

## *Chapter 2*

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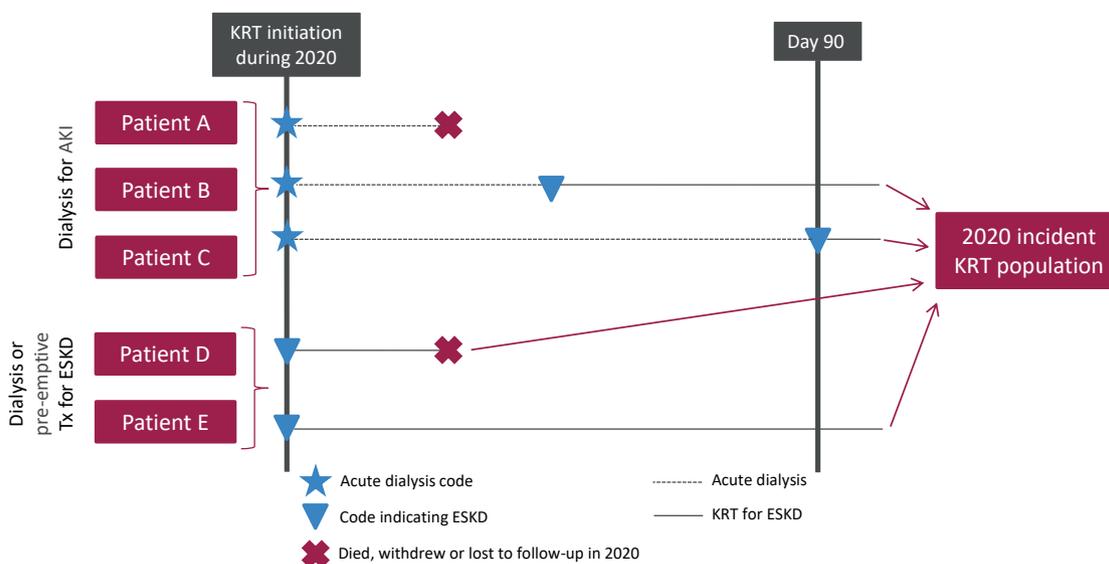
# **Adults starting kidney replacement therapy (KRT) for end-stage kidney disease (ESKD) in the UK in 2020**

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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 2020 (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

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

Note that 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 2020 Multisite Dialysis Access Audit. As of last year, 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 2020 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](http://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 2020 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](http://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.

**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 data completeness poor so 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

- 7,373 adult patients started KRT for ESKD in the UK in 2020, a decrease of 8.6% from 2019.
- KRT incidence in adults was 139 pmp, a decrease from 151 pmp in 2019.
- The reduction in incident KRT patients this year was more pronounced in those >65 years. We suspect that this may be explained by older patients with advanced CKD dying prior to needing to start KRT during the pandemic. It is also likely that both kidney units and patients delayed initiation of KRT.
- The median age of incident KRT patients was 63.7 years, but this was dependent on ethnicity (White 65.4 years, Asian 62.3 years and Black 57.2 years).
- 64.5% of incident KRT patients were male.
- Diabetes remained the most common identifiable primary renal disease (PRD) for patients starting KRT (30.5%).
- By 90 days after KRT start 5.9% of patients had died or stopped treatment.
- In 2020 there was higher proportion of patients starting KRT on PD at 22.1% as compared to 20.1% in 2019 albeit no change in absolute numbers.
- In 2020 a lower proportion of patients started KRT with a transplant at 5.9% compared to 8.3% in 2019. This is likely due to COVID related disruption of transplant pathways.
- The mean eGFR at the start of KRT was 7.2 mL/min/1.73m<sup>2</sup> (HD 6.9 mL/min/1.73m<sup>2</sup>, PD 7.4 mL/min/1.73m<sup>2</sup> and pre-emptive Tx 10.5 mL/min/1.73m<sup>2</sup>) compared to 7.3ml/min/1.73m<sup>2</sup> in 2019.
- Late presentation was 16.3% and unchanged compared to 2019.
- Of the 5,242 incident dialysis patients with dialysis access data, 50.8% started dialysis with definitive access (24% PD and 26.8% HD with an AVF or AVG), 30.8% with a TL and 18.4% with an NTL.
- A smaller proportion of patients started haemodialysis with definitive access this year 26.8% versus 35.1 % in 2019 likely as result of COVID related disruption to vascular access pathways and is not explained by an increase in late presenters.
- Short-term (90 day) age-adjusted survival of incident KRT patients in a combined 2 year cohort (2018–2019) was 96.7%, which was the same as in the analysis of the 2017–2018 cohort.
- 1 year after 90 day age-adjusted survival for incident KRT patients in a combined 2 year cohort (2018–2019) was 90.6% (compared to 91% in the previous analysis of the 2017–2018 cohort).
- There were 6 outlying centres in the funnel plot showing 1 year after 90 day age-adjusted survival for incident KRT patients in a combined 4 year cohort (2016–2019): 2 centres below the lower 95% limit and 4 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 39.7% 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 (25.1%) and infection (18.3%).

# 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)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020		
ENGLAND							
Bham	376	385	370	371	329	2.04	161
Bradfd	88	82	71	106	82	0.49	168
Brightn	149	154	176	151	142	1.07	133
Bristol	154	157	166	166	131	1.21	108
Camb	102	88	114	120	108	0.93	116
Carlis	36	42	33	40	34	0.25	134
Carsh	246	230	244	230	298	1.62	184
Colchr	29	45	38	40	39	0.29	135
Covnt	136	120	129	141	141	0.79	179
Derby	87	89	84	90	73	0.56	131
Donc	64	57	52	52	47	0.37	126
Dorset	71	103	106	91	88	0.72	122
Dudley	53	59	53	56	60	0.34	176
EssexMS	152	142	125	149	129	0.99	131
Exeter	145	140	132	157	105	0.95	111
Glouc	71	82	72	64	83	0.51	164
Hull	93	106	105	105	105	0.79	132
Ipswi	43	53	58	57	43	0.31	139
Kent	148	140	137	153	141	1.06	133
L Barts	290	342	344	276	200	1.58	127
L Guys	166	167	182	211	161	1.00	161
L Kings	152	170	149	186	158	0.93	170
L Rfree	238	236	244	265	231	1.32	175
L St.G	91	92	84	103	81	0.66	123
L West	386	408	392	391	361	1.95	185
Leeds	167	175	181	163	152	1.36	112
Leic	320	291	312	368	324	2.07	156
Liv Ain	51	55	65	40	43	0.43	100
Liv Roy*	111	138	100	68	61	0.81	76
M RI	213	226	190	212	173	1.32	131
Middlbr	100	117	118	110	97	0.80	121
Newc	132	145	136	115	125	0.95	132
Norwch	103	80	83	105	91	0.68	133
Nottm	122	134	125	128	120	0.92	130
Oxford	213	216	217	206	204	1.44	142
Plymth	61	92	64	62	61	0.40	153
Ports	215	220	222	223	219	1.74	126
Prestn	141	167	179	155	167	1.23	136
Redng	96	105	103	117	99	0.69	143
Salford	192	173	162	172	173	1.14	151

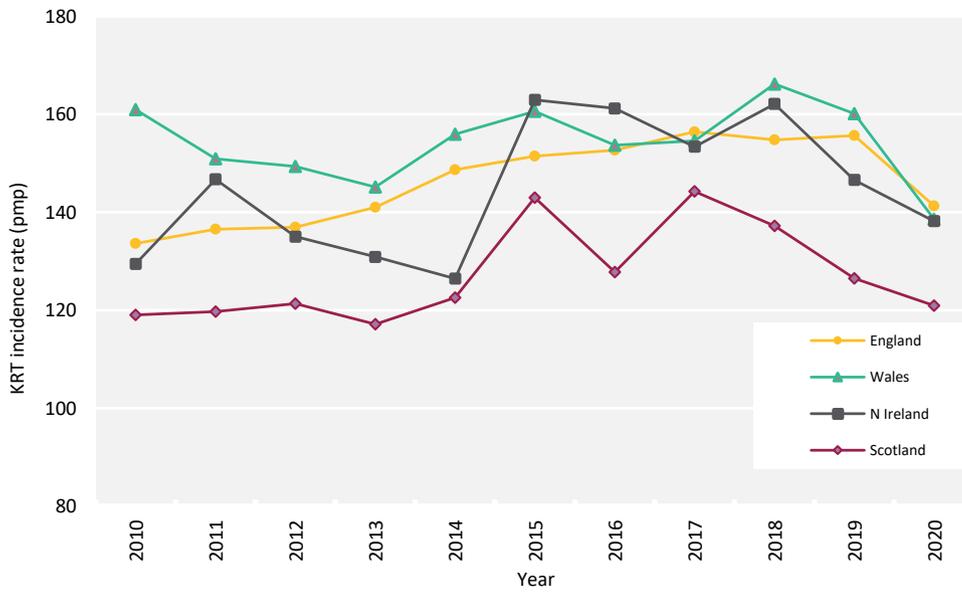
Table 2.2 Continued

Centre	N on KRT					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020		
Sheff	150	159	184	161	173	1.13	154
Shrew	58	62	77	66	45	0.41	110
Stevng	163	140	175	193	167	1.10	151
Stoke	114	100	103	99	111	0.73	153
Sund	94	95	89	87	67	0.54	123
Truro	48	58	61	56	46	0.36	129
Wirral	66	61	62	62	44	0.47	94
Wolve	71	88	94	95	104	0.54	191
York	73	59	51	58	47	0.48	97
N IRELAND							
Antrim	40	47	57	43	29	0.24	119
Belfast	95	78	72	74	76	0.53	144
Newry	28	30	32	30	30	0.23	129
Ulster	31	31	32	28	28	0.20	139
West NI	36	34	41	38	38	0.25	153
SCOTLAND							
Abrdn	52	54	58	29	56	0.50	112
Airdrie	62	66	64	70	55	0.46	120
D&Gall	12	16	18	17	19	0.12	156
Dundee	44	55	36	27	28	0.37	76
Edinb	86	126	106	109	87	0.84	104
Glasgw	198	202	210	203	180	1.37	131
Inverns	20	25	37	17	18	0.22	81
Klmarnk	53	49	38	44	57	0.29	196
Krkldy	32	41	38	45	37	0.27	136
WALES							
Bangor	23	27	25	19	29	0.17	172
Cardff	165	180	189	166	137	1.19	115
Clwyd	17	24	32	29	26	0.19	139
Swanse	130	130	142	159	123	0.78	158
Wrexm	47	25	29	31	37	0.21	173
TOTALS							
<b>England</b>	<b>6,640</b>	<b>6,845</b>	<b>6,813</b>	<b>6,892</b>	<b>6,283</b>	<b>44.46</b>	<b>141</b>
<b>N Ireland</b>	<b>230</b>	<b>220</b>	<b>234</b>	<b>213</b>	<b>201</b>	<b>1.45</b>	<b>138</b>
<b>Scotland</b>	<b>559</b>	<b>634</b>	<b>605</b>	<b>561</b>	<b>537</b>	<b>4.44</b>	<b>121</b>
<b>Wales</b>	<b>382</b>	<b>386</b>	<b>417</b>	<b>404</b>	<b>352</b>	<b>2.54</b>	<b>139</b>
<b>UK</b>	<b>7,811</b>	<b>8,085</b>	<b>8,069</b>	<b>8,070</b>	<b>7,373</b>	<b>52.89</b>	<b>139</b>

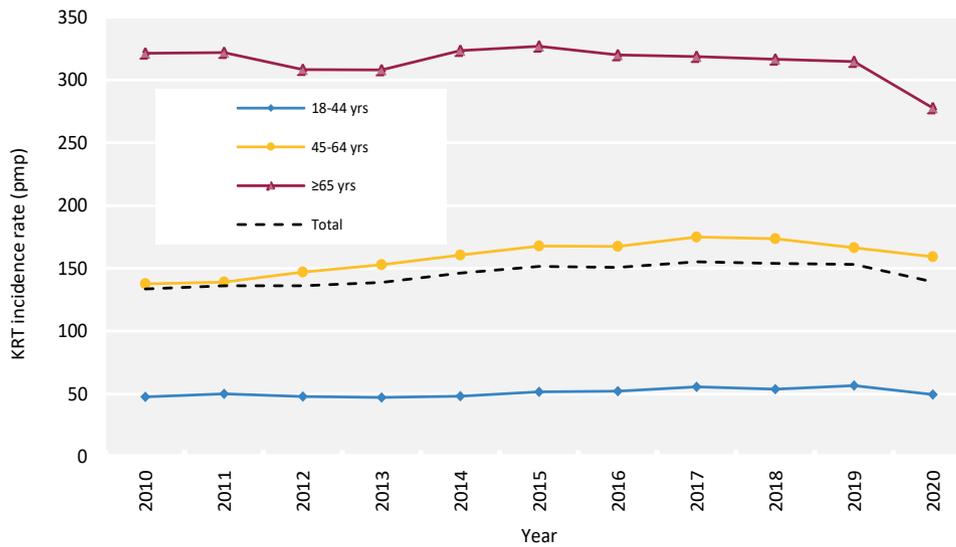
Country KRT populations were calculated by summing the KRT patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures. See appendix A for details on estimated catchment population by kidney centre.

