



UK Kidney Association  
UK Renal Registry

# UK Renal Registry 24th Annual Report

Data to 31/12/2020

Chronic kidney disease

Incidence of KRT

Prevalence of KRT

Transplant

In-centre haemodialysis

Peritoneal dialysis

Home haemodialysis

Paediatrics

# UK Renal Registry 24th Annual Report

Data to 31/12/2020

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## Summary of the UKRR 24th Annual Report – adults

UK Renal Registry (2022) UK Renal Registry Summary of Annual Report – analyses of adult data to the end of 2020, Bristol, UK.  
Available from <https://ukkidney.org/audit-research/annual-report>

## Summary of the UKRR 24th Annual Report – children and young people

UK Renal Registry (2022) UK Renal Registry Summary of Annual report – analyses of paediatric data to the end of 2020, Bristol, UK.  
Available from <https://ukkidney.org/audit-research/annual-report>

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# Foreword



*Professor James Medcalf  
Medical director, The UK Kidney Association*

When writing this years' UK Renal Registry (UKRR) annual report - and despite all the disruption from COVID-19 - we were keen to maintain our focus on the measures we have refined over many years and most recently co-produced with Renal Getting it Right First Time (GIRFT), and the Renal Services Transformation Programme (RSTP). These measures are all presented here, but in fact the unifying theme (described in every chapter) is the major impact that the first 9 months of COVID-19 had on kidney care, and therefore kidney patients themselves.

In this report we describe a significant drop in the incidence of kidney replacement therapy (KRT) – driven in large part by a reduction in the number of people > 65yrs of age starting KRT. Whether this was people 'putting off' KRT or dying before they were established on KRT will be clearer in later years.

We also report fewer people having a kidney transplant, and in contrast a greater proportion (if not actually more people) started KRT by performing their own peritoneal dialysis. Whilst we all hope for an increase in the number of people transplanted, this increase in proportion of those starting with a home dialysis (for those suitable and who want it) would be welcome if it continued. These two goals remain a key aspiration of many renal networks.

By the publication of the next annual report there will have been a significant change in the way renal services are commissioned – with a devolution of responsibility to regional integrated care systems. Collecting comparative information on renal services and presenting it in a usable format and in a timely manner will remain essential to highlight any variation and inequality. Some high-level measures have been agreed and will be co-presented with RSTP. However, the UKRR also remain committed to producing a wider range of measures reflecting the broadest possible kidney pathway to allow clinicians to guide good planning decisions.

Thank you to all the renal centres again for your support in providing the data which makes up this report. I hope you feel able to challenge us too if you think we are getting things wrong. I look forward to continuing to work together as we move to 'timely data' (with more centres now adopting the UKRDC), and the wider pathway (focusing on advanced CKD care, KRT preparation and choice).

A handwritten signature in black ink that reads "J. Medcalf".

**Professor James Medcalf**  
Medical director, The UK Kidney Association, July 2022

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Appendix A	Definitions and methodologies used in the 24th Annual Report – data to the end of 2020
Appendix B	Integrated Care System (ICS) and health board (HB) adult incidence and prevalence numbers, rates and standardised ratios – data to the end of 2019

# Introduction: The UK Renal Registry's 24th Annual Report

The UK Renal Registry (UKRR) collects and reports data annually on approximately 70,000 kidney patients on kidney replacement therapy (KRT) in the UK. The annual report is an audit of the care provided to these patients at each of the 68 adult and 13 paediatric centres against national standards, in particular, the UK Kidney Association's guidelines – [ukkidney.org/health-professionals/guidelines/guidelines-commentaries](http://ukkidney.org/health-professionals/guidelines/guidelines-commentaries).

The 24th Annual Report includes patients who started KRT in 2020, as well as all patients who were on KRT at the end of 2020. The chapters are split by treatment modality (transplant, in-centre haemodialysis, peritoneal dialysis and home haemodialysis), as well as by adults and children. The online appendices cover the methodologies, including how data are collected and coded (appendix A) and include basic analyses at Integrated Care System and health board level (appendix B) – [ukkidney.org/audit-research/annual-report](http://ukkidney.org/audit-research/annual-report). Plain English summaries of the annual report have been developed in partnership with the UK Kidney Association's Patient Council and all graphs used in the report are available for use in presentations – [ukkidney.org/audit-research/annual-report](http://ukkidney.org/audit-research/annual-report).

## How to interpret centre analyses and outlying centres

The UKRR advises caution when comparing centre-specific attainment of clinical audit measures, because for many of these analyses no adjustment can be made for the range of factors known to influence the measured variable. The UKRR does not test for significant differences between centres – arbitrary 95% and 99% confidence intervals are created from the data to illustrate variability between centres and highlight outlying centres. Centre comparisons will become more meaningful when more comorbidity data (via linkages) and advanced CKD data are included to understand differences in the transition of patients onto both RRT and conservative non-dialysis pathways. Despite these shortcomings, identifiable centre-specific analyses on the survival of KRT patients are published in the annual report. Although the UKRR has no statutory powers, the UKRR senior management team communicates survival outlier status with kidney centres prior to publication. Centres are asked to report their outlying status internally at trust level and to follow-up with robust mortality and morbidity meetings. They are also asked to provide evidence that the clinical governance department and chief executive of the trust housing the service have been informed. In the event that no such evidence is provided, the chief executive officer or medical director of the UKRR informs the president of the UK Kidney Association, who then takes action to ensure that the findings are properly investigated.

## *Chapter 1*

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**Adults with chronic kidney disease (CKD) and estimated glomerular filtration rate (eGFR) <30mL/min/1.73m<sup>2</sup> in the UK at the end of 2020**

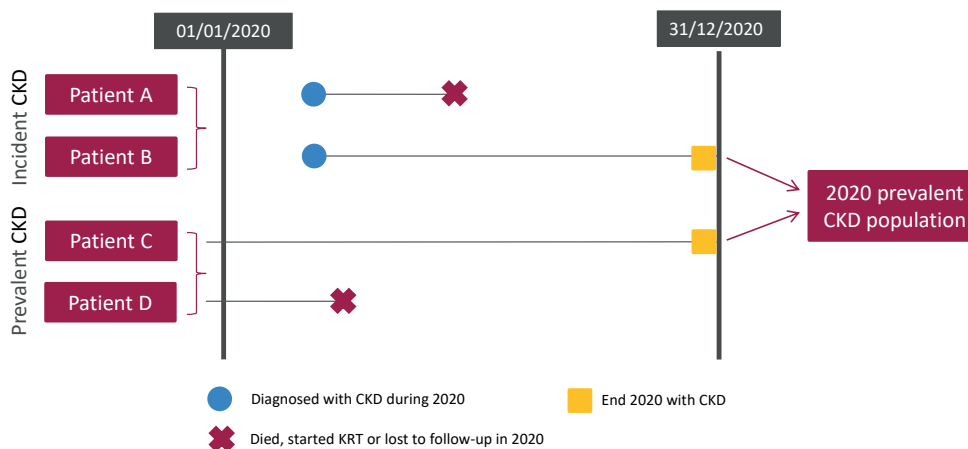
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## Introduction

This is the second year the UKRR has published data in the annual report about patients with chronic kidney disease (CKD) outside the context of kidney replacement therapy (KRT) or acute kidney injury (AKI). The primary aim of this chapter is to present the demographic and clinical features of patients receiving treatment for CKD stages G4 and 5 at UK kidney centres at the end of 2020 (figure 1.1). A ‘2020 prevalent CKD population’ is described, comprising individuals who:

- were reported by an adult kidney centre as receiving treatment for CKD at the end of 2020, and
- had an eGFR of  $<30\text{mL}/\text{min}/1.73\text{m}^2$  on their last recorded creatinine measurement.



**Figure 1.1** Pathways adult patients could follow to be included in the UK 2020 prevalent CKD population

Auditable aspects of care for this population are highlighted and described. For the purpose of this chapter, individuals are categorised as having CKD stage G5 (estimated glomerular filtration rate [eGFR]  $<15\text{ mL}/\text{min}/1.73\text{m}^2$ ) or CKD stage G4 (eGFR  $15\text{--}29\text{ mL}/\text{min}/1.73\text{m}^2$ ) using their last recorded creatinine measurement. Patients whose last measurement was over two years old are included, but are reported as ‘CKD stage unknown’. Further categorisation, e.g. by eGFR trend or albuminuria is not possible using UKRR data.

Information about completeness of primary renal disease (PRD) data are presented. Whilst PRD data are known to be incomplete, no triangulation was performed using other datasets available to the UKRR, e.g. Hospital Episode Statistics (HES). The UKRR is developing approaches to combine CKD and AKI reporting systems with HES and will publish these elsewhere. Data relating to survival and initiation of KRT/conservative care (CC) are also being prepared separately.

It is important to highlight that the individuals described in this chapter represent a sub-population of those with CKD in the UK. Many individuals with diagnosed CKD receive care without referral to a kidney centre, particularly those with earlier stages. Furthermore, not all kidney centres are yet submitting CKD data to the UKRR. For this reason, it is not appropriate to generalise findings from this chapter to the wider CKD population, even to those cared for in kidney centres.

Consequently, this CKD chapter asks simple questions:

- Which individuals with CKD are currently reported to the UKRR?
- What data are captured and which aspects of CKD care can be audited using them?



## Rationale for analyses

Since 2016, kidney centres in England and Wales have been asked by the National Clinical Reference Group to report individuals with CKD under their care to the UKRR. In 2020 the UKRR received data from 19 units of the 54 adult centres in England and Wales (two more than in 2019).

Reliable estimates of CKD prevalence in secondary care are required to inform CKD management and policy planning. The presented analyses will be performed annually to help clinicians and policy makers in this task and will be expanded as data quality and quantity improve. 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 with CKD, and where data permit, their attainment by UK kidney centres in 2020 is reported in this chapter (table 1.1). Some audit measures cannot be reported because the completeness of the required data items is too low. Audit measures in guidelines that have been archived are not included. For consistency with other chapters, table 1.1 is provided to outline the addressed UK Kidney Association audit measures. However, data completeness is poor even for the analyses presented, necessitating caution in interpretation. Further detail about the completeness of data returned to the UKRR is available through the UKRR ([data portal ukkidney.org/audit-research/data-portals](http://data.portal.ukkidney.org/audit-research/data-portals)).

**Table 1.1** The UK Kidney Association audit measures relevant to CKD that are reported in this chapter

The UK Kidney Association guideline	Audit criteria	Related analysis/analyses
Commentary on the Kidney Disease Improving Global Outcomes (KDIGO) guideline on the diagnosis, evaluation, prevention and treatment of CKD mineral bone disorder (2018)	Percentage of adult CKD G5 patients with serum calcium above the normal reference range 2.2–2.5 mmol/L	<a href="#">Figure 1.3</a>
Cardiovascular disease in CKD (2008)	Blood pressure in CKD stages G1–4 should be managed according to National Institute for Health and Care Excellence (NICE) guidance: <140/90 mmHg in patients without significant proteinuria and <130/80 mmHg in those with proteinuria or with diabetes	<a href="#">Table 1.4</a> (partly addressed)
Anaemia of CKD (updated 2020)	Proportion of CKD patients with eGFR <30mL/min/1.73m <sup>2</sup> (using CKD-EPI equation) and an annual haemoglobin level measurement	<a href="#">Figure 1.4</a>
	Proportion of CKD stage G4–5 patients with haemoglobin 100–120 g/L	<a href="#">Figures 1.5–1.6</a>
Commentary on the National Institute for Health and Care Excellence (NICE) guideline on KRT and conservative management (2020)	The number of patients with stage G5 CKD who were reported as being under conservative care	<a href="#">Table 1.2</a>

For definitions and methods relating to this chapter see appendix A. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

## Key findings

- Data about patients with CKD stages G4 and 5 who were not on KRT were reported by just 19 of the UK's adult kidney centres.
- The 2020 prevalent CKD population comprised 21,937 patients, with a median age of 77.6 years, compared to a median age of 59.6 years for those on KRT.
- CKD prevalence was 1,191 per million population (pmp) overall, but ranged from 173 to 2,633 pmp between centres. There were also substantial differences in the ages and distribution of disease stages between centres. Such large variation suggests discrepancies in the definitions used for processes of care or reporting of people with CKD between centres.
- The data reported in this chapter highlight the need for improved capture and reporting of CKD data to enable national quality assurance. Concordance with audit measures for the CKD not on KRT population cannot be addressed until this is achieved.

## Analyses

### Stage and demographics of adult CKD patients

For the 19 adult kidney centres, the number of prevalent patients with CKD and eGFR  $\leq 30$  mL/min/1.73m<sup>2</sup> was calculated as a proportion of the estimated centre catchment population (details in appendix A). Only a few centres reported patients with kidney failure as undergoing conservative care (CC). It is not clear whether a CC code means the same thing at all centres and for each patient. In particular, it is unclear which CC codes represent planned KRT for the eventuality of kidney failure, and which represent active treatment for an individual who might otherwise have started KRT. As such, people coded as receiving CC are included throughout this chapter.

**Table 1.2** Number of adult patients prevalent to CKD stages G4 and 5 on 31/12/2020, including those on conservative care (CC) by stage and centre; number of CKD and KRT patients as a proportion of the adult catchment population

Centre	N with CKD	N on CC	Total	% stage			Estimated catchment population (millions)	CKD 2020 crude rate (pmp)	KRT 2020 crude rate (pmp)
				G4	G5	unknown			
Bham <sup>1</sup>	775	46	821	69.9	29.6	0.5	2.04	403	1,605
Camb	160	1	161	62.7	28.6	8.7	0.93	173	1,641
Carlisle	526	79	605	74.0	13.6	12.4	0.25	2,387	1,172
Covnt	1,584	1	1,585	86.8	12.2	1.0	0.79	2,007	1,388
Derby	1,117	3	1,120	82.1	16.2	1.7	0.56	2,010	1,215
Glouc	1,087	1	1,088	87.8	11.2	1.0	0.51	2,148	1,029
L Guys	859	0	859	70.3	29.6	0.1	1.00	860	2,323
L Kings	277	0	277	40.1	59.2	0.7	0.93	299	1,351
L Rfree	1,654	232	1,886	64.2	26.7	9.1	1.32	1,431	1,773
Leic	3,742	1	3,743	81.0	16.3	2.7	2.07	1,807	1,257
Middlbr	528	0	528	63.3	32.6	4.2	0.80	659	1,176
Oxford	2,039	2	2,041	71.6	21.1	7.3	1.44	1,422	1,408
Plymth	1,046	0	1,046	86.4	11.4	2.2	0.40	2,625	1,365
Ports	1,994	0	1,994	75.0	24.6	0.4	1.74	1,148	1,095
Salford	319	1	320	94.1	5.9	0.0	1.14	280	1,105
Stevng	350	97	447	63.1	31.1	5.8	1.10	405	873
Sthend	506	0	506	79.6	19.0	1.4	0.27	1,862	990
Swanse	2,030	25	2,055	86.1	13.9	0.0	0.78	2,633	1,089
Truro	797	58	855	85.6	14.2	0.2	0.36	2,405	1,252
<b>Total</b>	<b>21,390</b>	<b>547</b>	<b>21,937</b>	<b>77.6</b>	<b>19.5</b>	<b>3.0</b>	<b>18.42</b>	<b>1,191</b>	<b>1,363</b>

<sup>1</sup>The catchment population and 2020 crude rate for KRT reflect the combined Bham population (QEH and Heartlands kidney centres), but CKD patients were only reported for QEH.

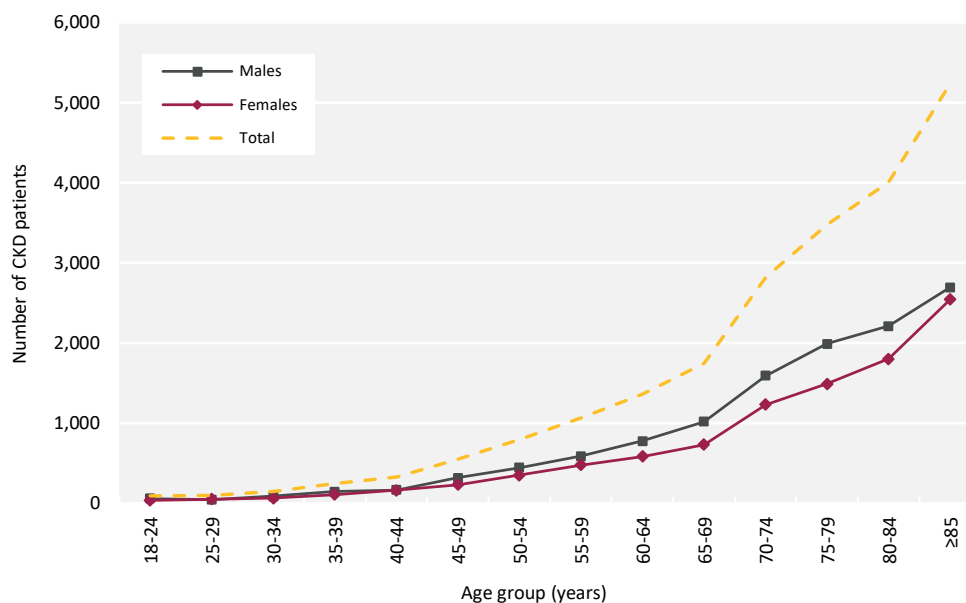
This part of the report includes Southend only (Chelmsford and Basildon do not submit CKD data)

The proportion of patients with CKD and eGFR  $\leq 30$  mL/min/1.73m<sup>2</sup> from each ethnic group is shown for patients with ethnicity data – the proportion of centre patients with no ethnicity is shown separately. The completeness of PRD data varies greatly between centres, making interpretation difficult. PRD completeness is shown for each centre overall and by CKD stage.

**Table 1.3** Demographics and completeness of primary renal disease (PRD) data of adult patients prevalent to CKD stages G4 and 5 on 31/12/2020 by centre

Centre	N with CKD	Median age (yrs)	% male	Ethnicity					PRD completeness		
				% White	% Asian	% Black	% Other	% missing	% all stages	% stage G4	% stage G5
Bham	821	68.0	59.2	60.6	23.8	12.3	3.3	14.1	14.1	5.7	33.3
Camb	161	78.0	51.6	95.4	2.6	0.7	1.3	6.2	49.1	35.6	84.8
Carlisle	605	78.5	50.9	99.6	0.4	0.0	0.0	22.8	14.7	14.7	24.4
Covnt	1,585	79.5	52.4	89.7	8.8	1.5	0.0	7.9	84.4	84.4	84.5
Derby	1,120	77.7	54.4	91.4	5.9	1.4	1.3	12.2	92.6	92.2	96.1
Glouc	1,088	79.8	58.2	94.9	2.5	1.4	1.3	5.2	53.1	51.1	70.5
L Guys	859	71.0	55.6	62.3	7.8	25.0	4.9	23.7	40.9	31.8	62.6
L Kings	277	63.3	56.7	41.7	10.6	44.4	3.2	22.0	22.4	7.2	32.3
L Rfree	1,886	75.8	55.8	57.1	19.6	12.8	10.6	21.7	50.7	49.9	58.6
Leic	3,743	78.8	53.4	81.7	15.3	1.7	1.3	27.8	58.5	56.9	67.7
Middlbr	528	73.5	58.7	94.5	4.7	0.3	0.5	27.5	20.8	17.1	29.7
Oxford	2,041	76.5	58.1	87.6	5.6	2.7	4.1	72.8	15.3	12.4	28.1
Plymth	1,046	80.8	49.2	98.4	0.4	0.1	1.1	4.4	19.3	18.0	28.6
Ports	1,994	76.0	58.1	97.6	1.5	0.4	0.5	37.3	20.0	14.6	36.7
Salford	320	75.9	57.5	85.9	12.7	0.7	0.7	9.1	1.9	1.7	5.3
Stevng	447	82.5	54.1	87.6	7.9	1.7	2.9	45.9	43.2	29.8	70.5
Sthend	506	79.4	56.5	94.6	2.0	1.4	2.0	1.8	33.6	26.6	62.5
Swanse	2,055	79.5	53.9	99.7	0.0	0.3	0.0	83.0	22.3	19.3	40.9
Truro	855	79.8	56.4	98.8	0.4	0.2	0.6	0.2	16.3	12.7	38.0
<b>Total</b>	<b>21,937</b>	<b>77.6</b>	<b>55.2</b>	<b>84.8</b>	<b>8.5</b>	<b>4.4</b>	<b>2.3</b>	<b>30.4</b>	<b>40.0</b>	<b>37.7</b>	<b>51.3</b>

This part of the report includes Southend only (Chelmsford and Basildon do not submit CKD data)



**Figure 1.2** Number of adult patients prevalent to CKD stages G4 and 5 on 31/12/2020 by age group and sex

## Blood pressure in adult CKD patients

Only 7 centres submitted sufficient blood pressure data for analysis (Bham, Derby, Glouc, L Rfree, Plymth, Ports, Swansea).

**Table 1.4** Blood pressures in adult patients prevalent to CKD stages G4 and 5 on 31/12/2020 by stage

	All stages				Stage G4				Stage G5			
	N (%) complete)	Median SBP	Median DBP	N (%) <140/90 <sup>1</sup>	N (%) complete)	Median SBP	Median DBP	N (%) <140/90 <sup>1</sup>	N (%) complete)	Median SBP	Median DBP	N (%) <140/90 <sup>1</sup>
<b>All</b>	2594 (25.9)	143	76	1057 (40.7)	1716 (21.9)	141	77	734 (42.8)	877 (45.1)	146	76	323 (36.8)
<b>Age group (yrs)</b>												
18-29	29 (39.2)	130	79	21 (72.4)	17 (34.7)	130	79	13 (76.5)	12 (50)	130.5	82.5	8 (66.7)
30-39	73 (41.5)	137	87	37 (50.7)	52 (41.6)	136.5	84	27 (51.9)	21 (52.5)	137	90	10 (47.6)
40-49	183 (43.8)	141	84	77 (42.1)	130 (41.7)	140.5	82.5	57 (43.8)	53 (53)	145	85	20 (37.7)
50-59	323 (38.8)	142	82	134 (41.5)	211 (34.8)	140	82	92 (43.6)	112 (53.3)	145	82	42 (37.5)
60-64	224 (36.4)	142	79	90 (40.2)	142 (31.5)	140	78	62 (43.7)	81 (55.9)	145	80	28 (34.6)
65-69	274 (34.9)	146	78	101 (36.9)	188 (31)	146	78	71 (37.8)	86 (53.8)	146.5	76	30 (34.9)
70-74	360 (27)	143	75	148 (41.1)	239 (22.6)	140	76	107 (44.8)	121 (46)	147	74	41 (33.9)
75-79	416 (25.5)	144	73	167 (40.1)	278 (21.2)	141	73	118 (42.4)	138 (48.3)	146.5	72	49 (35.5)
80-84	387 (21.4)	144	72	159 (41.1)	260 (17.8)	143	73	112 (43.1)	127 (42.2)	145	70	47 (37)
≥85	325 (13.9)	145	71	123 (37.8)	199 (10.8)	144.5	70	75 (37.7)	126 (30.3)	147	71	48 (38.1)
<b>Sex</b>												
Male	1504 (27)	144	77	600 (39.9)	1003 (23)	142	77	419 (41.8)	501 (46)	147	76	181 (36.1)
Female	1090 (24.5)	142	76	457 (41.9)	713 (20.5)	141	76	315 (44.2)	376 (43.9)	145	76	142 (37.8)

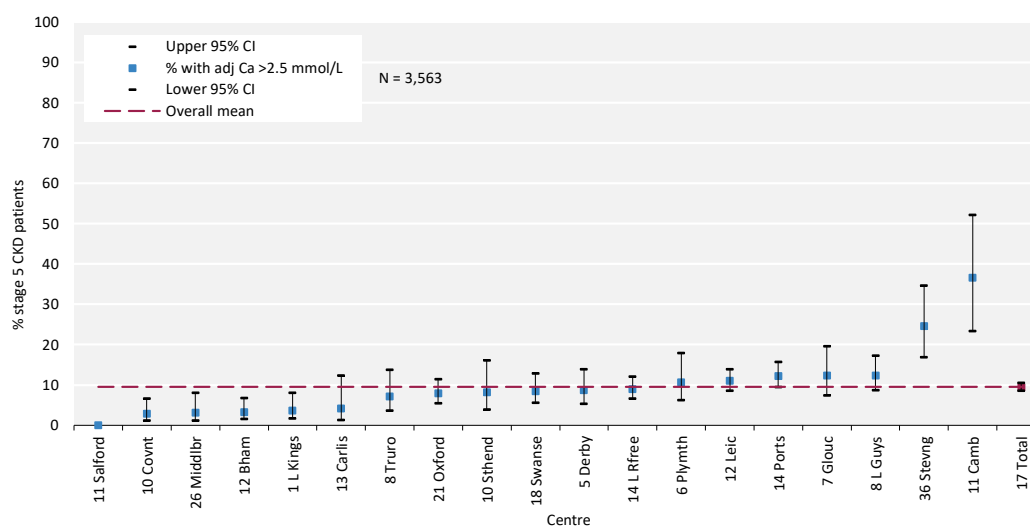
<sup>1</sup>% <140/90 mmHg of patients with complete blood pressure data.

