0
E, W & NI	7,083	7,433	13,763	95.6	94.1	17.2	19.5	28.5

Blank cells – no data returned by the centre or data completeness <70%

If a centre had low referral completeness (<70%) for 1 of the 2 years, only a 1 year cohort was included in the analysis

For the analysis of late referral in people without diabetes, patients with missing PRD were excluded from the analysis and the results not shown if the completeness of PRD was <70%

PRD – primary renal disease

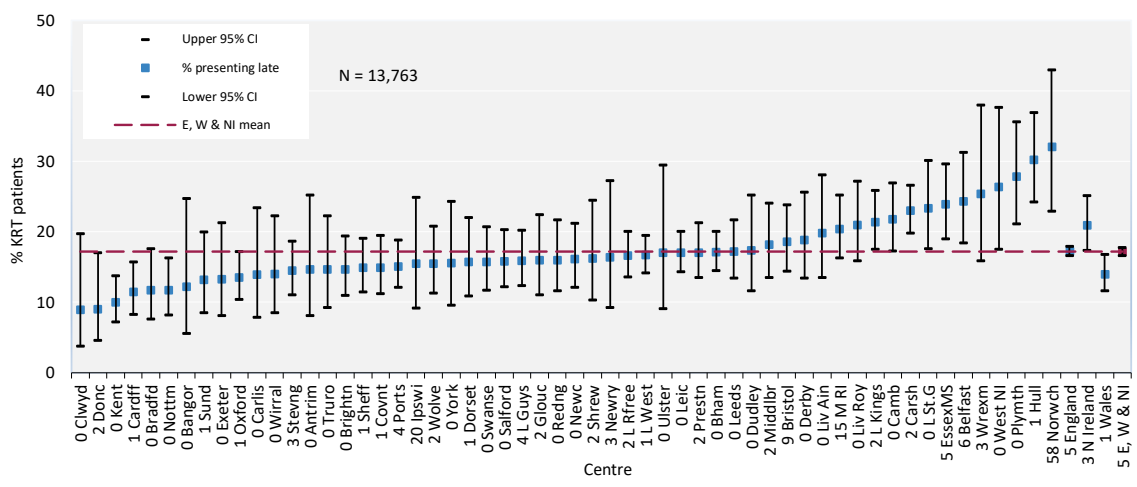


Figure 2.8 Percentage of incident adult KRT patients presenting late (<90 days) to a nephrologist (2019–2021 2 year cohort)
 CI – confidence interval

Table 2.10 Characteristics of incident adult KRT patients by referral time (2020–2021 2 year cohort)

Characteristic	Referral time	
	<90 days	≥90 days
Median age (yrs)	62.6	64.0
% male	68.1	63.6
% starting on PD	9.8	24.5
% on PD at 90 days	11.9	23.3
Mean haemoglobin at KRT start (g/L)	94	100
Mean eGFR at KRT start (mL/min/1.73m ²) ¹	6.2	7.2

¹Data available for approximately 35% of patients
 eGFR – estimated glomerular filtration rate

Late presentation is shown by PRDs, which were grouped into categories as shown in table 2.11, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of patients with each PRD presenting late is shown for patients with PRD data. The proportion of patients with no PRD data is shown on a separate line.

Table 2.11 Referral time of incident adult KRT patients by primary renal disease (PRD) (2020–2021 2 year cohort)

PRD	N with data	Referral time			
		<90 days		≥90 days	
		N	%	N	%
Diabetes	3,788	335	8.8	3,453	91.2
Glomerulonephritis	1,541	203	13.2	1,338	86.8
Hypertension	890	147	16.5	743	83.5
Polycystic kidney disease	791	41	5.2	750	94.8
Pyelonephritis	623	110	17.7	513	82.3
Renal vascular disease	574	72	12.5	502	87.5
Other	2,202	742	33.7	1,460	66.3
Uncertain aetiology	1,867	338	18.1	1,529	81.9
Total (with data)	12,276	1,988	16.2	10,288	83.8
Missing	1,487	380	25.6	1,107	74.4

Table 2.12 Referral time of incident adult KRT patients by year of start (restricted to centres reporting continuous data for 2015–2021)

Referral time	KRT start year (%)						
	2015	2016	2017	2018	2019	2020	2021
<90 days	16.1	15.2	16.0	15.1	15.7	15.9	18.1
3-6 mths	4.6	4.7	4.8	4.5	4.1	3.7	4.5
6-12 mths	7.9	8.2	6.9	7.4	7.7	7.5	6.7
≥12 mths	71.4	72.0	72.3	73.1	72.4	72.8	70.7

Start estimated glomerular filtration rate in incident adult KRT patients

Start eGFR was calculated using the CKD Epidemiology Collaboration method for incident KRT patients by age group and by start modality. Care needs to be taken in interpreting these data because (i) start eGFR data completeness is poor (35% overall), (ii) if the date of KRT start is incorrect, the documented start eGFR may have been taken after the patient had started KRT.

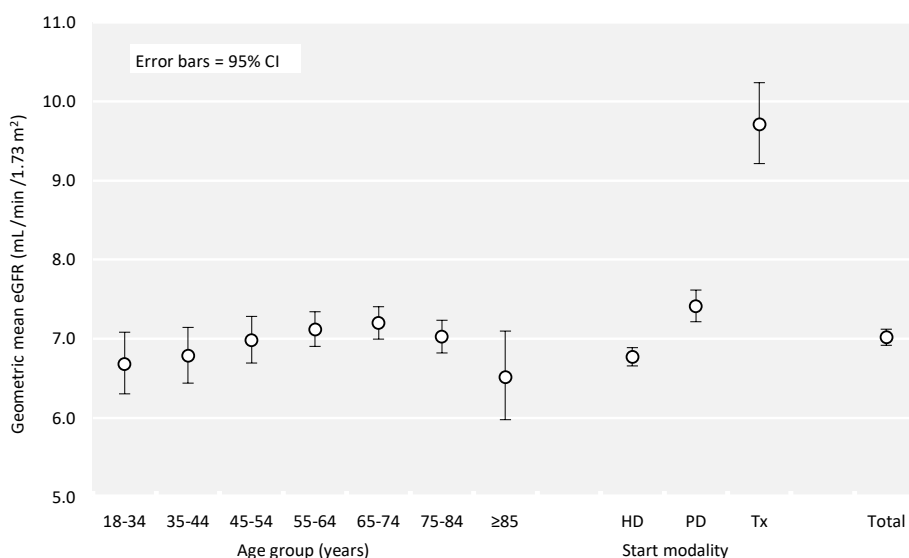


Figure 2.9 Geometric mean estimated glomerular filtration rates (eGFR) for adult patients incident to KRT in 2021 by age group and start modality

CI – confidence interval

Anaemia in incident adult KRT patients

The analyses of haemoglobin by modality and timing of presentation used haemoglobin measurements from after the start of KRT but still within the same quarter.

Table 2.13 Haemoglobin (Hb) data for adult patients incident to KRT in 2021 by centre

Centre	All KRT patients		Median Hb (g/L) by modality			Median Hb (g/L) by presentation time		% data completeness
	Median Hb (g/L)	% Hb \geq 100 g/L	Tx	PD	HD	\geq 90 days	<90 days	
ENGLAND								
Bham	99	47.9	105	105	94	100	91	94.9
Bradfd	99	46.3		112	94	99		83.8
Brightn	102	58.1		111	100	102	96	95.4
Bristol	104	68.4		113	101	105	101	98.7
Camb	100	53.3	106	111	97	102	97	71.3
Carlis	100	51.1		114	93	101		100.0
Carsh	94	40.3		106	92	97	92	96.3
Colchr								65.7
Covnt	98	46.5		107	94	100	92	96.0
Derby	97	40.5		104	94	98	95	95.5
Donc	95	39.0			91	97		93.2
Dorset	100	52.0			96	101	94	94.9
Dudley	95	39.7		109	93	97	91	96.7
EssexMS	93	35.7		105	90	98	88	94.0
Exeter								
Glouc	99	48.7		105	98	98	101	96.3
Hull	97	45.9		110	93	104	88	90.4
Ipswi	92	30.5			90	92		96.7
Kent	97	42.5		105	95	97	91	96.7
L Barts								56.9
L Guys	93	31.3	99	103	91	93	93	98.0
L Kings	96	41.0		103	93	97	92	91.3
L Rfree	100	51.3	110	105	96	101	97	98.6
L St.G	94	40.5		103	90	97	92	96.7
L West	101	54.3	117	105	100	102	93	72.3
Leeds	91	30.6	110	106	89	93	83	95.2
Leic	95	41.5	108	106	93	98	91	90.2
Liv Ain								44.4
Liv Roy								44.7
M RI	95	42.2	103	100	94	96	93	97.1
Middlbr	100	50.0			99	101	87	90.9
Newc	98	46.5	111	107	94	100	85	98.5
Norwch	96	45.7		112	89			84.4
Nottm	100	50.8		107	95	101	91	94.5
Oxford	98	43.7	101	102	95	98	91	94.8
Plymth	100	54.2	108	109	99	100	102	97.7
Ports	98	44.0	115	104	95	99	93	98.7
Prestn	96	42.7	102	102	94	95	92	97.5
Redng	94	35.0		104	91	94	93	93.5
Salford	95	41.3	110	107	90	96	87	96.5
Sheff	95	40.1		108	91	98	82	98.2
Shrew	108	60.7		112	98	108		98.4
Stevng	97	45.8		101	96	99	93	98.3
Stoke	105	71.1		109	103			92.4
Sund	101	56.1		104	99	101		95.7
Truro	97	47.8			94	97		94.4