\*Incident patient numbers at Liverpool Royal Infirmary are under-reported (about 30 HD patients) due to a systems extraction problem at the centre. This will be corrected in the next annual report.

pmp – per million population



**Figure 2.2** Adult KRT incidence rates by country between 2010 and 2020  
pmp – per million population



**Figure 2.3** Adult KRT incidence rates by age group between 2010 and 2020  
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 2020 by centre

Centre	N on RRT	% on ICHD	% on PD	% on HHD	% on Tx	% pre-emptive listing/tx	Median age (yrs)	% male	Ethnicity				
									% White	% Asian	% Black	% Other missing	
ENGLAND													
Bham	329	68.7	28.3	0.0	3.0	14.0	63.0	63.5	56.2	31.9	9.8	2.2	3.6
Bradfd	82	79.3	13.4	0.0	7.3	13.4	62.7	64.6	51.9	38.3	1.2	8.6	1.2
Brightn	142	73.9	22.5	0.7	2.8	10.6	68.1	71.1	89.9	5.4	1.6	3.1	9.2
Bristol	131	74.8	17.6	0.0	7.6	16.0	65.0	68.7	90.7	2.5	5.9	0.8	9.9
Camb	108	51.9	18.5	0.0	29.6	41.7	59.3	64.8	91.5	1.1	4.3	3.2	13.0
Carlis	34	70.6	26.5	2.9	0.0	11.8	62.0	67.6	100.0	0.0	0.0	0.0	0.0
Carsh	298	81.9	16.1	0.0	2.0	10.1	67.7	63.8	64.1	16.9	11.4	7.7	8.4
Colchr	39	100.0	0.0	0.0	0.0	5.1	72.6	56.4	97.0	0.0	0.0	3.0	15.4
Covnt	141	67.4	24.8	0.0	7.8	20.6	67.1	64.5	78.4	16.5	5.0	0.0	1.4
Derby	73	54.8	39.7	4.1	1.4	16.4	66.3	78.1	88.1	6.0	1.5	4.5	8.2
Donc	47	80.9	14.9	2.1	2.1	17.0	68.7	70.2	95.7	0.0	2.1	2.1	0.0
Dorset	88	72.7	19.3	0.0	8.0	28.4	66.1	64.8	98.9	1.1	0.0	0.0	1.1
Dudley	60	76.7	18.3	0.0	5.0	11.7	70.7	58.3	76.7	16.7	6.7	0.0	0.0
EssexMS	129	78.3	19.4	0.0	2.3	9.3	65.9	63.6	85.1	5.3	3.5	6.1	11.6
Exeter	105	82.9	15.2	1.0	1.0	15.2	66.9	67.6	94.3	3.8	1.0	1.0	0.0
Glouc	83	73.5	19.3	1.2	6.0	10.8	71.7	67.5	95.1	2.4	1.2	1.2	1.2
Hull	105	72.4	27.6	0.0	0.0	11.4	63.7	68.6	95.2	1.9	2.9	0.0	1.0
Ipswi	43	72.1	20.9	0.0	7.0	18.6	70.1	58.1	89.5	0.0	0.0	10.5	11.6
Kent	141	77.3	19.2	0.0	3.6	13.5	67.9	68.8	95.0	2.9	2.2	0.0	1.4
L Barts	200	34.0	60.0	0.0	6.0	24.5	58.6	57.5	26.5	40.9	27.1	5.5	9.5
L Guys	161	79.5	16.8	0.0	3.7	14.3	60.8	57.8	47.7	10.6	36.4	5.3	18.0
L Kings	158	70.3	27.9	0.0	1.9	12.7	57.8	61.4	43.8	12.5	38.9	4.9	8.9
L Rfree	231	61.9	31.2	0.0	6.9	16.0	64.3	62.3	44.6	24.9	15.5	15.0	16.5
L St.G	81	72.8	18.5	0.0	8.6	28.4	60.1	69.1	37.5	25.0	27.8	9.7	11.1
L West	361	67.3	28.5	0.0	4.2	16.1	63.9	65.7	39.6	38.5	18.3	3.6	0.0
Leeds	152	70.4	17.8	0.0	11.8	28.3	61.1	65.1	76.4	15.5	5.4	2.7	2.6
Leic	324	78.1	11.7	0.0	10.2	20.4	64.5	62.0	75.4	19.0	4.2	1.4	10.8
Liv Ain	43	72.1	25.6	2.3	0.0	4.7	52.8	62.8	97.5	0.0	2.5	0.0	7.0
Liv Roy	61	77.1	13.1	3.3	6.6	9.8	59.6	52.5	86.3	3.9	5.9	3.9	16.4
M RI	173	70.5	24.3	0.0	5.2	18.5	63.8	60.1	60.5	13.8	22.8	3.0	3.5
Middlbr	97	82.5	8.3	0.0	9.3	17.5	58.5	72.2	94.4	3.3	0.0	2.2	7.2
Newc	125	75.2	16.8	0.0	8.0	20.0	60.1	59.2	93.6	4.8	0.8	0.8	0.0
Norwch	91	83.5	16.5	0.0	0.0	7.7	63.4	65.9	98.9	0.0	1.1	0.0	0.0
Nottm	120	60.0	34.2	0.0	5.8	19.2	61.3	62.5	75.0	8.3	14.2	2.5	0.0
Oxford	204	69.1	19.1	0.0	11.8	25.5	64.3	61.8	75.8	6.0	6.7	11.4	27.0
Plymth	61	62.3	18.0	0.0	19.7	24.6	64.2	62.3	98.4	1.6	0.0	0.0	0.0
Ports	219	72.6	22.4	2.3	2.7	16.9	66.6	71.7	94.9	3.2	0.6	1.3	28.3
Prestn	167	74.3	21.0	0.6	4.2	18.6	62.1	64.7	80.0	17.0	0.6	2.4	1.2
Redng	99	55.6	38.4	0.0	6.1	16.2	56.7	56.6	66.3	23.3	3.5	7.0	13.1
Salford	173	71.1	22.5	0.0	6.4	25.4	59.8	65.9	70.9	21.5	3.5	4.1	0.6
Sheff	173	76.9	20.2	0.0	2.9	13.3	64.3	72.3	87.7	7.4	2.5	2.5	5.8
Shrew	45	57.8	40.0	2.2	0.0	6.7	67.8	75.6	95.0	5.0	0.0	0.0	11.1
Stevng	167	82.0	15.0	1.2	1.8	10.2	64.1	64.7					31.7
Stoke	111	67.6	30.6	0.0	1.8	12.6	67.2	71.2	88.0	10.0	2.0	0.0	9.9

**Table 2.3** Continued

Centre	N on RRT	% on ICHD	% on PD	% on HHD	% on Tx	% pre-emptive listing/tx	Median age (yrs)	% male	Ethnicity				
									% White	% Asian	% Black	% Other	% missing
Sund	67	70.2	26.9	0.0	3.0	17.9	60.4	59.7	93.9	4.5	0.0	1.5	1.5
Truro	46	91.3	8.7	0.0	0.0	4.3	69.6	60.9	100.0	0.0	0.0	0.0	0.0
Wirral	44	72.7	27.3	0.0	0.0	18.2	62.3	70.5	97.7	2.3	0.0	0.0	0.0
Wolve	104	71.2	24.0	4.8	0.0	7.7	65.0	73.1	58.7	27.9	10.6	2.9	0.0
York	47	78.7	14.9	0.0	6.4	12.8	62.9	59.6	100.0	0.0	0.0	0.0	4.3
<b>N IRELAND</b>													
Antrim	29	86.2	3.5	0.0	10.3	13.8	69.8	55.2	100.0	0.0	0.0	0.0	24.1
Belfast	76	55.3	10.5	0.0	34.2	43.4	61.0	59.2	98.2	1.8	0.0	0.0	27.6
Newry	30	73.3	13.3	0.0	13.3	26.7	64.4	66.7	96.4	3.6	0.0	0.0	6.7
Ulster	28	85.7	3.6	0.0	10.7	17.9	69.2	82.1	100.0	0.0	0.0	0.0	0.0
West NI	38	81.6	5.3	2.6	10.5	18.4	65.1	57.9	100.0	0.0	0.0	0.0	2.6
<b>SCOTLAND</b>													
Abrdn	56	85.7	14.3	0.0	0.0	8.9	61.4	62.5					100.0
Airdrie	55	76.4	23.6	0.0	0.0	18.2	68.1	50.9					100.0
D&Gall	19	68.4	31.6	0.0	0.0	21.1	71.2	63.2					100.0
Dundee	28	85.7	14.3	0.0	0.0	14.3	59.5	75.0					100.0
Edinb	87	57.5	19.5	0.0	23.0	36.8	56.3	66.7					98.9
Glasgw	180	71.7	16.1	0.0	12.2	36.1	60.5	60.6					100.0
Inverns	18	88.9	11.1	0.0	0.0	11.1	65.7	55.6					100.0
Klmarnk	57	70.2	29.8	0.0	0.0	12.3	69.6	64.9					100.0
Krkldy	37	94.6	2.7	2.7	0.0	5.4	67.4	62.2					100.0
<b>WALES</b>													
Bangor	29	65.5	27.6	3.5	3.5	6.9	67.1	65.5	100.0	0.0	0.0	0.0	24.1
Cardff	137	75.2	16.8	0.0	8.0	17.5	62.6	59.9	90.0	7.7	1.5	0.8	5.1
Clwyd	26	65.4	30.8	0.0	3.9	7.7	65.2	73.1	95.7	4.3	0.0	0.0	11.5
Swanse	123	75.6	19.5	0.8	4.1	10.6	67.1	69.9	98.4	0.8	0.0	0.8	0.8
Wrexm	37	59.5	40.5	0.0	0.0	13.5	69.8	67.6	97.1	0.0	0.0	2.9	5.4
<b>TOTALS</b>													
<b>England</b>	<b>6,283</b>	<b>71.3</b>	<b>22.9</b>	<b>0.4</b>	<b>5.4</b>	<b>16.7</b>	<b>63.6</b>	<b>64.7</b>	<b>73.0</b>	<b>14.9</b>	<b>8.5</b>	<b>3.5</b>	<b>8.1</b>
<b>N Ireland</b>	<b>201</b>	<b>71.6</b>	<b>8.0</b>	<b>0.5</b>	<b>19.9</b>	<b>28.4</b>	<b>64.1</b>	<b>62.7</b>	<b>98.8</b>	<b>1.2</b>	<b>0.0</b>	<b>0.0</b>	<b>15.4</b>
<b>Scotland</b>	<b>537</b>	<b>73.9</b>	<b>18.1</b>	<b>0.2</b>	<b>7.8</b>	<b>24.4</b>	<b>62.8</b>	<b>62.0</b>					<b>99.8</b>
<b>Wales</b>	<b>352</b>	<b>72.2</b>	<b>22.2</b>	<b>0.6</b>	<b>5.1</b>	<b>13.1</b>	<b>65.5</b>	<b>65.6</b>	<b>94.9</b>	<b>3.6</b>	<b>0.6</b>	<b>0.9</b>	<b>5.7</b>
<b>UK</b>	<b>7,373</b>	<b>71.6</b>	<b>22.1</b>	<b>0.4</b>	<b>5.9</b>	<b>17.4</b>	<b>63.7</b>	<b>64.5</b>	<b>74.9</b>	<b>13.9</b>	<b>7.9</b>	<b>3.3</b>	<b>14.8</b>

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.

\*Incident patient numbers at Liverpool Royal Infirmary are under-reported (about 30 HD patients) due to a systems extraction problem at the centre. This will be corrected in the next annual report.

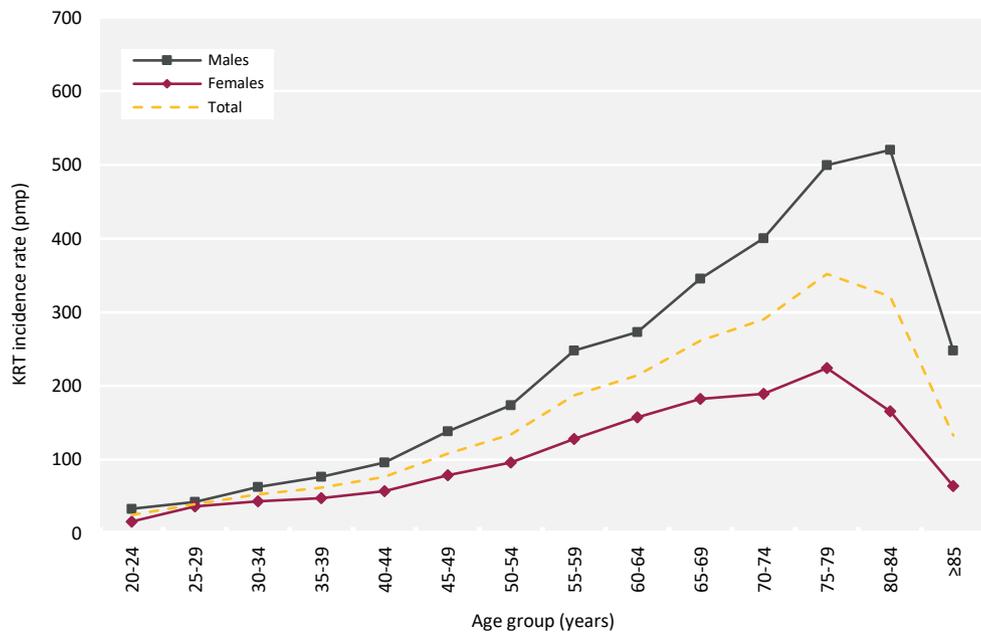
PRDs were grouped into categories as shown in table 2.4, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of KRT patients in each ethnic group and with each PRD is shown for patients with ethnicity and PRD data, respectively, and these total 100% of patients with data. The proportions of patients with no ethnicity and no PRD data are shown on separate lines.

The longitudinal trend of the PRD distribution, showing an increase in diabetes as the PRD, is presented in table 2.5.

**Table 2.4** Demographics, primary renal diseases (PRDs), referral time and start modality of adult patients incident to KRT in 2020 by age group

Characteristic	Age group (yrs)							Total	Median age (yrs)
	18-34	35-44	45-54	55-64	65-74	75-84	≥85		
<b>Total</b>									
N	558	586	1,085	1,670	1,853	1,401	220	7,373	63.7
%	7.6	7.9	14.7	22.7	25.1	19.0	3.0		
<b>Sex (%)</b>									
Male	59.3	61.8	63.4	63.8	65.0	68.0	69.5	64.5	64.3
Female	40.7	38.2	36.6	36.2	35.0	32.0	30.5	35.5	62.6
<b>Ethnicity (%)</b>									
White	74.9	67.1	69.7	68.6	77.8	84.0	86.6	74.9	65.4
Asian	12.3	16.8	14.7	15.4	15.4	10.2	7.0	13.9	62.3
Black	7.4	12.6	11.0	11.9	4.6	4.0	3.2	7.9	57.2
Other	5.3	3.4	4.7	4.2	2.3	1.8	3.2	3.3	58.4
Missing	8.2	7.6	8.0	8.0	7.7	8.8	11.0	8.1	64.4
<b>PRD (%)</b>									
Diabetes	19.5	28.1	31.0	40.0	32.4	23.6	14.7	30.5	62.7
Glomerulonephritis	26.5	15.3	16.3	11.1	9.7	8.1	3.8	12.3	56.4
Hypertension	5.6	7.9	9.1	6.4	6.4	7.2	9.8	7.1	62.2
Polycystic kidney disease	2.8	10.7	11.6	8.0	5.3	3.6	2.2	6.7	57.5
Pyelonephritis	8.0	5.0	3.5	3.7	5.2	7.1	9.2	5.3	67.3
Renal vascular disease	0.4	1.8	1.9	3.0	6.9	9.2	12.5	4.9	73.0
Other	26.9	17.9	15.1	16.8	17.7	20.0	16.3	18.2	63.7
Uncertain aetiology	10.4	13.1	11.5	11.0	16.5	21.3	31.5	15.0	69.0
Missing	10.0	7.7	8.5	9.9	10.1	13.4	16.4	10.5	66.1
<b>Referral time (%)</b>									
<90 days	27.6	18.1	13.7	15.0	15.2	16.8	17.4	16.4	63.4
≥90 days	72.4	81.9	86.3	85.0	84.8	83.2	82.6	83.6	63.9
Missing	2.5	3.7	2.0	3.2	2.7	3.4	4.3	3.0	64.4
<b>Start modality (%)</b>									
ICHD	54.1	57.8	66.4	72.7	75.7	79.9	81.4	71.6	65.5
HHD	0.0	0.3	0.6	0.7	0.4	0.2	0.0	0.4	59.6
PD	30.6	31.1	23.9	21.4	18.9	19.1	18.6	22.1	60.4
Tx	15.2	10.8	9.2	5.3	5.0	0.7	0.0	5.9	52.8

Scotland was excluded both from analyses of ethnicity and referral time, because Scottish renal centres had low completeness of ethnicity data and used a different definition of referral time.