The total includes the patients with old eGFR measurements who were classed as 'unknown stage'.

DBP – diastolic blood pressure; SBP – systolic blood pressure (both measured in mmHg)

## Biochemistry parameters in adult CKD patients

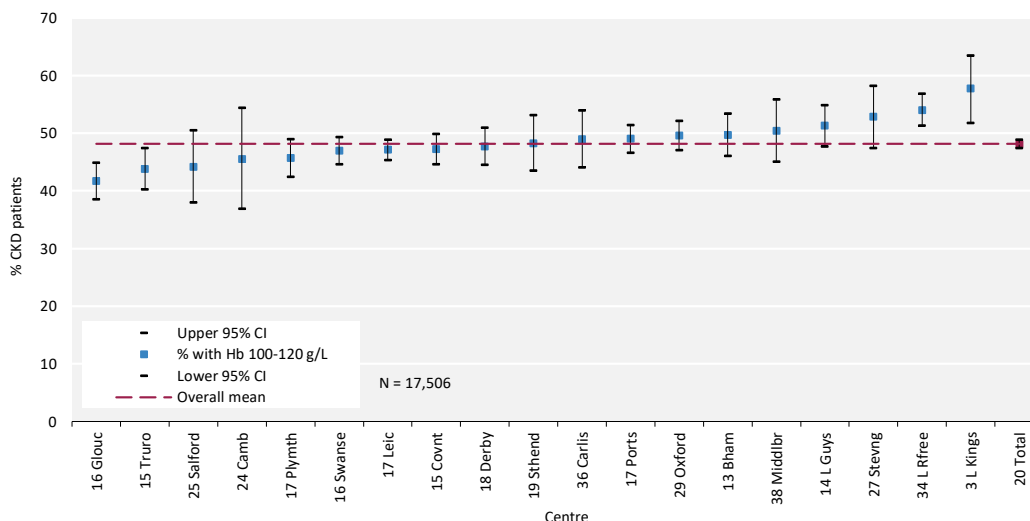
The UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which is the percentage of patients with adjusted calcium above the target range.



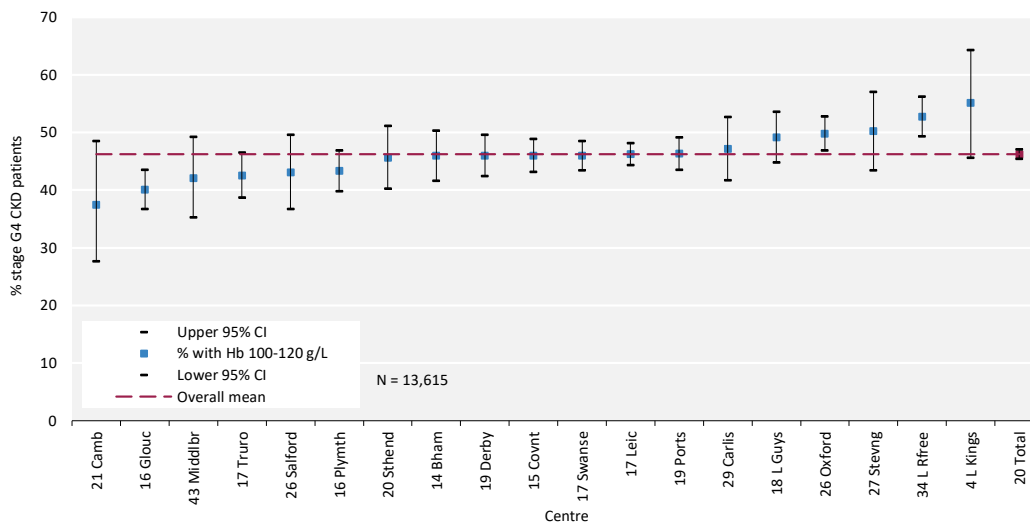
**Figure 1.3** Percentage of adult patients prevalent to CKD stage G5 on 31/12/2020 with adjusted serum calcium (Ca) >2.5 mmol/L by centre

## Anaemia in adult CKD patients

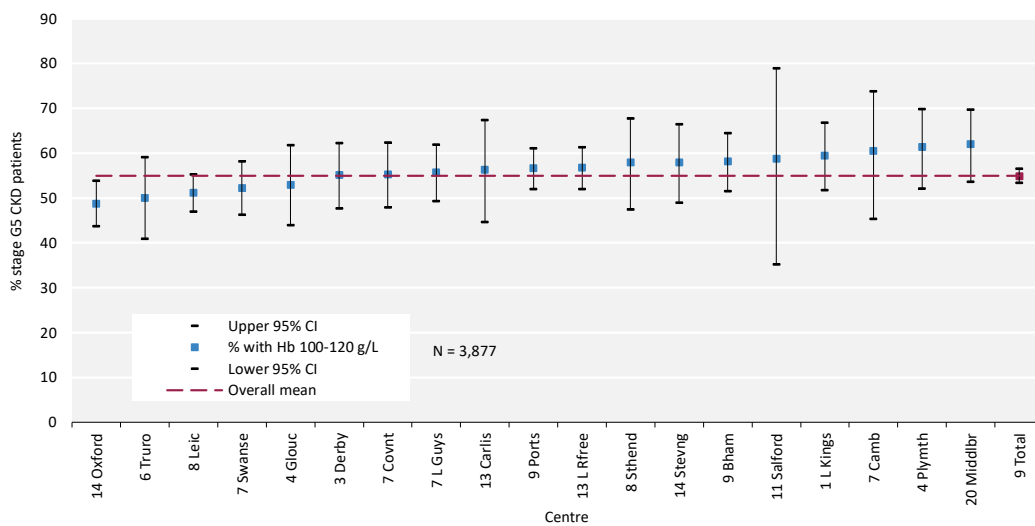
The percentage of patients with haemoglobin (Hb) 100–120 g/L is presented overall and by CKD stage. Inadequate data completeness in relation to erythropoiesis stimulating agents (ESAs) makes auditing against national guidelines difficult.



**Figure 1.4** Percentage of adult patients prevalent to CKD stages G4 and 5 on 31/12/2020 with haemoglobin (Hb) 100–120 g/L by centre



**Figure 1.5** Percentage of adult patients prevalent to CKD stage G4 on 31/12/2020 with haemoglobin (Hb) 100–120 g/L by centre



**Figure 1.6** Percentage of adult patients prevalent to CKD stage G5 on 31/12/2020 with haemoglobin (Hb) 100-120 g/L by centre

## *Chapter 2*

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

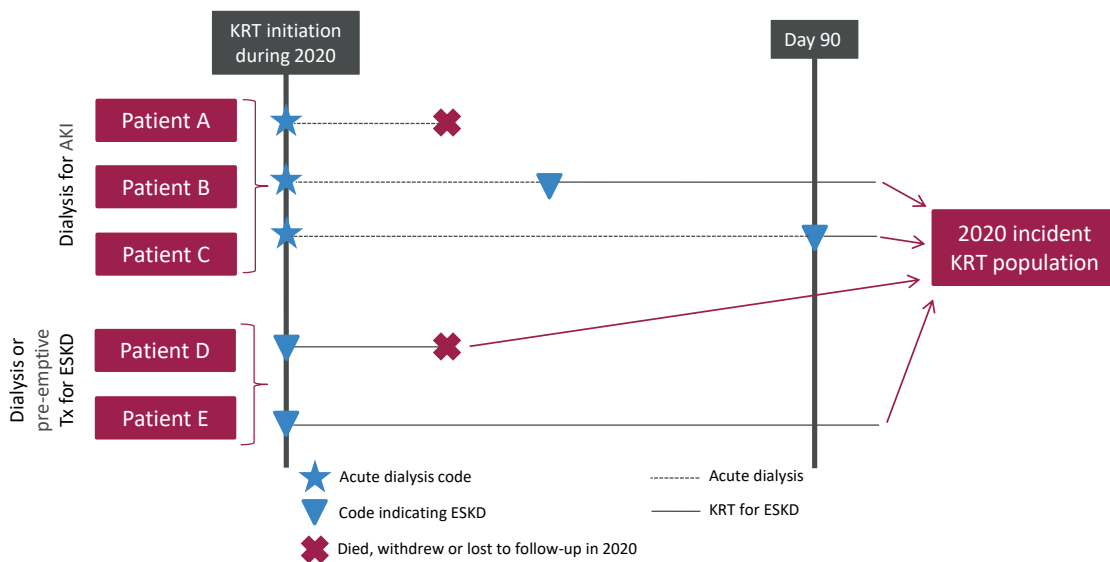


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# Introduction

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

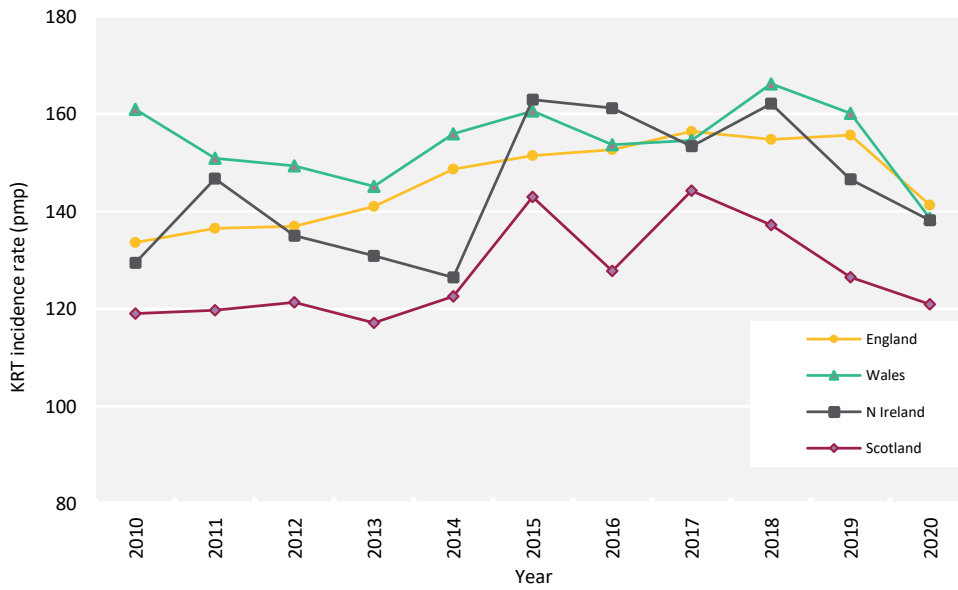
Centre	N on KRT					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020		
Sheff	150	159	184	161	173	1.13	154
Shrew	58	62	77	66	45	0.41	110
Stevng	163	140	175	193	167	1.10	151
Stoke	114	100	103	99	111	0.73	153
Sund	94	95	89	87	67	0.54	123
Truro	48	58	61	56	46	0.36	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
<b>N IRELAND</b>							
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
<b>SCOTLAND</b>							
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
<b>WALES</b>							
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
<b>TOTALS</b>							
<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.

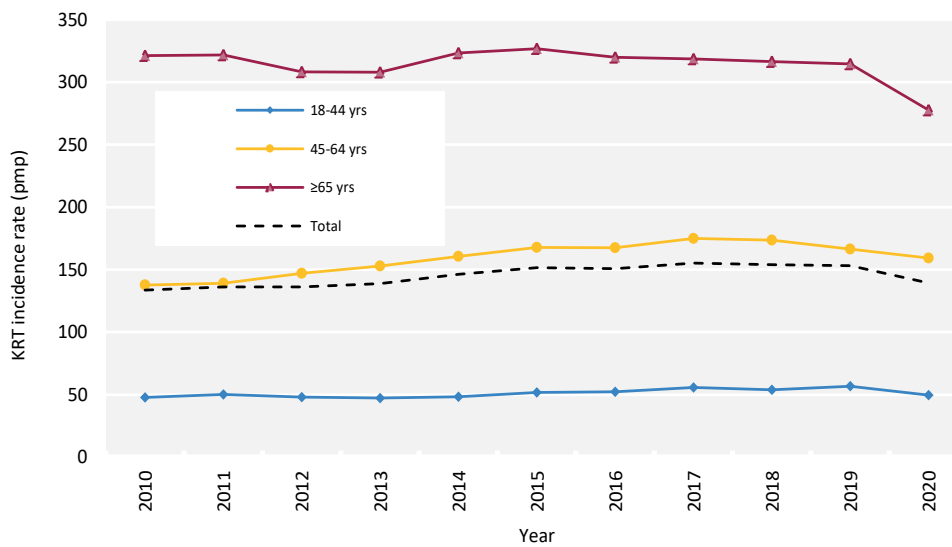
\*Incident patient numbers at Liverpool Royal Infirmary are under-reported (about 30 HD patients) due to a systems extraction problem at the centre. This will be corrected in the next annual report.

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.

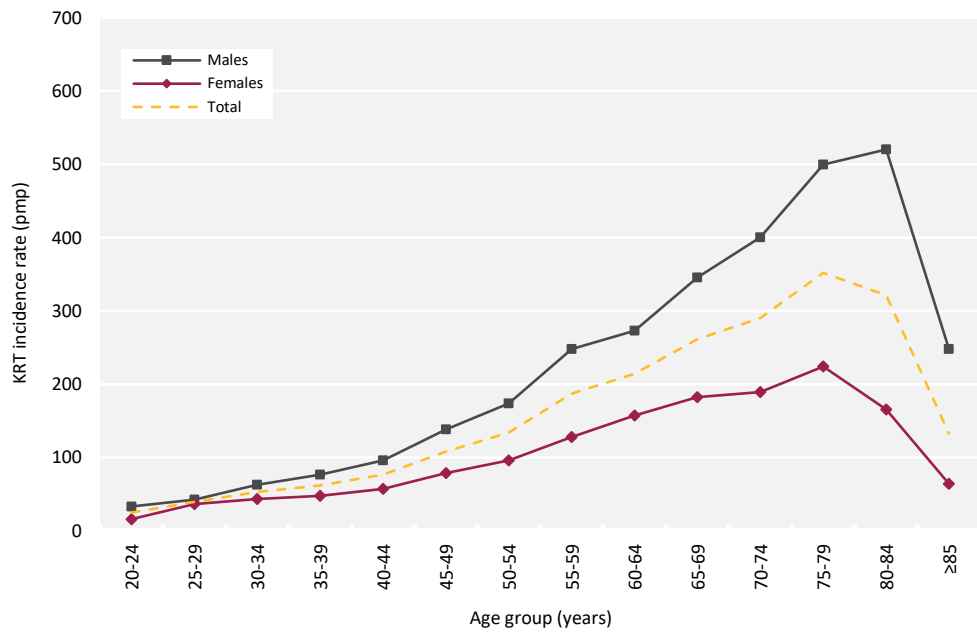
PRDs were grouped into categories as shown in table 2.4, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of KRT patients in each ethnic group and with each PRD is shown for patients with ethnicity and PRD data, respectively, and these total 100% of 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.



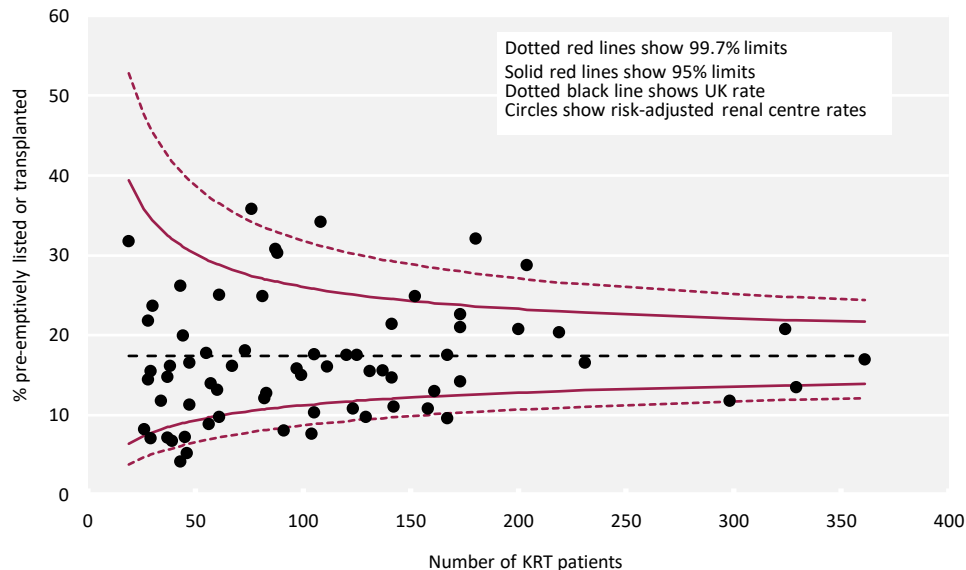
**Figure 2.4** Incidence rates for adult patients starting KRT in 2020 by age group and sex  
pmp – per million population

**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

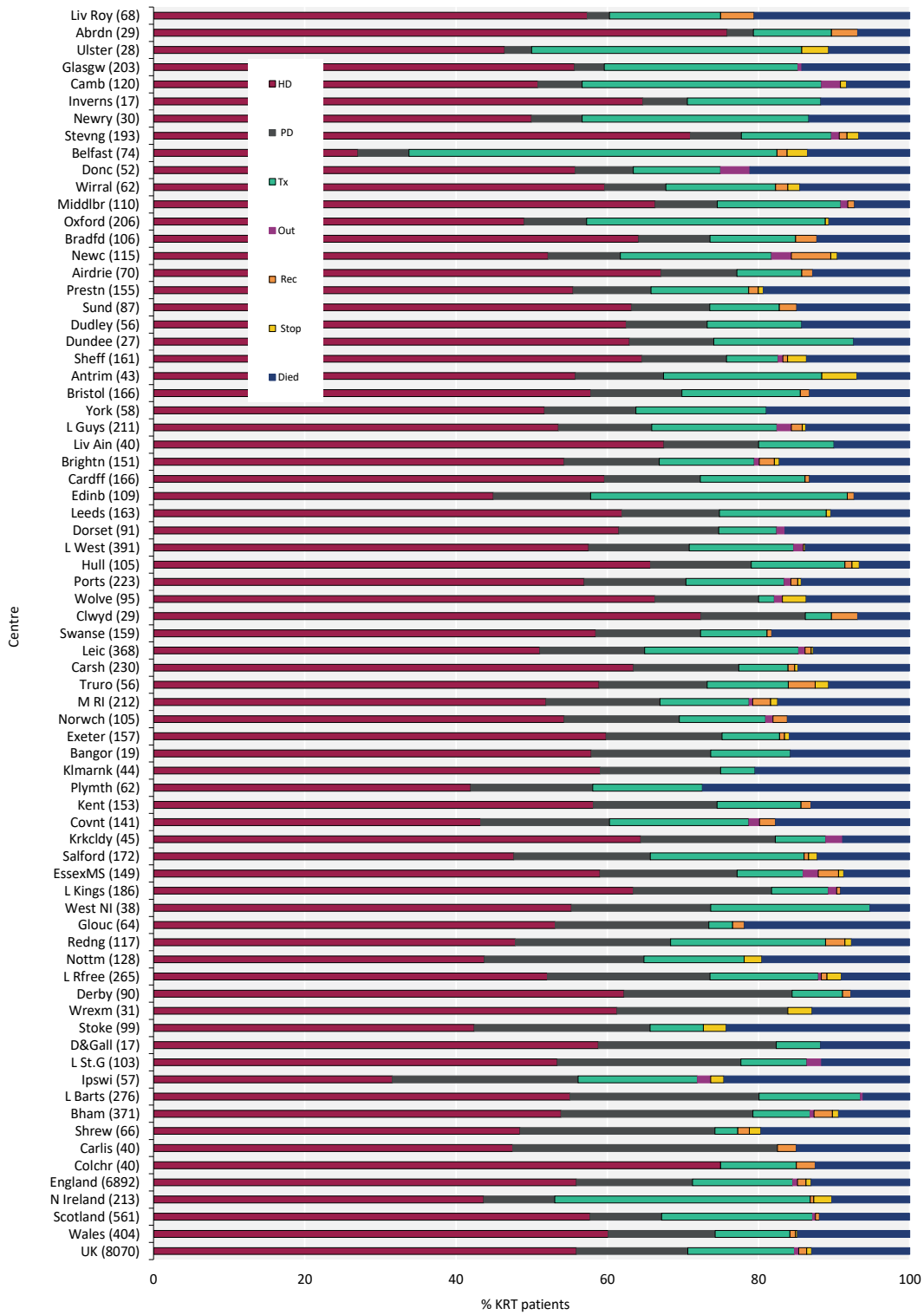
Shading indicates proportion of individuals maintained on their initial modality.

<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.

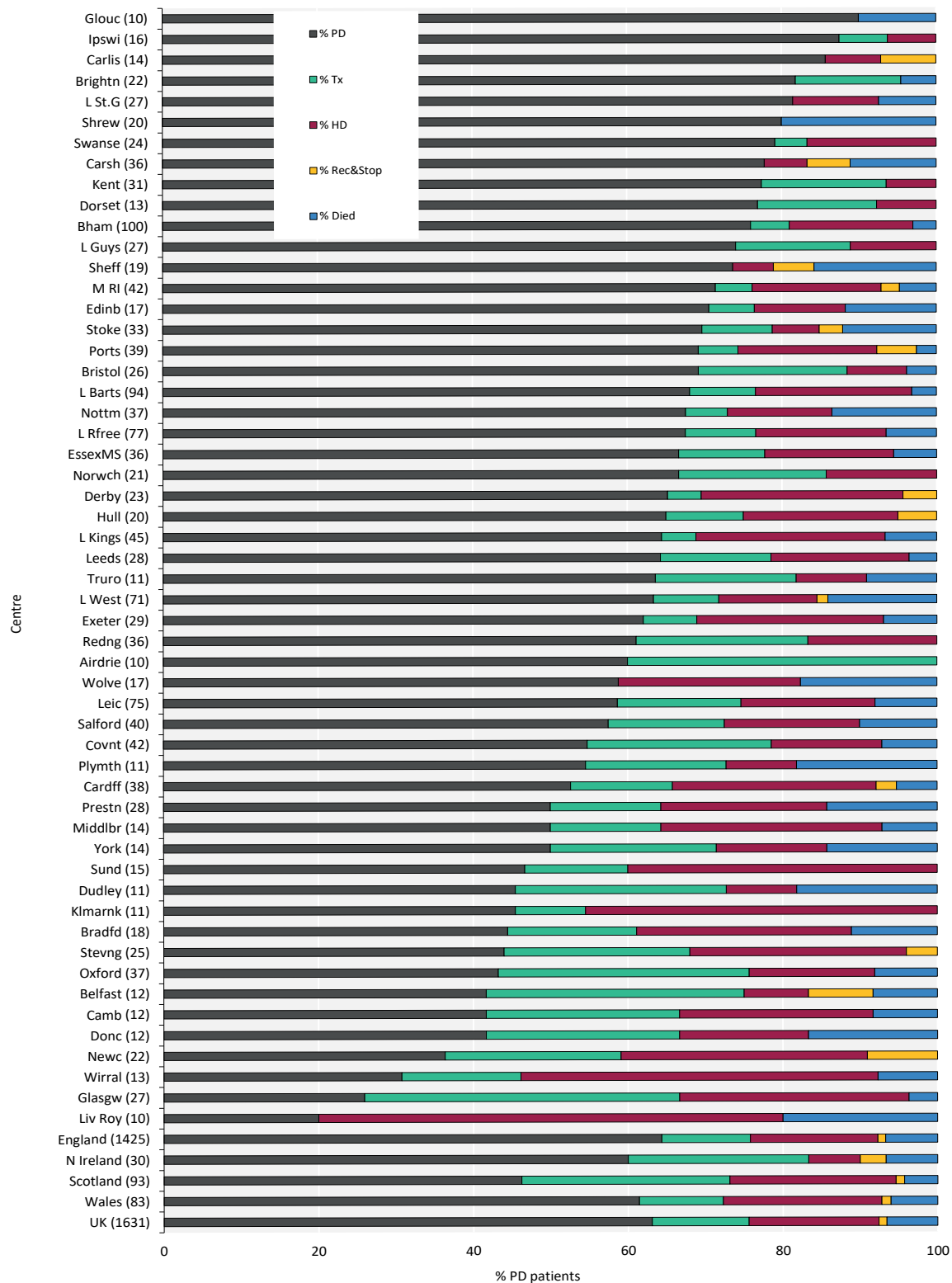




**Figure 2.6** KRT modality at 1 year for incident adult KRT patients who started KRT in 2019 by centre

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

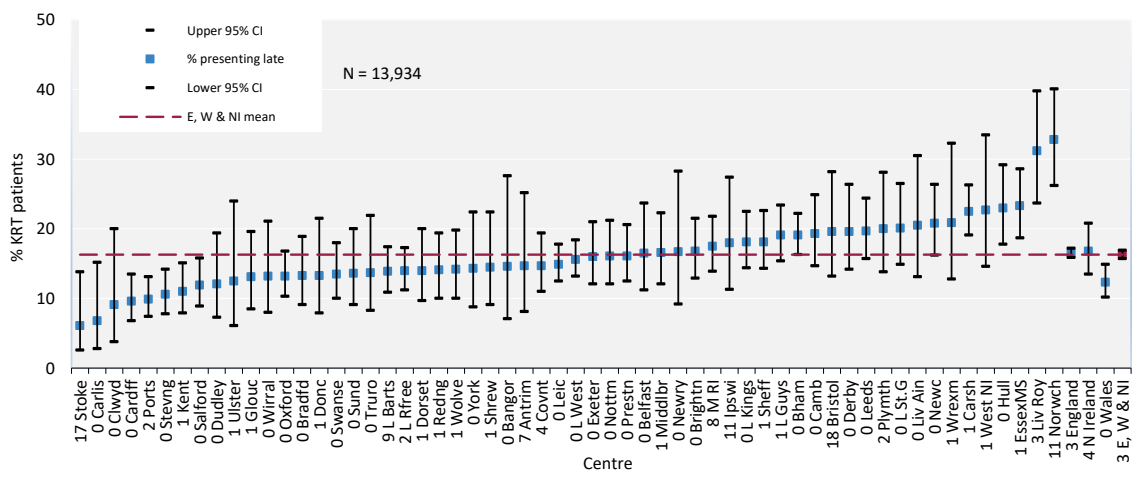
Centre	N on KRT		N with referral data	% data completeness		% presenting <90 days before KRT start		% presenting <1 yr before KRT start
	2019	2020		2019	2020	All PRDs	Non-diabetes PRDs	All PRDs
Shrew	66	45	110	100.0	97.8	14.5	16.3	30.9
Stevng	193	167	360	100.0	100.0	10.6	12.9	14.2
Stoke	99	111	82	82.8	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)