Table 2.13 Continued

Centre	All KRT patients		Median Hb (g/L) by modality			Median Hb (g/L) by presentation time		% data completeness
	Median Hb (g/L)	% Hb \geq 100 g/L	Tx	PD	HD	\geq 90 days	<90 days	
Wirral								44.2
Wolve	97	42.1		103	95	99	83	94.2
York	97	40.4		105	93	99		95.9
N IRELAND								
Antrim	101	52.8			95	105		92.3
Belfast	107	68.4	115	116	100	110	90	93.1
Newry	101	55.6			96	102		92.3
Ulster	97	45.8			96	101		96.0
West NI	104	61.8			103	104		100.0
WALES								
Bangor	110	60.0			95	110		100.0
Cardiff	96	47.0	110	104	96	97	94	98.1
Clwyd	87	34.5			86	88		96.7
Swanse	97	44.4		107	97	98	90	100.0
Wrexam	96	43.5			96	95		100.0
TOTALS								
England	98	45.8	107	105	94	99	92	90.2
N Ireland	104	60.4	115	113	99	105	88	94.1
Wales	97	45.6	107	107	95	97	92	98.9
UK	98	46.2	107	106	94	99	92	90.7

Blank cells – no data returned by the centre, data completeness (including referral time) <70% or N<10

For Scotland data see the Scottish Renal Registry Annual report 2022 (publichealthscotland.scot/publications/scottish-renal-registry/scottish-renal-registry-reporting-on-2021/)

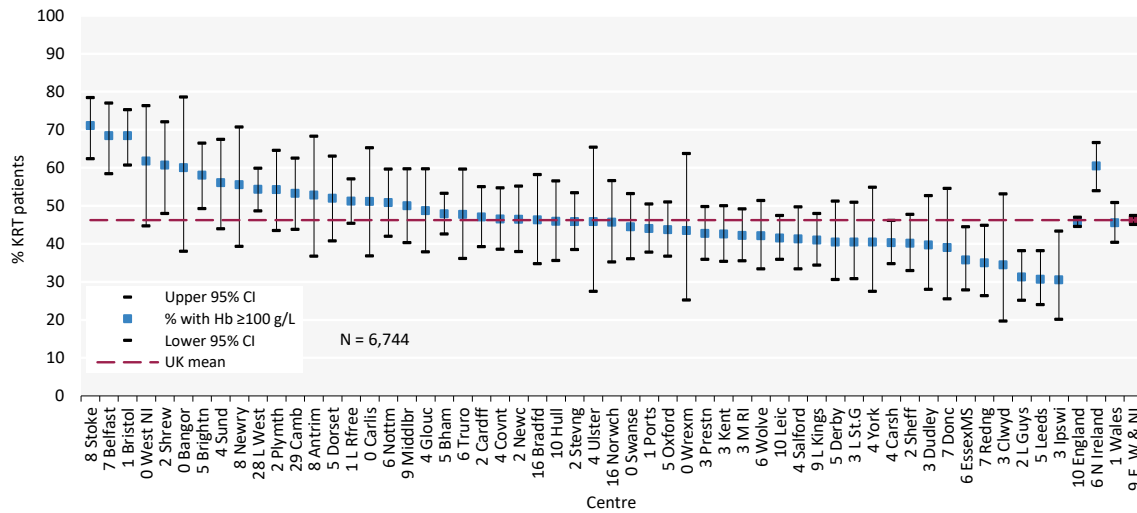


Figure 2.10 Percentage of adult patients incident to KRT in 2021 with haemoglobin (Hb) ≥ 100 g/L at start of KRT treatment by centre
 CI – confidence interval

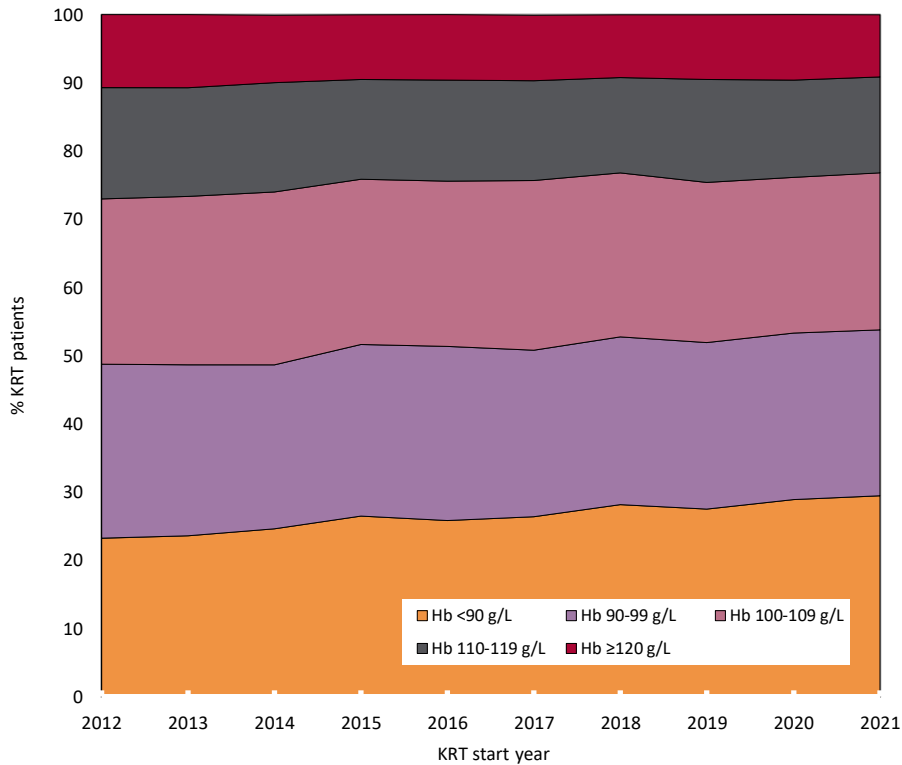


Figure 2.11 Distribution of haemoglobin (Hb) in incident adult KRT patients by year of start between 2012 and 2021

Biochemistry parameters in incident adult KRT patients

The latest UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which applies to patients with CKD and patients on KRT. It is the percentage of patients with adjusted calcium above the target range.

Table 2.14 Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients incident to KRT in 2021 by centre

Centre	Median adj Ca (mmol/L)	% adj Ca 2.2–2.5 mmol/L	% adj Ca >2.5 mmol/L	% data completeness
ENGLAND				
Bham	2.3	81.6	8.3	98.9
Bradfd	2.4	79.7	17.6	92.5
Brightn	2.3	80.8	3.1	100.0
Bristol	2.3	93.0	5.7	100.0
Camb	2.4	84.9	9.4	92.7
Carlis	2.3	77.3	0.0	97.8
Carsh	2.2	71.7	2.8	96.3
Colchr	2.3	83.3	6.7	85.7
Covnt	2.3	86.4	1.4	93.3
Derby	2.3	80.7	5.7	100.0
Donc	2.4	90.9	6.8	100.0
Dorset	2.3	68.0	14.1	98.7
Dudley	2.4	85.0	10.0	100.0
EssexMS	2.3	83.2	3.8	97.8
Exeter				
Glouc	2.4	80.3	12.4	100.0
Hull	2.4	86.4	6.8	93.6
Ipswi	2.3	72.1	8.2	100.0
Kent	2.3	77.0	10.1	98.9
L Barts	2.3	81.5	3.7	96.1
L Guys	2.4	83.7	9.2	100.0
L Kings	2.3	78.9	5.2	97.3
L Rfree	2.3	80.9	5.7	99.7
L St.G	2.4	81.1	10.0	97.8
L West	2.3	74.7	6.7	75.6
Leeds	2.3	79.3	5.5	97.6
Leic	2.3	77.4	7.8	96.4
Liv Ain	2.4	73.6	15.1	84.1
Liv Roy	2.4	84.3	12.1	80.6
M RI	2.4	81.5	7.3	100.0
Middlbr	2.2	81.3	2.8	97.3
Newc	2.4	79.8	8.5	100.0
Norwch	2.3	80.0	8.2	88.5
Nottm	2.2	66.7	4.0	99.2
Oxford	2.3	77.3	6.0	95.9
Plymth	2.3	88.1	3.6	98.8
Ports	2.3	80.2	5.9	100.0
Prestn	2.3	71.7	3.3	91.4
Redng	2.3	81.3	6.5	100.0
Salford	2.4	80.3	11.3	99.3
Sheff	2.3	78.2	3.5	100.0
Shrew	2.3	82.3	16.1	100.0
Stevng	2.3	77.8	4.7	100.0
Stoke	2.4	82.4	13.6	95.4
Sund	2.3	75.0	8.8	98.6
Truro	2.3	87.3	7.0	100.0