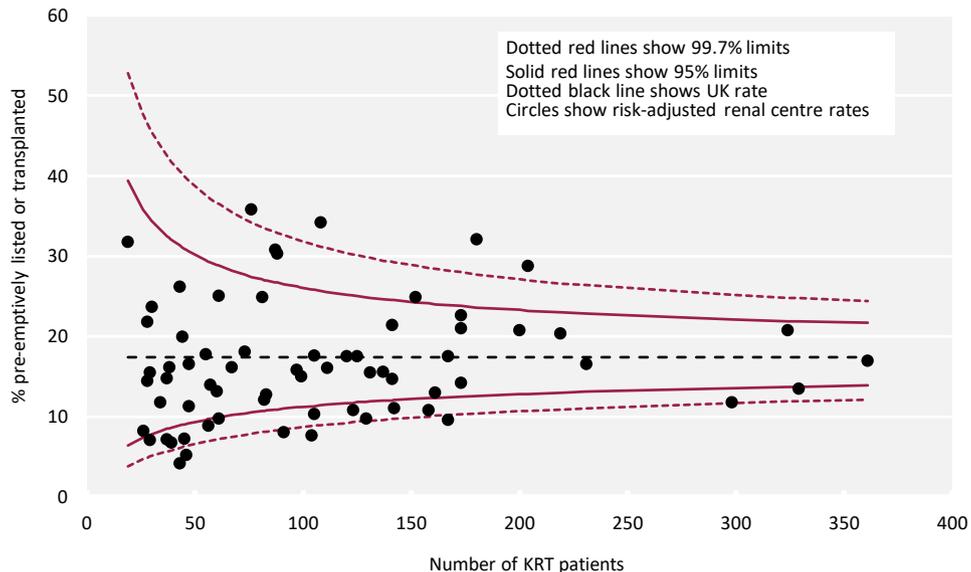
**Figure 2.4** Incidence rates for adult patients starting KRT in 2020 by age group and sex pmp – per million population

**Table 2.5** Change in primary renal disease (PRD) of adult patients incident to KRT from 2011 to 2020

PRD	Year of KRT start									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Diabetes	24.1	25.3	25.3	26.3	27.0	27.5	28.6	29.8	30.6	30.5
Glomerulonephritis	13.0	13.7	14.2	12.9	13.5	13.3	13.6	13.0	13.1	12.3
Hypertension	7.0	7.4	7.5	6.4	6.6	6.2	6.4	6.7	7.3	7.1
Polycystic kidney disease	7.5	6.7	7.6	6.5	7.1	6.7	6.8	6.9	6.9	6.7
Pyelonephritis	6.8	6.7	6.6	5.7	6.3	6.2	5.6	5.0	5.4	5.3
Renal vascular disease	6.7	6.2	5.3	6.1	5.9	6.1	5.6	5.6	5.4	4.9
Other	16.7	17.4	18.1	19.8	18.6	18.6	18.7	18.7	16.8	18.2
Uncertain aetiology	18.1	16.6	15.4	16.2	15.0	15.4	14.7	14.2	14.5	15.0
Missing	4.0	2.1	3.3	1.8	2.7	3.2	5.8	4.6	7.1	10.5

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 for transplant and transplant 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 2020. Please visit the UKRR data portal ([ukkidney.org/audit-research/data-portals](http://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 2020 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
<b>Day 0 modality</b>				
2015	72.7	0.2	19.2	7.9
2016	71.8	0.4	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	20.3	8.4
2020	71.6	0.4	22.1	5.9
<b>Day 90 modality</b>				
Oct 2014 - Sept 2015	70.7	0.6	19.3	9.5
Oct 2015 - Sept 2016	68.7	0.9	20.4	10.1
Oct 2016 - Sept 2017	68.5	0.8	20.0	10.7
Oct 2017 - Sept 2018	69.1	0.9	19.8	10.1
Oct 2018 - Sept 2019	68.4	1.0	20.9	9.8
Oct 2019 - Sept 2020	69.5	1.0	21.8	7.7

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 01/10/2019 and 30/09/2020 by country

Country	N	Patients who started KRT					Patients still on KRT at 90 days		
		% on HD <sup>1</sup>	% on PD	% with Tx	% discontinued <sup>2</sup>	% died	% on HD <sup>1</sup>	% on PD	% with Tx
England	6,456	65.8	21.6	6.6	1.1	5.0	70.0	23.0	7.0
N Ireland	191	63.9	6.8	24.6	3.7	1.1	67.0	7.1	25.8
Scotland	577	70.2	15.1	9.0	0.5	5.2	74.5	16.0	9.6
Wales	371	71.7	17.8	6.7	0.3	3.5	74.5	18.5	7.0
UK	7,595	66.4	20.5	7.2	1.1	4.8	70.5	21.8	7.7

<sup>1</sup>HD included ICHD and HHD.

<sup>2</sup>Discontinued 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 2015 by time after start

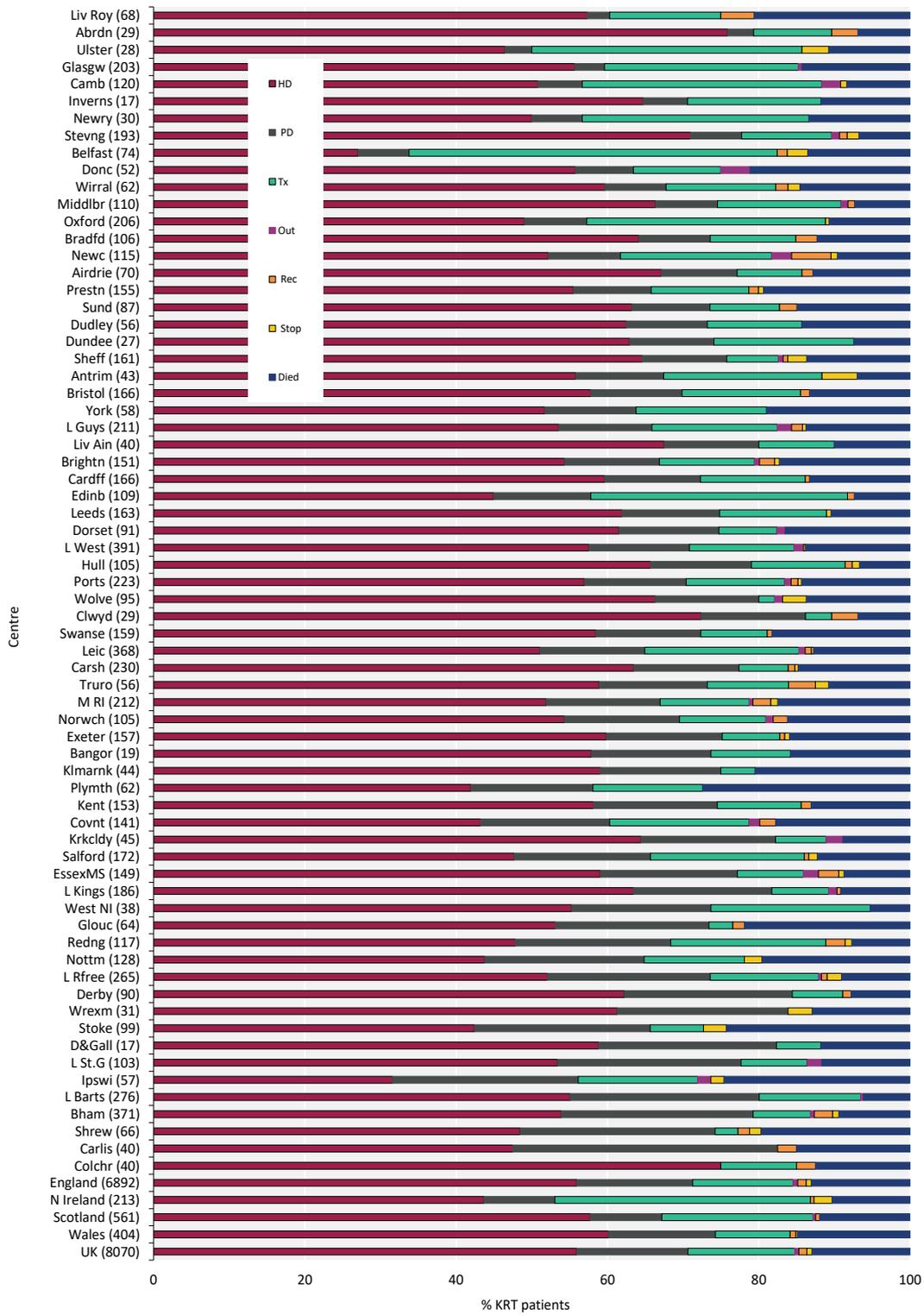
Start modality	N	Later modality <sup>1</sup>	Time after start (%)			
			90 days	1 yr	3 yrs	5 yrs
HD	5,671	HD	90.0	72.0	43.7	24.4
		PD	2.1	3.1	1.1	0.5
		Tx	1.3	5.6	14.6	18.3
		Other <sup>2</sup>	0.9	2.3	2.6	2.7
		Died	5.7	17.1	37.9	54.1
PD	1,492	HD	7.0	18.7	21.8	14.6
		PD	87.3	56.9	18.6	6.1
		Tx	3.2	14.7	33.3	39.1
		Other <sup>2</sup>	0.5	1.1	1.9	2.5
		Died	1.9	8.6	24.4	37.7
Tx	615	HD	0.8	1.3	1.6	2.6
		PD	0.0	0.0	0.5	0.8
		Tx	97.7	94.6	91.1	87.3
		Other <sup>2</sup>	1.3	2.4	3.6	3.7
		Died	0.2	1.6	3.3	5.5

Shading indicates proportion of individuals maintained on their initial modality.

<sup>1</sup>HD included ICHD and HHD.

<sup>2</sup>Other is discontinued, recovered, moved away or currently transferring between centres.

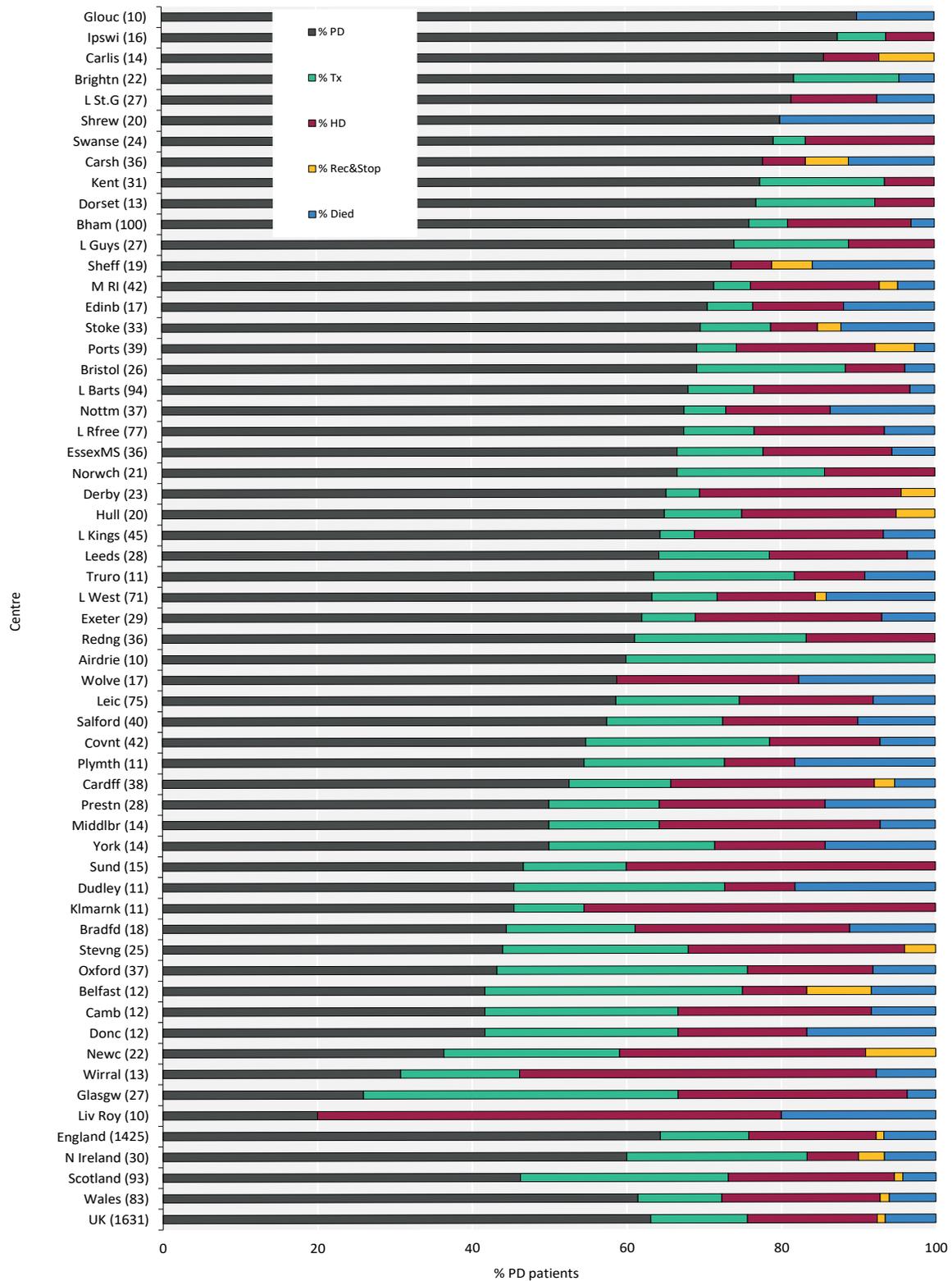
The modality at one year after KRT initiation is shown in figure 2.6 for all KRT starters and in figure 2.7 for those starting on PD by centre, using incident patients starting KRT in 2019 to allow one year follow-up time.