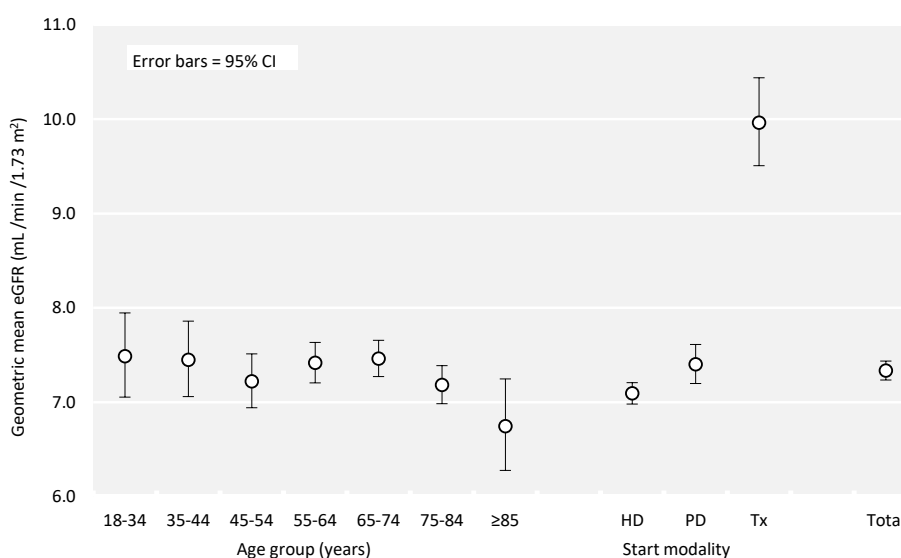
PRD	N with data	Referral time			
		<90 days		≥90 days	
		N	%	N	%
Diabetes	3,898	320	8.2	3,578	91.8
Glomerulonephritis	1,586	200	12.6	1,386	87.4
Hypertension	951	148	15.6	803	84.4
Polycystic kidney disease	847	43	5.1	804	94.9
Pyelonephritis	690	119	17.2	571	82.8
Renal vascular disease	630	73	11.6	557	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

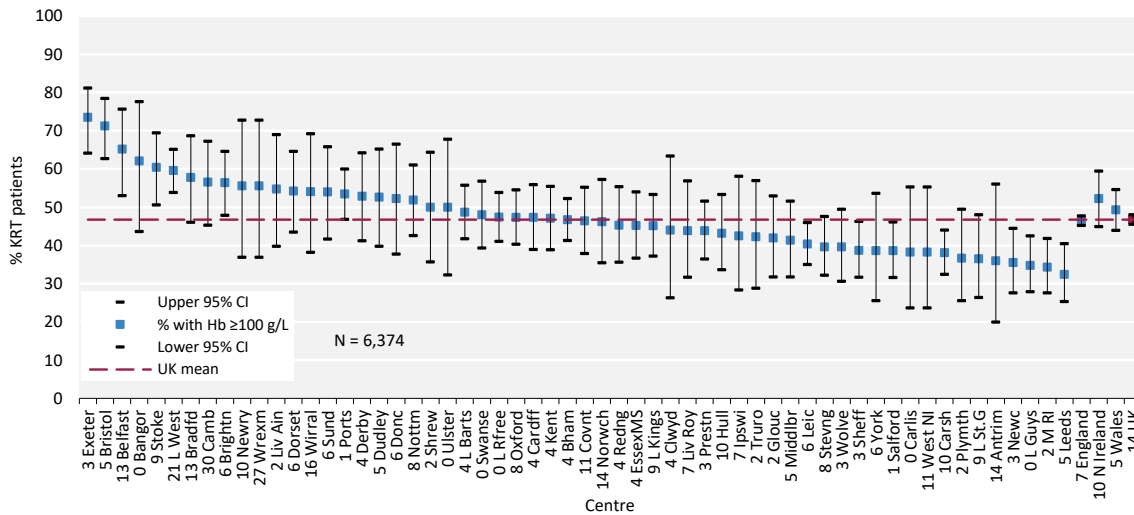
Centre	All KRT patients		Median Hb (g/L) by modality			Median Hb (g/L) by presentation time		% data completeness
	Median Hb (g/L)	% Hb $\geq 100$ g/L	Tx	PD	HD	$\geq 90$ days	<90 days	
<b>ENGLAND</b>								
Bham	97	46.7	104	104	93	101	88	96.4
Bradfd	104	57.8			104	104		86.6
Brightn	102	56.4		111	98	103	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

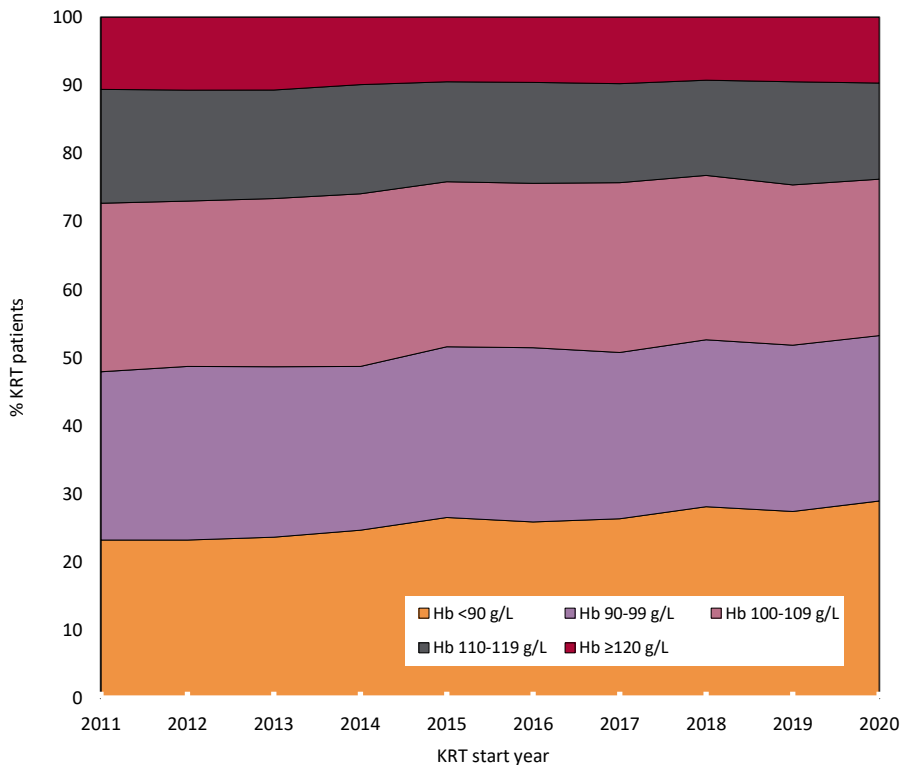
Centre	All KRT patients		Median Hb (g/L) by modality			Median Hb (g/L) by presentation time		% data completeness
	Median Hb (g/L)	% Hb $\geq$ 100 g/L	Tx	PD	HD	$\geq$ 90 days	<90 days	
Truro	97	42.2			97	99		97.8
Wirral	101	54.1			98	100		84.1
Wolve	97	39.6		96	97	98		97.1
York	94	38.6			93	97		93.6
<b>N IRELAND</b>								
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
<b>WALES</b>								
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
<b>TOTALS</b>								
<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.

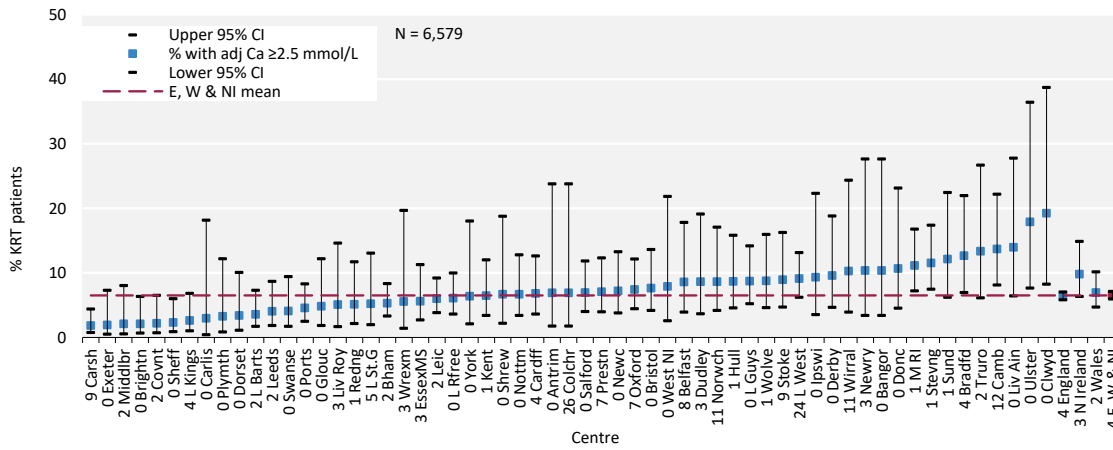
**Table 2.14** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients incident to KRT in 2020 by centre

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
Carlisle	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	Total	
	N	AVF/AVG	TL	NTL	N		
<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	64
	IQR (yrs)	55,75	57,75	52,74	55,76	48,73	53,74
	<45 yrs	525	24.2	52.4	23.4	291	816
	45–54 yrs	600	33.3	45.8	20.8	219	819
	55–64 yrs	1,011	37.6	39.8	22.7	280	1,291
	65–74 yrs	1,144	41.2	36.9	21.9	294	1,438
	≥75 yrs	1,079	35.7	37.0	27.3	272	1,351
<b>PRD (%)</b>	Diabetes	1,184	36.7	44.8	18.5	344	1,528
	Glomerulonephritis	355	39.4	40.6	20.0	220	575
	Hypertension	247	34.8	37.7	27.5	84	331
	Polycystic kidney disease	178	65.2	27.0	7.9	92	270
	Pyelonephritis	173	35.3	42.2	22.5	75	248
	Renal vascular disease	218	42.7	36.7	20.6	45	263
	Other	694	25.6	40.8	33.6	149	843
	Uncertain aetiology	563	39.6	40.9	19.5	159	722
	Missing	157	23.6	40.8	35.7	31	188
<b>Referral time (%)</b>	<90 days	768	3.4	48.2	48.4	78	846
	90–179 days	172	14.5	54.7	30.8	55	227
	180–364 days	331	29.3	51.1	19.6	105	436
	≥365 days	2,633	46.9	36.2	16.9	982	3,615
	Missing	11	36.4	45.5	18.2	5	16
<b>Sex (%)</b>	Male	2,851	36.5	40.1	23.4	868	3,719
	Female	1,508	34.6	41.8	23.6	488	1,996
<b>Ethnicity (%)</b>	White	2,513	36.5	38.3	25.2	813	3,326
	Asian	463	32.0	44.5	23.5	167	630
	Black	270	30.7	39.3	30.0	66	336
	Other	113	21.2	45.1	33.6	33	146
	Missing	222	38.3	43.7	18.0	67	289
<b>eGFR at start<sup>1</sup></b>	Median	7	7	7	7	8	7
	IQR (yrs)	5,9	6,9	5,9	5,9	6,9	6,9
<b>Diabetes<sup>2</sup> (%)</b>	Yes	754	38.5	36.5	25.1	197	951
	No	855	40.7	34.4	24.9	317	1,172
	Missing	128	25.8	40.6	33.6	46	174

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

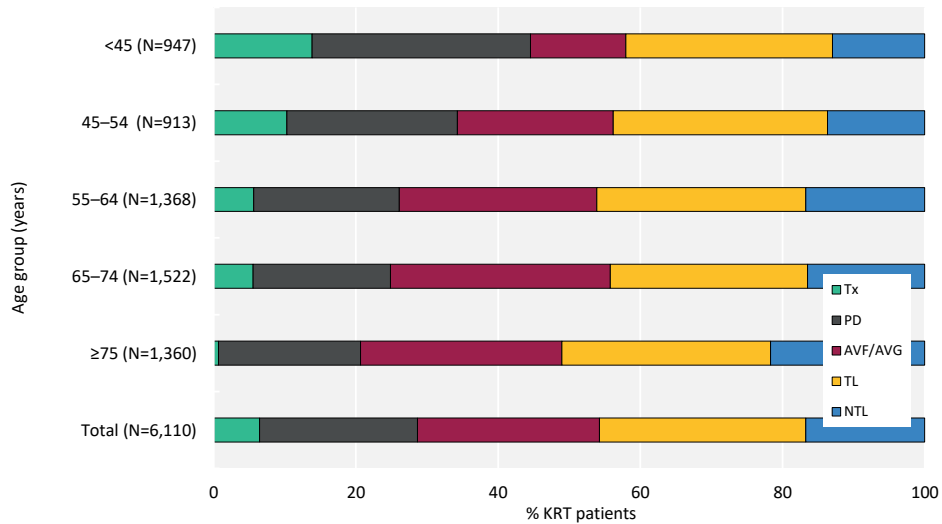
<sup>2</sup>Diabetes at start of dialysis as per the Multisite Dialysis Access Audit, or as a comorbidity or PRD from the UKRR database.

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

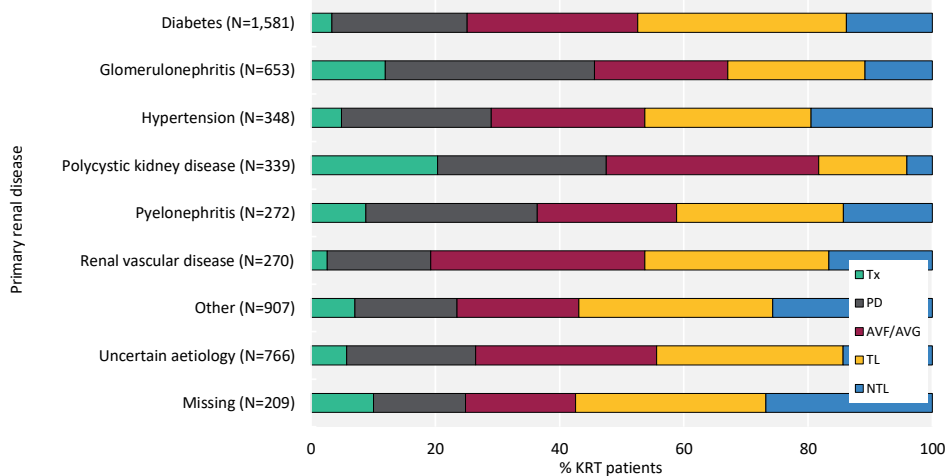
Dialysis access is best interpreted in the context of all patients starting KRT, so data were supplemented with pre-emptive Tx numbers.

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.



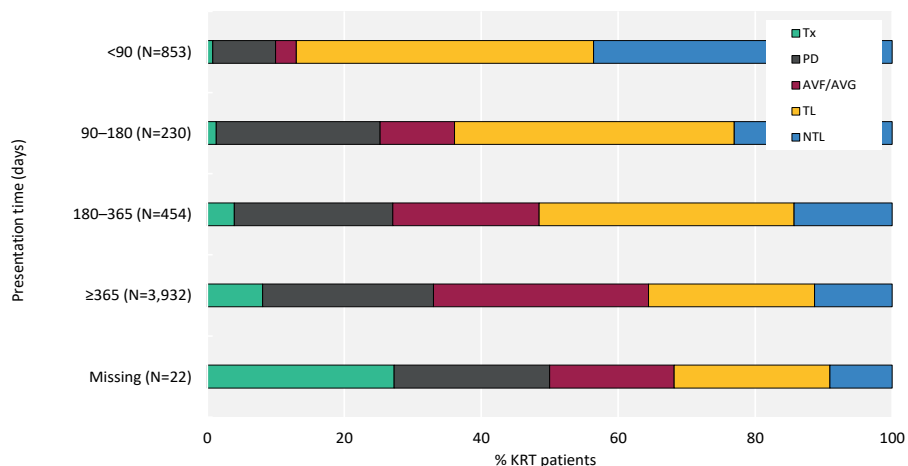
**Figure 2.13** Dialysis access used for adult patients incident to KRT in 2020 by age group (2020 Multisite Dialysis Access Audit)

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)

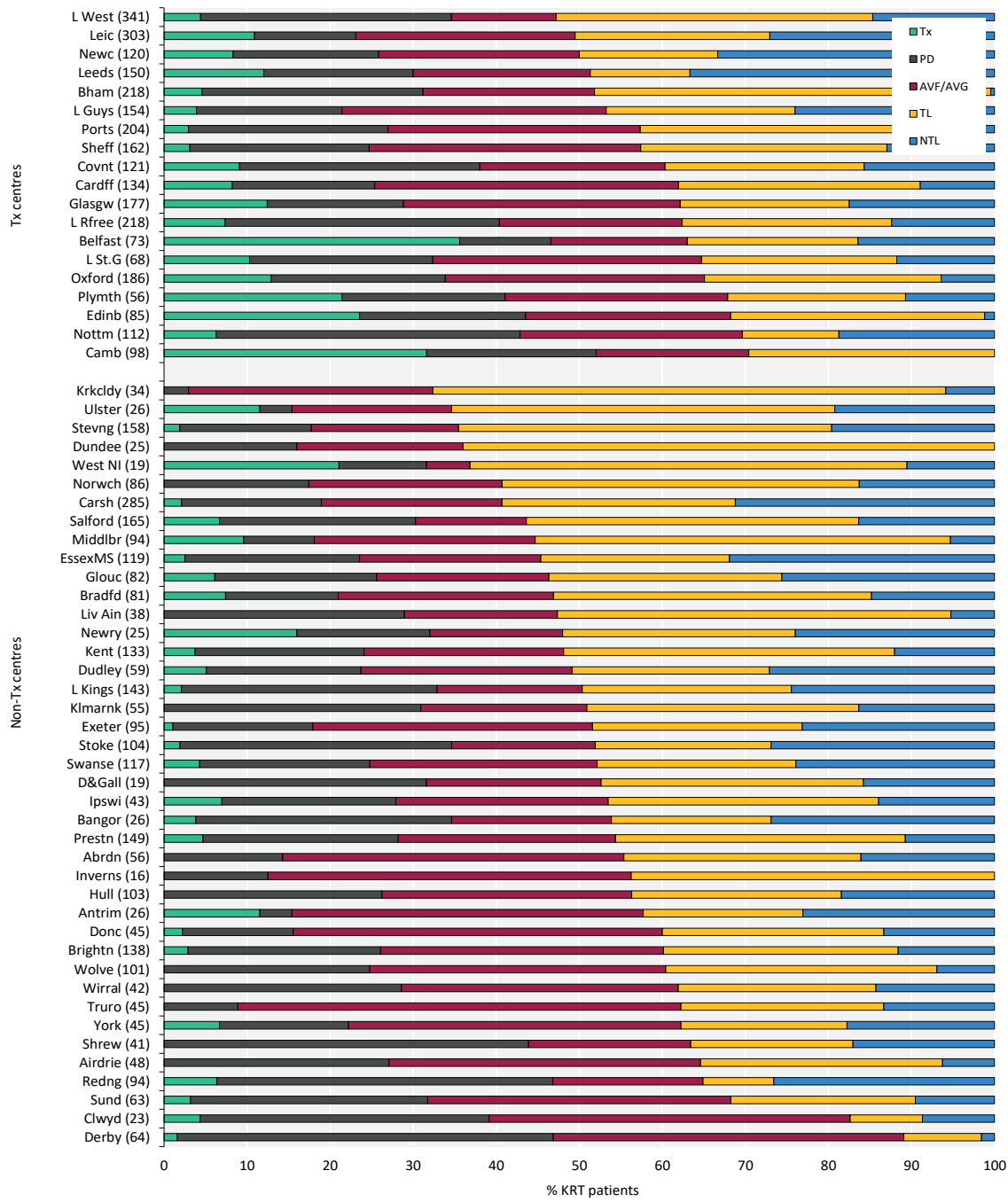
AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line



**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.

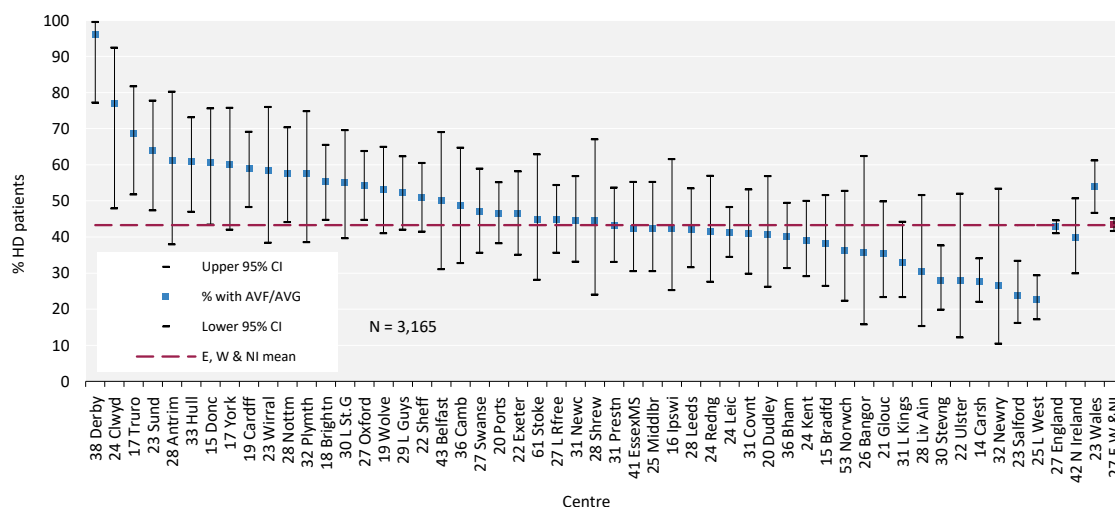
AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line



**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

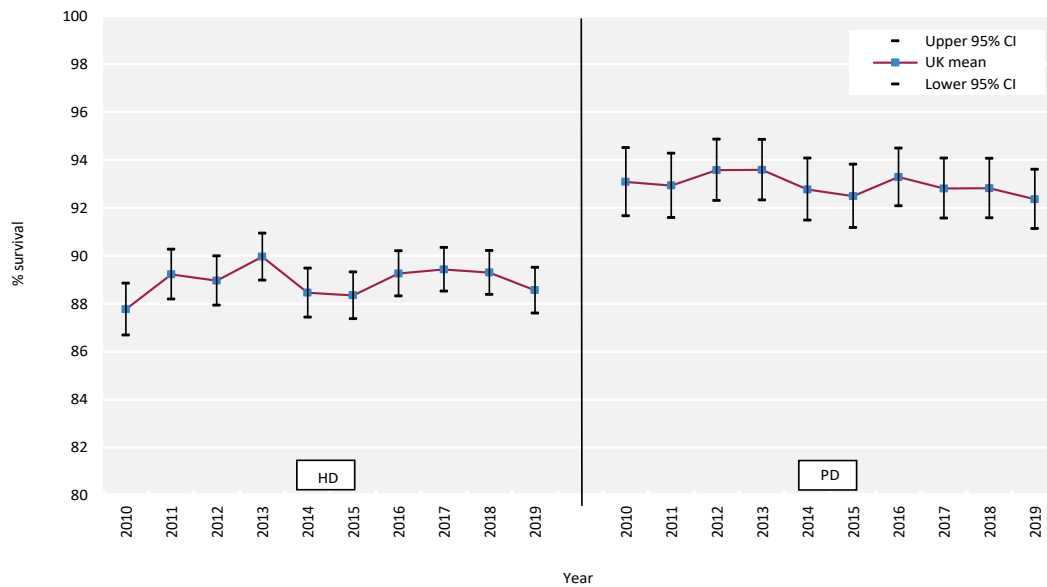
The survival of patients who started KRT for ESKD is described, with primary focus on the one year incident to KRT in 2019 cohort, followed up for a year. Some analyses used rolling incident cohorts over several years (two years or more as stated) to increase cohort patient numbers and more reliably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