Table 2.14 Continued

Centre	Median adj Ca (mmol/L)	% adj Ca 2.2–2.5 mmol/L	% adj Ca >2.5 mmol/L	% data completeness
Wirral	2.3	69.1	7.1	80.8
Wolve	2.3	73.5	12.0	96.7
York	2.4	85.4	12.5	98.0
N IRELAND				
Antrim	2.4	89.7	7.7	100.0
Belfast	2.3	82.8	6.1	97.1
Newry	2.4	76.3	5.3	97.4
Ulster	2.4	79.2	12.5	96.0
West NI	2.2	76.5	2.9	100.0
WALES				
Bangor	2.4	85.0	10.0	100.0
Cardff	2.3	82.5	5.8	100.0
Clwyd	2.2	56.7	3.3	100.0
Swanse	2.3	84.9	2.4	100.0
Wrexm	2.4	95.7	4.4	100.0
TOTALS				
England	2.3	79.6	7.0	95.8
N Ireland	2.3	81.6	6.4	97.9
Wales	2.3	82.2	4.5	100.0
E, W & NI	2.3	79.7	6.8	96.0

Ca - calcium

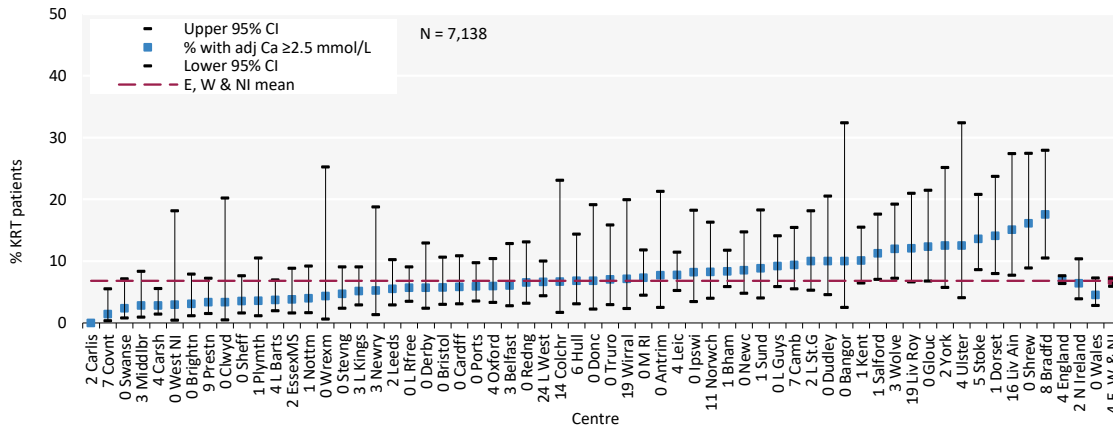


Figure 2.12 Percentage of adult patients incident to KRT in 2021 with adjusted calcium (Ca) above the normal range (>2.5 mmol/L) by centre
 CI – confidence interval

Dialysis access in incident adult dialysis patients

In previous years, incident dialysis access data were collected separately to the main UKRR quarterly data returns via the Multisite Dialysis Access Audit. This year in addition to the audit, some incident dialysis access data were collected through the dialysis sessions and access at start information in the quarterly returns. For more details please see Appendix A. Patients who did not start dialysis for the first time in 2021 based on UKRR quarterly data submissions were excluded. Data are not included in this section from any centres with <70% completeness for type of access at dialysis start.

Table 2.15 Demographics and characteristics of patients incident to dialysis in 2021 by first dialysis access type

Characteristic	HD – first dialysis access type				PD		
	N	AVF/AVG	TL	NTL	N	Total	
Total							
N	5,372	1,884	2,262	1,226	1,632	7,004	
%		35.1	42.1	22.8			
Age (%)	Median (yrs)	66	67	64	65	60	64
	IQR (yrs)	53,75	56,76	51,75	53,74	47,72	52,74
	<45 yrs	728	22.3	50.7	27.1	357	1,085
	45–54 yrs	748	32.8	46.9	20.3	261	1,009
	55–64 yrs	1,133	37.3	39.5	23.1	352	1,485
	65–74 yrs	1,428	38.2	37.8	23.9	400	1,828
	≥75 yrs	1,335	38.1	41.5	20.4	262	1,597
PRD (%)	Diabetes	1,392	39.0	41.2	19.8	364	1,756
	Glomerulonephritis	488	39.3	40.8	19.9	227	715
	Hypertension	285	37.9	40.4	21.8	83	368
	Polycystic kidney disease	195	61.0	30.8	8.2	113	308
	Pyelonephritis	179	36.9	36.3	26.8	60	239
	Renal vascular disease	223	37.7	42.2	20.2	46	269
	Other	766	21.5	46.1	32.4	170	936
	Uncertain aetiology	647	34.9	43.7	21.3	206	853
	Missing	240	30.4	36.7	32.9	43	283
Referral time (%)	<90 days	1,075	5.9	48.0	46.1	120	1,195
	90–179 days	210	17.1	64.8	18.1	59	269
	180–364 days	326	28.8	53.4	17.8	91	417
	≥365 days	3,024	47.0	37.9	15.1	1,066	4,090
	Missing	66	12.1	53.0	34.8	6	72
Sex (%)	Male	3,479	35.2	41.8	23.1	1,026	4,505
	Female	1,893	34.9	42.7	22.4	606	2,499
Ethnicity (%)	White	3,102	36.3	41.1	22.6	920	4,022
	Asian	592	35.8	40.7	23.5	226	818
	Black	382	24.1	45.3	30.6	111	493
	Other	145	26.9	47.6	25.5	53	198
	Missing	378	32.5	41.3	26.2	95	473
eGFR at start¹	Median	7	7	7	6	8	7
	IQR (yrs)	5,9	6,8	5,9	5,9	6,9	5,9
Diabetes² (%)	Yes	691	40.2	42.0	17.8	152	843
	No	837	38.8	39.7	21.5	264	1,101
	Missing	123	29.3	39.8	30.9	21	144

¹eGFR units are mL/min/1.73m²

²Diabetes at start of dialysis as a comorbidity or PRD from the UKRR database

A centre was excluded from the analysis of a particular variable if it returned data for <70% of patients

AVF – arteriovenous fistula; AVG – arteriovenous graft; eGFR – estimated glomerular filtration rate; IQR – interquartile range; NTL – non-tunnelled line; PRD – primary renal disease; TL – tunnelled line

Dialysis access is best interpreted in the context of all patients starting KRT, so data were supplemented with pre-emptive Tx numbers.

Dialysis access data are described in relation to age, PRD and timing of presentation. Delayed presentation/referral to kidney services is defined as being within 90 days (3 months) prior to the start of KRT.

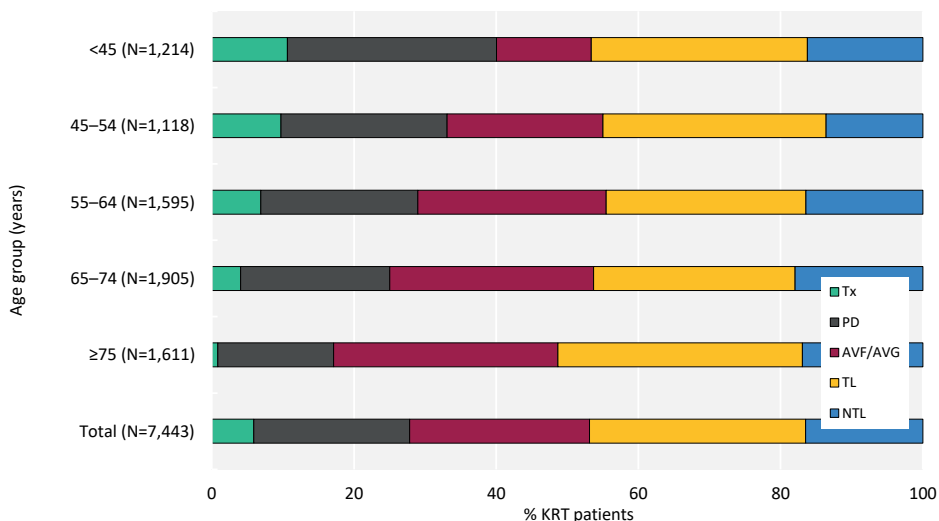


Figure 2.13 Dialysis access used for adult patients incident to KRT in 2021 by age group
 AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

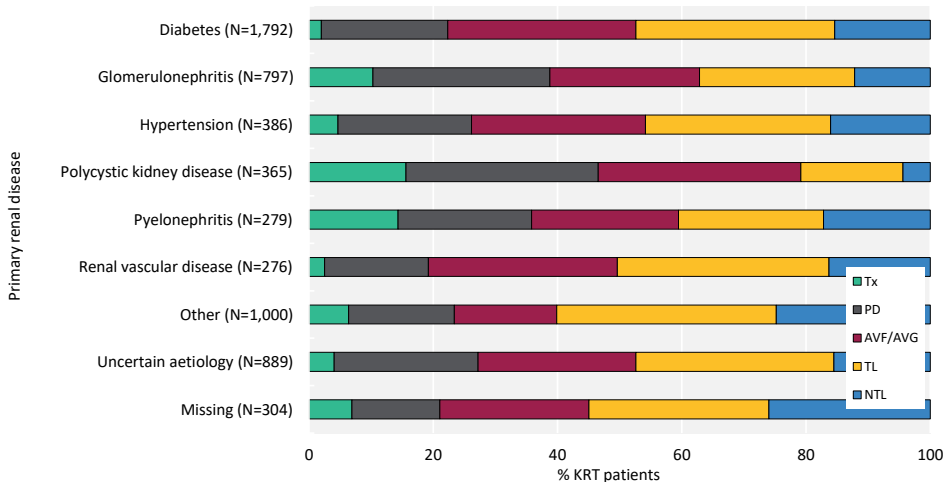


Figure 2.14 Dialysis access used for adult patients incident to KRT in 2021 by primary renal disease
 AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