**Figure 2.6** KRT modality at 1 year for incident adult KRT patients who started KRT in 2019 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 2019 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

## 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 (2019–2020) 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 (2019–2020 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
	2019	2020		2019	2020	All PRDs	Non-diabetes PRDs	All PRDs
ENGLAND								
Bham	371	329	697	99.7	99.4	19.1	24.0	29.4
Bradfd	106	82	188	100.0	100.0	13.3	17.5	24.5
Brightn	151	142	292	100.0	99.3	16.8	19.3	30.5
Bristol	166	131	107	65.7	81.7	19.6	25.3	29.9
Camb	120	108	228	100.0	100.0	19.3	20.3	35.1
Carlis	40	34	74	100.0	100.0	6.8	11.1	14.9
Carsh	230	298	524	99.1	99.3	22.5	20.6	35.3
Colchr	40	39		15.0	2.6			
Covnt	141	141	272	94.3	98.6	14.7	15.5	26.5
Derby	90	73	163	100.0	100.0	19.6	22.0	30.1
Donc	52	47	98	100.0	97.9	13.3	17.9	27.6
Dorset	91	88	178	98.9	100.0	14.0	14.4	24.2
Dudley	56	60	116	100.0	100.0	12.1	12.2	20.7
EssexMS	149	129	275	99.3	98.4	23.3	25.3	40.0
Exeter	157	105	262	100.0	100.0	16.0	19.7	26.7
Glouc	64	83	145	100.0	97.6	13.1	13.1	29.0
Hull	105	105	209	100.0	99.0	23.0	28.7	35.9
Ipswi	57	43	89	86.0	93.0	18.0		29.2
Kent	153	141	292	99.3	99.3	11.0	12.0	19.5
L Barts	276	200	433	89.1	93.5	13.9	14.9	30.0
L Guys	211	161	367	98.6	98.8	19.1	21.0	36.0
L Kings	186	158	343	100.0	99.4	18.1	22.4	28.9
L Rfree	265	231	487	98.1	98.3	14.0	17.6	25.9
L St.G	103	81	184	100.0	100.0	20.1	22.8	37.5
L West	391	361	750	100.0	99.4	15.6	18.0	33.3
Leeds	163	152	315	100.0	100.0	19.7	23.4	32.4
Leic	368	324	690	99.7	99.7	14.9	9.6	23.2
Liv Ain	40	43	83	100.0	100.0	20.5	22.0	31.3
Liv Roy	68	61	125	94.1	100.0	31.2	28.6	45.6
M RI	212	173	354	98.1	84.4	17.5		26.8
Middlbr	110	97	205	99.1	99.0	16.6	19.3	32.2
Newc	115	125	240	100.0	100.0	20.8	24.3	30.4
Norwch	105	91	174	89.5	87.9	32.8	33.3	46.0
Nottm	128	120	248	100.0	100.0	16.1	20.2	26.2
Oxford	206	204	409	100.0	99.5	13.2	16.4	21.8
Plymth	62	61	120	96.8	98.4	20.0	22.4	30.8
Ports	223	219	433	98.7	97.3	9.9		23.8
Prestn	155	167	322	100.0	100.0	16.1	19.8	29.5
Redng	117	99	213	99.1	98.0	14.1	18.7	20.2
Salford	172	173	344	100.0	99.4	11.9	16.2	27.6
Sheff	161	173	332	100.0	98.8	18.1	22.6	26.2

**Table 2.9** Continued

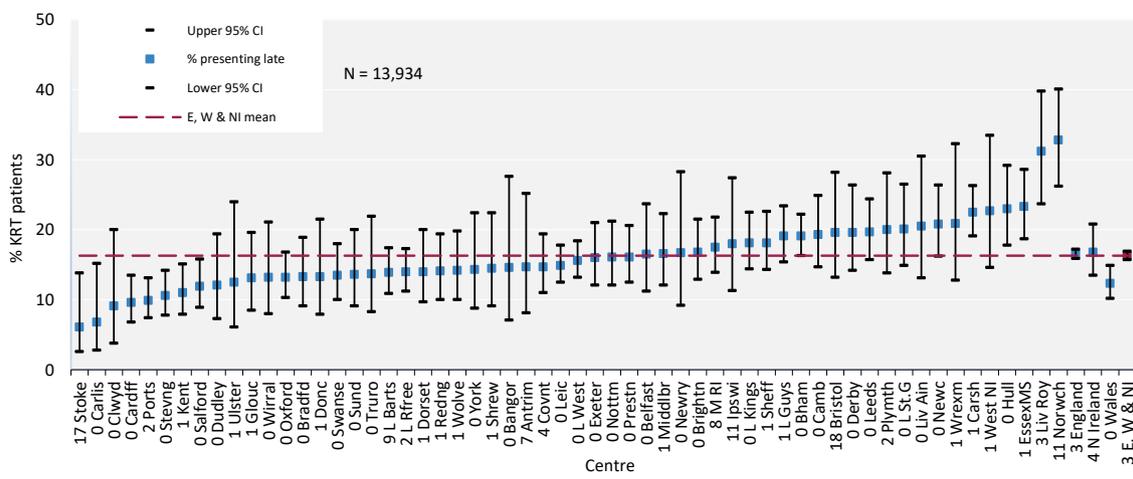
Centre	N on KRT		N with referral data	% data completeness		% presenting <90 days before KRT start		% presenting <1 yr before KRT start
	2019	2020		2019	2020	All PRDs	Non-diabetes PRDs	All PRDs
Shrew	66	45	110	100.0	97.8	14.5	16.3	30.9
Stevng	193	167	360	100.0	100.0	10.6	12.9	14.2
Stoke	99	111	82	82.8	63.1	6.1	7.1	18.3
Sund	87	67	154	100.0	100.0	13.6	15.7	29.2
Truro	56	46	102	100.0	100.0	13.7	15.9	30.4
Wirral	62	44	106	100.0	100.0	13.2	18.3	23.6
Wolve	95	104	197	100.0	98.1	14.2	19.5	26.4
York	58	47	105	100.0	100.0	14.3	13.4	28.6
<b>N IRELAND</b>								
Antrim	43	29	68	90.7	100.0	14.7	13.0	22.1
Belfast	74	76	139	89.2	96.1	16.5	18.6	19.4
Newry	30	30	60	100.0	100.0	16.7	15.0	28.3
Ulster	28	28	56	100.0	100.0	12.5	14.3	19.6
West NI	38	38	75	97.4	100.0	22.7	29.1	26.7
<b>WALES</b>								
Bangor	19	29	48	100.0	100.0	14.6	17.9	27.1
Cardff	166	137	302	100.0	99.3	9.6	12.3	16.9
Clwyd	29	26	55	100.0	100.0	9.1	12.9	29.1
Swanse	159	123	282	100.0	100.0	13.5	17.9	22.7
Wrexm	31	37	67	96.8	100.0	20.9	18.2	31.3
<b>TOTALS</b>								
<b>England</b>	<b>6,892</b>	<b>6,283</b>	<b>12,782</b>	<b>97.2</b>	<b>96.8</b>	<b>16.5</b>	<b>18.7</b>	<b>28.6</b>
<b>N Ireland</b>	<b>213</b>	<b>201</b>	<b>398</b>	<b>93.9</b>	<b>98.5</b>	<b>16.8</b>	<b>18.6</b>	<b>22.6</b>
<b>Wales</b>	<b>404</b>	<b>352</b>	<b>754</b>	<b>99.8</b>	<b>99.7</b>	<b>12.3</b>	<b>15.4</b>	<b>21.9</b>
<b>E, W &amp; NI</b>	<b>7,509</b>	<b>6,836</b>	<b>13,934</b>	<b>97.2</b>	<b>97.0</b>	<b>16.3</b>	<b>18.5</b>	<b>28.1</b>

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 (2018–2020 2 year cohort)  
 CI – confidence interval

**Table 2.10** Characteristics of incident adult KRT patients by referral time (2019–2020 2 year cohort)

Characteristic	Referral time	
	<90 days	≥90 days
Median age (yrs)	62.9	64.3
% male	66.3	63.8
% starting on PD	8.9	24
% on PD at 90 days	12.0	23.9
Mean haemoglobin at KRT start (g/L)	94	100
Mean eGFR at KRT start (mL/min/1.73m <sup>2</sup> ) <sup>1</sup>	6.4	7.4

<sup>1</sup>Data available for approximately 40% 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) (2019–2020 2 year cohort)

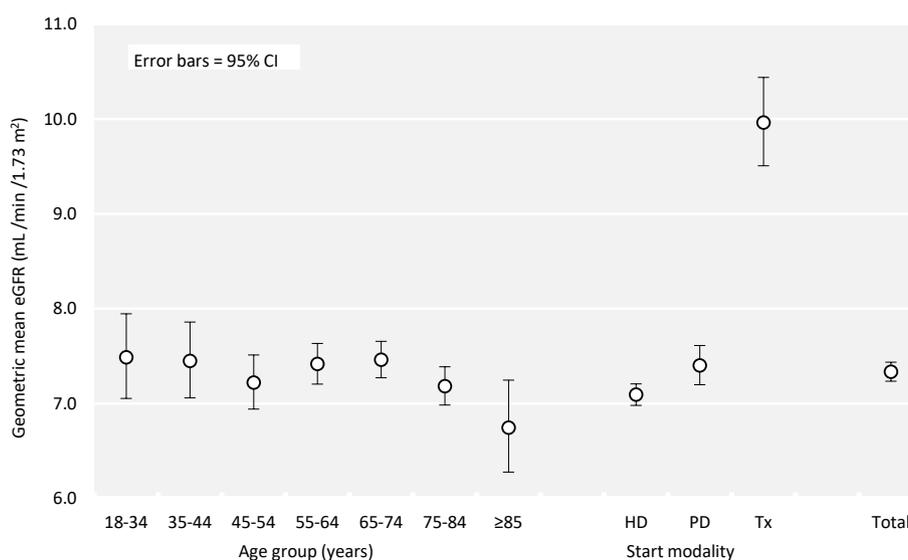
PRD	N with data	Referral time			
		<90 days		≥90 days	
		N	%	N	%
Diabetes	3,898	320	8.2	3,578	91.8
Glomerulonephritis	1,586	200	12.6	1,386	87.4
Hypertension	951	148	15.6	803	84.4
Polycystic kidney disease	847	43	5.1	804	94.9
Pyelonephritis	690	119	17.2	571	82.8
Renal vascular disease	630	73	11.6	557	88.4
Other	2,196	725	33.0	1,471	67.0
Uncertain aetiology	1,927	327	17.0	1,600	83.0
<b>Total (with data)</b>	<b>12,725</b>	<b>1,955</b>	<b>15.4</b>	<b>10,770</b>	<b>84.6</b>
Missing	1,209	317	26.2	892	73.8

**Table 2.12** Referral time of incident adult KRT patients by year of start (restricted to centres reporting continuous data for 2014–2020)

Referral time	KRT start year (%)						
	2014	2015	2016	2017	2018	2019	2020
<90 days	16.5	16.7	15.8	16.1	15.6	16.1	16.4
3–6 mths	5.3	4.7	4.8	4.9	4.5	4.4	3.8
6–12 mths	8.3	8.1	8.2	7.1	7.4	7.8	7.5
≥12 mths	69.9	70.5	71.2	71.9	72.6	71.7	72.3

## 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 (40% 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 2020 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. The poor data completeness for ESA data in the incident KRT population limited analysis to the proportion of patients with haemoglobin measurements of  $\geq 100$  g/L.

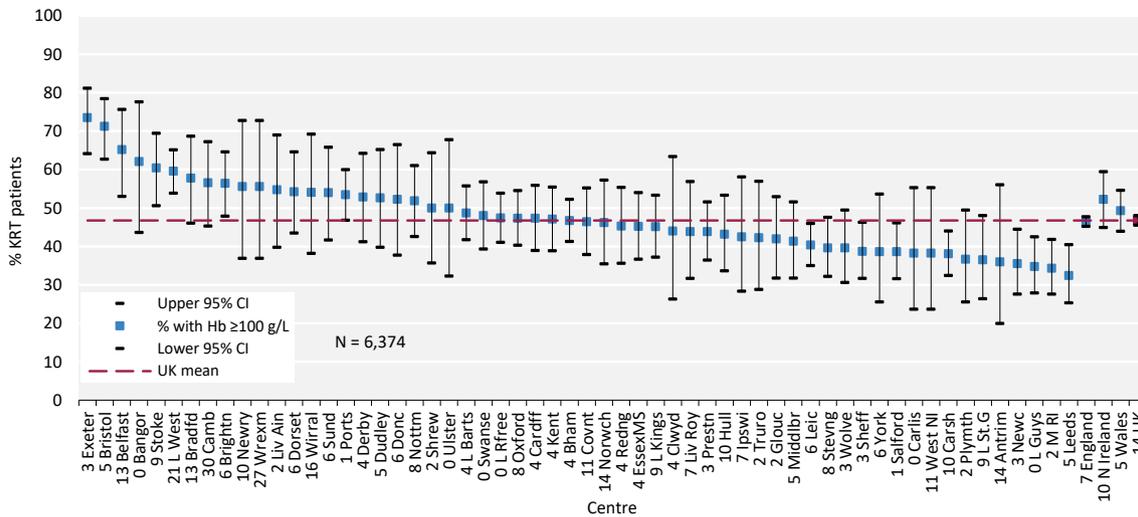
**Table 2.13** Haemoglobin (Hb) data for adult patients incident to KRT in 2020 by centre

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	97	46.7	104	104	93	101	88	96.4
Bradfd	104	57.8			104	104		86.6
Brightn	102	56.4		111	98	103	91	93.7
Bristol	103	71.2	116	113	102	103	101	95.4
Camb	103	56.6	106	107	98	104		70.4
Carlis	95	38.2			91	98		100.0
Carsh	96	38.1		104	95	97	93	89.9
Colchr								51.3
Covnt	98	46.4	120	101	93	98	99	88.7
Derby	101	52.9		101	99	103	97	95.9
Donc	101	52.3			93	101		93.6
Dorset	103	54.2		110	97	105		94.3
Dudley	101	52.6		115	95	101		95.0
EssexMS	98	45.2		110	97	102	92	96.1
Exeter	104	73.5		113	102	105	99	97.1
Glouc	97	42.0		113	94	97	93	97.6
Hull	98	43.2		110	94	101	90	90.5
Ipswi	95	42.5			92	98		93.0
Kent	99	47.1		103	96	99		96.5
L Barts	99	48.7		103	91	99	101	96.5
L Guys	93	34.8		104	90	94	90	100.0
L Kings	97	45.1		105	94	99	95	91.1
L Rfree	99	47.4	106	105	94	99	91	99.6
L St.G	95	36.5		104	92	96	85	91.4
L West	103	59.6	116	106	101	103	102	79.5
Leeds	93	32.4	111	102	89	95	85	95.4
Leic	95	40.3	105	110	92	96	86	94.1
Liv Ain	101	54.8		116	98	103		97.7
Liv Roy	97	43.9			95	95	101	93.4
M RI	94	34.3		98	93	92	97	97.7
Middlbr	97	41.3	102		94	99	86	94.9
Newc	93	35.5	95	107	91	95	86	96.8
Norwch	97	46.2		111	92	103	91	85.7
Nottm	100	51.8		108	94	100	87	91.7
Oxford	98	47.3	101	111	94	99	93	92.2
Plymth	94	36.7	105		89	92	101	98.4
Ports	101	53.5		109	98	102	98	99.1
Prestn	97	43.8		109	93	98	95	97.0
Redng	97	45.3		102	93	97	92	96.0
Salford	97	38.6	103	113	93	98	88	98.8
Sheff	95	38.7		113	93	97	83	97.1
Shrew	99	50.0		103	96	101		97.8
Stevng	96	39.6		105	94	96	91	92.2
Stoke	104	60.4		114	99			91.0
Sund	101	54.0		108	98	102		94.0