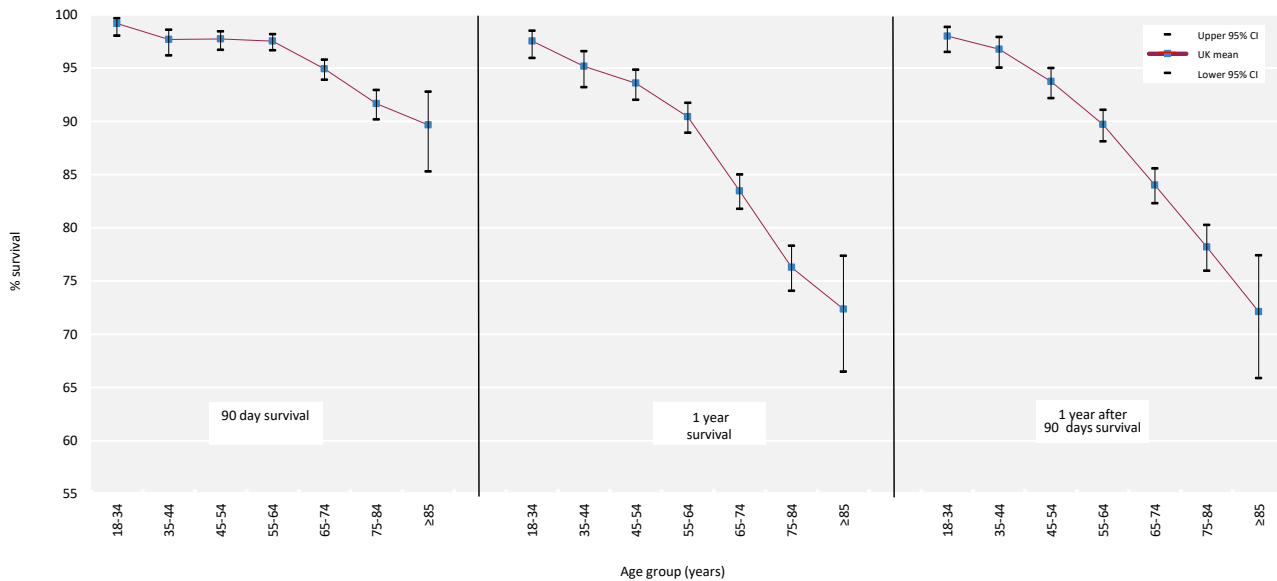
**Table 2.17** 90 days and 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients (2018–2019 2 year cohort) by country

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

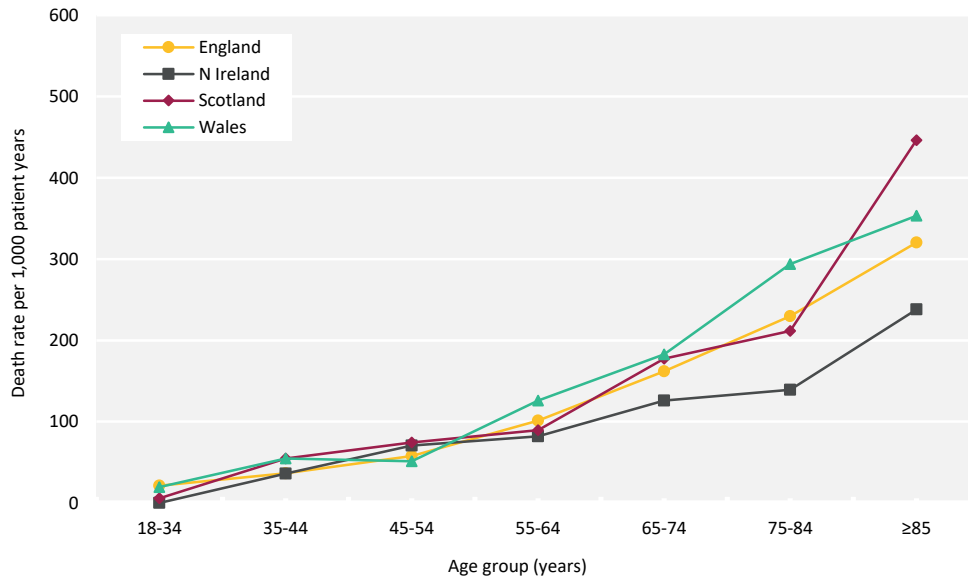
CI – confidence interval



**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

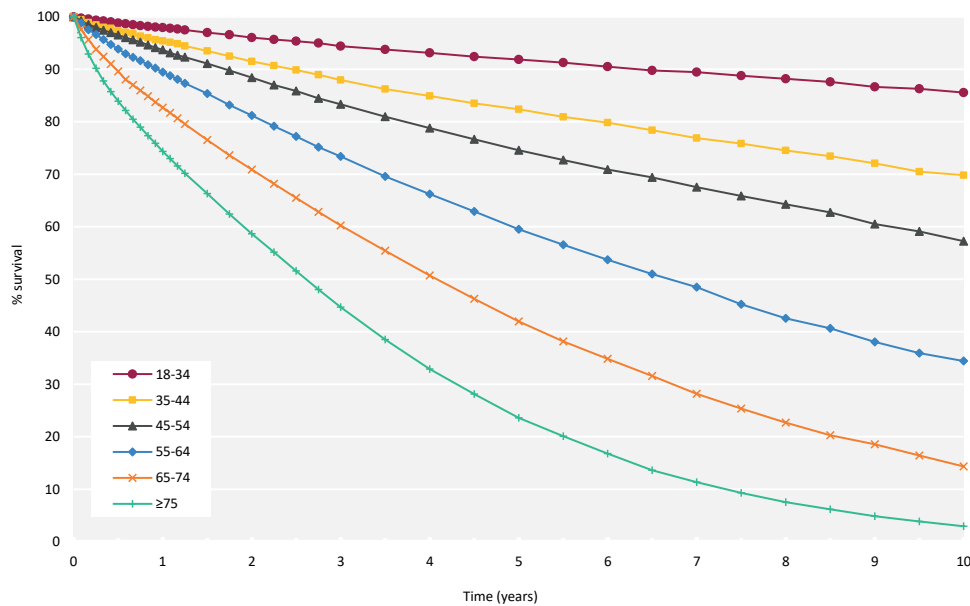


**Figure 2.19** 90 days, 1 year and 1 year after 90 days survival of incident adult KRT patients by age group (2019 cohort)  
 CI – confidence interval

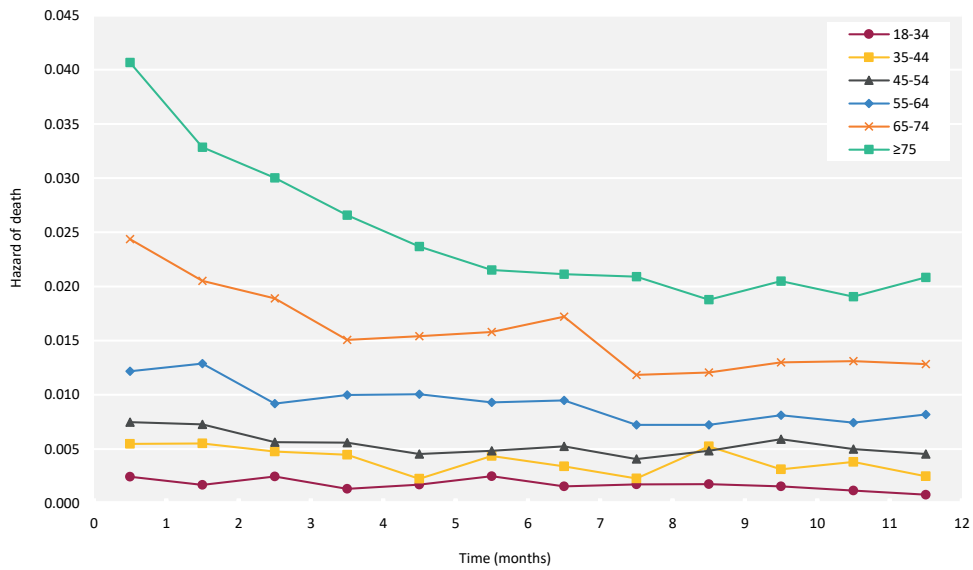


**Figure 2.20** 1 year after 90 days death rate per 1,000 incident KRT adult patient years by age group and country (2016–2019 4 year cohort)

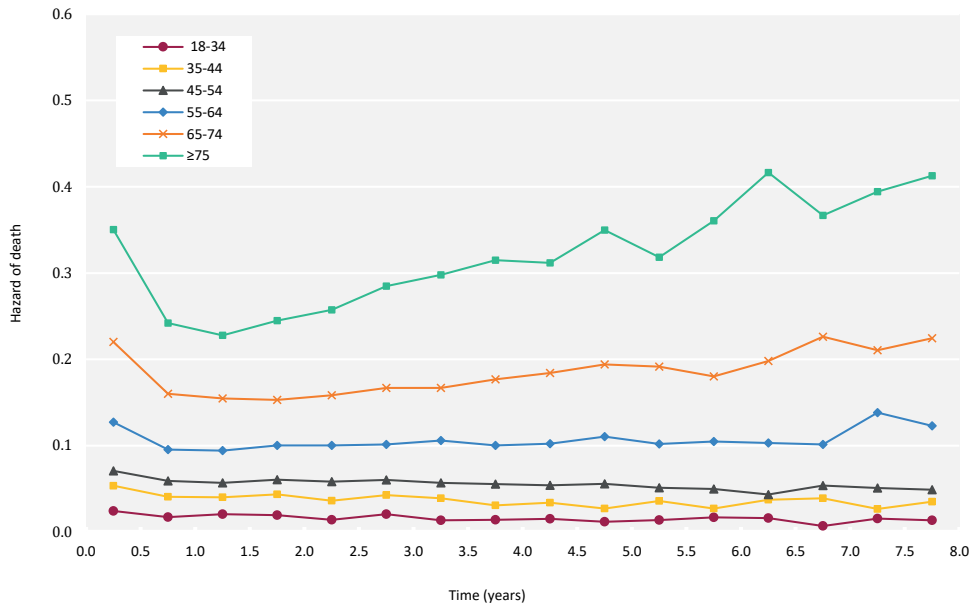
A ten year rolling cohort was used to analyse the long term survival of incident patients from start of KRT (day 0), according to age at KRT start (figure 2.21), with median survival identifiable from the y-axis. The same cohort was used in analyses of the monthly and six monthly hazard of death on KRT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

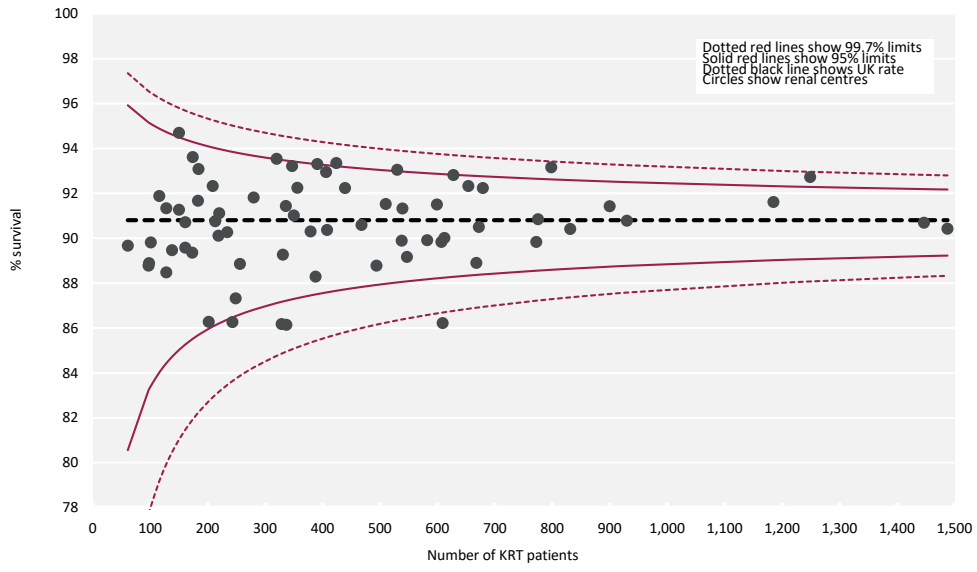
Centre	Age adjusted survival				Case-mix adjusted survival <sup>1</sup>			
	N on KRT	Adj 1 yr after 90 days survival (%)	Limits for funnel plot		N on KRT	Adj 1 yr after 90 days survival (%)	Limits for funnel plot	
			Lower 95% limit	Upper 95% limit			Lower 95% limit	Upper 95% limit
D&Gall	61	89.7	80.6	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

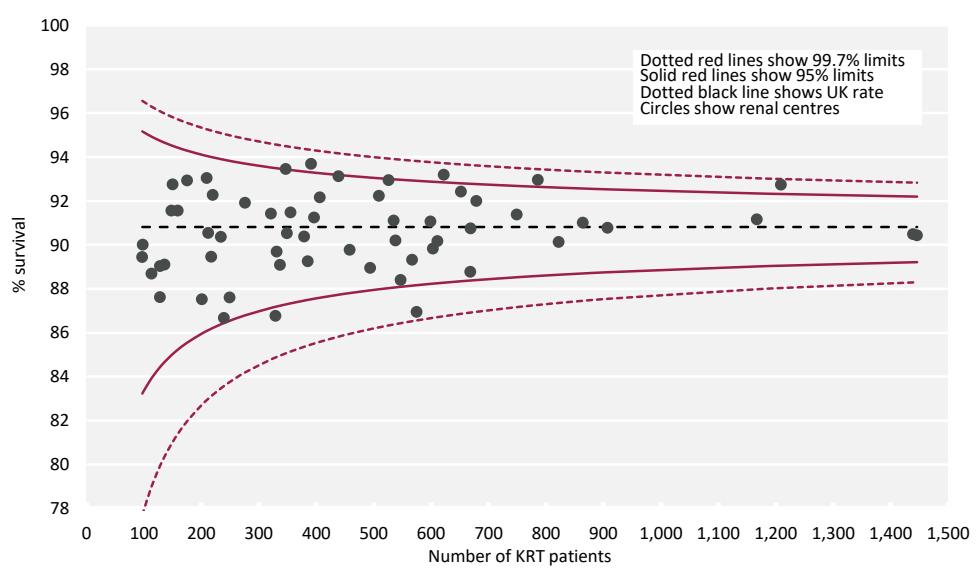
Centre	Age adjusted survival				Case-mix adjusted survival <sup>1</sup>			
	N on KRT	Adj 1 yr after 90 days survival (%)	Limits for funnel plot		N on KRT	Adj 1 yr after 90 days survival (%)	Limits for funnel plot	
			Lower 95% limit	Upper 95% limit			Lower 95% limit	Upper 95% limit
Middlbr	439	92.2	87.7	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

## *Chapter 3*

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# **Adults on kidney replacement therapy (KRT) in the UK at the end of 2020**

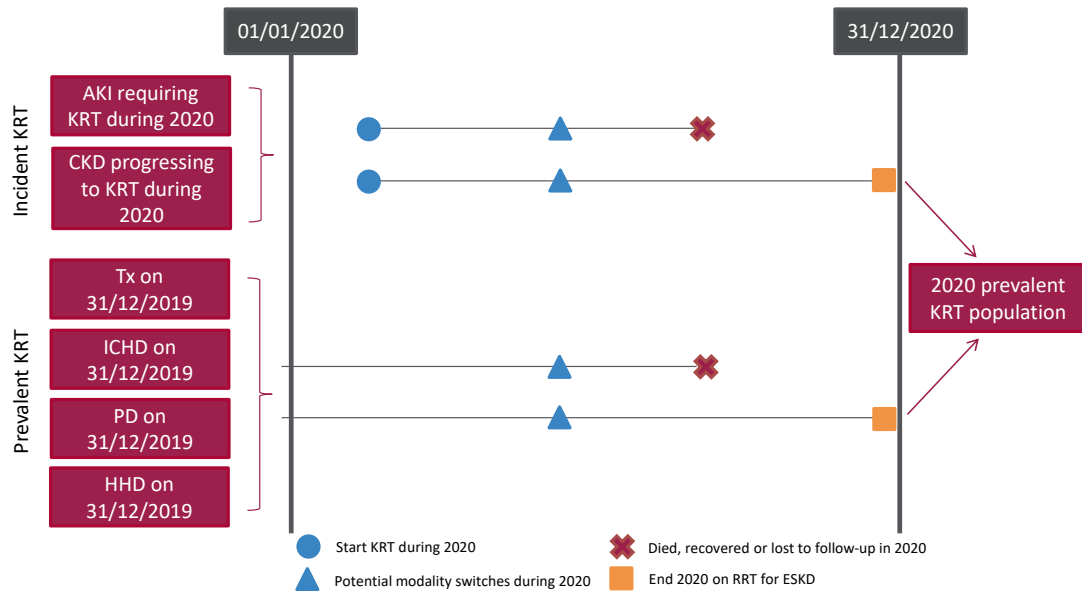
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# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were on kidney replacement therapy (KRT) in the UK at the end of 2020 (figure 3.1). Patients may have started KRT prior to 2020 or during 2020. Three KRT modalities are available to patients with ESKD – haemodialysis (HD), peritoneal dialysis (PD) and kidney transplantation. HD may be undertaken in-centre (ICHD) or at home (HHD).

The size of the prevalent population on each KRT modality reflects uptake to the modality by new KRT patients (chapter 2); the number of patients switching from one modality to another; and the length of time patients remain on a modality before they switch to another, withdraw from KRT or die.



**Figure 3.1** Pathways adult patients could follow to be included in the UK 2020 prevalent KRT population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for chronic KRT at the end of 2020 or if they had been on KRT for  $\geq 90$  days and were on KRT at the end of 2020. CKD – chronic kidney disease; Tx – transplant

Survival and cause of death analyses were undertaken on historic prevalent cohorts to allow sufficient follow-up time.

## Rationale for analyses

The analyses focus on a description of the 2020 prevalent adult KRT population, including the number on KRT per million population (pmp). These analyses are performed annually to help clinicians and policy makers plan future KRT requirements in the UK. Variation in case-mix is also reported to aid understanding of how to improve equity of KRT provision in the UK.

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 on KRT, but these are treatment-specific – for further details see the guideline tables in each chapter.

For definitions and methods relating to this chapter see appendix A.

## Key findings

- 68,249 adult patients were receiving KRT for ESKD on 31/12/2020 which is similar to the 68,111 that were receiving KRT for ESKD at the end of 2019. This represents the first year we have not seen a 2-2.5% increase in number of patients on KRT. This is likely due to the impact of COVID pandemic with fewer patients starting KRT and increased COVID related mortality of existing KRT patients.
- KRT prevalence was 1,290 per million population, again stable compared to last year and in contrast to increasing prevalence seen in previous years.
- The median age of KRT patients was 59.6 years (ICHD 66.5 years, HHD 55.3 years, PD 63.5 years and Tx 56.0 years). In 2010 the median age was 57.9 years (ICHD 66.8 years, HHD 52.4 years, PD 61.5 years and Tx 51.2 years).
- 61.3% of KRT patients were male.
- Tx continued as the most common treatment modality (57.0%) – ICHD comprised 35.4%, PD 5.6% and HHD 2.0% of the KRT population.
- The most common identifiable primary renal disease was glomerulonephritis (19.6%), followed by diabetes (18.4%).
- There were 3 centres above the upper 95% limit and no centres below the lower 95% limit in the funnel plots showing 1 year age-, sex- and comorbidity-adjusted survival for patients prevalent to dialysis on 31/12/2019. It is expected that 3 centres would be outside the limits by chance.
- There was no cause of death data available for 35.0% of deaths. For those with data, the leading cause of death was infection amongst both patients > 65 years and < 65 years at 28.8% and 29.6% respectively, with a significant contribution from COVID related deaths.

# Analyses

## Changes to the prevalent adult KRT population

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

**Table 3.1** Number of prevalent adult KRT patients by year and by centre; number of KRT patients as a proportion of the catchment population

Centre	N on KRT					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020		
ENGLAND							
Bham	3,051	3,173	3,250	3,312	3,272	2.04	1,605
Bradfd	634	674	688	733	727	0.49	1,491
Brightn	993	1,012	1,055	1,064	1,078	1.07	1,007
Bristol	1,470	1,473	1,471	1,486	1,477	1.21	1,218
Camb	1,326	1,335	1,388	1,457	1,526	0.93	1,641
Carlis	279	281	293	301	297	0.25	1,172
Carsh	1,657	1,696	1,752	1,781	1,854	1.62	1,147
Colchr	123	129	122	145	151	0.29	521
Covnt	976	965	958	1,075	1,096	0.79	1,388
Derby	543	556	587	654	677	0.56	1,215
Donc	331	333	330	342	341	0.37	915
Dorset	685	730	764	773	798	0.72	1,102
Dudley	345	366	360	366	370	0.34	1,084
EssexMS	783	831	845	851	884	0.99	896
Exeter	1,013	1,057	1,083	1,089	1,106	0.95	1,169
Glouc	473	511	522	529	521	0.51	1,029
Hull	854	872	880	904	914	0.79	1,150
Ipswi	417	436	428	428	425	0.31	1,370
Kent	1,073	1,091	1,112	1,139	1,143	1.06	1,077
L Barts	2,374	2,498	2,600	2,660	2,557	1.58	1,620
L Guys	2,101	2,165	2,231	2,321	2,320	1.00	2,323
L Kings	1,112	1,154	1,183	1,247	1,253	0.93	1,351
L Rfree	2,176	2,192	2,235	2,345	2,337	1.32	1,773
L St.G	853	839	835	853	857	0.66	1,298
L West	3,395	3,475	3,560	3,611	3,537	1.95	1,814
Leeds	1,548	1,619	1,683	1,727	1,751	1.36	1,285
Leic	2,293	2,356	2,452	2,579	2,604	2.07	1,257
Liv Ain	229	210	217	209	216	0.43	503
Liv Roy*	1,218	1,252	1,270	1,224	1,142	0.81	1,417
M RI	1,988	2,052	2,066	2,045	1,985	1.32	1,499
Middlbr	892	904	930	953	942	0.80	1,176
Newc	1,051	1,116	1,153	1,172	1,207	0.95	1,276
Norwch	774	781	788	810	805	0.68	1,176
Nottm	1,152	1,184	1,197	1,217	1,212	0.92	1,314
Oxford	1,768	1,880	1,940	1,969	2,021	1.44	1,408
Plymth	514	541	540	534	544	0.40	1,365
Ports	1,692	1,746	1,762	1,880	1,902	1.74	1,095
Prestn	1,208	1,272	1,322	1,343	1,370	1.23	1,118
Redng	791	795	814	862	871	0.69	1,257
Salford	1,022	1,117	1,173	1,241	1,264	1.14	1,105
Sheff	1,422	1,441	1,481	1,488	1,491	1.13	1,324
Shrew	378	386	428	432	414	0.41	1,016



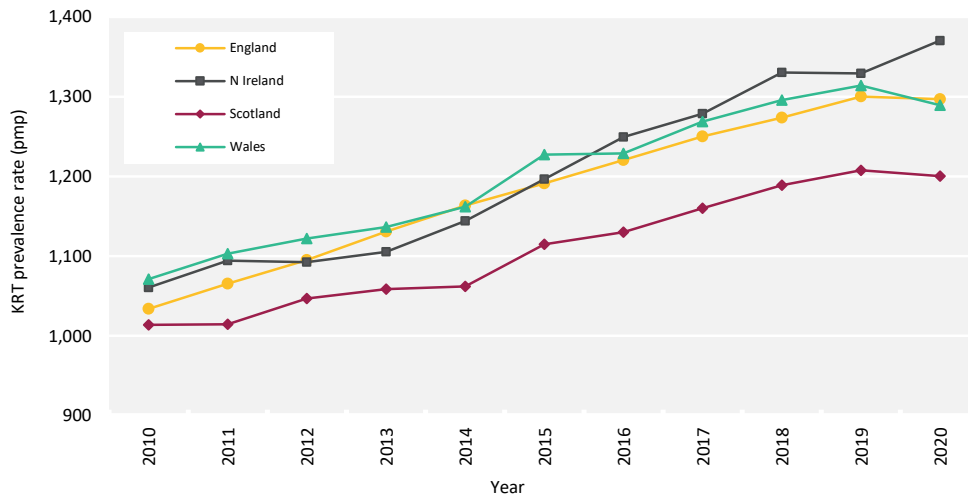
**Table 3.1** Continued

Centre	N on KRT					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020		
Stevng	888	884	938	962	963	1.10	873
Stoke	829	811	806	805	809	0.73	1,114
Sund	508	544	560	570	557	0.54	1,025
Truro	426	425	437	450	445	0.36	1,252
Wirral	338	389	398	412	406	0.47	871
Wolve	571	582	608	613	643	0.54	1,180
York	536	557	569	582	572	0.48	1,186
<b>N IRELAND</b>							
Antrim	252	255	274	286	289	0.24	1,188
Belfast	822	842	876	880	890	0.53	1,684
Newry	236	241	252	253	264	0.23	1,134
Ulster	166	183	191	184	200	0.20	994
West NI	306	313	327	328	350	0.25	1,408
<b>SCOTLAND</b>							
Abrdn	555	563	572	558	565	0.50	1,133
Airdrie	439	466	488	524	514	0.46	1,123
D&Gall	131	135	145	149	156	0.12	1,277
Dundee	418	435	445	449	430	0.37	1,172
Edinb	777	824	862	885	888	0.84	1,060
Glasgw	1,752	1,772	1,813	1,854	1,844	1.37	1,347
Inverns	258	262	279	282	271	0.22	1,216
Klmarnk	317	337	340	359	369	0.29	1,267
Krkldy	294	304	298	295	291	0.27	1,067
<b>WALES</b>							
Bangor	179	195	203	201	216	0.17	1,280
Cardff	1,629	1,682	1,719	1,729	1,678	1.19	1,410
Clwyd	177	179	190	205	207	0.19	1,111
Swanse	756	789	825	869	850	0.78	1,089
Wrexm	313	323	314	311	323	0.21	1,510
<b>TOTALS</b>							
<b>England</b>	<b>53,073</b>	<b>54,688</b>	<b>56,064</b>	<b>57,545</b>	<b>57,654</b>	<b>44.46</b>	<b>1,297</b>
<b>N Ireland</b>	<b>1,782</b>	<b>1,834</b>	<b>1,920</b>	<b>1,931</b>	<b>1,993</b>	<b>1.45</b>	<b>1,370</b>
<b>Scotland</b>	<b>4,941</b>	<b>5,098</b>	<b>5,242</b>	<b>5,355</b>	<b>5,328</b>	<b>4.44</b>	<b>1,200</b>
<b>Wales</b>	<b>3,054</b>	<b>3,168</b>	<b>3,251</b>	<b>3,315</b>	<b>3,274</b>	<b>2.54</b>	<b>1,289</b>
<b>UK</b>	<b>62,850</b>	<b>64,788</b>	<b>66,477</b>	<b>68,146</b>	<b>68,249</b>	<b>52.89</b>	<b>1,290</b>

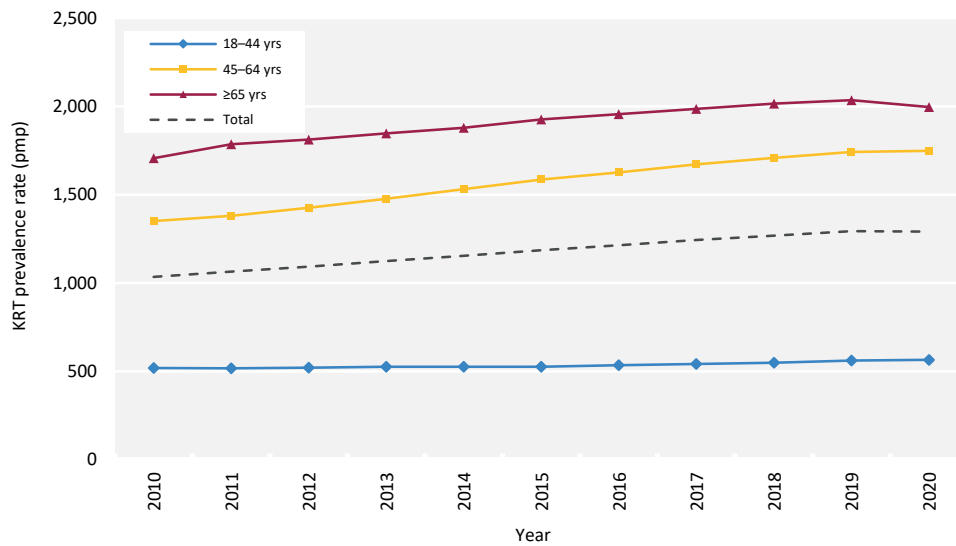
Country KRT populations were calculated by summing the KRT patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures. See appendix A for details on estimated catchment population by kidney centre.