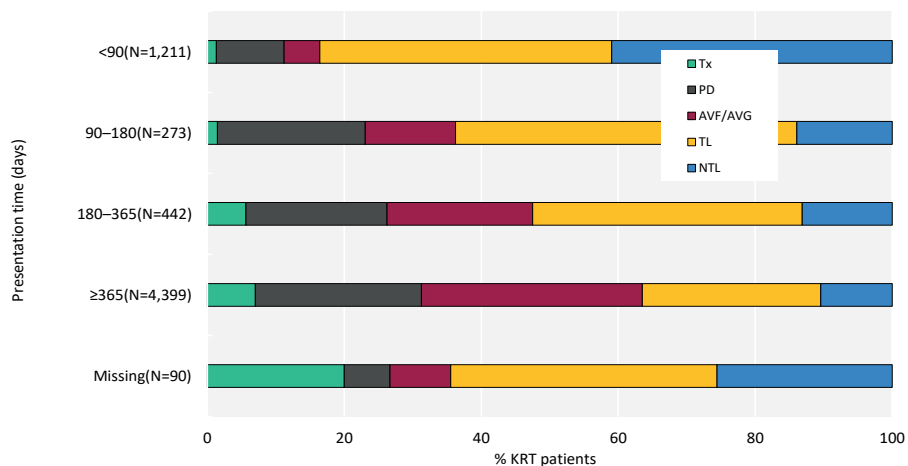


Figure 2.15 Dialysis access used for adult patients incident to KRT in 2021 by presentation time
 AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

The audit measures related to dialysis access at KRT start include the proportion of planned starts on KRT with a pre-emptive Tx or with definitive access. In addition, at least 60% of the planned HD starts should be with either an AVF or an AVG. The proportions of patients who commenced dialysis with definitive access (AVF/AVG/PD catheter) were reported for centres returning adequate data.

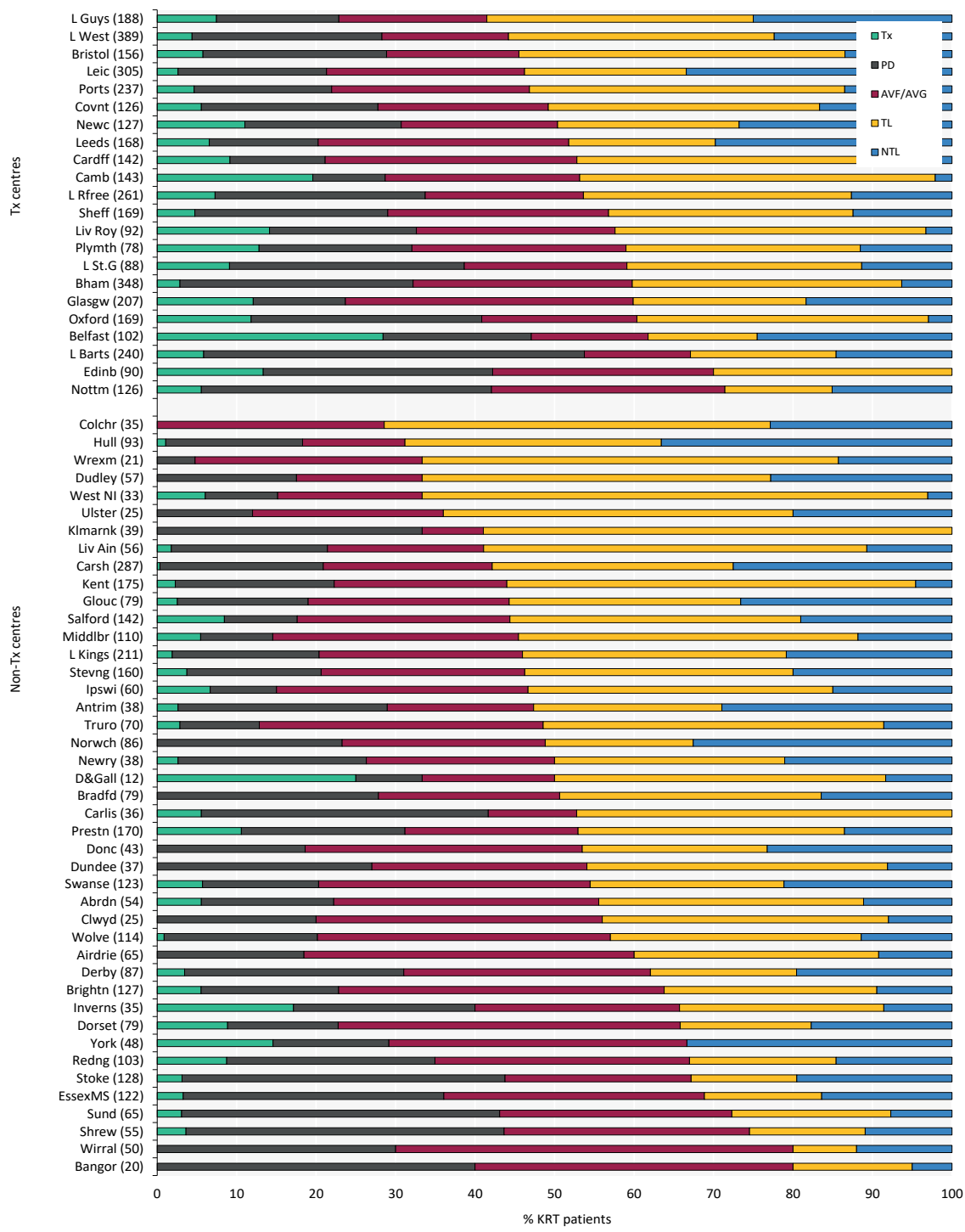


Figure 2.16 First dialysis access used for adult patients incident to KRT in 2021 by centre
 Number of incident patients on KRT in a centre in brackets
 Centres are ordered by decreasing use of lines
 AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

Table 2.16 Start modality and dialysis access used for adult patients incident to dialysis in 2021 by presentation before start of dialysis by centre