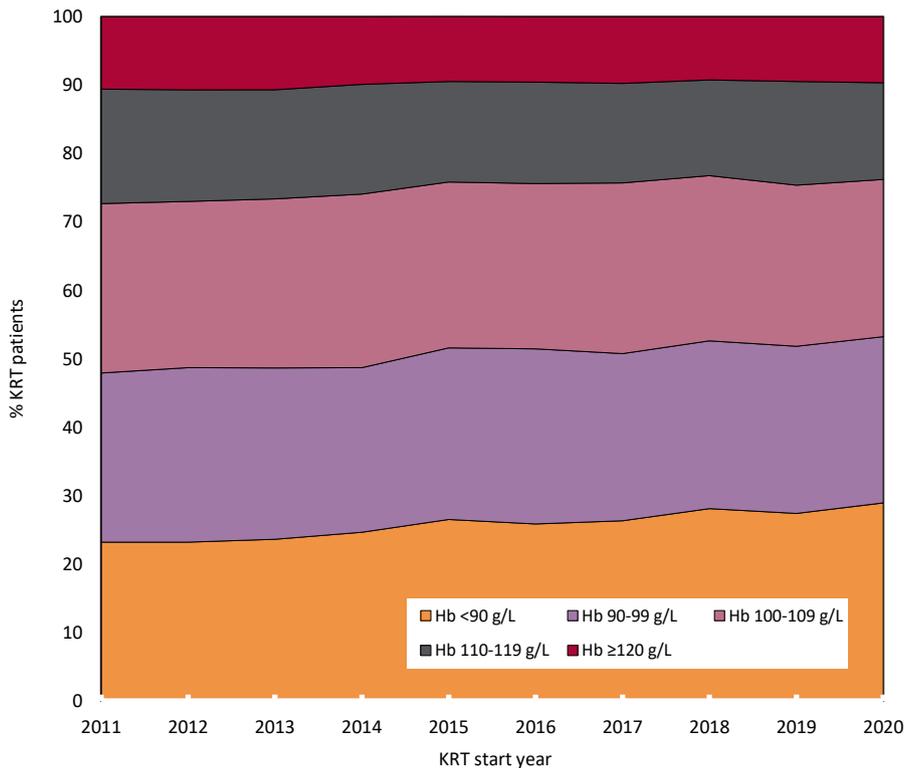
**Table 2.13** Continued

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	
Truro	97	42.2			97	99		97.8
Wirral	101	54.1			98	100		84.1
Wolve	97	39.6		96	97	98		97.1
York	94	38.6			93	97		93.6
N IRELAND								
Antrim	93	36.0			94	94		86.2
Belfast	104	65.2	109		97	106	95	86.8
Newry	102	55.6			102	102		90.0
Ulster	99	50.0			96	100		100.0
West NI	94	38.2			91	97		89.5
WALES								
Bangor	109	62.1			99	113		100.0
Cardff	99	47.3	117	110	96	100	88	95.6
Clwyd	96	44.0			92	98		96.2
Swanse	99	48.0		110	97	99	96	100.0
Wrexm	102	55.6		112	90	103		73.0
TOTALS								
<b>England</b>	<b>98</b>	<b>46.4</b>	<b>107</b>	<b>106</b>	<b>94</b>	<b>99</b>	<b>92</b>	<b>93.3</b>
<b>N Ireland</b>	<b>101</b>	<b>52.2</b>	<b>109</b>	<b>112</b>	<b>96</b>	<b>103</b>	<b>89</b>	<b>89.6</b>
<b>Wales</b>	<b>99</b>	<b>49.3</b>	<b>117</b>	<b>111</b>	<b>96</b>	<b>100</b>	<b>95</b>	<b>95.2</b>
<b>UK</b>	<b>98</b>	<b>46.8</b>	<b>108</b>	<b>107</b>	<b>95</b>	<b>99</b>	<b>92</b>	<b>86.5</b>

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



**Figure 2.10** Percentage of adult patients incident to KRT in 2020 with haemoglobin (Hb)  $\geq 100$  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 2011 and 2020

## 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.

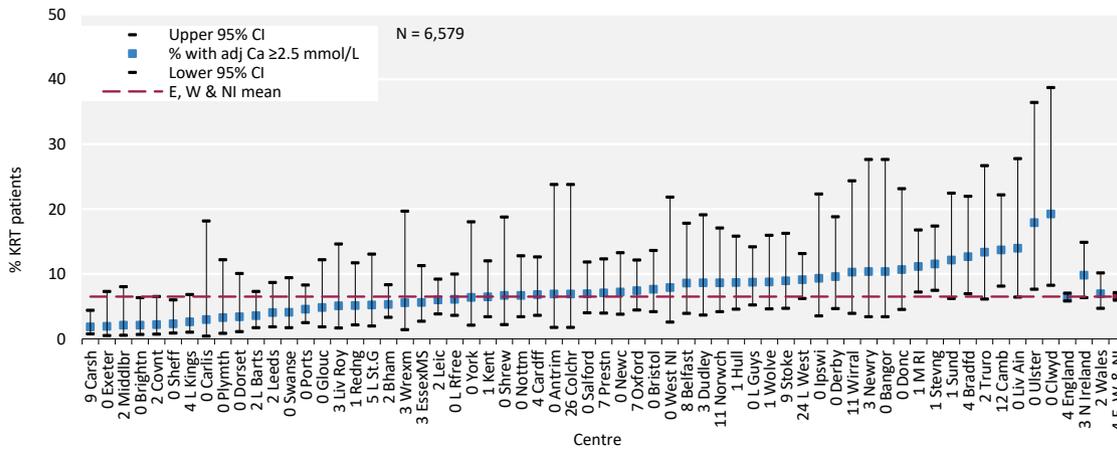
**Table 2.14** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients incident to KRT in 2020 by centre

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	78.9	5.3	97.9
Bradfd	2.4	82.3	12.7	96.3
Brightn	2.3	84.5	2.1	100.0
Bristol	2.3	88.6	7.6	100.0
Camb	2.4	80.0	13.7	88.0
Carlis	2.2	61.8	2.9	100.0
Carsh	2.2	60.0	1.9	90.6
Colchr	2.3	86.2	6.9	74.4
Covnt	2.3	82.6	2.2	97.9
Derby	2.3	79.5	9.6	100.0
Donc	2.3	76.6	10.6	100.0
Dorset	2.2	78.4	3.4	100.0
Dudley	2.4	86.2	8.6	96.7
EssexMS	2.3	88.8	5.6	96.9
Exeter	2.3	93.3	1.9	100.0
Glouc	2.3	86.8	4.8	100.0
Hull	2.4	80.8	8.7	99.1
Ipswi	2.3	72.1	9.3	100.0
Kent	2.3	73.4	6.5	98.6
L Barts	2.3	79.2	3.6	98.5
L Guys	2.4	84.5	8.7	100.0
L Kings	2.3	84.9	2.6	96.2
L Rfree	2.3	79.2	6.1	100.0
L St.G	2.4	85.7	5.2	95.1
L West	2.3	74.9	9.1	76.2
Leeds	2.3	83.9	4.0	98.0
Leic	2.3	78.0	6.0	98.2
Liv Ain	2.3	83.7	14.0	100.0
Liv Roy	2.3	88.1	5.1	96.7
M RI	2.4	79.5	11.1	98.8
Middlbr	2.2	67.4	2.1	97.9
Newc	2.3	80.8	7.2	100.0
Norwch	2.3	85.2	8.6	89.0
Nottm	2.3	80.8	6.7	100.0
Oxford	2.3	80.4	7.4	92.7
Plymth	2.3	88.5	3.3	100.0
Ports	2.3	84.9	4.6	100.0
Prestn	2.3	72.4	7.1	93.4
Redng	2.3	80.6	5.1	99.0
Salford	2.3	83.2	6.9	100.0
Sheff	2.3	79.2	2.3	100.0
Shrew	2.3	77.8	6.7	100.0
Stevng	2.3	80.0	11.5	98.8
Stoke	2.3	84.2	8.9	91.0

**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
Sund	2.3	74.2	12.1	98.5
Truro	2.3	86.7	13.3	97.8
Wirral	2.4	76.9	10.3	88.6
Wolve	2.3	69.9	8.7	99.0
York	2.4	91.5	6.4	100.0
N IRELAND				
Antrim	2.4	93.1	6.9	100.0
Belfast	2.3	75.7	8.6	92.1
Newry	2.4	86.2	10.3	96.7
Ulster	2.4	78.6	17.9	100.0
West NI	2.2	55.3	7.9	100.0
WALES				
Bangor	2.4	79.3	10.3	100.0
Cardff	2.3	83.3	6.8	96.4
Clwyd	2.4	73.1	19.2	100.0
Swanse	2.3	75.6	4.1	100.0
Wrexm	2.3	77.8	5.6	97.3
TOTALS				
<b>England</b>	<b>2.3</b>	<b>79.8</b>	<b>6.4</b>	<b>96.1</b>
<b>N Ireland</b>	<b>2.3</b>	<b>76.3</b>	<b>9.8</b>	<b>96.5</b>
<b>Wales</b>	<b>2.3</b>	<b>78.9</b>	<b>6.9</b>	<b>98.3</b>
<b>E, W &amp; NI</b>	<b>2.3</b>	<b>79.6</b>	<b>6.5</b>	<b>96.2</b>

Ca - calcium



**Figure 2.12** Percentage of adult patients incident to KRT in 2020 with adjusted calcium (Ca) above the normal range (>2.5 mmol/L) by centre  
 CI – confidence interval

### Dialysis access in incident adult dialysis patients

Incident dialysis access data were collected separately to the main UKRR quarterly data returns via the 2020 Multisite Dialysis Access Audit (see appendix A). Patients who did not start dialysis for the first time in 2020 based on UKRR quarterly data submissions were excluded.

**Table 2.15** Demographics and characteristics of patients in the 2020 Multisite Dialysis Access Audit by first dialysis access type

Characteristic	HD – first dialysis access type				PD	
	N	AVF/AVG	TL	NTL	N	Total
<b>Total</b>						
N	4,359	1,563	1,773	1,023	1,356	5,715
%		35.9	40.7	23.5		
<b>Age (%)</b>	Median (yrs)	65	67	63	67	61
	IQR (yrs)	55,75	57,75	52,74	55,76	48,73
	<45 yrs	525	24.2	52.4	23.4	291
	45–54 yrs	600	33.3	45.8	20.8	219
	55–64 yrs	1,011	37.6	39.8	22.7	280
	65–74 yrs	1,144	41.2	36.9	21.9	294
	≥75 yrs	1,079	35.7	37.0	27.3	272
<b>PRD (%)</b>	Diabetes	1,184	36.7	44.8	18.5	344
	Glomerulonephritis	355	39.4	40.6	20.0	220
	Hypertension	247	34.8	37.7	27.5	84
	Polycystic kidney disease	178	65.2	27.0	7.9	92
	Pyelonephritis	173	35.3	42.2	22.5	75
	Renal vascular disease	218	42.7	36.7	20.6	45
	Other	694	25.6	40.8	33.6	149
	Uncertain aetiology	563	39.6	40.9	19.5	159
	Missing	157	23.6	40.8	35.7	31
<b>Referral time (%)</b>	<90 days	768	3.4	48.2	48.4	78
	90–179 days	172	14.5	54.7	30.8	55
	180–364 days	331	29.3	51.1	19.6	105
	≥365 days	2,633	46.9	36.2	16.9	982
	Missing	11	36.4	45.5	18.2	5
<b>Sex (%)</b>	Male	2,851	36.5	40.1	23.4	868
	Female	1,508	34.6	41.8	23.6	488
<b>Ethnicity (%)</b>	White	2,513	36.5	38.3	25.2	813
	Asian	463	32.0	44.5	23.5	167
	Black	270	30.7	39.3	30.0	66
	Other	113	21.2	45.1	33.6	33
	Missing	222	38.3	43.7	18.0	67
<b>eGFR at start<sup>1</sup></b>	Median	7	7	7	7	8
	IQR (yrs)	5,9	6,9	5,9	5,9	6,9
<b>Diabetes<sup>2</sup> (%)</b>	Yes	754	38.5	36.5	25.1	197
	No	855	40.7	34.4	24.9	317
	Missing	128	25.8	40.6	33.6	46

<sup>1</sup>eGFR units are mL/min/1.73m<sup>2</sup>.

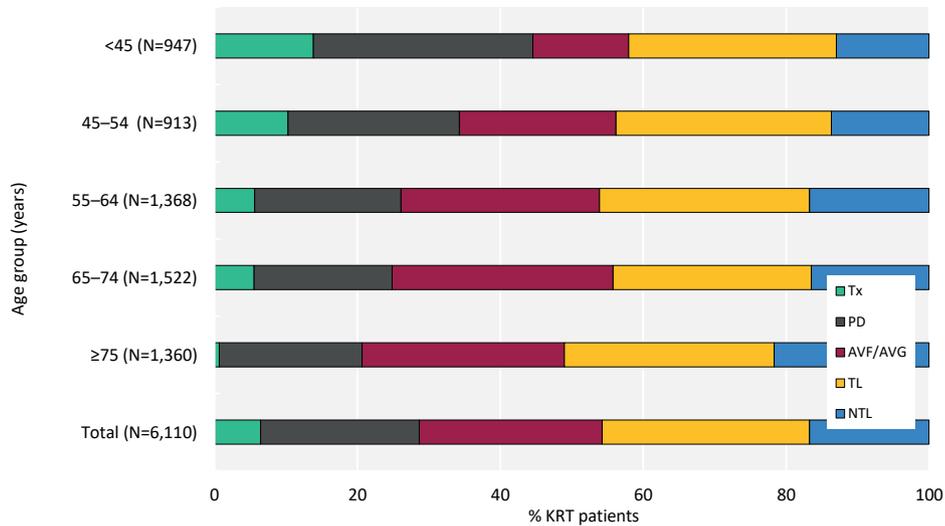
<sup>2</sup>Diabetes at start of dialysis as per the Multisite Dialysis Access Audit, or as a comorbidity or PRD from the UKRR database.