\*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 3.2** Adult KRT prevalence rates by country between 2010 and 2020  
pmp – per million population



**Figure 3.3** Adult KRT prevalence rates by age group between 2010 and 2020  
pmp – per million population

## Demographics and treatment modality of prevalent 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.

Variation between centres in the proportion of dialysis patients on home therapies (PD and HHD combined) is shown in figure 3.4.

**Table 3.2** Demographics and treatment modality of adult patients prevalent to KRT on 31/12/2020 by centre

Centre	N on KRT	% on ICHD	% on PD	% on HHD	% with Tx	Median age (yrs)	% male	Ethnicity				
								% White	% Asian	% Black	% Other	% missing
ENGLAND												
Bham	3,272	40.2	8.2	2.3	49.3	58.4	59.1	56.7	29.6	10.9	2.8	1.2
Bradfd	727	38.2	3.6	0.8	57.4	57.0	60.5	51.0	44.1	2.5	2.4	0.8
Brightn	1,078	39.4	6.1	2.9	51.6	61.4	63.7	89.6	6.4	1.9	2.0	3.2
Bristol	1,477	31.4	4.6	1.2	62.8	59.4	62.4	89.0	3.8	5.3	1.8	1.1
Camb	1,526	18.0	1.8	1.7	78.6	57.0	63.3	89.4	6.3	2.5	1.7	1.9
Carlis	297	37.4	10.8	0.7	51.2	60.8	61.3	99.0	1.0	0.0	0.0	0.0
Carsh	1,854	46.4	6.6	1.5	45.5	62.0	62.0	66.3	17.1	11.4	5.3	3.2
Colchr	151	100.0	0.0	0.0	0.0	73.9	63.6	95.9	1.4	0.7	2.0	2.6
Covnt	1,096	32.8	7.8	1.8	57.7	59.6	61.5	77.7	17.6	4.8	0.0	0.3
Derby	677	36.0	10.3	9.3	44.3	61.0	63.4	83.5	11.3	2.8	2.4	0.9
Donc	341	51.9	5.6	1.5	41.1	63.5	62.2	94.1	2.3	1.5	2.1	0.0
Dorset	798	37.3	4.3	2.0	56.4	65.0	60.0	96.6	1.5	0.3	1.6	0.0
Dudley	370	56.5	8.6	2.4	32.4	64.2	62.4	78.9	14.1	6.2	0.8	0.0
EssexMS	884	47.9	9.5	3.2	39.5	63.0	64.4	86.8	5.9	4.1	3.1	2.8
Exeter	1,106	41.6	7.7	1.8	48.9	63.5	62.2	97.3	0.8	0.7	1.2	0.3
Glouc	521	43.4	5.8	0.0	50.9	63.5	62.0	91.9	4.0	2.3	1.7	0.4
Hull	914	38.5	6.2	0.8	54.5	59.4	65.0	96.0	2.1	0.9	1.0	0.4
Ipswi	425	31.8	7.5	0.7	60.0	61.7	62.8	84.2	2.4	3.2	10.2	3.3
Kent	1,143	37.1	5.4	1.6	55.9	60.9	61.0	92.9	3.2	1.5	2.4	1.0
L Barts	2,557	36.6	10.5	0.9	52.0	57.5	59.4	33.0	34.6	24.1	8.3	1.4
L Guys	2,320	29.9	2.8	2.1	65.3	56.1	59.2	58.4	10.0	27.2	4.3	2.8
L Kings	1,253	49.2	8.1	1.8	41.0	59.4	60.8	43.9	13.8	37.7	4.6	1.3
L Rfree	2,337	30.8	7.8	0.4	61.0	58.5	59.6	43.8	22.4	22.1	11.7	5.5
L St.G	857	37.1	5.6	0.7	56.6	59.8	58.0	40.1	25.4	24.8	9.6	4.1
L West	3,537	35.9	5.7	1.0	57.4	60.8	61.0	38.8	35.6	18.9	6.6	0.0
Leeds	1,751	31.4	3.7	1.3	63.7	57.3	61.5	76.3	16.9	5.3	1.5	0.2
Leic	2,604	36.7	4.3	1.9	57.1	60.3	60.4	73.0	20.4	4.9	1.7	4.3
Liv Ain	216	67.1	9.3	4.6	19.0	61.5	61.6	95.8	0.5	1.4	2.3	1.4
Liv Roy*	1,142	28.2	2.4	3.3	66.1	58.0	60.3	90.7	3.3	3.5	2.6	1.7
M RI	1,985	25.4	4.2	3.5	66.8	57.5	59.9	66.6	14.5	16.7	2.2	1.4
Middlbr	942	34.4	3.0	1.9	60.7	59.3	64.8	94.1	4.7	0.3	0.9	0.5
Newc	1,207	29.5	3.8	1.2	65.5	59.3	60.5	93.3	4.6	1.1	1.1	0.1
Norwch	805	35.9	5.5	1.6	57.0	62.1	61.5	97.0	1.4	0.7	0.9	0.4
Nottm	1,212	28.8	7.8	2.6	60.7	58.3	61.1	80.9	8.7	7.6	2.9	0.0
Oxford	2,021	23.8	3.3	0.8	72.1	58.5	62.0	79.7	11.2	4.5	4.5	11.6
Plymth	544	28.1	6.1	0.0	65.8	62.6	67.6	97.1	0.9	0.4	1.7	0.0
Ports	1,902	31.9	5.3	4.4	58.5	60.1	61.7	92.2	4.1	1.1	2.6	7.4
Prestn	1,370	36.5	3.6	3.4	56.4	59.6	61.0	83.2	15.2	0.9	0.7	0.1
Redng	871	34.4	7.1	0.9	57.5	61.0	62.6	65.1	22.9	6.0	6.0	4.6
Salford	1,264	34.3	8.4	3.0	54.4	58.6	60.8	79.0	16.1	3.2	1.7	0.0
Sheff	1,491	36.8	5.2	4.1	54.0	59.7	63.2	88.3	6.6	2.6	2.6	1.7
Shrew	414	42.0	12.3	8.7	37.0	62.2	65.7	92.6	3.7	1.2	2.5	1.7
Stevng	963	56.3	2.6	3.2	37.9	61.5	62.8	70.2	16.2	9.1	4.4	11.0

**Table 3.2** Continued

Centre	N on KRT	% on ICHD	% on PD	% on HHD	% with Tx	Median age (yrs)	% male	Ethnicity				
								% White	% Asian	% Black	% Other	% missing
Stoke	809	31.3	11.0	4.8	52.9	59.9	64.2	90.6	5.7	1.9	1.8	3.1
Sund	557	39.5	5.9	1.6	53.0	60.0	59.4	95.9	3.1	0.5	0.5	0.2
Truro	445	35.7	5.2	0.9	58.2	63.2	58.7	98.2	0.4	0.0	1.3	0.0
Wirral	406	48.0	3.7	1.7	46.6	60.5	63.1	95.6	2.7	1.0	0.7	0.2
Wolve	643	50.2	9.2	4.7	35.9	60.2	61.6	62.3	25.7	9.3	2.6	0.2
York	572	33.6	4.2	3.1	59.1	61.6	61.5	97.2	1.2	0.5	1.1	1.7
<b>N IRELAND</b>												
Antrim	289	38.8	4.2	1.4	55.7	63.6	63.3	99.6	0.0	0.4	0.0	2.1
Belfast	890	16.1	1.7	1.1	81.1	57.8	59.6	97.6	1.7	0.5	0.2	3.3
Newry	264	29.5	3.4	1.5	65.5	60.7	59.1	98.5	0.8	0.4	0.4	1.5
Ulster	200	48.0	1.5	0.0	50.5	66.7	59.0	94.5	3.5	1.5	0.5	0.0
West NI	350	33.7	2.0	0.9	63.4	58.2	60.9	99.1	0.6	0.3	0.0	0.6
<b>SCOTLAND</b>												
Abrdn	565	34.0	3.9	0.4	61.8	57.9	58.1					69.4
Airdrie	514	37.7	5.4	0.0	56.8	58.6	57.8					16.9
D&Gall	156	35.9	6.4	0.6	57.1	61.0	62.8					39.7
Dundee	430	36.7	3.3	1.4	58.6	59.5	60.5					67.7
Edinb	888	32.4	3.6	0.3	63.6	58.6	64.8					77.9
Glasgw	1,844	29.8	2.4	0.6	67.2	58.4	59.3					52.6
Inverns	271	32.8	3.3	1.1	62.7	59.1	57.6					49.8
Klmarnk	369	39.8	7.3	3.8	49.1	62.0	58.8					62.6
Krkldy	291	50.2	2.1	1.0	46.7	62.4	62.5					82.5
<b>WALES</b>												
Bangor	216	36.1	8.3	6.0	49.5	63.7	65.7	98.5	0.0	0.5	1.0	5.6
Cardiff	1,678	30.5	4.0	2.0	63.5	58.7	61.2	90.9	6.1	1.1	1.9	1.0
Clwyd	207	40.6	7.2	0.0	52.2	62.8	64.7	97.0	2.5	0.0	0.5	4.8
Swanse	850	46.4	6.9	5.2	41.5	63.4	64.2	97.5	1.8	0.2	0.5	0.7
Wrexm	323	35.0	8.0	2.2	54.8	59.8	65.0	96.2	1.3	0.9	1.6	1.2
<b>TOTALS</b>												
<b>England</b>	<b>57,654</b>	<b>35.7</b>	<b>5.9</b>	<b>2.1</b>	<b>56.3</b>	<b>59.6</b>	<b>61.3</b>	<b>73.0</b>	<b>14.6</b>	<b>9.0</b>	<b>3.4</b>	<b>2.3</b>
<b>N Ireland</b>	<b>1,993</b>	<b>27.4</b>	<b>2.3</b>	<b>1.1</b>	<b>69.2</b>	<b>59.6</b>	<b>60.2</b>	<b>98.0</b>	<b>1.3</b>	<b>0.5</b>	<b>0.2</b>	<b>2.1</b>
<b>Scotland</b>	<b>5,328</b>	<b>34.1</b>	<b>3.6</b>	<b>0.8</b>	<b>61.4</b>	<b>59.1</b>	<b>60.2</b>					<b>58.2</b>
<b>Wales</b>	<b>3,274</b>	<b>36.1</b>	<b>5.7</b>	<b>3.0</b>	<b>55.3</b>	<b>60.2</b>	<b>62.9</b>	<b>94.0</b>	<b>3.9</b>	<b>0.7</b>	<b>1.3</b>	<b>1.5</b>
<b>UK</b>	<b>68,249</b>	<b>35.4</b>	<b>5.6</b>	<b>2.0</b>	<b>57.0</b>	<b>59.6</b>	<b>61.3</b>	<b>75.3</b>	<b>13.4</b>	<b>8.1</b>	<b>3.1</b>	<b>6.6</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.

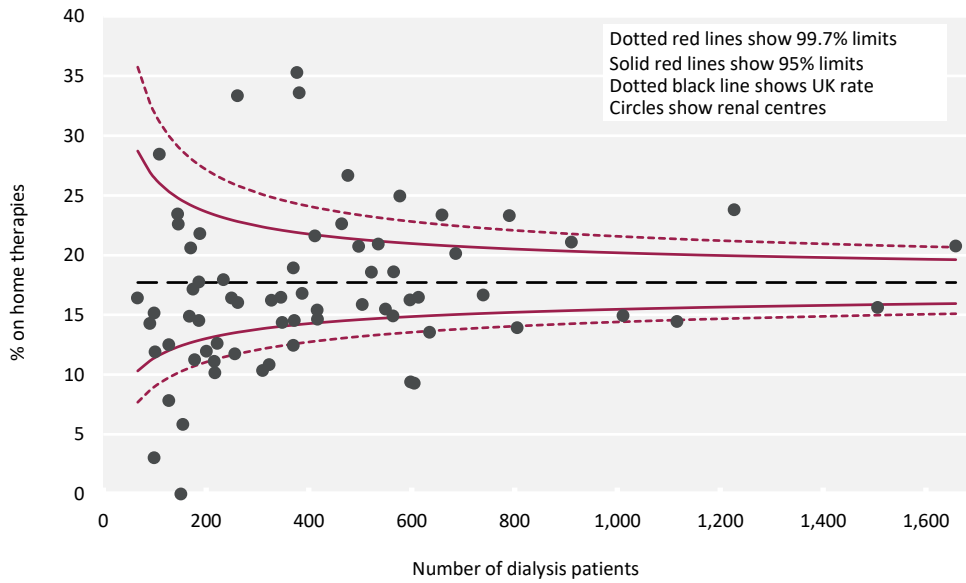
\*Incident patient numbers at Liverpool Royal Infirmiry are under-reported (about 30 HD patients) due to a systems extraction problem at the centre. This will be corrected in the next annual report.

PRDs were grouped into categories as shown in table 3.3, 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.

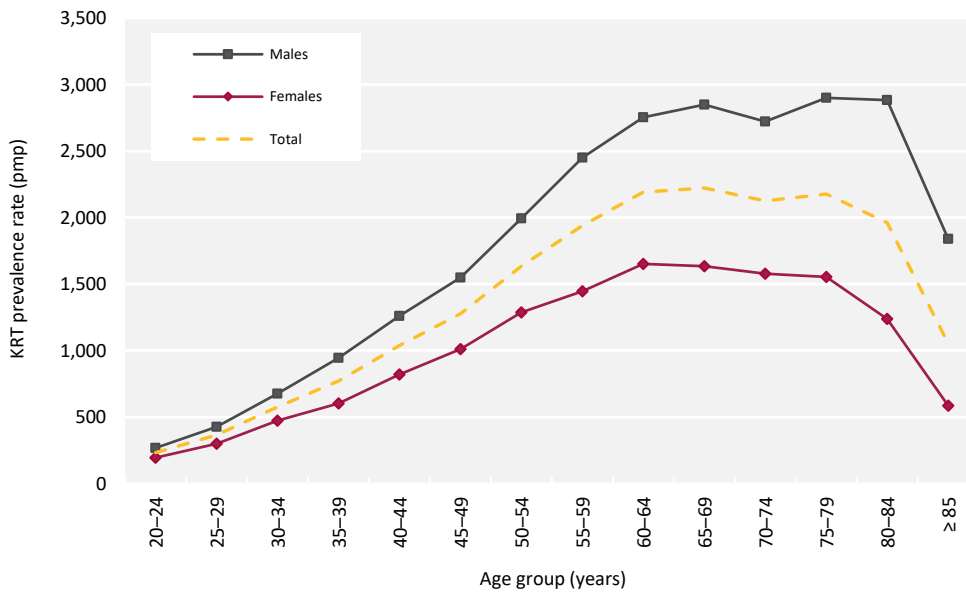
**Table 3.3** Demographics, primary renal diseases (PRDs) and prevalent treatment modality of adult patients prevalent to KRT on 31/12/2020 by age group

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 on KRT	5,407	7,645	13,035	17,193	14,603	8,619	1,747	68,249	59.6
% on KRT	7.9	11.2	19.1	25.2	21.4	12.6	2.6		
<b>Sex (%)</b>									
Male	7.7	11.0	18.7	25.4	21.5	13.0	2.7	61.3	59.9
Female	8.4	11.5	19.7	24.8	21.2	12.1	2.3	38.7	59.2
<b>Ethnicity (%)</b>									
White	7.9	10.6	18.7	24.8	21.9	13.3	2.8	75.3	60.0
Asian	8.9	13.6	18.9	24.3	22.9	9.9	1.5	13.4	59.0
Black	6.3	12.4	24.1	31.2	13.7	10.1	2.2	8.1	57.0
Other	9.8	16.5	20.9	23.7	17.9	9.3	1.9	3.1	56.4
Missing	7.1	9.5	16.7	25.2	23.7	15.3	2.5	6.6	61.8
<b>PRD (%)</b>									
Diabetes	2.9	9.0	18.7	29.3	24.9	13.2	2.1	18.4	61.9
Glomerulonephritis	9.2	13.8	22.1	26.4	18.8	8.4	1.3	19.6	56.8
Hypertension	3.2	8.9	19.1	26.0	20.8	17.4	4.6	6.3	62.0
Polycystic kidney disease	1.7	5.5	19.9	34.6	27.2	10.3	0.8	10.5	61.5
Pyelonephritis	11.4	14.5	23.0	23.0	16.0	9.8	2.3	9.6	55.5
Renal vascular disease	2.2	3.6	5.9	13.4	29.7	34.8	10.3	2.7	73.8
Other	16.5	14.0	17.5	20.7	18.6	10.6	2.1	18.3	56.0
Uncertain aetiology	6.8	11.7	17.7	20.9	21.9	16.6	4.4	14.5	61.4
Missing	9.9	9.6	14.5	22.0	21.6	18.5	4.0	2.5	62.5
<b>Modality (%)</b>									
ICHD	4.7	6.7	13.2	22.0	24.5	22.9	6.1	35.4	66.5
HHD	9.5	15.1	24.3	27.2	15.5	7.8	0.7	2.0	55.3
PD	7.7	9.3	14.7	21.4	23.1	19.8	4.1	5.6	63.5
Tx	9.9	14.1	23.0	27.5	19.5	5.7	0.3	57.0	56.0

Variation between centres in the proportion of patients prevalent to dialysis on 31/12/2020 and on home therapies is shown in figure 3.4 . Please visit the UKRR data portal ([ukkidney.org/audit-research/data-portals](http://ukkidney.org/audit-research/data-portals)) to identify individual kidney centres.

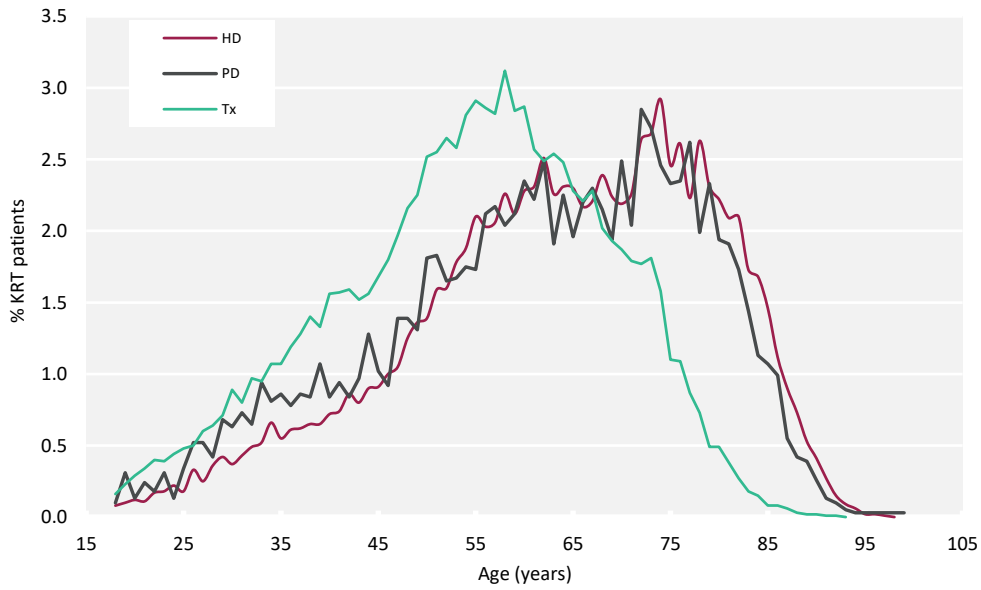


**Figure 3.4** Percentage of adult patients prevalent to dialysis on 31/12/2020 on home therapies (PD and HHD) by centre

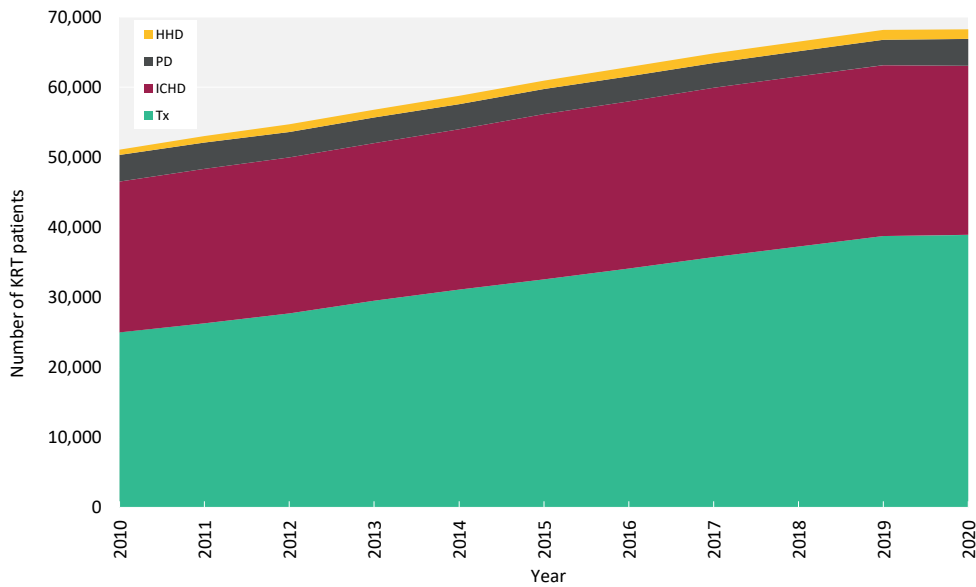


**Figure 3.5** Prevalence rates for adult patients on KRT on 31/12/2020 by age group and sex

For each modality, the percentage of patients of each year of age is shown in figure 3.6.