Centre	Early presenters (≥ 90 days)(%)					Late presenters (<90 days) (%)					Start modality (%)		
	N	PD	AVF/AVG	TL	NTL	N	PD	AVF/AVG	TL	NTL	HD	PD	Tx
Antrim	30	33.3	23.3	30.0	13.3	7	0.0	0.0	0.0	100.0	71.1	26.3	2.6
Bangor	18	44.4	44.4	11.1	0.0	2	0.0	0.0	50.0	50.0	60.0	40.0	0.0
Belfast	45	33.3	31.1	17.8	17.8	23	17.4	4.3	17.4	60.9	52.9	18.6	28.4
Bham	277	35.4	33.2	26.0	5.4	61	6.6	6.6	75.4	11.5	67.8	29.3	2.9
Bradfd	71	29.6	25.4	32.4	12.7	8	12.5	0.0	37.5	50.0	72.2	27.8	0.0
Brightn	105	20.0	49.5	24.8	5.7	15	6.7	0.0	53.3	40.0	77.2	17.3	5.5
Bristol	118	28.0	21.2	40.7	10.2	27	11.1	0.0	59.3	29.6	71.2	23.1	5.8
Camb	90	12.2	38.9	47.8	1.1	25	8.0	0.0	84.0	8.0	71.3	9.1	19.6
Cardff	111	15.3	38.7	40.5	5.4	16	0.0	12.5	68.8	18.8	78.9	12.0	9.2
Carlisle	28	46.4	14.3	39.3	0.0	6	0.0	0.0	100.0	0.0	58.3	36.1	5.6
Carsh	213	23.0	27.2	32.4	17.4	64	15.6	4.7	20.3	59.4	79.1	20.6	0.3
Clwyd	23	21.7	39.1	34.8	4.3	2	0.0	0.0	50.0	50.0	80.0	20.0	0.0
Colchr	1					2					100.0	0.0	0.0
Covnt	5	100.0	0.0	0.0	0.0	114	20.2	23.7	37.7	18.4	72.2	22.2	5.6
Derby	68	33.8	38.2	19.1	8.8	16	6.3	6.3	18.8	68.8	69.0	27.6	3.4
Donc	40	20.0	37.5	22.5	20.0	3	0.0	0.0	33.3	66.7	81.4	18.6	0.0
Dorset	56	19.6	58.9	16.1	5.4	16	0.0	6.3	25.0	68.8	77.2	13.9	8.9
Dudley	46	21.7	19.6	43.5	15.2	11	0.0	0.0	45.5	54.5	82.5	17.5	0.0
EssexMS	92	40.2	38.0	14.1	7.6	24	8.3	16.7	20.8	54.2	63.9	32.8	3.3
Glouc	61	19.7	31.1	27.9	21.3	15	6.7	6.7	33.3	53.3	81.0	16.5	2.5
Hull	61	24.6	19.7	34.4	21.3	31	3.2	0.0	29.0	67.7	81.7	17.2	1.1
Ipswi	35	5.7	48.6	31.4	14.3	6	33.3	0.0	16.7	50.0	85.0	8.3	6.7
Kent	137	20.4	27.7	49.6	2.2	34	20.6	0.0	64.7	14.7	77.7	20.0	2.3
L Barts	92					21					46.3	47.9	5.8
L Guys	144	19.4	24.3	35.4	20.8	23	4.3	0.0	39.1	56.5	77.1	15.4	7.4
L Kings	156	21.8	33.3	30.8	14.1	43	9.3	2.3	44.2	44.2	79.6	18.5	1.9
L Rfree	193	33.7	26.4	30.6	9.3	48	6.3	2.1	60.4	31.3	66.3	26.4	7.3
L St.G	57	36.8	28.1	21.1	14.0	23	21.7	8.7	60.9	8.7	61.4	29.5	9.1
L West	303	29.4	20.5	35.6	14.5	69	5.8	0.0	31.9	62.3	71.7	23.9	4.4
Leeds	132	17.4	39.4	18.9	24.2	25	0.0	4.0	24.0	72.0	79.8	13.7	6.5
Leic	234	24.4	32.5	19.2	23.9	61	0.0	0.0	24.6	75.4	78.7	18.7	2.6
Liv Ain	42	19.0	26.2	47.6	7.1	13	23.1	0.0	53.8	23.1	78.6	19.6	1.8
Liv Roy	69	23.2	33.3	42.0	1.4	10	10.0	0.0	70.0	20.0	67.4	18.5	14.1
Middlbr	82	11.0	39.0	45.1	4.9	19	5.3	5.3	52.6	36.8	85.5	9.1	5.5
Newc	94	25.5	26.6	28.7	19.1	19	5.3	0.0	10.5	84.2	69.3	19.7	11.0
Newry	29	31.0	27.6	27.6	13.8	8	0.0	12.5	37.5	50.0	73.7	23.7	2.6
Norwch	13					18					76.7	23.3	0.0
Nottm	107	40.2	34.6	15.0	10.3	12	25.0	0.0	8.3	66.7	57.9	36.5	5.6
Oxford	132	34.1	25.0	37.9	3.0	17	23.5	0.0	70.6	5.9	59.2	29.0	11.8
Plymth	60	23.3	35.0	33.3	8.3	8	12.5	0.0	37.5	50.0	67.9	19.2	12.8
Ports	177	20.3	32.8	36.2	10.7	37	8.1	2.7	64.9	24.3	78.1	17.3	4.6
Prestn	122	24.6	30.3	35.2	9.8	30	16.7	0.0	46.7	36.7	68.8	20.6	10.6
Redng	77	31.2	37.7	18.2	13.0	17	17.6	23.5	29.4	29.4	65.0	26.2	8.7
Salford	105	11.4	36.2	37.1	15.2	25	4.0	0.0	52.0	44.0	82.4	9.2	8.5
Sheff	129	31.0	33.3	29.5	6.2	32	3.1	12.5	43.8	40.6	71.0	24.3	4.7
Shrew	45	44.4	37.8	8.9	8.9	8	25.0	0.0	50.0	25.0	56.4	40.0	3.6
Stevng	122	20.5	31.1	35.2	13.1	30	6.7	3.3	36.7	53.3	79.4	16.9	3.8
Stoke	71					0					56.3	40.6	3.1
Sund	53	43.4	35.8	15.1	5.7	10	30.0	0.0	50.0	20.0	56.9	40.0	3.1
Swanse	98	17.3	42.9	23.5	16.3	18	5.6	0.0	38.9	55.6	79.7	14.6	5.7
Truro	58	12.1	43.1	37.9	6.9	10	0.0	0.0	80.0	20.0	87.1	10.0	2.9
Ulster	19	15.8	31.6	42.1	10.5	6	0.0	0.0	50.0	50.0	88.0	12.0	0.0
West NI	24	12.5	25.0	62.5	0.0	7	0.0	0.0	85.7	14.3	84.8	9.1	6.1
Wirral	46	30.4	54.3	6.5	8.7	4	25.0	0.0	25.0	50.0	70.0	30.0	0.0
Wolve	92	18.5	43.5	31.5	6.5	21	23.8	9.5	33.3	33.3	79.8	19.3	0.9
Wrexm	13	7.7	46.2	23.1	23.1	7	0.0	0.0	100.0	0.0	95.2	4.8	0.0

Table 2.16 Continued

Centre	Early presenters (≥90 days)(%)					Late presenters (<90 days) (%)					Start modality (%)		
	N	PD	AVF/AVG	TL	NTL	N	PD	AVF/AVG	TL	NTL	HD	PD	Tx
York	32	21.9	56.3	0.0	21.9	9	0.0	0.0	0.0	100.0	70.8	14.6	14.6
Total	4,953	26.8	31.9	29.7	11.6	1,236	11.1	5.1	42.2	41.6	72.2	22.1	5.6

Start modality breakdown includes patients with missing presentation time

Blank cells - referral data completeness < 70%; breakdown by access type not presented but these centres were included in the totals

AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

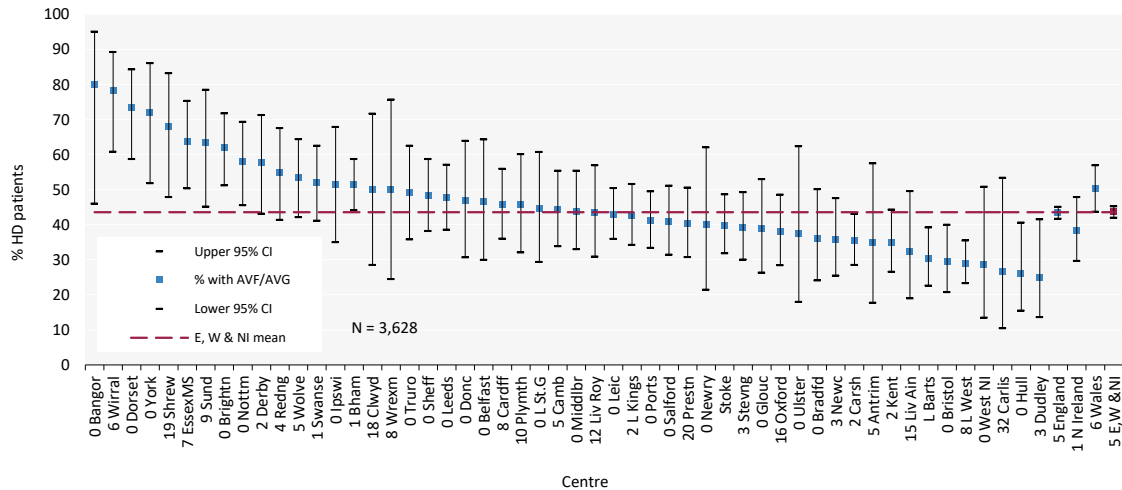


Figure 2.17 Percentage of adult patients incident to HD in 2021 who started dialysis using either an arteriovenous fistula (AVF) or an arteriovenous graft (AVG) by centre, excluding late presenters
CI – confidence interval

Survival in incident adult KRT patients

The survival of patients who started KRT for ESKD is described, with primary focus on the one year incident to KRT in 2020 cohort, followed up for a year. Some analyses used rolling incident cohorts over several years (two years or more as stated) to increase cohort patient numbers and more reliably identify survival differences between compared countries or centres. Analyses included patients who were coded as being on chronic dialysis for ESKD who died during the first 90 days (unless stated otherwise), provided that data were returned to the UKRR. Analyses were often adjusted to age 60 years to allow comparisons between centres with different age distributions and one analysis was also adjusted for sex and comorbidity. However, analyses were not generally adjusted for differences in ethnicity, PRD, socioeconomic status or comorbidity.

To enable comparisons with international registries, survival was described to day 90, one year and one year after the first 90 days. The UKRR defines day 0 as the first day of KRT, but some countries define day 90 of KRT as day 0 and do not include patients who died in the first 90 days. Analyses were not censored for Tx unless stated (for more details see appendix A).

Table 2.17 90 days and 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients (2019–2020 2 year cohort) by country

Survival period	England	N Ireland	Scotland	Wales	UK
Survival at 90 days (%)	96.2	98.4	96.1	97.5	96.4
95% CI	95.9-96.6	97.4-99.5	95.1-97.2	96.6-98.5	96.0-96.7
Survival 1 year after 90 days (%)	90.4	92.4	91.3	87.8	90.4
95% CI	89.8-91.0	90.2-94.7	89.7-92.9	85.7-89.9	89.9-90.9

CI – confidence interval

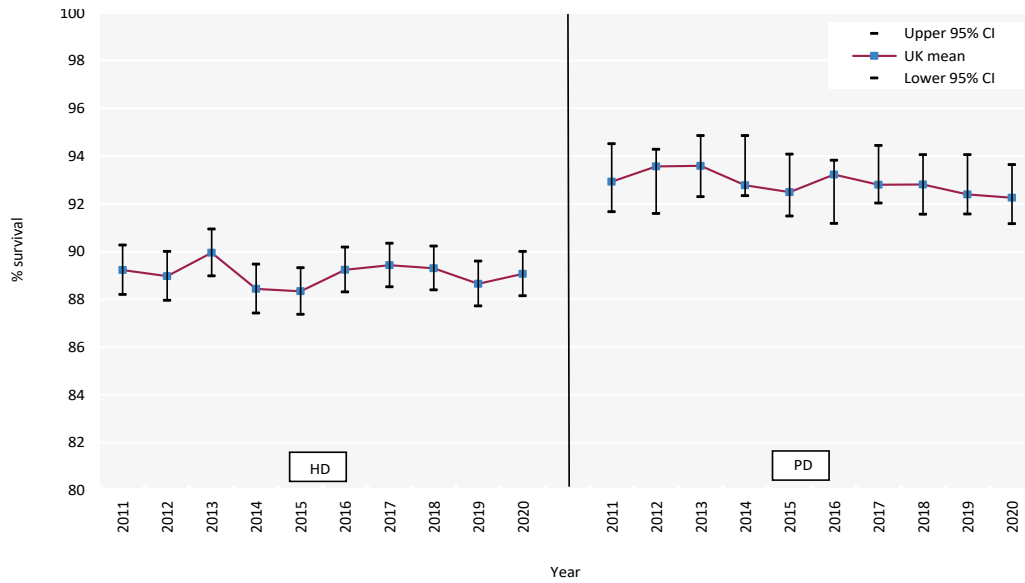


Figure 2.18 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients by start modality between 2011 and 2020