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

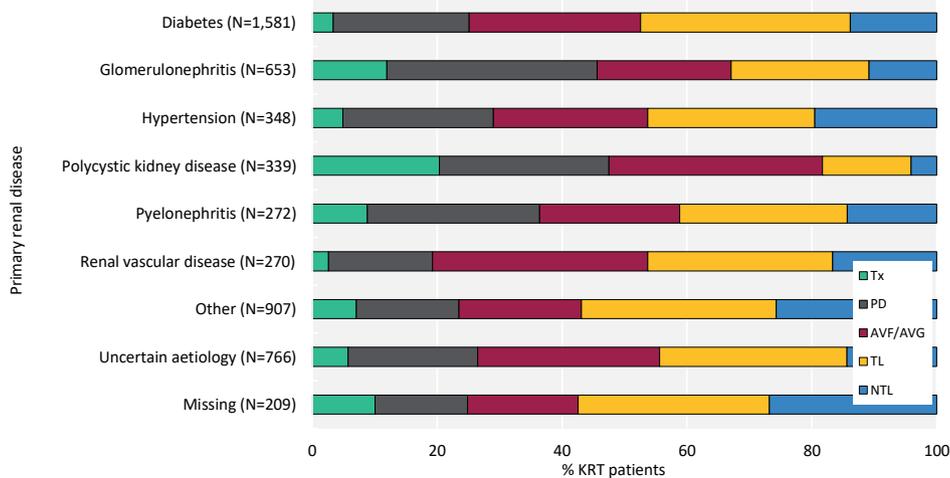
Dialysis access is best interpreted in the context of all patients starting KRT, so data were supplemented with pre-emptive Tx numbers.

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.



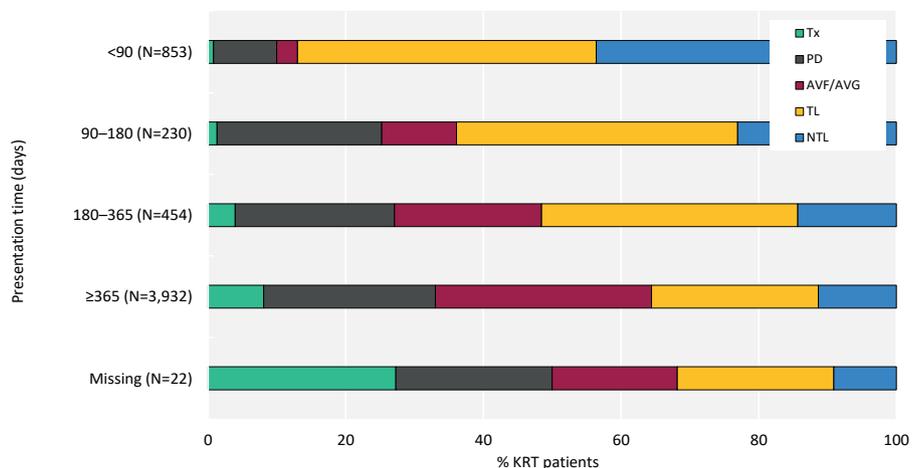
**Figure 2.13** Dialysis access used for adult patients incident to KRT in 2020 by age group (2020 Multisite Dialysis Access Audit)

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 2020 by primary renal disease (2020 Multisite Dialysis Access Audit)

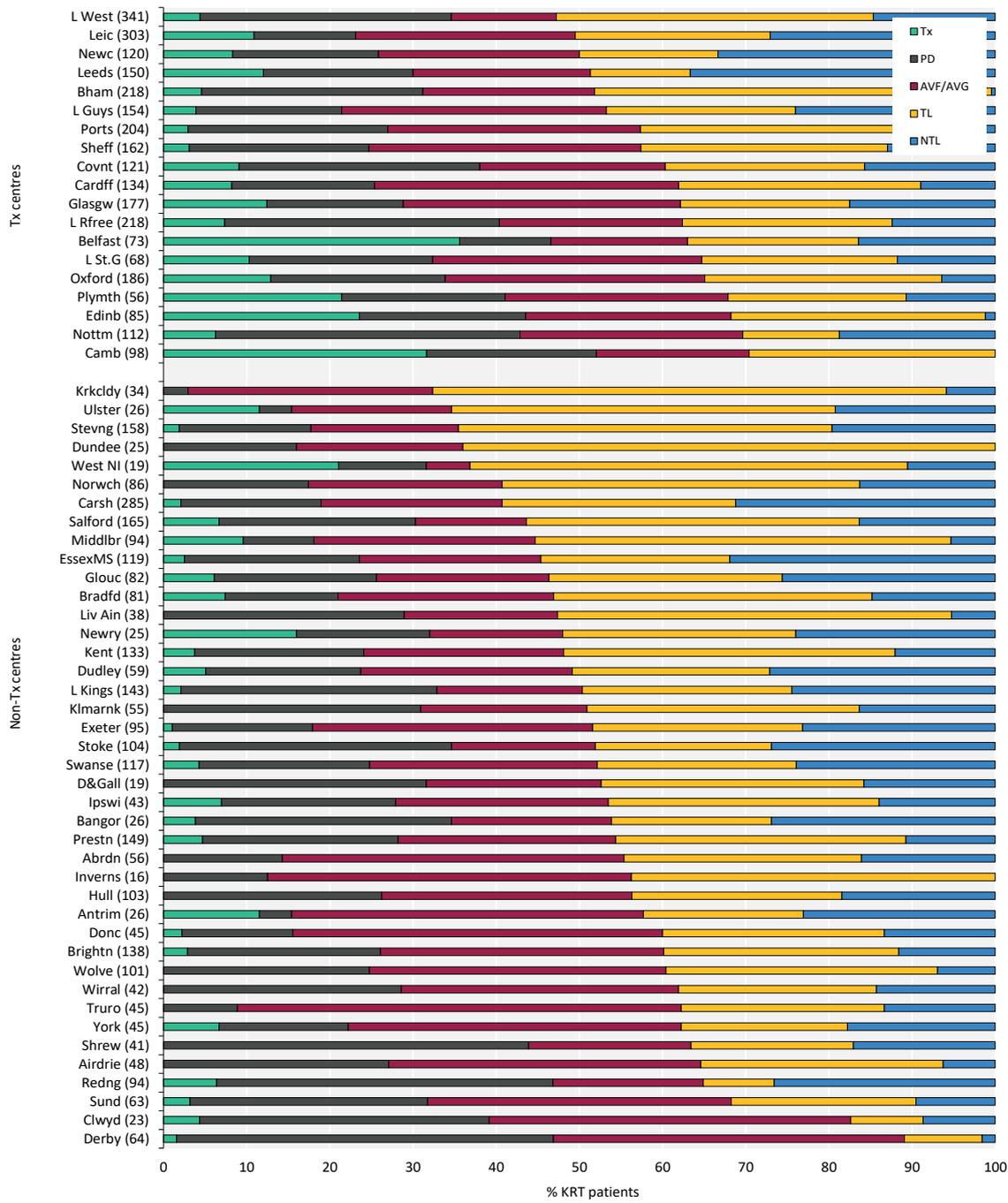
AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line



**Figure 2.15** Dialysis access used for adult patients incident to KRT in 2020 by presentation time (2020 Multisite Dialysis Access Audit)

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. For West NI and Birmingham, not all contributing centres submitted vascular access data, so the number of patients on dialysis is lower than presented elsewhere in the report.



**Figure 2.16** First dialysis access used for adult patients incident to KRT in 2020 by centre (2020 Multisite Dialysis Access Audit)

Number of incident patients on KRT in a centre in brackets.

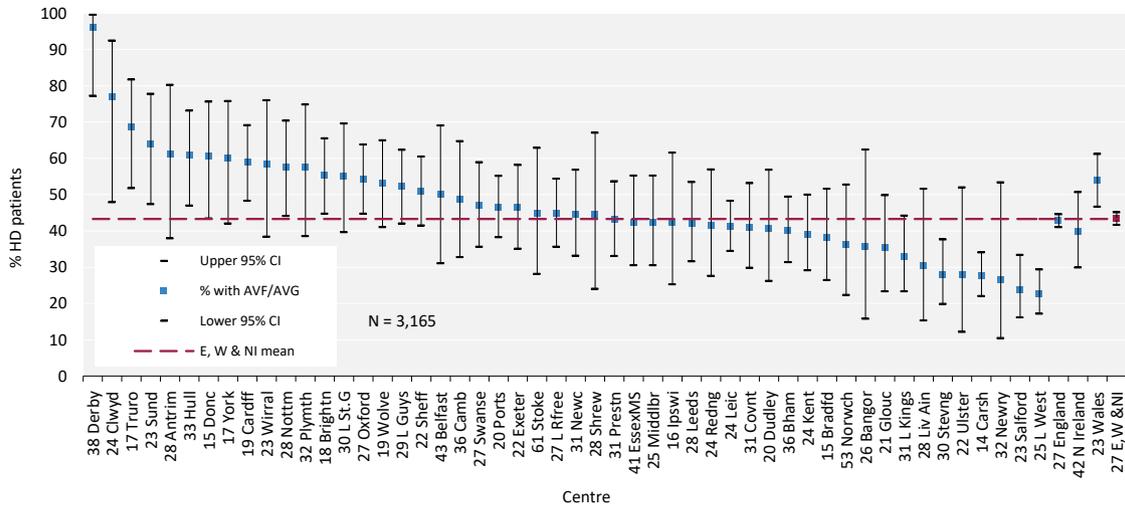
Centres are ordered by decreasing use of lines.

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 2020 by presentation time before start of dialysis by centre (2020 Multisite Dialysis Access Audit)

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	19	5.3	57.9	26.3	10.5	4	0.0	0.0	0.0	100.0	84.6	3.8	11.5
Bangor	22	36.4	22.7	22.7	18.2	3	0.0	0.0	0.0	100.0	65.4	30.8	3.8
Belfast	31	22.6	38.7	19.4	19.4	16	6.3	0.0	56.3	37.5	53.4	11.0	35.6
Bham	163	32.5	27.0	40.5	0.0	45	11.1	2.2	84.4	2.2	68.8	26.6	4.6
Bradfd	66	16.7	31.8	39.4	12.1	9	0.0	0.0	55.6	44.4	79.0	13.6	7.4
Brightn	115	26.1	40.9	27.0	6.1	19	10.5	0.0	42.1	47.4	73.9	23.2	2.9
Camb	55	36.4	30.9	32.7	0.0	12	0.0	8.3	91.7	0.0	48.0	20.4	31.6
Cardff	106	21.7	46.2	28.3	3.8	16	0.0	0.0	56.3	43.8	74.6	17.2	8.2
Carsh	253	17.0	22.9	26.1	34.0	26	19.2	15.4	53.8	11.5	81.1	16.8	2.1
Clwyd	21	38.1	47.6	4.8	9.5	1	0.0	0.0	100.0	0.0	60.9	34.8	4.3
Covnt	100	34.0	27.0	26.0	13.0	10	10.0	0.0	30.0	60.0	62.0	28.9	9.1
Derby	53	50.9	47.2	1.9	0.0	10	20.0	20.0	50.0	10.0	53.1	45.3	1.6
Donc	38	13.2	52.6	28.9	5.3	6	16.7	0.0	16.7	66.7	84.4	13.3	2.2
Dudley	48	22.9	31.3	25.0	20.8	8	0.0	0.0	25.0	75.0	76.3	18.6	5.1
EssexMS	80	26.3	31.3	23.8	18.8	34	8.8	2.9	20.6	67.6	76.5	21.0	2.5
Exeter	84	17.9	38.1	23.8	20.2	10	10.0	0.0	40.0	50.0	82.1	16.8	1.1
Glouc	63	23.8	27.0	28.6	20.6	14	7.1	0.0	35.7	57.1	74.4	19.5	6.1
Hull	75	32.0	41.3	20.0	6.7	28	10.7	0.0	39.3	50.0	73.8	26.2	0.0
Ipswi	31	16.1	35.5	38.7	9.7	7	28.6	0.0	28.6	42.9	72.1	20.9	7.0
Kent	109	24.8	29.4	37.6	8.3	19	0.0	0.0	63.2	36.8	75.9	20.3	3.8
L Guys	115	21.7	40.9	22.6	14.8	32	3.1	6.3	28.1	62.5	78.6	17.5	3.9
L Kings	111	31.5	22.5	27.0	18.9	29	31.0	0.0	20.7	48.3	67.1	30.8	2.1
L Rfree	176	40.3	26.7	24.4	8.5	26	3.8	3.8	46.2	46.2	59.6	33.0	7.3
L St.G	53	24.5	41.5	22.6	11.3	8	25.0	0.0	50.0	25.0	67.6	22.1	10.3
L West	279	35.1	14.7	38.4	11.8	47	10.6	4.3	48.9	36.2	65.4	30.2	4.4
Leeds	102	25.5	31.4	11.8	31.4	30	3.3	0.0	20.0	76.7	70.0	18.0	12.0
Leic	228	15.8	34.6	24.1	25.4	42	2.4	2.4	38.1	57.1	76.9	12.2	10.9
Liv Ain	33	30.3	21.2	45.5	3.0	5	20.0	0.0	60.0	20.0	71.1	28.9	0.0
Middlbr	67	11.9	37.3	44.8	6.0	18	0.0	0.0	94.4	5.6	81.9	8.5	9.6
Newc	85	23.5	34.1	17.6	24.7	25	4.0	0.0	20.0	76.0	74.2	17.5	8.3
Newry	19	21.1	21.1	36.8	21.1	2	0.0	0.0	0.0	100.0	68.0	16.0	16.0
Norwch	51	29.4	25.5	41.2	3.9	27	0.0	11.1	48.1	40.7	82.6	17.4	0.0
Nottm	90	42.2	33.3	12.2	12.2	15	20.0	0.0	13.3	66.7	57.1	36.6	6.3
Oxford	138	25.4	40.6	28.3	5.8	24	16.7	8.3	58.3	16.7	66.1	21.0	12.9
Plymth	36	27.8	41.7	22.2	8.3	7	14.3	0.0	42.9	42.9	58.9	19.6	21.4
Ports	177	26.0	34.5	30.5	9.0	20	10.0	5.0	60.0	25.0	73.0	24.0	2.9
Prestn	114	24.6	32.5	37.7	5.3	28	25.0	7.1	32.1	35.7	71.8	23.5	4.7
Redng	74	44.6	23.0	10.8	21.6	14	35.7	0.0	0.0	64.3	53.2	40.4	6.4
Salford	129	27.9	17.1	44.2	10.9	25	12.0	0.0	36.0	52.0	69.7	23.6	6.7
Sheff	138	24.6	38.4	27.5	9.4	19	5.3	0.0	52.6	42.1	75.3	21.6	3.1
Shrew	36	50.0	22.2	13.9	13.9	5	0.0	0.0	60.0	40.0	56.1	43.9	0.0
Stevng	122	20.5	22.1	47.5	9.8	33	0.0	3.0	39.4	57.6	82.3	15.8	1.9
Stoke	50	42.0	26.0	14.0	18.0	12	25.0	8.3	0.0	66.7	65.4	32.7	1.9
Sund	53	32.1	43.4	22.6	1.9	8	12.5	0.0	25.0	62.5	68.3	28.6	3.2
Swanse	91	25.3	35.2	22.0	17.6	21	4.8	0.0	38.1	57.1	75.2	20.5	4.3
Truro	39	10.3	61.5	17.9	10.3	6	0.0	0.0	66.7	33.3	91.1	8.9	0.0
Ulster	19	5.3	26.3	52.6	15.8	4	0.0	0.0	50.0	50.0	84.6	3.8	11.5
West NI	10	20.0	10.0	60.0	10.0	5	0.0	0.0	80.0	20.0	68.4	10.5	21.1
Wirral	35	31.4	40.0	22.9	5.7	7	14.3	0.0	28.6	57.1	71.4	28.6	0.0
Wolve	89	28.1	38.2	27.0	6.7	12	0.0	16.7	75.0	8.3	75.2	24.8	0.0
York	37	18.9	48.6	16.2	16.2	5	0.0	0.0	60.0	40.0	77.8	15.6	6.7
<b>Total</b>	<b>4,328</b>	<b>26.9</b>	<b>31.7</b>	<b>28.3</b>	<b>13.2</b>	<b>858</b>	<b>9.4</b>	<b>3.1</b>	<b>43.1</b>	<b>44.3</b>	<b>71.2</b>	<b>22.5</b>	<b>6.3</b>