**Figure 3.6** Age profile of adult patients prevalent to KRT on 31/12/2020 by KRT modality



**Figure 3.7** Growth in numbers of prevalent adult KRT patients by treatment modality between 2010 and 2020

**Table 3.4** Change in adult KRT prevalence rates by modality between 2016 and 2020

Year	Prevalence (pmp)					% growth in prevalence				
	HD	PD	Dialysis	Tx	KRT	HD	PD	Dialysis	Tx	KRT
2016	486	70	555	659	1,214					
2017	490	68	557	687	1,244	0.9	-3.0	0.4	4.2	2.5
2018	490	68	558	711	1,269	-0.0	1.2	0.1	3.5	2.0
2019	489	69	558	736	1,294	-0.1	1.0	0.0	3.5	1.9
2020	483	72	555	735	1,290	-1.3	4.7	-0.6	-0.0	-0.3
<b>Average annual growth 2016-2020</b>						<b>-0.1</b>	<b>1.0</b>	<b>-0.0</b>	<b>2.8</b>	<b>1.5</b>

pmp – per million population

In table 3.5, for each PRD category, the proportion of patients on each treatment modality is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line. Table 3.6 shows changes in PRDs between 2011 and 2020, in particular the increase in diabetes.

**Table 3.5** Treatment modality of adult patients prevalent to KRT on 31/12/2020 by primary renal disease (PRD)

PRD	N on KRT	% KRT population	Modality (%)		
			HD	PD	Tx
Diabetes	12,244	18.4	55.1	7.3	37.5
Glomerulonephritis	13,039	19.6	26.7	4.6	68.7
Hypertension	4,225	6.3	43.7	7.2	49.0
Polycystic kidney disease	7,018	10.5	21.0	3.8	75.2
Pyelonephritis	6,392	9.6	28.8	3.7	67.5
Renal vascular disease	1,801	2.7	64.2	10.2	25.6
Other	12,178	18.3	35.4	4.5	60.1
Uncertain aetiology	9,640	14.5	38.0	6.1	55.9
<b>Total (with data)</b>	<b>66,537</b>	<b>100.0</b>	<b>36.9</b>	<b>5.5</b>	<b>57.7</b>
Missing	1,712	2.5	58.9	10.8	30.3

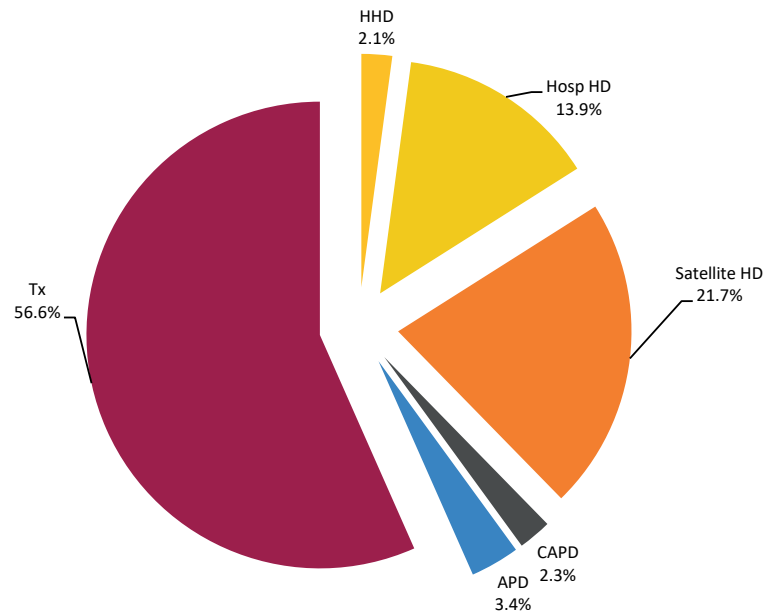
**Table 3.6** Change in primary renal disease (PRD) of adult patients prevalent to KRT between 2011 and 2020

PRD	Year									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Diabetes	15.9	16.3	16.6	16.8	17.2	17.4	17.7	18.1	18.4	18.4
Glomerulonephritis	19.4	19.5	19.6	19.5	19.5	19.5	19.5	19.5	19.5	19.6
Hypertension	6.1	6.3	6.3	6.3	6.3	6.2	6.3	6.2	6.4	6.3
Polycystic kidney disease	10.1	10.0	10.2	10.2	10.3	10.3	10.3	10.3	10.4	10.5
Pyelonephritis	11.8	11.6	11.4	11.1	10.8	10.6	10.3	10.0	9.8	9.6
Renal vascular disease	3.5	3.4	3.2	3.1	3.0	3.0	3.0	2.9	2.8	2.7
Other	16.3	16.5	16.7	17.1	17.3	17.6	17.9	18.2	18.2	18.3
Uncertain aetiology	17.0	16.5	16.1	15.9	15.6	15.3	15.0	14.8	14.6	14.5
Missing	0.6	0.6	0.7	0.7	0.8	0.8	1.1	1.3	1.7	2.5

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

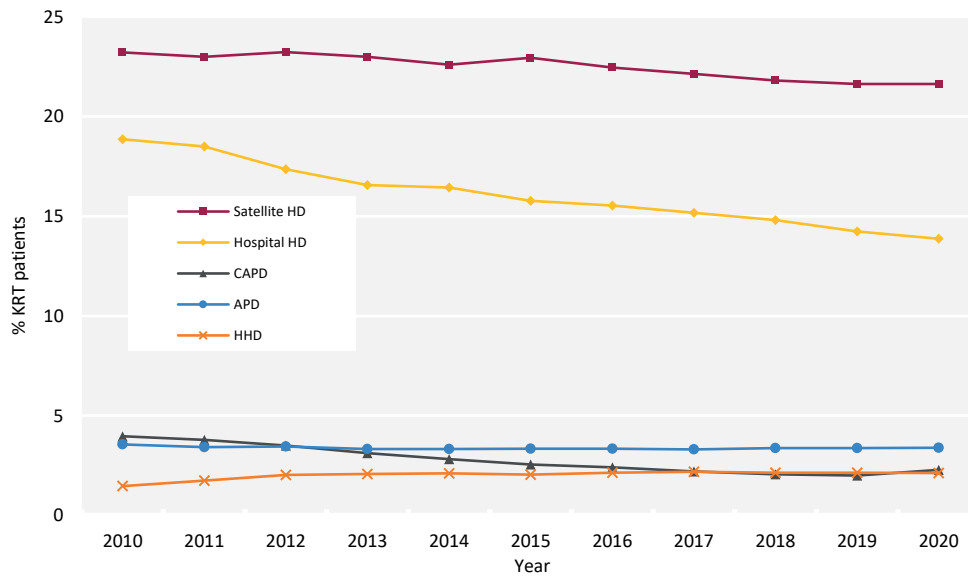
The treatment modality distribution for prevalent adult KRT patients was further divided by treatment location for HD patients – hospital unit, satellite unit or home – and for PD patients by type of PD – automated PD (APD) and continuous ambulatory PD (CAPD).





**Figure 3.8** Detailed treatment modality of adult patients prevalent to KRT on 31/12/2020

No Scottish centres were included because data on satellite HD were not available.  
 APD – automated PD; CAPD – continuous ambulatory PD.



**Figure 3.9** Detailed dialysis modality changes in prevalent adult KRT patients between 2010 and 2020

No Scottish centres were included because data on satellite HD were not available.  
 The denominator includes patients with a Tx.  
 APD – automated PD; CAPD – continuous ambulatory PD.

**Table 3.7** Adult patients prevalent to dialysis on 31/12/2020 by detailed dialysis modality and centre

Centre	N on dialysis	% Tx wait-listed <65 yrs	% Tx wait-listed ≥65 yrs	% on HD				% on PD		
				All HD	HHD	Hospital	Satellite	All PD	CAPD	APD
ENGLAND										
Bham	1,658	32.9	3.3	83.8	4.6	26.1	53.1	16.2	2.8	13.3
Bradfd	310	27.7	6.0	91.6	1.9	76.5	13.2	8.4	3.2	5.2
Brightn	522	28.0	4.6	87.4	5.9	39.9	41.6	12.6	8.1	4.6
Bristol	549	31.0	3.1	87.6	3.1	14.2	70.3	12.4	7.3	5.1
Camb	327	25.0	2.6	91.7	8.0	36.1	47.7	8.3	7.0	1.2
Carlisle	145	31.9	7.9	77.9	1.4	44.8	31.7	22.1	6.2	15.9
Carsh	1,011	28.4	4.7	87.8	2.8	25.2	59.8	12.2	4.2	7.9
Colchr	151	20.5	0.9	100.0	0.0	76.8	23.2	0.0	0.0	0.0
Covnt	464	40.4	6.5	81.7	4.3	77.4	0.0	18.3	18.3	0.0
Derby	377	29.5	4.0	81.4	16.7	55.2	9.6	18.6	10.3	8.2
Donc	201	28.2	6.5	90.6	2.5	48.3	39.8	9.5	4.0	5.5
Dorset	348	33.6	10.5	90.2	4.6	21.6	64.1	9.8	3.2	6.3
Dudley	250	30.4	2.7	87.2	3.6	27.2	56.4	12.8	8.8	4.0
EssexMS	535	28.9	3.7	84.3	5.2	72.2	6.9	15.7	8.6	7.1
Exeter	565	30.8	4.7	85.0	3.5	12.7	68.7	15.0	6.6	8.5
Glouc	256	29.5	6.5	88.3	0.0	80.1	8.2	11.7	1.2	10.6
Hull	416	23.2	5.6	86.3	1.7	42.1	42.6	13.7	7.2	6.5
Ipswi	170	17.5	4.7	81.2	1.8	73.5	5.9	18.8	8.8	8.8
Kent	504	28.0	6.6	87.7	3.6	28.8	55.4	12.3	10.5	1.8
L Barts	1,227	39.8	6.9	78.2	2.0	31.0	45.2	21.8	8.3	13.5
L Guys	805	29.5	7.0	92.1	6.0	14.8	71.3	8.0	1.1	6.8
L Kings	739	25.6	6.9	86.3	3.0	15.0	68.3	13.7	4.3	9.2
L Rfree	911	37.3	8.2	80.0	1.1	1.2	77.7	20.0	9.4	10.4
L St.G	372	37.9	8.8	87.1	1.6	15.1	70.4	12.9	2.2	10.0
L West	1,506	47.3	16.1	86.7	2.3	15.2	69.2	13.3	8.4	4.9
Leeds	635	38.4	12.8	89.9	3.5	10.9	75.6	10.1	2.7	7.4
Leic	1,116	31.0	7.1	90.0	4.4	16.0	69.6	10.0	2.2	7.9
Liv Ain	175	21.3	7.0	88.6	5.7	12.6	70.3	11.4	3.4	8.0
Liv Roy	387	26.6	12.7	93.0	9.8	23.0	60.2	7.0	2.6	4.4
M RI	659	37.5	11.8	87.3	10.6	14.9	61.8	12.8	4.4	8.4
Middlbr	370	34.9	5.5	92.4	4.9	27.0	60.5	7.6	7.6	0.0
Newc	417	28.7	9.6	89.0	3.6	59.5	25.9	11.0	1.4	9.6
Norwch	346	14.9	2.0	87.3	3.8	45.1	38.4	12.7	9.0	3.8
Nottm	476	33.2	5.2	80.0	6.7	29.2	44.1	20.0	4.2	15.8
Oxford	564	35.4	8.1	88.1	3.0	32.1	53.0	11.9	5.5	6.4
Plymth	186	25.0	13.2	82.3	0.0	78.0	4.3	17.7	5.9	11.8
Ports	790	33.9	10.7	87.2	10.5	16.1	60.6	12.8	4.9	7.9
Prestn	597	35.4	10.2	91.6	7.9	18.8	65.0	8.4	2.9	5.5
Redng	370	35.4	5.2	83.2	2.2	28.7	52.4	16.8	13.0	3.8
Salford	577	38.3	27.2	81.6	6.6	19.6	55.5	18.4	7.3	11.1
Sheff	686	30.9	7.7	88.8	8.9	43.7	36.2	11.2	2.5	8.5
Shrew	261	25.9	5.4	80.5	13.8	28.7	37.9	19.5	1.5	18.0
Stevng	598	35.7	7.8	95.8	5.2	46.0	44.7	4.2	1.5	2.7
Stoke	381	33.9	1.9	76.6	10.2	42.8	23.6	23.4	1.8	15.8
Sund	262	31.4	8.8	87.4	3.4	45.8	38.2	12.6	1.5	11.1
Truro	186	26.6	4.9	87.6	2.2	53.8	31.7	12.4	6.5	5.9
Wirral	217	27.2	10.7	93.1	3.2	39.6	50.2	6.9	0.9	6.0
Wolve	412	22.0	7.8	85.7	7.3	70.2	8.3	14.3	2.9	9.7
York	234	33.3	11.3	89.7	7.7	28.6	53.4	10.3	0.9	9.4

**Table 3.7** Continued

Centre	N on dialysis	% Tx wait-listed <65 yrs	% Tx wait-listed ≥65 yrs	% on HD				% on PD		
				All HD	HHD	Hospital	Satellite	All PD	CAPD	APD
<b>N IRELAND<sup>1</sup></b>										
Antrim	128	22.6	1.0	90.6	3.1	87.5	0.0	9.4	3.1	4.7
Belfast	168	24.7	6.9	91.1	6.0	85.1	0.0	8.9	0.6	6.6
Newry	91	26.8	4.0	90.1	4.4	85.7	0.0	9.9	1.1	6.6
Ulster	99	31.8	.	97.0	0.0	97.0	0.0	3.0	0.0	1.0
West NI	128	25.9	1.4	94.5	2.3	92.2	0.0	5.5	1.6	3.9
<b>SCOTLAND<sup>2</sup></b>										
Abrdn	216	32.4	11.7	89.8	0.9	88.9	0.0	10.2	7.4	2.8
Airdrie	222	44.3	14.0	87.4	0.0	87.4	0.0	12.6	6.3	6.3
D&Gall	67	42.9	10.3	85.1	1.5	83.6	0.0	14.9	3.0	11.9
Dundee	178	33.7	5.3	92.1	3.4	88.8	0.0	7.9	0.0	7.9
Edinb	323	40.7	11.9	90.1	0.9	89.2	0.0	9.9	4.3	5.6
Glasgw	605	46.3	17.0	92.6	1.8	90.7	0.0	7.4	1.2	6.3
Inverns	101	40.9	5.3	91.1	3.0	88.1	0.0	8.9	7.9	1.0
Klmarnk	188	25.3	13.3	85.6	7.5	78.2	0.0	14.4	1.1	13.3
Krkldy	155	20.6	12.6	96.1	1.9	94.2	0.0	3.9	1.3	2.6
<b>WALES</b>										
Bangor	109	29.8	4.8	83.5	11.9	51.4	20.2	16.5	6.4	10.1
Cardff	613	30.5	8.1	89.1	5.6	3.4	80.1	10.9	5.9	5.1
Clwyd	99	14.6	3.4	84.9	0.0	84.9	0.0	15.2	9.1	6.1
Swanse	497	30.9	7.2	88.1	8.9	47.3	32.0	11.9	6.0	5.8
Wrexm	146	26.5	7.7	82.2	4.8	63.0	14.4	17.8	0.7	17.1
<b>TOTALS</b>										
<b>England</b>	<b>25,221</b>	<b>32.8</b>	<b>7.6</b>	<b>86.5</b>	<b>4.8</b>	<b>30.5</b>	<b>51.2</b>	<b>13.5</b>	<b>5.4</b>	<b>8.0</b>
<b>N Ireland</b>	<b>614</b>	<b>25.8</b>	<b>2.6</b>	<b>92.5</b>	<b>3.4</b>	<b>89.1</b>	<b>0.0</b>	<b>7.5</b>	<b>1.3</b>	<b>4.7</b>
<b>Scotland</b>	<b>2,055</b>	<b>38.8</b>	<b>12.8</b>	<b>90.6</b>	<b>2.1</b>	<b>88.5</b>	<b>0.0</b>	<b>9.4</b>	<b>3.2</b>	<b>6.2</b>
<b>Wales</b>	<b>1,464</b>	<b>29.3</b>	<b>7.1</b>	<b>87.4</b>	<b>6.7</b>	<b>33.3</b>	<b>47.3</b>	<b>12.6</b>	<b>5.7</b>	<b>7.0</b>
<b>UK</b>	<b>29,354</b>	<b>32.9</b>	<b>7.8</b>	<b>87.0</b>	<b>4.7</b>	<b>35.9</b>	<b>46.4</b>	<b>13.0</b>	<b>5.1</b>	<b>7.7</b>

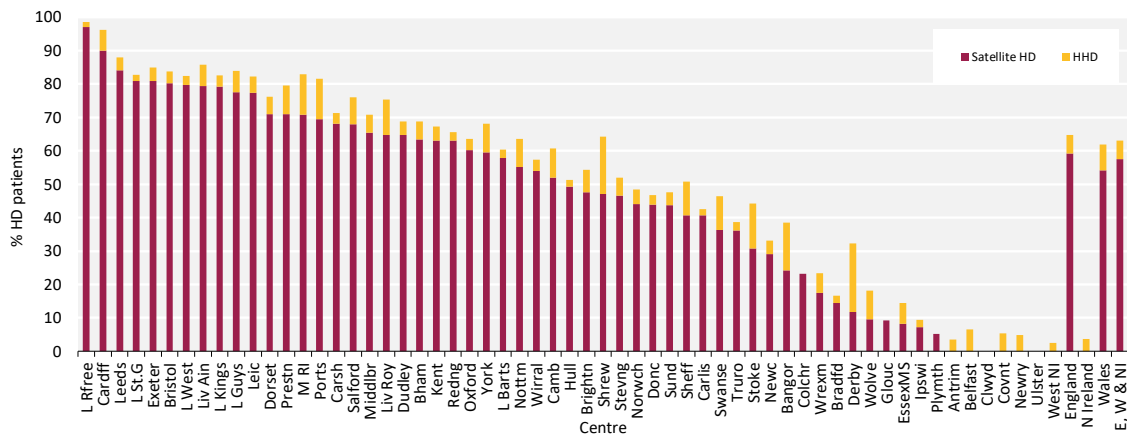
Blank cells – no data returned by the centre.

<sup>1</sup>There were no satellite units in Northern Ireland.

<sup>2</sup>All HD patients in Scotland were shown as receiving treatment at home or in hospital because no data were available regarding satellite dialysis.

APD – automated PD; CAPD – continuous ambulatory PD.

The proportion of patients on HHD versus satellite HD is shown in figure 3.10, with the remaining patients on hospital HD.



**Figure 3.10** Adult patients prevalent to HD on 31/12/2020 treated with satellite HD or HHD by centre  
There were no satellite units in Northern Ireland and Scottish centres were excluded because data on satellite HD were not available.

## Dialysis access in prevalent adult dialysis patients

The type of dialysis access used by the prevalent dialysis population is described in chapter 5.

## Survival in adult dialysis patients

Survival was analysed in prevalent patients receiving dialysis on 31/12/2019 and followed-up for one year in 2020. Survival in patients with a Tx is presented in chapter 4.

Survival analyses, where stated, were adjusted to age 60 years to allow comparisons between centres with different age distributions. Centre-specific survival rates were further adjusted for not only age (figure 3.11), but also sex and comorbidities for centres with at least 85% completeness (figure 3.12). UKRR comorbidity data were augmented using diagnostic and procedure codes from Hospital Episode Statistics (HES) in England and Patient Episode Database for Wales (PEDW) in Wales (see appendix A for details). Centres are identifiable from the x-axis by using the number of prevalent dialysis patients by centre in table 3.8.

**Table 3.8** 1 year adjusted survival (age and case-mix) of adult patients prevalent to dialysis on 31/12/2019 by centre

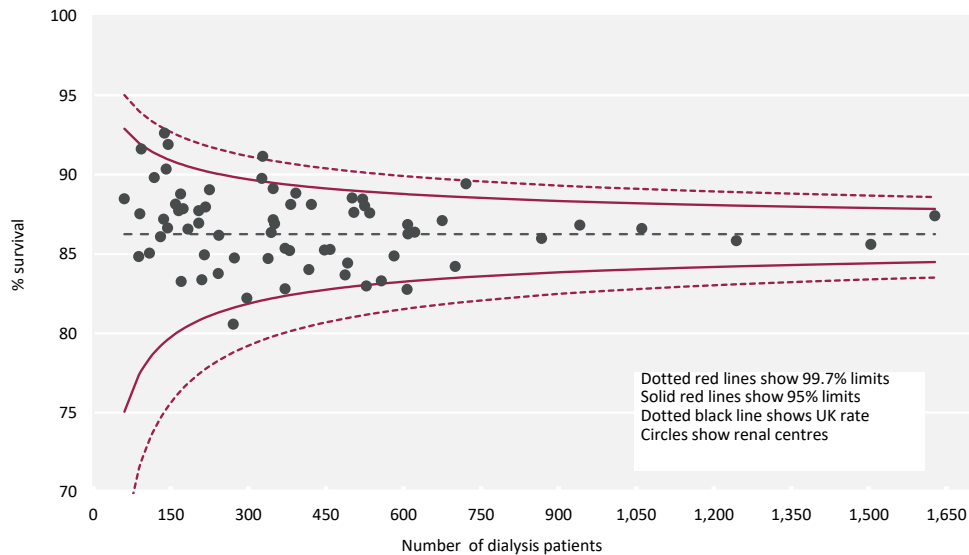
Centre	Age-adjusted survival				Case-mix adjusted survival <sup>1</sup>			
	N on dialysis	1 yr (%)	Lower 95% limit	Upper 95% limit	N on dialysis	1 yr (%)	Lower 95% limit	Upper 95% limit
D&Gall	60	88.5	75.1	92.9				
Clwyd	88	84.8	77.4	92.0	88	87.2	79.9	93.6
Newry	90	87.5	77.5	92.0	86	86.1	79.7	93.6
Bangor	93	91.6	77.7	91.9	93	93.2	80.1	93.5
Inverns	109	85.1	78.4	91.5				
Ulster	118	89.8	78.8	91.4	115	87.8	81.1	93.1
Wrexm	130	86.1	79.2	91.2	130	87.7	81.7	92.9
Carlisle	136	87.2	79.4	91.1	132	88.1	81.7	92.8
West NI	138	92.6	79.4	91.1	124	90.1	81.5	92.9
Antrim	141	90.3	79.5	91.0	129	89.3	81.6	92.9
Krkldy	144	86.6	79.6	91.0				
Colchr	145	91.9	79.6	91.0	144	93.2	82.1	92.7
Plymth	159	88.1	80.0	90.8	157	91.1	82.4	92.5
Klmarnk	165	87.7	80.1	90.7				
Ipswi	169	88.8	80.2	90.7	164	90.4	82.5	92.5
Liv Ain	170	83.3	80.2	90.7	170	87.0	82.6	92.4
Truro	174	87.9	80.3	90.6	173	90.2	82.7	92.4
Dundee	183	86.6	80.5	90.5				
Abrdn	204	87.7	80.8	90.3				
Donc	204	86.9	80.8	90.3	201	88.6	83.2	92.1
Airdrie	210	83.4	80.9	90.3				
Wirral	215	84.9	81.0	90.2	214	88.3	83.4	92.0
Belfast	217	88.0	81.0	90.2				
York	225	89.1	81.1	90.2	225	90.7	83.5	92.0
Glouc	242	83.8	81.3	90.0	239	86.2	83.7	91.9
Dudley	243	86.2	81.3	90.0	243	88.6	83.7	91.8
Sund	271	80.6	81.6	89.9	271	86.2	84.0	91.7
Shrew	273	84.7	81.6	89.9	273	87.1	84.0	91.7
Bradfd	297	82.2	81.8	89.7	295	85.2	84.2	91.6
Dorset	326	89.8	82.1	89.6	326	90.6	84.4	91.4
L St.G	328	91.2	82.1	89.6	316	92.5	84.4	91.5
Edinb	338	84.7	82.2	89.5				
Norwch	344	86.4	82.2	89.5	343	87.4	84.5	91.4
Derby	348	89.1	82.2	89.5	348	90.9	84.6	91.4
Stoke	348	87.2	82.2	89.5	346	89.2	84.6	91.4
Redng	351	86.9	82.2	89.5	351	89.4	84.6	91.3
Hull	371	85.3	82.4	89.4	370	87.5	84.7	91.3
Middlbr	371	82.8	82.4	89.4	371	86.2	84.7	91.3
Wolve	380	85.2	82.4	89.4	379	87.7	84.8	91.2
Newc	382	88.1	82.4	89.4	382	90.7	84.8	91.2
Camb	392	88.8	82.5	89.3	376	88.8	84.7	91.3
Liv Roy	417	84.0	82.6	89.2	412	88.2	84.9	91.1
Covnt	422	88.1	82.6	89.2	416	89.4	84.9	91.1
Nottm	447	85.3	82.7	89.1	446	87.7	85.1	91.0
Kent	458	85.3	82.8	89.1	458	86.9	85.1	91.0
Swanse	487	83.7	82.9	89.0	487	86.7	85.2	90.9
Brightn	492	84.4	82.9	89.0	481	85.6	85.2	91.0
Essex MS	501	88.5	83.0	89.0	498	90.1	85.3	90.9
Oxford	504	87.6	83.0	89.0	495	90.0	85.3	90.9
Bristol	521	88.5	83.0	89.0	519	90.5	85.3	90.9
Exeter	525	88.0	83.0	88.9	522	89.2	85.3	90.9
Salford	528	83.0	83.0	88.9	527	86.1	85.4	90.9
Stevng	535	87.6	83.1	88.9	533	89.6	85.4	90.8
Prestn	557	83.3	83.1	88.9	537	86.2	85.4	90.8

**Table 3.8** Continued

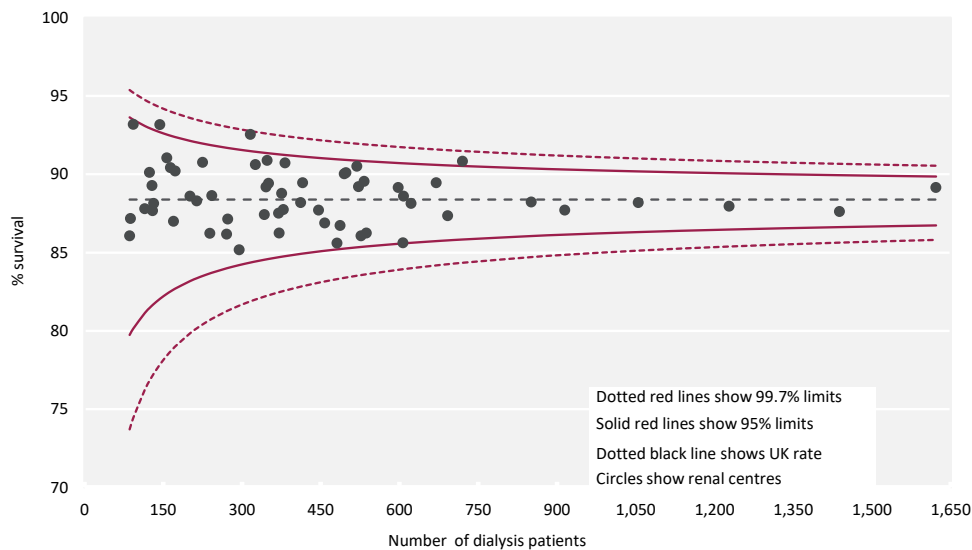
Centre	Age-adjusted survival				Case-mix adjusted survival <sup>1</sup>			
	N on dialysis	1 yr (%)	Lower 95% limit	Upper 95% limit	N on dialysis	1 yr (%)	Lower 95% limit	Upper 95% limit
Glasgw	582	84.9	83.2	88.8				
Cardff	607	82.8	83.3	88.8	607	85.6	85.6	90.7
M RI	608	86.8	83.3	88.8	598	89.1	85.6	90.7
Leeds	609	86.3	83.3	88.8	608	88.6	85.6	90.7
Sheff	622	86.4	83.3	88.7	622	88.1	85.6	90.7
L Kings	675	87.1	83.4	88.7	670	89.5	85.7	90.6
Ports	700	84.2	83.5	88.6	692	87.4	85.8	90.6
L Guys	721	89.4	83.5	88.6	720	90.8	85.8	90.5
L Rfree	867	86.0	83.8	88.4	851	88.2	86.1	90.4
Carsh	941	86.8	83.9	88.3	915	87.7	86.1	90.3
Leic	1,061	86.6	84.0	88.2	1,055	88.2	86.3	90.2
L Barts	1,244	85.8	84.2	88.1	1,228	88.0	86.5	90.1
L West	1,504	85.6	84.4	87.9	1,438	87.6	86.6	89.9
Bham	1,628	87.4	84.5	87.8	1,622	89.1	86.7	89.9

Centres are ordered by increasing number of patients.