CI – confidence interval

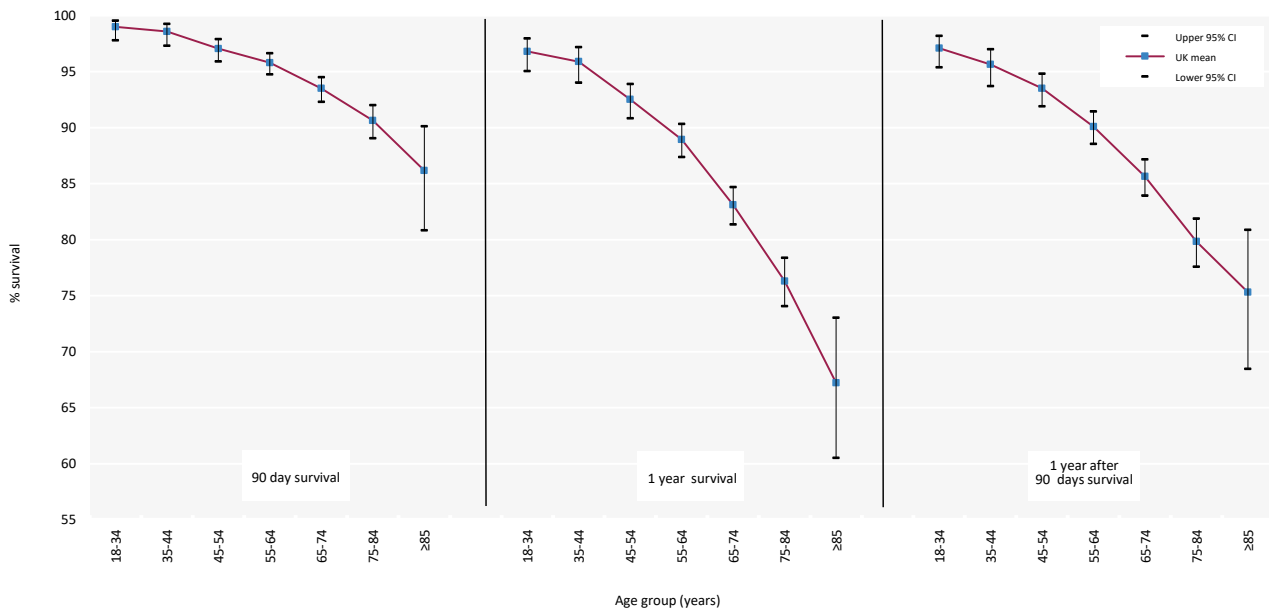


Figure 2.19 90 days, 1 year and 1 year after 90 days survival of incident adult KRT patients by age group (2020 cohort)

CI – confidence interval

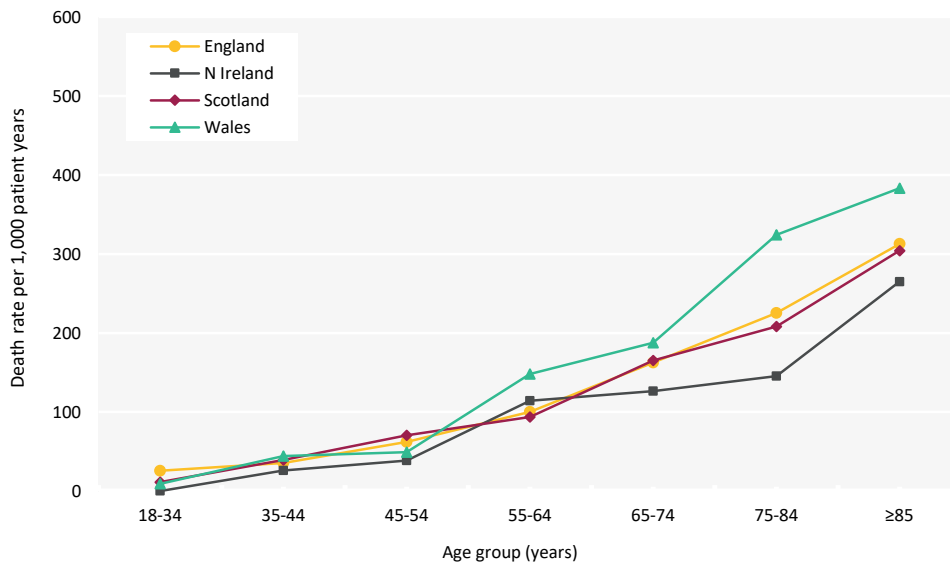


Figure 2.20 1 year after 90 days death rate per 1,000 incident KRT adult patient years by age group and country (2017–2020 4 year cohort)

A ten year rolling cohort was used to analyse the long term survival of incident patients from start of KRT (day 0), according to age at KRT start (figure 2.21), with median survival identifiable from the y-axis. The same cohort was used in analyses of the monthly and six monthly hazard of death on KRT by age group (figures 2.22 and 2.23).

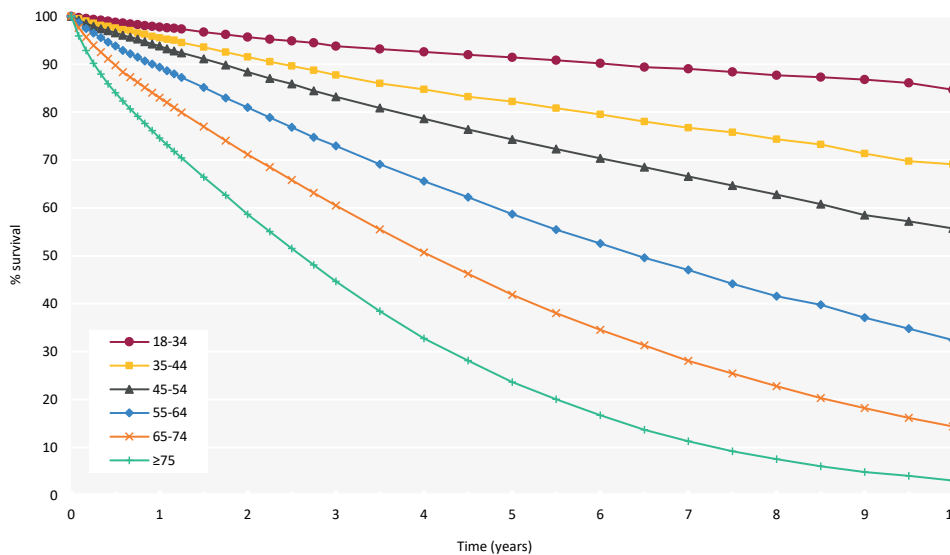


Figure 2.21 Survival (unadjusted) of incident adult KRT patients from day 0 by age group (2011–2020 10 year cohort)

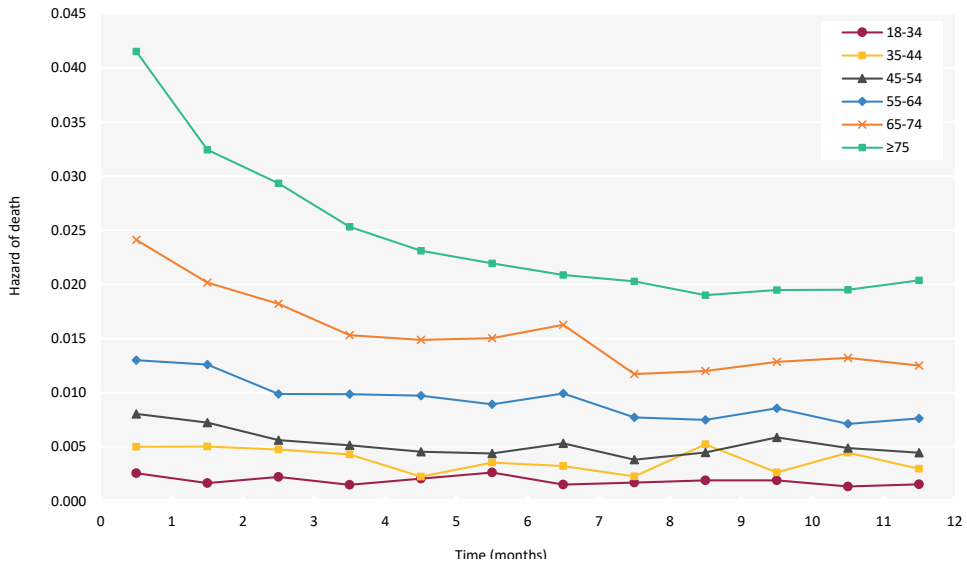


Figure 2.22 Monthly hazard of death (unadjusted) of incident adult KRT patients from day 0 to 1 year by age group (2011–2020 10 year cohort)