Centres with <70% access or time of referral data were excluded. Start modality breakdown includes patients with missing referral time. AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line



**Figure 2.17** Percentage of adult patients incident to HD in 2020 who started dialysis using either an arteriovenous fistula (AVF) or an arteriovenous graft (AVG) by centre, excluding late presenters (2020 Multisite Dialysis Access Audit)

Centres with <70% completeness of access data for all dialysis patients were excluded. No further exclusion for completeness in HD patients was applied. Therefore, data completeness for some centres is less than in other caterpillar plots in this report.  
 CI – confidence interval

### Survival in incident adult KRT patients

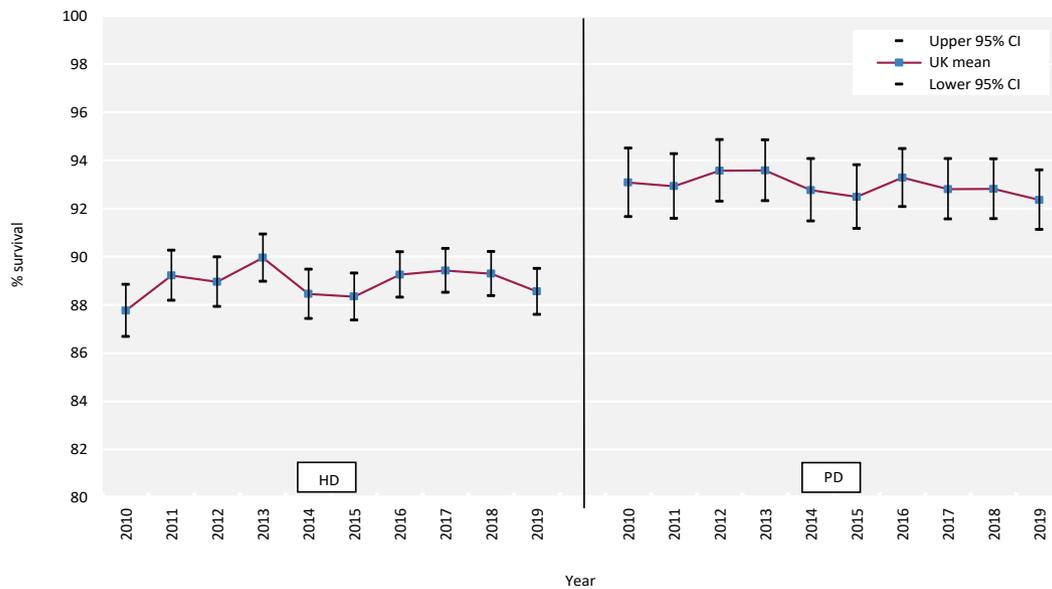
The survival of patients who started KRT for ESKD is described, with primary focus on the one year incident to KRT in 2019 cohort, followed up for a year. Some analyses used rolling incident cohorts over several years (two years or more as stated) to increase cohort patient numbers and more reliably 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).

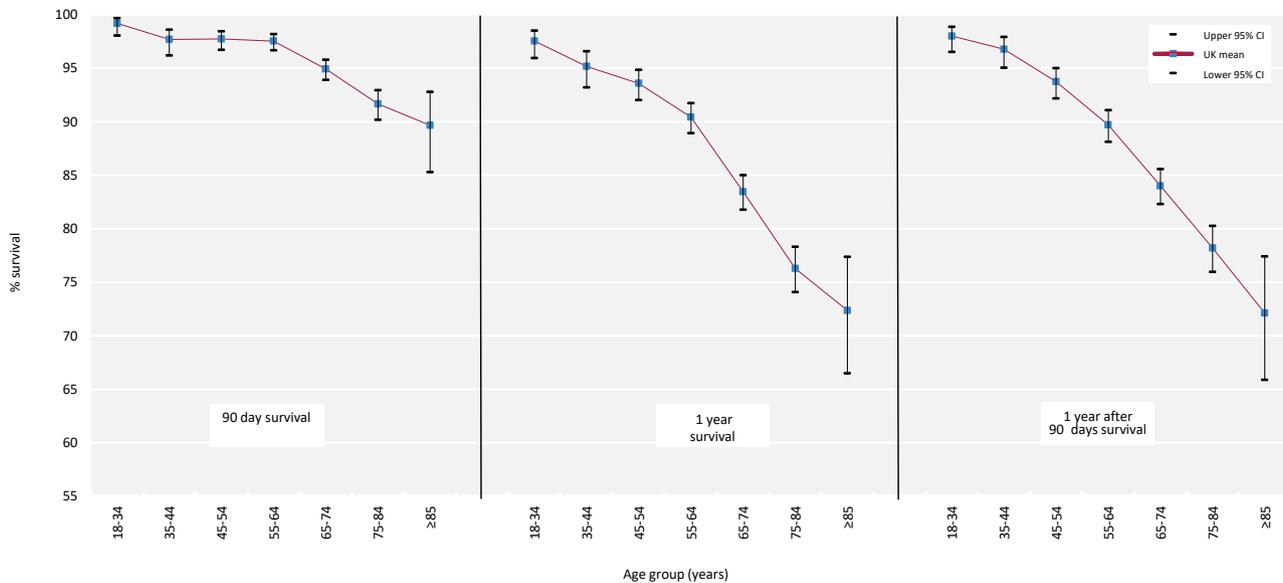
**Table 2.17** 90 days and 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients (2018–2019 2 year cohort) by country

Interval	England	N Ireland	Scotland	Wales	UK
Survival at 90 days (%)	96.5	98.1	96.7	98.3	96.7
95% CI	96.2-96.8	97.1-99.1	95.8-97.6	97.5-99.0	96.3-97.0
Survival 1 year after 90 days (%)	90.7	92.4	90.7	88.8	90.6
95% CI	90.1-91.2	90.4-94.6	89.2-92.3	86.9-90.8	90.1-91.1

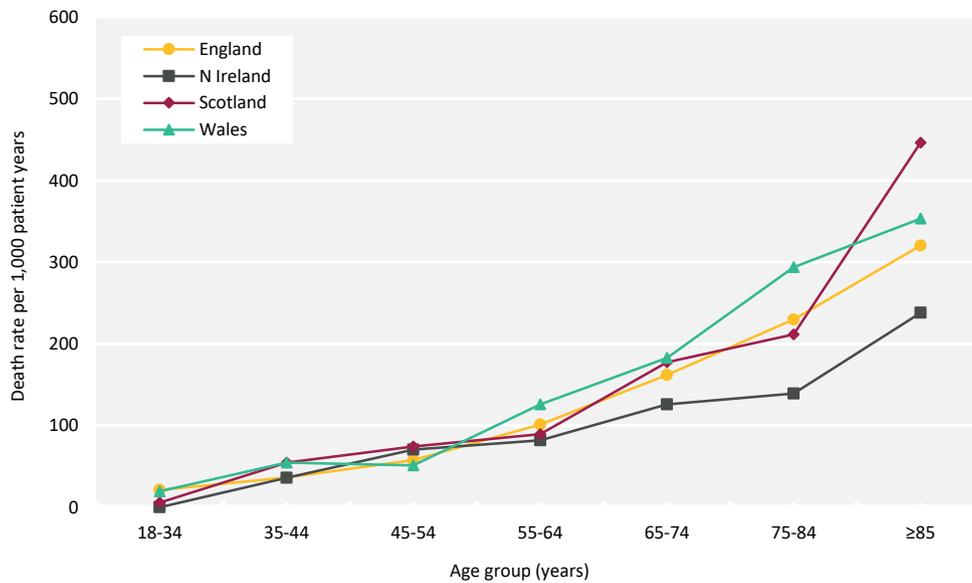
CI – confidence interval



**Figure 2.18** 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients by start modality between 2010 and 2019  
CI – confidence interval

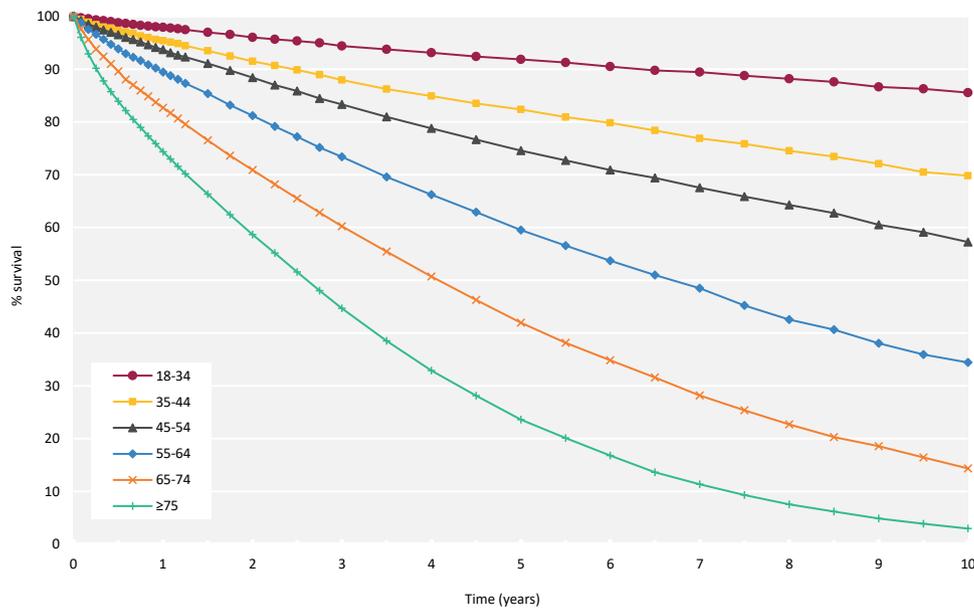


**Figure 2.19** 90 days, 1 year and 1 year after 90 days survival of incident adult KRT patients by age group (2019 cohort)  
CI – confidence interval

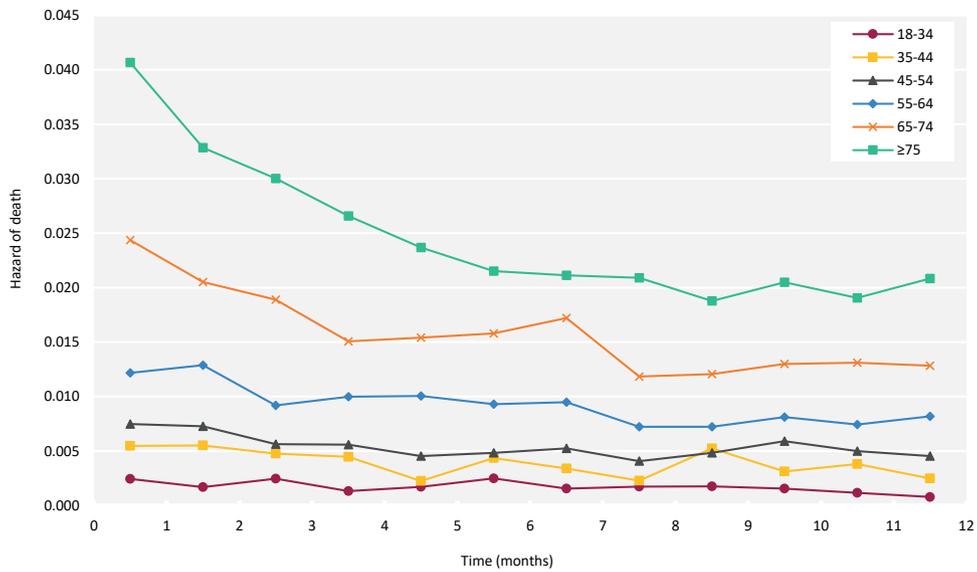


**Figure 2.20** 1 year after 90 days death rate per 1,000 incident KRT adult patient years by age group and country (2016–2019 4 year cohort)

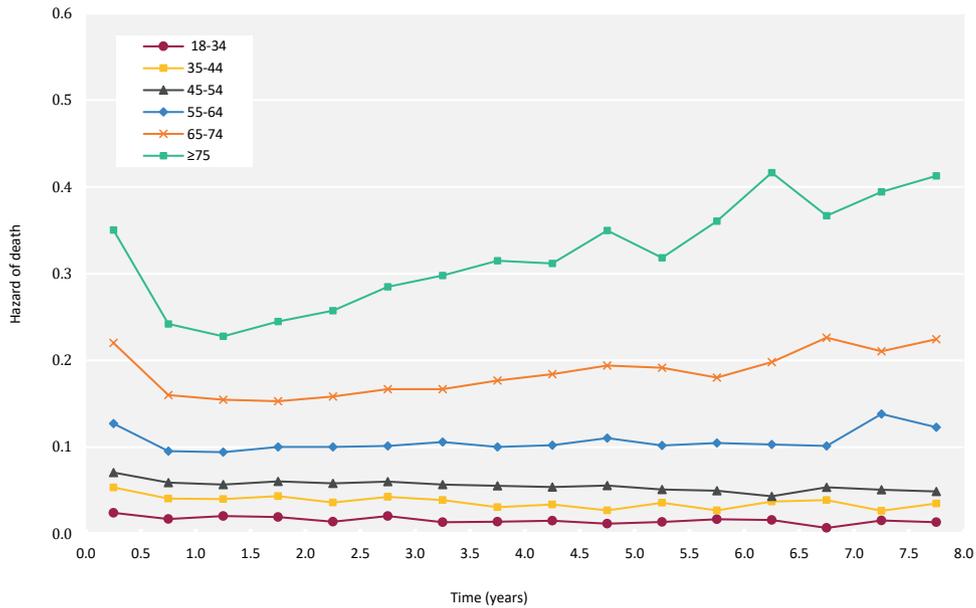
A ten year rolling cohort was used to analyse the long term survival of incident patients from start of KRT (day 0), according to age at KRT start (figure 2.21), with median survival identifiable from the y-axis. The same cohort was used in analyses of the monthly and six monthly hazard of death on KRT 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 (2010–2019 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 (2010–2019 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 (2010–2019 10 year cohort)