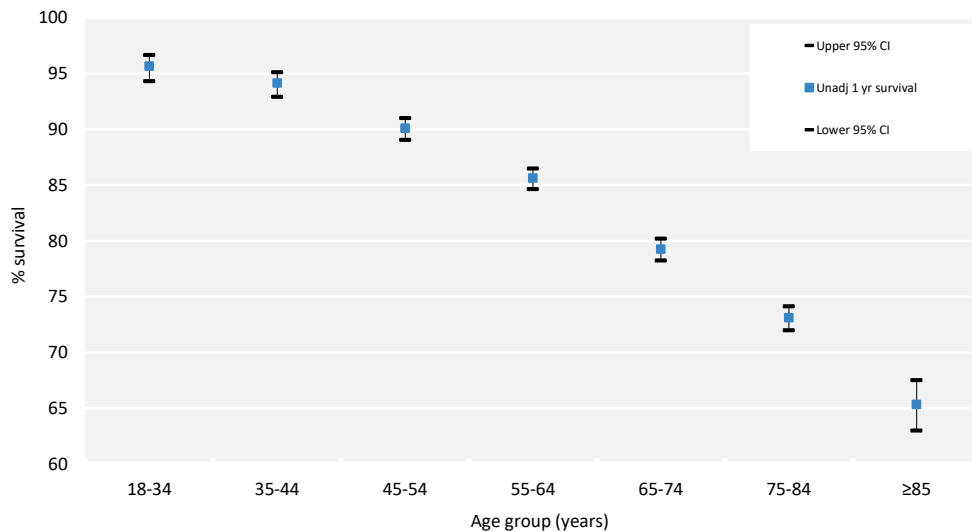
<sup>1</sup>Centres excluded if <85% comorbidity data were available – this included Belfast and all Scottish kidney centres.



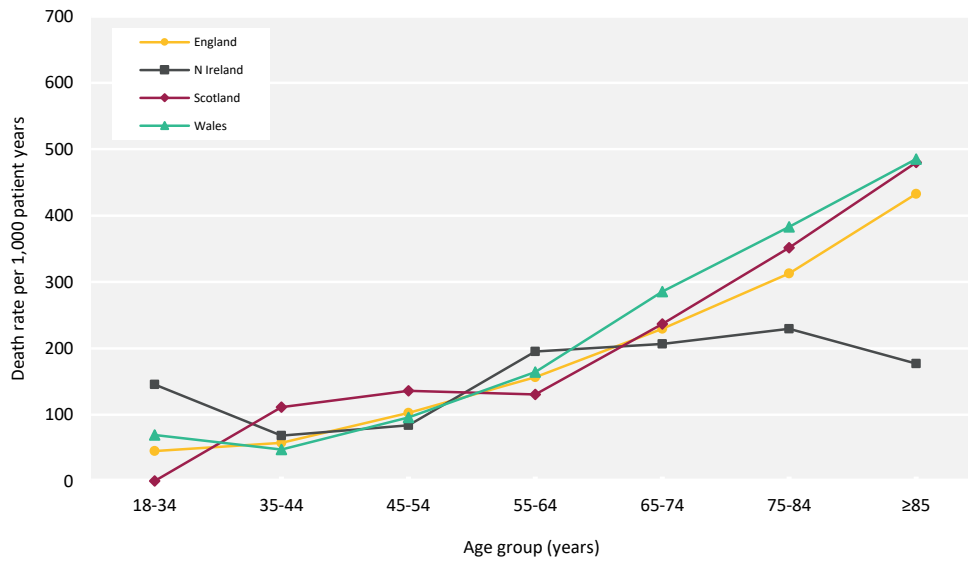
**Figure 3.11** 1 year survival (adjusted to age 60 years) of adult patients prevalent to dialysis on 31/12/2019 by centre



**Figure 3.12** 1 year survival (adjusted to 60 years, male and median comorbidity score) of adult patients prevalent to dialysis on 31/12/2019 by centre

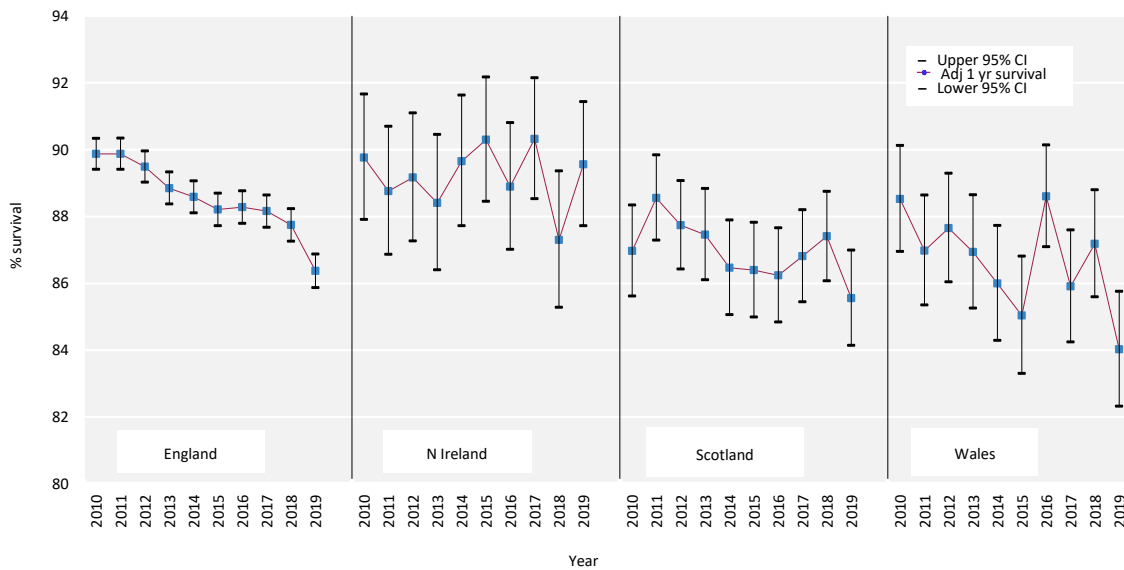


**Figure 3.13** 1 year survival (unadjusted) of adult patients prevalent to dialysis on 31/12/2019 by age group  
CI – confidence interval



**Figure 3.14** 1 year death rate per 1,000 patient years for adult patients prevalent to dialysis on 31/12/2019 by country and age group

The serial one year death rate in prevalent adult dialysis patients by country is shown in figure 3.15, adjusted to age 60 years.



**Figure 3.15** 1 year survival (adjusted to age 60 years) for prevalent adult dialysis patients by country between 2010 and 2019

CI – confidence interval

The relative risk of death by age group for prevalent KRT patients compared to the general population’s risk of death, calculated using Office for National Statistics UK population and deaths data, is shown in table 3.9.



**Table 3.9** Death rate by age group for adult patients prevalent to KRT on 31/12/2019 followed-up for 1 year compared with the general population and with previous analyses in the 1998–2001 cohort

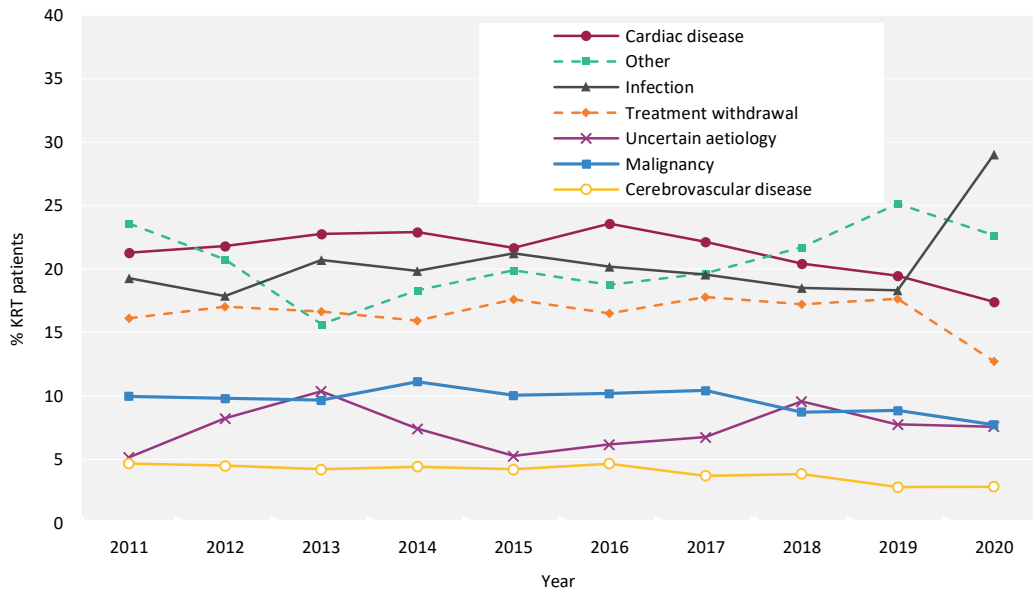
Age group (yrs)	UK population mid-2020 (thousands)	UK deaths in 2020	Death rate per 1,000 population	Expected number of deaths in UKRR population	UKRR deaths in 2020	UKRR death rate per 1,000 prevalent KRT patients	Relative risk of death in 2020	Relative risk of death 1998-2001 cohort
20-24	4,133	1,450	0.4	0	11	12	32.9	41.1
25-29	4,477	2,065	0.5	1	22	13	28.5	41.8
30-34	4,522	3,079	0.7	2	45	18	26.4	31.2
35-39	4,404	4,646	1.1	4	65	19	18.2	26.0
40-44	4,092	6,407	1.6	6	104	26	16.3	22.6
45-49	4,304	10,595	2.5	14	208	37	15.1	19.0
50-54	4,616	16,690	3.6	27	335	45	12.5	12.8
55-59	4,511	24,155	5.4	44	498	60	11.3	10.1
60-64	3,856	32,500	8.4	66	739	95	11.3	10.4
65-69	3,355	44,044	13.1	91	861	125	9.5	7.9
70-74	3,364	69,684	20.7	136	1,084	166	8.0	7.2
75-79	2,404	87,252	36.3	172	1,065	225	6.2	5.3
80-84	1,726	112,712	65.3	198	1,005	331	5.1	4.0
≥85	1,659	269,973	162.7	236	622	429	2.6	3.0
<b>Total</b>	<b>51,423</b>	<b>685,252</b>	<b>13.3</b>	<b>996</b>	<b>6,664</b>	<b>104</b>	<b>6.7</b>	<b>7.7</b>

## Cause of death in adult KRT patients

Cause of death was analysed in prevalent patients receiving KRT on 31/12/2019 and followed-up for one year in 2020. The proportion of KRT patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line.

**Table 3.10** Cause of death in adult patients prevalent to KRT on 31/12/2019 followed-up in 2020 by age group

Cause of death	KRT all ages		KRT <65 yrs		KRT ≥65 yrs	
	N	%	N	%	N	%
Cardiac disease	755	17.4	280	21.8	475	15.6
Cerebrovascular disease	124	2.9	48	3.7	76	2.5
Infection	1,258	29.0	380	29.6	878	28.8
Malignancy	335	7.7	118	9.2	217	7.1
Treatment withdrawal	552	12.7	81	6.3	471	15.4
Other	982	22.7	288	22.5	694	22.7
Uncertain aetiology	329	7.6	87	6.8	242	7.9
<b>Total (with data)</b>	<b>4,335</b>	<b>100.0</b>	<b>1,282</b>	<b>100.0</b>	<b>3,053</b>	<b>100.0</b>
Missing	2,330	35.0	746	36.8	1,584	34.2



**Figure 3.16** Cause of death between 2011 and 2020 for adult patients prevalent to KRT at the beginning of the year



## *Chapter 4*

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# **Adults with a kidney transplant (Tx) in the UK at the end of 2020**

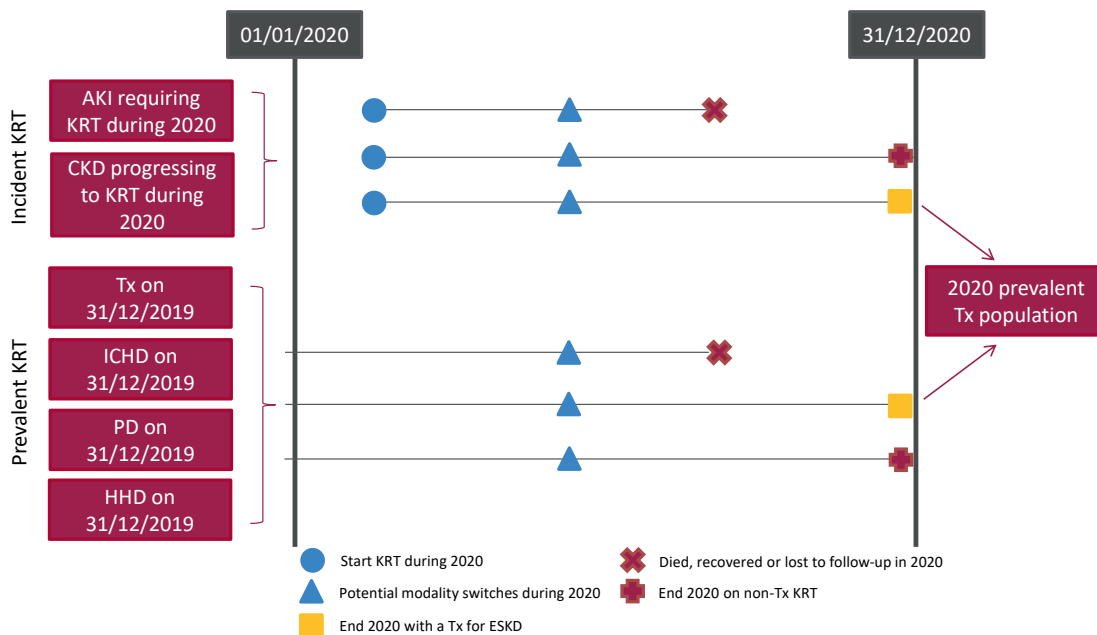
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# Introduction

This chapter describes the population of patients with end-stage kidney disease (ESKD) who had a functioning kidney transplant (Tx) in the UK at the end of 2020 (figure 4.1). Patients can receive their first Tx either pre-emptively, i.e. without spending any time on dialysis, or while on dialysis. Donors in both pathways may be either a living kidney donor (LKD) or a deceased kidney donor – receiving a kidney from a donor after brain death (DBD) or a donor after circulatory death (DCD). If a Tx begins to fail a patient may be considered for a second (or subsequent) Tx, which again can come from a living or deceased donor.

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



**Figure 4.1** Pathways adult patients could follow to be included in the UK 2020 prevalent Tx population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for Tx at the end of 2020 or if they had been on KRT for  $\geq 90$  days and were on Tx at the end of 2020.

AKI – acute kidney injury; CKD – chronic kidney disease; HHD – home haemodialysis; ICHD – in-centre haemodialysis; PD – peritoneal dialysis; Tx - Transplantation

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

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

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

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

## Rationale for analyses

The analyses begin with a brief summary of the number and type of kidney Tx undertaken in recent years in the UK as well as early graft and patient survival. More detailed results are available at [organdonation.nhs.uk/helping-you-to-decide/about-organ-donation/statistics-about-organ-donation](https://organdonation.nhs.uk/helping-you-to-decide/about-organ-donation/statistics-about-organ-donation). The 2020 prevalent adult Tx population is described, including the number transplanted per million population (pmp).

The UK Kidney Association guidelines ([ukkidney.org/health-professionals/guidelines/guidelines-commentaries](https://ukkidney.org/health-professionals/guidelines/guidelines-commentaries)) provide audit measures relevant to the care of patients with a Tx, and where data permit, their attainment by UK kidney centres in 2020 is reported in this chapter (table 4.1). Audit measures in guidelines that have been archived are not included.

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

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

The UK Kidney Association guideline	Audit criteria	Related analysis/analyses
Post-operative care in the kidney Tx recipient (2017)	Proportion of patients receiving a target blood pressure of 140/90 mmHg or 130/80 mmHg in the presence of proteinuria – protein:creatinine ratio >100 mg/mmol or albumin:creatinine ratio >70 mg/mmol	Table 4.8, figures 4.13–4.14 (proteinuria was not adequately collected)
	Proportion of patients achieving dyslipidaemia targets	Table 4.8
	Incidence of hyperparathyroidism	Table 4.8
	Prevalence of anaemia	Table 4.8, figures 4.11–4.12
Anaemia (2020)	Treatment guidelines for anaemia in kidney Tx patients should be similar to those for CKD patients not on dialysis	Table 4.8, figures 4.11–4.12

In 2020, 23 of the 68 adult kidney centres in the UK were Tx centres – 19 in England, two in Scotland and one in each of Northern Ireland and Wales.

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

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



## Key findings

- 38,895 adult patients had a kidney Tx for ESKD in the UK on 31/12/2020, which represented 57.0% of the KRT population.
- The median age of kidney Tx patients was 56.0 years and 60.8% were male.
- There was a 29% reduction in overall kidney Tx performed in 2020 compared to 2019, with a decrease in kidney Tx from LKDs by 44%, DCDs by 33% and 14% DBDs. This is likely due to COVID disruption of transplant pathways.
- The median eGFR for kidney Tx patients 1 year after transplantation was 56.8 mL/min/1.73m<sup>2</sup> from LKD, 51.8 mL/min/1.73m<sup>2</sup> from DBD and 47.7 mL/min/1.73m<sup>2</sup> from DCD.
- 15.9% of kidney Tx patients had eGFR <30 mL/min/1.73m<sup>2</sup>.
- The median decline in eGFR slope beyond the first year after transplantation was 0.8 mL/min/1.73m<sup>2</sup>/year.
- There was no cause of death data available for 38.4% of deaths on Tx. For those Tx patients with data, the leading cause of death was infection (32%) compared to (18.7%) the previous year and the increase is most likely due to an increase in COVID related deaths.

# Analyses

## Kidney Tx activity

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

**Table 4.2** Number of kidney and kidney plus other organ Tx (adult and paediatric) in the UK, 2018–2020 calendar years

Organ	2018	2019	2020	% change 2019-2020
Kidney DBD <sup>1</sup>	1,466	1,417	1,220	-14
Kidney DCD <sup>2</sup>	940	1024	683	-33
Kidney LKD	1,036	1,042	586	-44
Kidney and liver <sup>3</sup>	18	18	5	
Kidney and heart	0	1	0	
Kidney and pancreas <sup>4</sup>	174	157	97	-38
Kidney and pancreas islets <sup>5</sup>	3	4	0	
Small bowel (inc kidney)	7	7	4	
<b>Total kidney Tx</b>	<b>3,644</b>	<b>3,670</b>	<b>2,595</b>	<b>-29</b>

<sup>1</sup>Includes en bloc transplants (6 in 2018, 5 in 2019, and 2 in 2020) and double kidney transplants (14 in 2018, 18 in 2019, 10 in 2020)

<sup>2</sup>Includes en bloc transplants (8 in 2018, 3 in 2019, and 2 in 2020) and double kidney transplants (15 in 2018, 24 in 2019, and 9 in 2020)

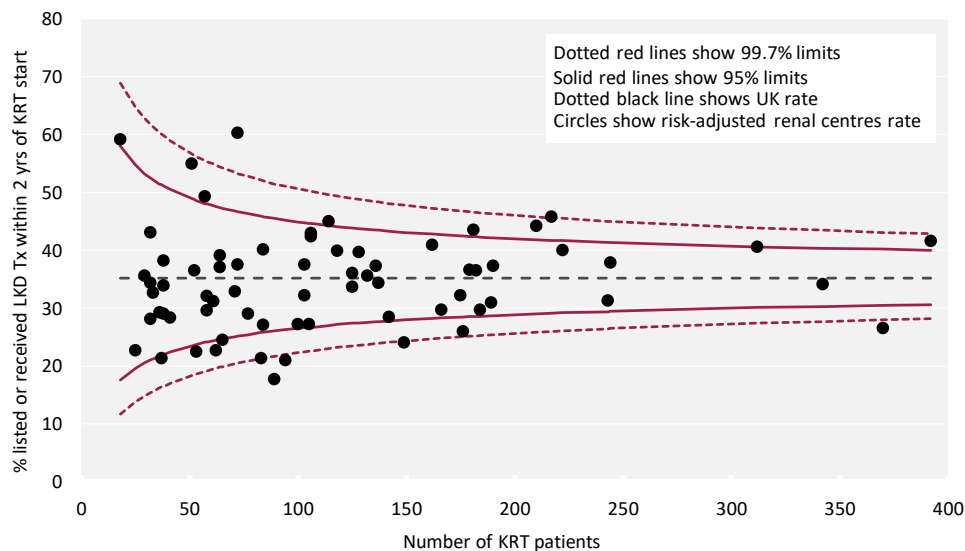
<sup>3</sup>Includes DCD transplants (48 in 2018, 45 in 2019, and 23 in 2020)

<sup>4</sup>Includes DCD transplants (1 in 2020)

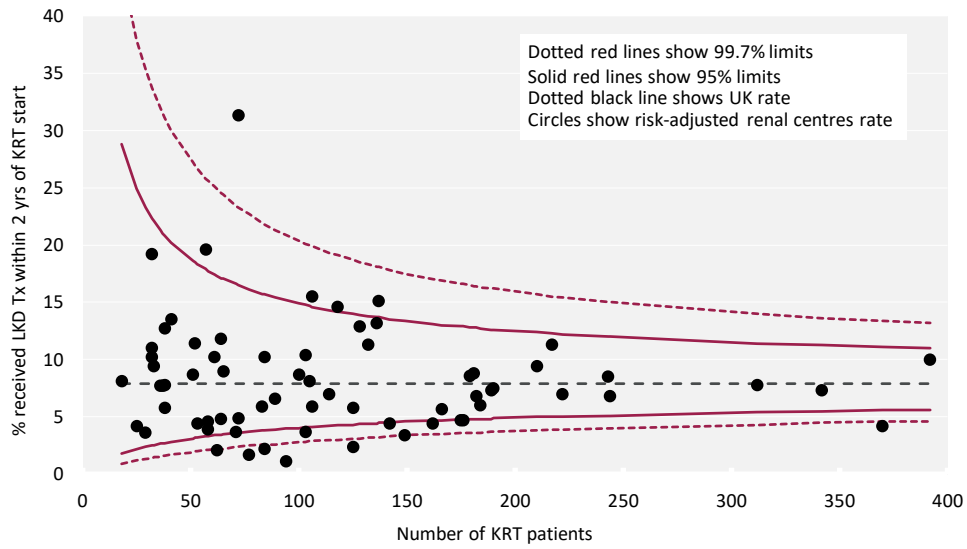
<sup>5</sup>Includes DCD transplants (3 in 2018 and 2 in 2020)

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

Variation in the proportion of patients who received an LKD Tx or were on the Tx waiting list within two years of KRT start, is shown for patients incident to KRT in 2018, adjusted by sex, age and primary renal disease (PRD) (figure 4.2). The analysis for LKD transplantation only is shown separately (figure 4.3).