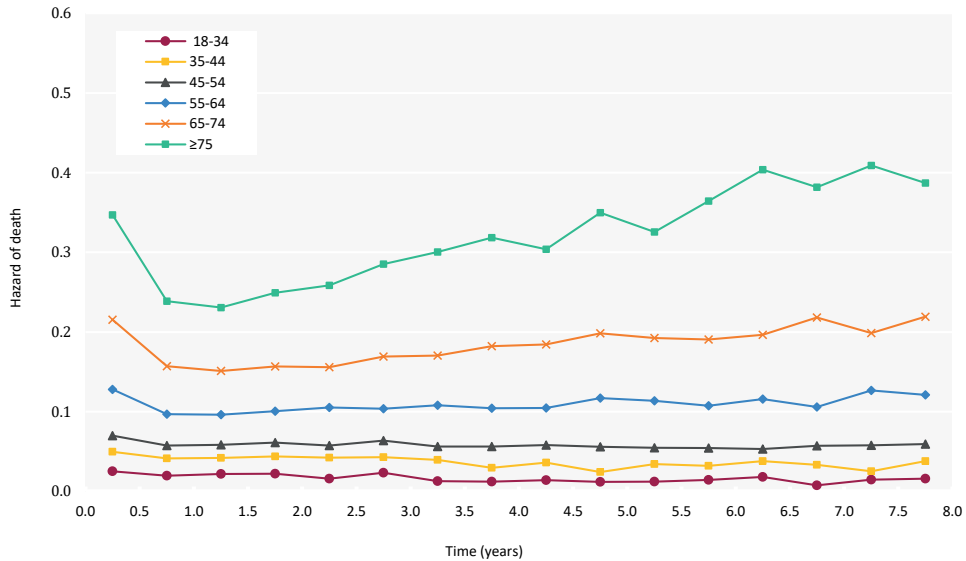


Figure 2.23 6 monthly hazard of death (unadjusted) of incident adult KRT patients from day 0 to 8 years by age group (2011–2020 10 year cohort)

Table 2.18 Survival (unadjusted) of incident adult KRT patients aged <65 years (2001–2020)

Cohort	Unadjusted survival (%)										95% CI for longest survival	N	
	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr	7 yr	8 yr	9 yr	10 yr			
2020	92.2											91.3-92.9	4,142
2019	93.2	86.4										85.3-87.4	4,195
2018	92.9	86.9	80.1									78.8-81.3	4,253
2017	93.0	87.2	81.6	76.4								75.1-77.7	4,235
2016	92.9	87.5	82.1	77.2	71.4							69.9-72.8	4,015
2015	92.3	86.4	81.4	76.9	72.6	68.3						66.8-69.8	3,923
2014	92.8	86.8	81.4	77.0	73.4	69.2	65.0					63.5-66.6	3,668
2013	93.7	88.2	83.1	77.7	73.2	68.6	64.6	60.2				58.5-61.8	3,572
2012	93.1	87.4	81.9	76.9	72.6	68.6	64.9	60.9	57.5			55.8-59.1	3,516
2011	93.2	88.6	83.6	79.0	74.5	70.9	67.7	64.7	60.7	57.5		55.7-59.2	3,339
2010	92.3	86.6	81.7	77.4	72.8	69.6	66.4	62.5	59.5	56.6		54.9-58.3	3,363
2009	91.2	85.1	80.4	76.3	71.1	67.0	63.8	60.4	57.4	54.6		52.9-56.3	3,392
2008	91.5	86.0	81.2	76.9	73.2	69.6	65.7	62.4	59.4	56.5		54.8-58.2	3,450
2007	92.5	86.9	81.7	76.6	72.9	69.1	65.8	62.4	59.1	56.1		54.3-57.8	3,310
2006	90.6	84.9	80.0	75.5	71.7	67.9	63.7	60.8	57.8	55.1		53.3-56.8	3,149
2005	89.6	83.5	78.4	73.7	69.0	65.5	62.4	59.4	56.4	53.8		51.9-55.6	2,830
2004	89.6	83.3	77.9	72.5	67.8	64.0	60.9	57.1	54.6	53.0		51.0-54.9	2,536
2003	89.3	82.5	77.2	72.4	67.1	62.9	59.3	56.6	54.0	51.5		49.3-53.6	2,176
2002	88.8	81.1	75.2	69.6	65.5	61.5	58.0	55.0	51.9	49.8		47.5-52.0	1,981
2001	88.0	81.0	75.4	70.0	65.1	60.4	56.4	53.0	50.1	48.0		45.5-50.4	1,678

CI – confidence interval

Table 2.19 Survival (unadjusted) of incident adult KRT patients aged ≥65 years (2001–2020)

Cohort	Unadjusted survival (%)										95% CI for longest survival	N	
	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr	7 yr	8 yr	9 yr	10 yr			
2020	79.4											78.0-80.7	3,674
2019	80.0	64.4										62.8-65.8	3,949
2018	79.3	65.3	51.7									50.1-53.3	3,817
2017	79.3	67.4	53.6	42.0								40.4-43.6	3,834
2016	80.1	65.2	52.8	40.3	30.8							29.3-32.3	3,756
2015	78.2	64.8	52.2	42.0	32.0	24.8						23.5-26.2	3,811
2014	78.5	64.2	52.2	41.3	32.8	26.2	19.8					18.5-21.1	3,588
2013	78.5	64.6	53.1	42.9	34.5	27.6	20.7	15.5				14.3-16.8	3,436
2012	77.2	65.1	54.2	44.0	35.4	27.7	21.8	17.1	13.3			12.1-14.5	3,328
2011	77.2	62.7	51.2	41.1	32.4	24.7	18.9	14.4	11.1	7.9		7.0-8.9	3,353
2010	76.0	63.0	51.1	41.8	32.1	25.4	19.6	14.5	11.3	8.3		7.4-9.3	3,282
2009	76.4	63.0	52.4	41.4	32.8	26.1	20.0	15.3	11.2	8.2		7.3-9.2	3,376
2008	74.6	61.0	49.7	40.3	32.0	25.6	20.4	16.1	12.1	9.0		8.0-10.0	3,180
2007	74.9	61.1	49.5	40.3	31.8	25.2	20.0	15.3	11.7	9.1		8.1-10.1	3,219
2006	72.0	58.1	46.8	37.2	28.8	22.9	17.4	13.2	10.5	8.3		7.4-9.4	3,110
2005	71.2	57.3	45.5	36.3	27.9	21.2	16.6	12.5	9.9	7.7		6.8-8.8	2,942
2004	68.9	53.9	42.2	33.8	26.6	20.8	16.1	12.8	9.7	7.4		6.4-8.5	2,599
2003	68.3	53.2	41.4	31.6	24.3	18.1	14.0	10.8	8.2	6.5		5.5-7.6	2,230
2002	65.9	50.9	40.4	31.8	24.0	18.4	13.7	10.8	8.1	6.4		5.4-7.5	2,039
2001	66.1	51.7	38.2	28.6	21.4	15.9	11.9	8.7	7.0	5.4		4.3-6.6	1,636

CI – confidence interval

Due to small numbers of incident patients in a given year, centre one year after the first 90 days survival is compared using a rolling four year cohort (table 2.20). Centre-specific one year survival rates were adjusted for not only age (figure 2.24), but also sex and comorbidities for centres with at least 85% completeness (figure 2.25). UKRR comorbidity data have been augmented using diagnostic and procedure codes from HES in England and PEDW in Wales (see appendix A for details). Centres can be identified in the funnel plots using the number of patients in the centre in table 2.20. Given there are 68 centres with data for age adjusted survival, it would be expected that three centres would fall outside the 95% (1 in 20) confidence limit, entirely by chance.

Table 2.20 1 year after 90 days adjusted survival (60 years, male and median comorbidity score) of incident adult KRT patients by centre (2017–2020 4 year cohort)