**Table 2.18** Survival (unadjusted) of incident adult KRT patients aged <65 years (2000–2019)

Cohort	Unadjusted survival (%)										95% CI for latest year	N	
	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr	7 yr	8 yr	9 yr	10 yr			
<b>2019</b>	<b>93.1</b>											<b>92.3-93.8</b>	<b>4,164</b>
2018	92.9	86.9										85.8-87.9	4,250
2017	93.0	87.2	81.5									80.3-82.7	4,236
2016	92.9	87.5	82.0	77.1								75.7-78.4	4,016
2015	92.2	86.4	81.4	76.8	72.5							71.1-73.9	3,920
2014	92.8	86.8	81.3	76.9	73.2	69.1						67.5-70.6	3,668
2013	93.7	88.2	83.1	77.6	73.1	68.4	64.3					62.7-65.9	3,572
2012	93.1	87.3	81.8	76.7	72.4	68.4	64.7	60.6				58.9-62.2	3,522
2011	93.2	88.6	83.5	78.9	74.4	70.8	67.5	64.5	60.5			58.8-62.2	3,341
2010	92.2	86.6	81.7	77.2	72.7	69.4	66.2	62.3	59.3	56.4		54.7-58.1	3,362
2009	91.3	85.0	80.3	76.2	71.0	66.9	63.7	60.2	57.2	54.4		52.7-56.1	3,384
2008	91.5	86.0	81.1	76.8	73.2	69.5	65.5	62.2	59.2	56.2		54.5-57.9	3,448
2007	92.5	87.0	81.8	76.8	73.0	69.3	65.9	62.6	59.2	56.2		54.5-57.9	3,326
2006	90.6	85.0	80.0	75.6	71.8	68.0	63.8	60.9	57.8	55.2		53.4-56.9	3,155
2005	89.6	83.6	78.5	73.8	69.1	65.5	62.4	59.4	56.3	53.7		51.9-55.6	2,829
2004	89.6	83.3	77.9	72.5	67.8	64.0	60.8	57.0	54.5	52.9		50.9-54.8	2,534
2003	89.3	82.5	77.2	72.4	67.1	62.8	59.2	56.4	53.8	51.3		49.1-53.4	2,177
2002	88.8	81.0	75.1	69.5	65.3	61.3	57.8	54.8	51.7	49.5		47.3-51.7	1,980
2001	88.0	81.0	75.5	70.0	65.3	60.6	56.6	53.2	50.3	48.2		45.7-50.6	1,679
2000	89.1	80.9	74.1	69.1	63.5	58.9	55.3	52.3	49.9	47.3		44.7-49.8	1,472

CI – confidence interval

**Table 2.19** Survival (unadjusted) of incident adult KRT patients aged ≥65 years (2000–2019)

Cohort	Unadjusted survival (%)										95% CI for latest year	N	
	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr	7 yr	8 yr	9 yr	10 yr			
2019	79.8											78.5-81.1	3,926
2018	79.3	65.3										63.7-66.8	3,816
2017	79.3	67.4	53.5									51.9-55.1	3,829
2016	80.0	65.1	52.7	40.3								38.7-41.8	3,758
2015	78.2	64.8	52.2	41.9	32.0							30.5-33.5	3,808
2014	78.5	64.2	52.2	41.3	32.9	26.2						24.8-27.7	3,589
2013	78.5	64.6	53.1	42.9	34.5	27.6	20.7					19.3-22.1	3,437
2012	77.2	65.1	54.2	44.0	35.4	27.7	21.9	17.1				15.8-18.4	3,327
2011	77.1	62.7	51.2	41.1	32.4	24.7	18.9	14.5	11.1			10.1-12.2	3,351
2010	76.0	63.1	51.2	41.8	32.2	25.4	19.7	14.5	11.2	8.3		7.3-9.3	3,280
2009	76.4	63.1	52.4	41.5	32.8	26.1	20.1	15.3	11.2	8.2		7.3-9.2	3,374
2008	74.6	61.0	49.7	40.3	32.0	25.6	20.4	16.0	12.0	9.0		8.0-10.0	3,177
2007	74.9	61.2	49.6	40.4	31.8	25.3	20.1	15.4	11.8	9.1		8.2-10.2	3,218
2006	72.0	58.2	46.9	37.2	28.9	23.0	17.5	13.4	10.6	8.4		7.5-9.5	3,112
2005	71.2	57.3	45.4	36.3	27.9	21.2	16.6	12.5	9.9	7.8		6.8-8.8	2,941
2004	68.9	54.0	42.2	33.9	26.7	20.8	16.1	12.8	9.7	7.4		6.5-8.5	2,598
2003	68.3	53.3	41.4	31.7	24.4	18.1	14.0	10.8	8.2	6.5		5.5-7.6	2,228
2002	65.9	50.9	40.4	31.8	24.0	18.4	13.7	10.9	8.1	6.4		5.4-7.5	2,038
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
2000	66.2	52.1	39.6	28.8	22.1	16.9	12.9	9.3	7.2	5.3		4.2-6.6	1,422

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, it would be expected that three centres would fall outside the 95% (1 in 20) confidence limit, entirely by chance.

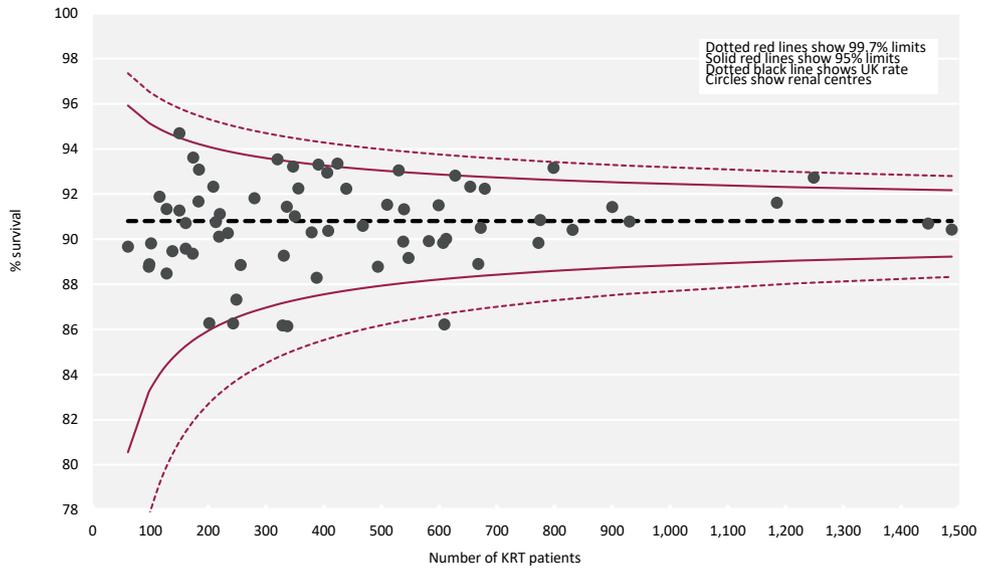
**Table 2.20** 1 year after 90 days adjusted survival (60 years, male and median comorbidity score) of incident adult KRT patients by centre (2016–2019 4 year cohort)

Centre	Age adjusted survival				Case-mix adjusted survival <sup>1</sup>			
	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	61	89.7	80.6	95.9				
Clwyd	97	88.8	83.2	95.2	97	89.4	83.2	95.2
Bangor	98	88.9	83.3	95.1	98	90.0	83.3	95.2
Inverns	101	89.8	83.4	95.1				
Newry	116	91.9	84.0	94.9	113	88.7	83.9	94.9
Ulster	128	91.3	84.4	94.7	128	89.0	84.4	94.7
Wrexm	128	88.5	84.4	94.7	128	87.6	84.4	94.7
Carlisle	138	89.5	84.7	94.6	136	89.1	84.7	94.7
West NI	150	94.7	85.0	94.5	150	92.7	85.0	94.5
Colchr	150	91.3	85.0	94.5	148	91.6	85.0	94.5
Krkldy	161	90.7	85.3	94.4				
Dundee	161	89.6	85.3	94.4				
Klmarnk	173	89.4	85.5	94.3				
Antrim	174	93.6	85.5	94.3	159	91.6	85.2	94.4
Abrdn	183	91.7	85.7	94.2				
Ipswi	184	93.1	85.7	94.2	175	92.9	85.5	94.3
Liv Ain	202	86.3	86.0	94.1	201	87.5	86.0	94.1
Dudley	209	92.3	86.1	94.0	209	93.0	86.1	94.1
Truro	213	90.8	86.1	94.0	212	90.5	86.1	94.0
Donc	219	90.1	86.2	94.0	217	89.5	86.2	94.0
Wirral	220	91.1	86.2	94.0	220	92.3	86.2	94.0
York	234	90.3	86.4	93.9	234	90.4	86.4	93.9
Plymth	243	86.3	86.5	93.8	239	86.7	86.4	93.9
Shrew	249	87.3	86.5	93.8	249	87.6	86.5	93.8
Airdrie	256	88.9	86.6	93.8				
Glouc	280	91.8	86.8	93.7	276	91.9	86.8	93.7
Belfast	320	93.5	87.1	93.5				
Wolve	329	86.2	87.2	93.5	329	86.8	87.2	93.5
Bradfd	331	89.3	87.2	93.5	331	89.7	87.2	93.5
L St.G	336	91.4	87.2	93.5	321	91.4	87.1	93.5
Sund	337	86.1	87.2	93.5	337	89.1	87.2	93.5
Derby	347	93.2	87.3	93.4	347	93.4	87.3	93.4
Dorset	350	91.0	87.3	93.4	349	90.5	87.3	93.4
Norwch	356	92.2	87.3	93.4	355	91.5	87.3	93.4
Hull	379	90.3	87.5	93.3	379	90.4	87.5	93.3
Stoke	388	88.3	87.5	93.3	385	89.3	87.5	93.3
Redng	391	93.3	87.5	93.3	391	93.7	87.5	93.3
Camb	406	93.0	87.6	93.3	406	92.2	87.6	93.3
Liv Roy	408	90.4	87.6	93.3	396	91.2	87.5	93.3
Edinb	424	93.3	87.7	93.2				

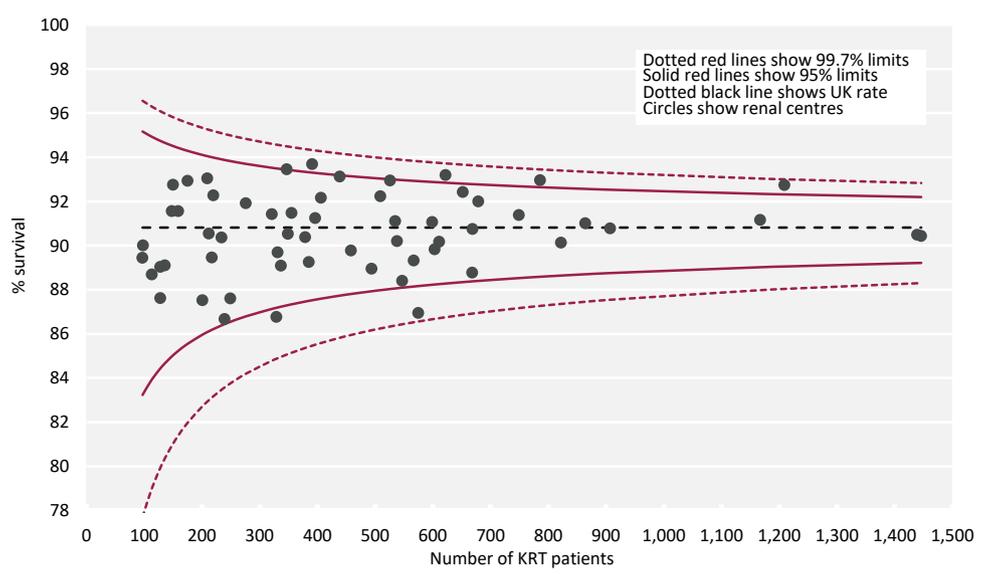
**Table 2.20** Continued

Centre	Age adjusted survival				Case-mix adjusted survival <sup>1</sup>			
	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
Middlbr	439	92.2	87.7	93.2	439	93.1	87.7	93.2
Covnt	468	90.6	87.8	93.1	458	89.8	87.8	93.1
Nottm	494	88.8	87.9	93.1	494	89.0	87.9	93.1
Newc	510	91.5	88.0	93.0	509	92.2	88.0	93.0
Essex MS	530	93.1	88.0	93.0	526	92.9	88.0	93.0
Swanse	538	89.9	88.1	93.0	538	90.2	88.1	93.0
Exeter	539	91.3	88.1	93.0	535	91.1	88.1	93.0
Kent	547	89.2	88.1	93.0	547	88.4	88.1	93.0
Brightn	582	89.9	88.2	92.9	567	89.3	88.1	92.9
Stevng	599	91.5	88.2	92.9	599	91.1	88.2	92.9
Bristol	607	89.8	88.2	92.9	603	89.8	88.2	92.9
Prestn	609	86.2	88.2	92.9	575	86.9	88.2	92.9
Sheff	612	90.0	88.2	92.9	611	90.2	88.3	92.9
L Kings	628	92.8	88.3	92.8	622	93.2	88.3	92.8
Leeds	654	92.3	88.3	92.8	652	92.4	88.3	92.8
Cardff	668	88.9	88.4	92.8	668	88.8	88.4	92.8
Salford	672	90.5	88.4	92.8	669	90.7	88.4	92.8
L Guys	679	92.2	88.4	92.8	679	92.0	88.4	92.8
Glasgw	772	89.8	88.6	92.6				
M RI	775	90.8	88.6	92.6	749	91.4	88.5	92.7
Oxford	798	93.2	88.6	92.6	786	93.0	88.6	92.6
Ports	831	90.4	88.6	92.6	822	90.1	88.6	92.6
Carsh	900	91.4	88.7	92.5	864	91.0	88.7	92.6
L Rfree	930	90.8	88.8	92.5	907	90.8	88.8	92.5
Leic	1,185	91.6	89.0	92.3	1,167	91.2	89.0	92.3
L Barts	1,249	92.7	89.1	92.3	1,209	92.7	89.1	92.3
Bham	1,447	90.7	89.2	92.2	1,439	90.5	89.2	92.2
L West	1,488	90.4	89.2	92.2	1,446	90.4	89.2	92.2

<sup>1</sup>Centres excluded if <85% comorbidity data were available – this included Belfast and all Scottish kidney centres.



**Figure 2.24** 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients by centre (2016–2019 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 (2016–2019 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 (2016–2019 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	224	25.1	29.0	23.9	495	20.6	25.0	18.8
Cerebrovascular disease	31	3.5	5.5	2.8	108	4.5	6.3	3.8
Infection	163	18.3	20.3	17.6	471	19.6	21.4	18.9
Malignancy	66	7.4	7.4	7.4	217	9.0	7.9	9.5
Treatment withdrawal	158	17.7	7.8	20.9	460	19.1	13.3	21.6
Other	190	21.3	24.0	20.4	482	20.1	20.1	20.0
Uncertain aetiology	60	6.7	6.0	7.0	170	7.1	6.1	7.5
<b>Total (with data)</b>	<b>892</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>2,403</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Missing	588	39.7	40.4	40.4	1,151	32.4	31.9	32.6