Centre	Age adjusted survival				Case-mix adjusted survival ¹			
	N on KRT	Adj 1 yr after 90 days survival (%)	Limits for funnel plot		N on KRT	Adj 1 yr after 90 days survival (%)	Limits for funnel plot	
			Lower 95% limit	Upper 95% limit			Lower 95% limit	Upper 95% limit
D&Gall	66	89.3	81.0	95.7				
Inverns	91	92.0	82.8	95.2				
Bangor	96	89.6	83.0	95.1	96	90.6	83.0	95.1
Clwyd	106	87.5	83.5	94.9	106	87.6	83.5	94.9
Newry	119	87.7	84.0	94.8	116	83.9	83.9	94.8
Ulster	120	91.3	84.0	94.8	118	88.0	83.9	94.7
Wrexm	125	85.9	84.2	94.7	125	84.7	84.2	94.7
Carlisle	145	90.3	84.8	94.5	144	89.9	84.7	94.4
Dundee	145	91.1	84.8	94.5				
West NI	146	93.8	84.8	94.5	145	91.2	84.7	94.4
Krkldy	156	93.1	85.0	94.4				
Colchr	160	92.2	85.1	94.3	156	92.8	85.0	94.3
Antrim	164	94.3	85.2	94.3	148	92.8	84.8	94.4
Klmarnk	179	88.3	85.5	94.2				
Abrdn	185	92.4	85.6	94.1				
Ipswi	188	90.8	85.6	94.1	179	90.5	85.4	94.1
Truro	195	91.6	85.7	94.1	193	91.7	85.7	94.0
Donc	197	88.9	85.8	94.0	196	88.6	85.7	94.0
York	199	88.2	85.8	94.0	199	87.9	85.8	94.0
Liv Ain	213	88.0	86.0	93.9	188	88.1	85.6	94.1
Wirral	219	90.4	86.1	93.9	219	91.6	86.0	93.9
Dudley	224	93.4	86.1	93.9	224	93.6	86.1	93.8
Shrew	249	88.0	86.4	93.7	249	88.8	86.4	93.7
Airdrie	254	89.7	86.5	93.7				
Plymth	255	86.0	86.5	93.7	251	86.5	86.4	93.7
Glouc	279	90.4	86.7	93.6	275	90.2	86.6	93.6
Belfast	291	94.2	86.8	93.5				
Derby	313	93.0	86.9	93.5	313	93.3	86.9	93.4
Bradfd	322	88.3	87.0	93.4	322	89.1	87.0	93.4
Sund	341	86.3	87.1	93.4	339	88.7	87.1	93.3
L St.G	343	91.8	87.1	93.4	334	91.6	87.0	93.3
Norwch	346	91.2	87.2	93.3	340	90.0	87.1	93.3
Wolve	360	86.0	87.2	93.3	360	86.9	87.2	93.3
Dorset	361	91.0	87.2	93.3	361	90.5	87.2	93.3
Hull	389	91.4	87.4	93.2	389	91.3	87.3	93.2
Stoke	391	87.1	87.4	93.2	388	88.0	87.3	93.2
Redng	407	93.8	87.5	93.2	407	94.1	87.4	93.1
Edinb	419	92.9	87.5	93.1				
Liv Roy	424	90.5	87.5	93.1	372	90.6	87.3	93.2
Middlbr	431	93.3	87.6	93.1	431	93.9	87.5	93.1
Camb	468	94.6	87.7	93.0	468	94.0	87.7	93.0
Newc	492	91.1	87.8	93.0	491	91.7	87.7	92.9

Table 2.20 Continued

Centre	Age adjusted survival				Case-mix adjusted survival ¹			
	N on KRT	Adj 1 yr after 90 days survival (%)	Limits for funnel plot		N on KRT	Adj 1 yr after 90 days survival (%)	Limits for funnel plot	
			Lower 95% limit	Upper 95% limit			Lower 95% limit	Upper 95% limit
Covnt	493	92.4	87.8	93.0	482	91.9	87.7	93.0
Nottm	495	88.5	87.8	93.0	495	89.0	87.8	92.9
EssexMS	525	92.0	87.9	92.9	520	92.3	87.8	92.9
Exeter	530	91.5	87.9	92.9	526	91.2	87.9	92.9
Swanse	542	89.0	88.0	92.9	542	89.3	87.9	92.8
Kent	545	88.6	88.0	92.9	545	88.1	87.9	92.8
Brightn	579	88.8	88.1	92.8	568	88.5	88.0	92.8
Bristol	581	88.9	88.1	92.8	571	89.2	88.0	92.8
Prestn	624	87.0	88.2	92.7	624	87.3	88.1	92.7
Sheff	632	90.5	88.2	92.7	630	90.7	88.1	92.7
Cardff	640	88.4	88.2	92.7	640	88.1	88.1	92.7
L Kings	640	92.9	88.2	92.7	634	93.4	88.1	92.7
Stevng	641	92.6	88.2	92.7	641	92.6	88.1	92.7
Salford	657	88.9	88.2	92.7	656	89.1	88.2	92.7
Leeds	660	93.0	88.2	92.7	660	93.2	88.2	92.7
L Guys	679	91.6	88.3	92.7	679	91.2	88.2	92.6
M RI	743	90.2	88.4	92.6	722	90.8	88.3	92.6
Glasgw	767	90.0	88.4	92.6				
Oxford	810	92.4	88.5	92.5	795	92.3	88.4	92.5
Ports	846	90.1	88.6	92.5	837	90.0	88.5	92.5
Carsh	902	90.8	88.6	92.4	885	90.7	88.6	92.4
L Rfree	945	89.3	88.7	92.4	923	89.7	88.6	92.4
Leic	1,233	91.8	88.9	92.2	1,214	91.3	88.9	92.2
L Barts	1,279	92.9	89.0	92.2	1,128	92.2	88.8	92.2
Bham	1,392	90.6	89.1	92.1	1,382	90.6	89.0	92.1
L West	1,483	91.0	89.1	92.1	1,440	91.0	89.0	92.1

¹Centres excluded if <85% comorbidity data were available – this included Belfast and all Scottish kidney centres
Survival adjusted to age 60 years, male and median comorbidity score

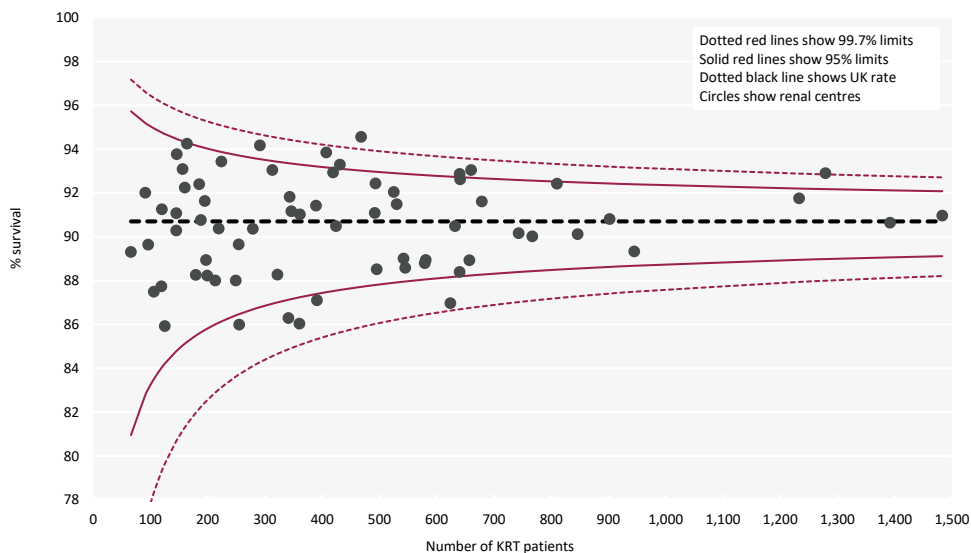


Figure 2.24 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients by centre (2017–2020 4 year cohort)

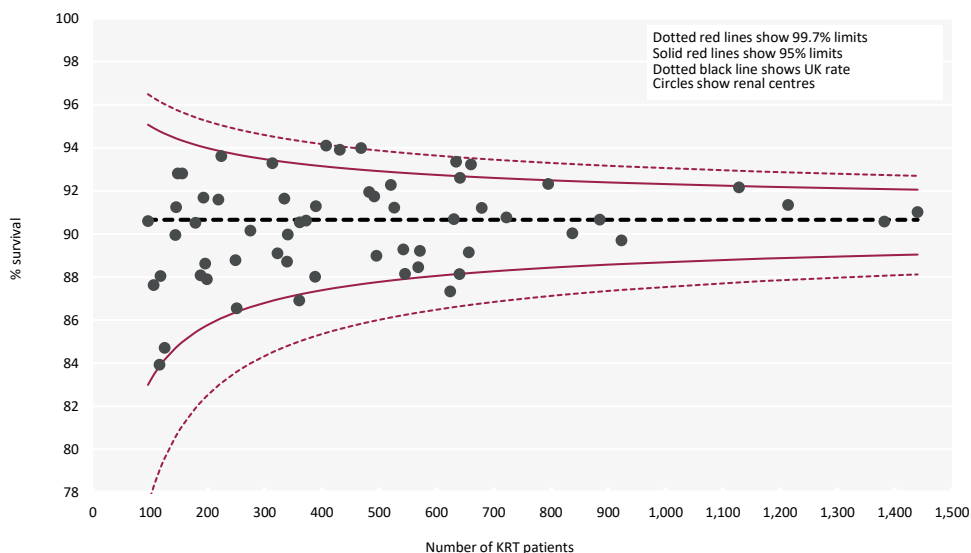


Figure 2.25 1 year after 90 days survival (adjusted to age 60 years, male and median comorbidity score) of incident adult KRT patients by centre (2017–2020 4 year cohort)

Cause of death in incident adult KRT patients

Cause of death was analysed in incident KRT patients using a four year incident cohort followed up for 90 days and 1 year after 90 days. The proportion of incident adult 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.

Table 2.21 Cause of death in the first 90 days and one year after 90 days in incident adult KRT patients by age group (2017–2020 4 year cohort)

Cause of death	First 90 days				1 year after 90 days			
	All ages		<65 yrs (%)	≥65 yrs (%)	All ages		<65 yrs (%)	≥65 yrs (%)
	N	%			N	%		
Cardiac disease	221	23.9	29.0	22.3	473	19.7	23.3	18.1
Cerebrovascular disease	23	2.5	3.1	2.3	87	3.6	5.1	3.0
Infection	187	20.3	21.5	19.9	505	21.0	23.6	19.9
Malignancy	60	6.5	4.4	7.2	191	7.9	6.8	8.5
Treatment withdrawal	153	16.6	8.8	19.1	460	19.1	13.2	21.7
Other	219	23.7	26.3	22.9	509	21.2	22.0	20.8
Uncertain aetiology	60	6.5	7.0	6.3	179	7.4	6.1	8.1
Total (with data)	923	100.0	100.0	100.0	2,404	100.0	100.0	100.0
Missing	619	40.1	42.4	39.4	1,151	32.4	31.8	32.6