**Figure 4.2** Percentage of adult patients incident to KRT in 2018 who were waitlisted or received a living kidney donor (LKD) Tx within 2 years of KRT start adjusted by age, sex and primary renal disease by centre



**Figure 4.3** Percentage of adult patients incident to KRT in 2018 who received a living kidney donor (LKD) Tx within 2 years of KRT start adjusted by age, sex and primary renal disease by centre

## Early kidney Tx outcomes

Kidney Tx recipient outcome data from NHSBT were reported against the Tx centre rather than the referring centre (table 4.3). Note that the survival rates were risk-adjusted and used financial year cohorts as per NHSBT methodology (see table footnote).

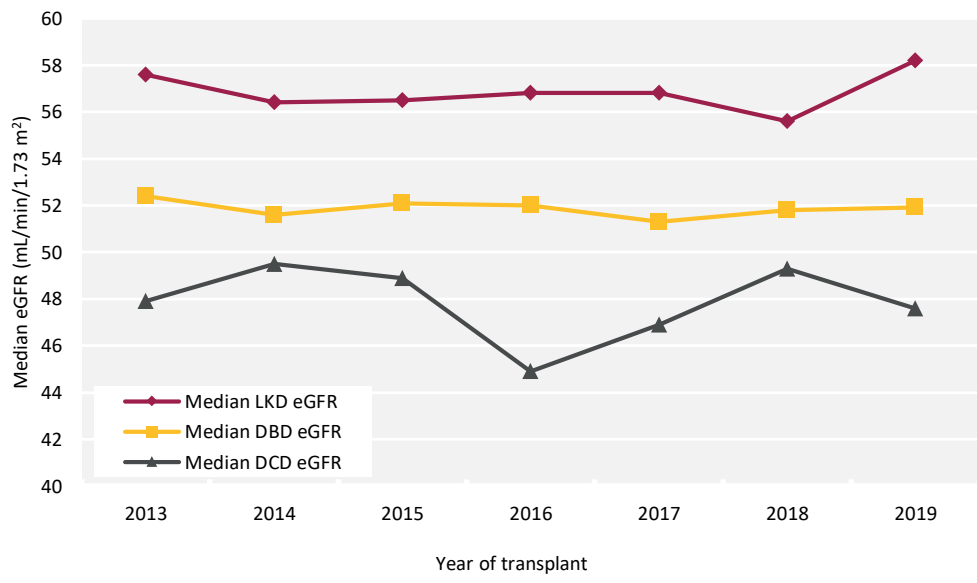
**Table 4.3** Risk-adjusted first adult kidney-only Tx, graft and patient survival by Tx type and Tx centre<sup>1</sup> (cohorts detailed in footnote)

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

Cohorts for survival rate estimation: 1 year survival: 1/4/2016–31/03/2020; 5 year survival: 1/4/2012–31/3/2016; first grafts only – re-grafts excluded for patient survival estimation. Since the cohorts to estimate 1 and 5 year survival are different, some centres may appear to have 5 year survival better than 1 year survival.

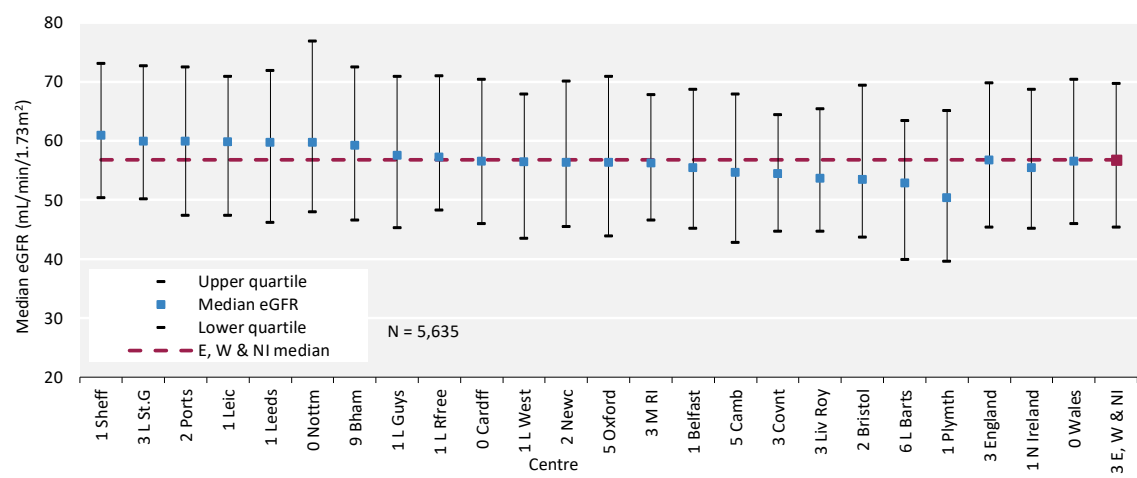
<sup>1</sup>Information courtesy of NHSBT: number of Tx, patients and 95% confidence intervals (CI) for each estimate; statistical methodology for computing risk-adjusted estimates can be obtained from NHSBT (<https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-corp/20032/kidney-annual-report-2019-20-final.pdf>).

Kidney graft function at one year post-Tx was assessed using median eGFR by donor type and by centre using a seven year cohort (patients with graft failure including death with a functioning graft were excluded). The data completeness at one year after Tx (for Tx occurring 2013–2019) was 97.3%.

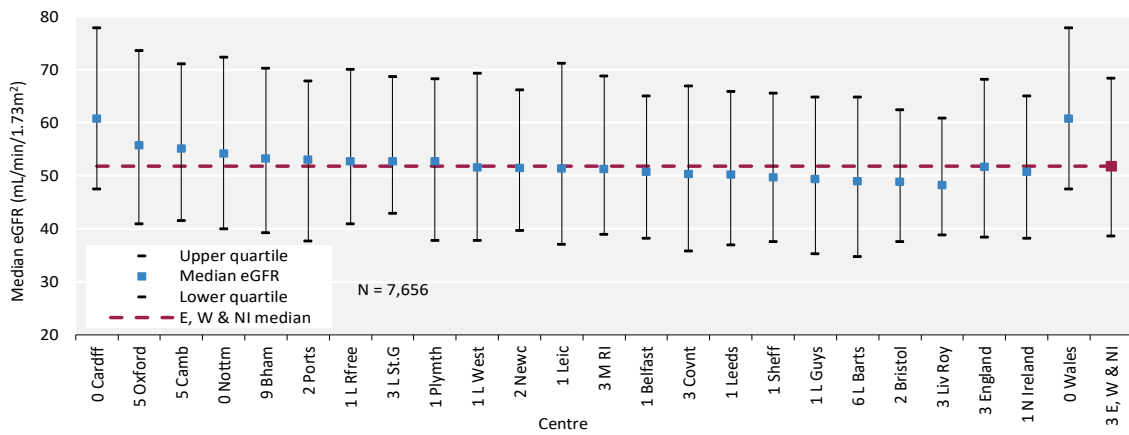


**Figure 4.4** Median estimated glomerular filtration rate (eGFR) for kidney Tx at 1 year by donor type and year of transplantation between 2013 and 2019

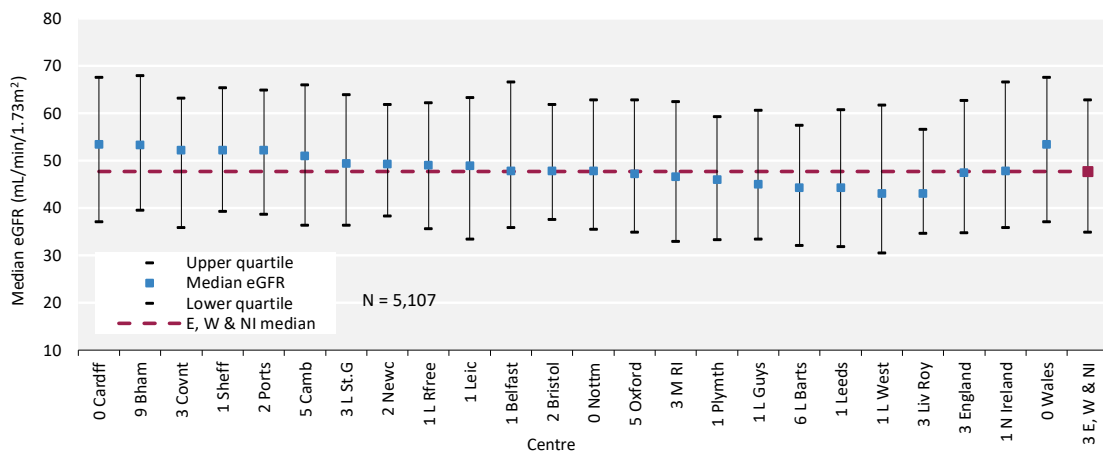
DBD – donor after brain death; DCD – donor after circulatory death; LKD – living kidney donor



**Figure 4.5** Median estimated glomerular filtration rate (eGFR) at 1 year post-living kidney donor (LKD) Tx by transplanting centre for transplantation that occurred between 2013 and 2019



**Figure 4.6** Median estimated glomerular filtration rate (eGFR) at 1 year post-donor after brain death (DBD) Tx by transplanting centre for transplantation that occurred between 2013 and 2019



**Figure 4.7** Median estimated glomerular filtration rate (eGFR) at 1 year post-donor after circulatory death (DCD) Tx by transplanting centre for transplantation that occurred between 2013 and 2019

## Changes to the prevalent adult kidney Tx population

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

**Table 4.4** Percentage completeness of estimated glomerular filtration rate (eGFR), blood pressure, haemoglobin, total cholesterol, adjusted calcium, phosphate and parathyroid hormone (PTH) by centre for adult patients prevalent to Tx on 31/12/2020

Centre	N with Tx	Data completeness (%)						
		eGFR	Blood pressure	Haemoglobin	Total cholesterol	Adjusted calcium	Phosphate	PTH
<b>TX CENTRES</b>								
Bham	1,569	87.6	69.0	86.9	76.1	86.9	83.6	1.4
Belfast	716	95.8	89.9	97.1	97.2	93.6	94.7	27.9
Bristol	911	98.9	84.1	98.9	91.2	97.9	97.5	96.9
Camb	1,150	92.9	0.0	92.7	72.7	86.7	84.3	76.4
Cardff	1,044	98.4	91.7	98.5	39.5	97.8	97.7	14.1
Covnt	620	95.5	40.2	95.5	63.1	94.8	29.2	33.7
Edinb	548			0.0				
Glasgw	1,204			0.0				
L Barts	1,306	86.9	0.2	86.8	93.7	86.2	86.2	87.7
L Guys	1,482	76.5	0.0	73.1	29.0	71.8	71.8	21.6
L Rfree	1,387	87.9	69.1	87.5	57.7	85.8	85.7	54.5
L St.G	474	89.5	61.6	89.2	84.4	89.2	89.2	81.2
L West	1,987	93.1	0.0	93.2	49.4	92.3	93.0	42.6
Leeds	1,096	98.3	73.7	97.3	91.8	93.7	86.1	38.3
Leic	1,461	95.6	3.2	95.2	94.3	93.8	93.1	33.1
Liv Roy	741	93.4	0.5	93.4	60.9	92.0	91.9	0.7
M RI	1,267	90.8	4.0	90.7	60.2	90.5	90.5	54.2
Newc	761	87.1	26.5	86.9	19.3	86.3	86.3	56.4
Nottm	720	98.6	88.1	97.8	62.1	96.0	95.0	79.9
Oxford	1,407	84.9	0.0	83.8	46.7	82.0	81.5	44.9
Plymth	341	98.5	74.8	97.7	58.9	95.3	90.3	43.7
Ports	1,096	90.7	23.1	89.8	42.2	88.5	83.2	33.0
Sheff	790	95.2	64.3	94.9	33.7	93.8	93.5	15.8
<b>DIALYSIS CENTRES</b>								
Abrdn	344			0.0				
Airdrie	291			0.0				
Antrim	157	98.1	37.6	95.5	100.0	94.9	96.2	56.7
Bangor	105	99.1	46.7	97.1	100.0	97.1	97.1	23.8
Bradfd	408	98.0	6.6	97.8	83.3	90.7	90.2	65.2
Brightn	549	99.3	23.0	98.4	68.1	96.4	96.5	49.2
Carlisle	149	85.2	0.0	83.2	59.7	82.6	81.2	42.3
Carsh	825	84.9	3.2	84.2	32.4	82.2	81.7	24.0
Clwyd	105	97.1	1.9	96.2	95.2	95.2	95.2	66.7
D&Gall	88			0.0				
Derby	295	98.3	79.0	97.6	88.5	97.0	97.0	1.4
Donc	138	100.0	29.0	100.0	43.5	99.3	99.3	10.9
Dorset	437	87.0	23.1	85.1	65.2	86.0	70.7	44.4
Dudley	115	96.5	0.9	96.5	79.1	89.6	95.7	0.9
Dundee	251			0.0				
EssexMS	344	92.7	9.3	92.2	68.6	91.3	86.6	10.8
Exeter	526	87.1	0.0	85.9	75.3	83.1	81.0	56.1
Glouc	260	96.2	26.9	95.4	48.1	92.3	89.2	20.8
Hull	491	98.6	2.2	98.8	32.4	96.7	96.5	16.3

**Table 4.4** Continued

Centre	N with Tx	Data completeness (%)						
		eGFR	Blood pressure	Haemoglobin	Total cholesterol	Adjusted calcium	Phosphate	PTH
Inverns	170			0.0				
Ipswi	245	90.6	0.4	90.2	49.8	88.6	88.6	45.7
Kent	628	98.6	93.8	98.4	36.8	97.3	97.5	8.4
Klmarnk	178			0.0				
Krkcldy	136			0.0				
L Kings	501	94.0	0.0	93.8	63.5	93.8	93.8	67.7
Liv Ain	35	88.6	2.9	85.7	40.0	88.6	88.6	0.0
Middlbr	565	78.4	0.2	77.4	37.4	75.4	69.7	9.9
Newry	172	99.4	55.8	96.5	99.4	95.4	98.8	95.9
Norwch	451	96.7	1.1	94.7	98.0	90.2	89.1	18.2
Prestn	763	95.3	0.0	94.5	60.9	92.9	90.6	33.6
Redng	487	98.6	71.3	98.8	60.6	98.2	97.1	41.3
Salford	686	96.9	0.0	96.8	92.3	96.7	96.7	0.2
Shrew	153	66.7	0.7	65.4	58.8	64.1	64.1	15.7
Stevng	361	67.6	27.4	65.4	26.6	65.1	63.2	32.7
Stoke	421	96.9	0.0	96.4	99.5	95.7	95.7	48.7
Sund	289	95.9	0.0	95.9	85.5	95.9	95.9	87.2
Swanse	348	98.9	92.5	98.9	56.6	98.3	98.3	62.4
Truro	252	98.8	0.0	97.6	65.9	96.0	95.2	56.0
Ulster	97	99.0	95.9	97.9	93.8	97.9	99.0	12.4
West NI	220	68.2	58.6	94.6	98.2	57.3	95.5	87.3
Wirral	181	91.2	1.7	88.4	65.2	84.0	82.3	9.9
Wolve	229	93.9	67.3	88.7	71.2	93.0	24.0	24.5
Wrexm	177	96.6	81.4	96.6	99.4	96.6	96.6	99.4
York	333	98.8	57.7	97.9	66.7	97.3	96.1	14.7
<b>TOTALS</b>								
England	31,683	91.4	25.8	90.7	62.5	89.2	86.1	40.3
N Ireland	1,362	92.3	75.0	96.5	97.7	88.4	95.8	48.3
Scotland	3,210			0.0				
Wales	1,779	98.3	82.9	98.2	55.7	97.6	97.5	35.7
<b>UK</b>	<b>38,034</b>	<b>91.8</b>	<b>31.4</b>	<b>83.6</b>	<b>63.5</b>	<b>89.6</b>	<b>87.0</b>	<b>40.3</b>

Blank cells – no data returned by the centre.

Patients who had been on Tx for <3 months were excluded from this analysis, including N with Tx.

Scottish centres were excluded from blood pressure, cholesterol and PTH analyses because the Scottish Renal Registry does not share these data items with the UKRR. UK completeness excludes Scotland for these analyses.

Patients with missing ethnicity were classed as White for the eGFR calculation.

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



**Table 4.5** Number of prevalent adult Tx patients and proportion of adult KRT patients with a Tx by year and by centre; number of Tx patients as a proportion of the catchment population

Centre	N with Tx					% with Tx					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020		
<b>TX CENTRES</b>												
Belfast	603	639	671	692	722	73.4	75.9	76.6	78.6	81.1	0.53	1,366
Bham	1,411	1,516	1,576	1,630	1,614	46.3	47.8	48.5	49.2	49.3	2.04	792
Bristol	909	907	925	939	928	61.8	61.6	62.9	63.2	62.8	1.21	765
Camb	953	977	1,020	1,110	1,199	71.9	73.2	73.5	76.2	78.6	0.93	1,290
Cardff	1,038	1,043	1,072	1,082	1,065	63.7	62.0	62.4	62.6	63.5	1.19	895
Covnt	531	566	578	619	632	54.4	58.7	60.3	57.6	57.7	0.79	800
Edinb	453	482	522	546	565	58.3	58.5	60.6	61.7	63.6	0.84	674
Glasgw	1,104	1,136	1,156	1,216	1,239	63.0	64.1	63.8	65.6	67.2	1.37	905
L Barts	1,141	1,200	1,266	1,380	1,330	48.1	48.0	48.7	51.9	52.0	1.58	843
L Guys	1,365	1,415	1,458	1,550	1,515	65.0	65.4	65.4	66.8	65.3	1.00	1,517
L Rfree	1,288	1,346	1,374	1,424	1,426	59.2	61.4	61.5	60.7	61.0	1.32	1,082
L St.G	476	487	495	502	485	55.8	58.1	59.3	58.9	56.6	0.66	735
L West	1,826	1,894	1,975	2,046	2,031	53.8	54.5	55.5	56.7	57.4	1.95	1,041
Leeds	976	999	1,054	1,082	1,116	63.1	61.7	62.6	62.7	63.7	1.36	819
Leic	1,245	1,290	1,363	1,441	1,488	54.3	54.8	55.6	55.9	57.1	2.07	718
Liv Roy	782	791	814	804	755	64.2	63.2	64.1	65.7	66.1	0.81	937
M RI	1,398	1,407	1,422	1,397	1,326	70.3	68.6	68.8	68.3	66.8	1.32	1,001
Newc	680	710	732	765	790	64.7	63.6	63.5	65.3	65.5	0.95	835
Nottm	678	727	743	751	736	58.9	61.4	62.1	61.7	60.7	0.92	798
Oxford	1,225	1,346	1,405	1,430	1,457	69.3	71.6	72.4	72.6	72.1	1.44	1,015
Plymth	330	341	362	359	358	64.2	63.0	67.0	67.2	65.8	0.40	899
Ports	981	1,053	1,069	1,133	1,112	58.0	60.3	60.7	60.3	58.5	1.74	640
Sheff	754	787	821	835	805	53.0	54.6	55.4	56.1	54.0	1.13	715
<b>DIALYSIS CENTRES</b>												
Abrdn	303	311	328	343	349	54.6	55.2	57.3	61.5	61.8	0.50	700
Airdrie	230	257	274	296	292	52.4	55.2	56.2	56.5	56.8	0.46	638
Antrim	112	120	131	145	161	44.4	47.1	47.8	50.7	55.7	0.24	662
Bangor	89	94	100	106	107	49.7	48.2	49.3	52.7	49.5	0.17	634
Bradfd	359	376	392	413	417	56.6	55.8	57.0	56.3	57.4	0.49	855
Brightn	473	487	510	545	556	47.6	48.1	48.3	51.2	51.6	1.07	520
Carlis	148	156	162	155	152	53.1	55.5	55.3	51.5	51.2	0.25	600
Carsh	685	724	766	834	843	41.3	42.7	43.7	46.8	45.5	1.62	521
Clwyd	89	94	98	104	108	50.3	52.5	51.6	50.7	52.2	0.19	579
D&Gall	71	76	83	87	89	54.2	56.3	57.2	58.4	57.1	0.12	729
Derby	224	234	258	296	300	41.3	42.1	44.0	45.3	44.3	0.56	538
Donc	110	117	119	132	140	33.2	35.1	36.1	38.6	41.1	0.37	376
Dorset	368	394	422	436	450	53.7	54.0	55.2	56.4	56.4	0.72	621
Dudley	94	95	106	111	120	27.3	26.0	29.4	30.3	32.4	0.34	352
Dundee	219	232	254	259	252	52.4	53.3	57.1	57.7	58.6	0.37	687
EssexMS	282	312	331	328	349	36.0	37.6	39.2	38.5	39.5	0.99	354
Exeter	477	514	537	541	541	47.1	48.6	49.6	49.7	48.9	0.95	572
Glouc	187	216	243	267	265	39.5	42.3	46.6	50.5	50.9	0.51	523
Hull	455	461	480	498	498	53.3	52.9	54.6	55.1	54.5	0.79	627
Inverns	154	164	169	171	170	59.7	62.6	60.6	60.6	62.7	0.22	763
Ipswi	233	236	232	240	255	55.9	54.1	54.2	56.1	60.0	0.31	822
Kent	584	595	633	649	639	54.4	54.5	56.9	57.0	55.9	1.06	602
Klmarnk	143	159	167	182	181	45.1	47.2	49.1	50.7	49.1	0.29	622
Krkldy	132	149	153	143	136	44.9	49.0	51.3	48.5	46.7	0.27	499
L Kings	436	461	480	525	514	39.2	40.0	40.6	42.1	41.0	0.93	554
Liv Ain	15	15	20	29	41	6.6	7.1	9.2	13.9	19.0	0.43	96
Middlbr	534	537	539	558	572	59.9	59.4	58.0	58.6	60.7	0.80	714

**Table 4.5** Continued

Centre	N with Tx					% with Tx					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020		
Newry	128	138	152	162	173	54.2	57.3	60.3	64.0	65.5	0.23	743
Norwch	395	422	445	454	459	51.0	54.0	56.5	56.1	57.0	0.68	670
Prestn	605	672	721	746	773	50.1	52.8	54.5	55.6	56.4	1.23	631
Redng	433	448	468	483	501	54.7	56.4	57.5	56.0	57.5	0.69	723
Salford	513	572	621	686	687	50.2	51.2	52.9	55.3	54.4	1.14	601
Shrew	134	138	144	146	153	35.5	35.8	33.6	33.8	37.0	0.41	376
Stevng	340	366	378	382	365	38.3	41.4	40.3	39.7	37.9	1.10	331
Stoke	404	409	419	439	428	48.7	50.4	52.0	54.5	52.9	0.73	589
Sund	240	264	278	280	295	47.2	48.5	49.6	49.1	53.0	0.54	543
Swanse	328	334	346	358	353	43.4	42.3	41.9	41.2	41.5	0.78	452
Truro	239	243	249	261	259	56.1	57.2	57.0	58.0	58.2	0.36	729
Ulster	58	67	75	80	101	34.9	36.6	39.3	43.5	50.5	0.20	502
West NI	168	188	202	207	222	54.9	60.1	61.8	63.1	63.4	0.25	893
Wirral	118	158	167	180	189	34.9	40.6	42.0	43.7	46.6	0.47	405
Wolve	189	195	204	228	231	33.1	33.5	33.6	37.2	35.9	0.54	424
Wrexm	156	171	171	175	177	49.8	52.9	54.5	56.3	54.8	0.21	827
York	306	325	340	349	338	57.1	58.4	59.8	60.0	59.1	0.48	701
<b>TOTALS</b>												
<b>England</b>	<b>28,529</b>	<b>29,901</b>	<b>31,116</b>	<b>32,388</b>	<b>32,433</b>	<b>53.8</b>	<b>54.7</b>	<b>55.5</b>	<b>56.3</b>	<b>56.3</b>	<b>44.46</b>	<b>730</b>
<b>N Ireland</b>	<b>1,069</b>	<b>1,152</b>	<b>1,231</b>	<b>1,286</b>	<b>1,379</b>	<b>60.0</b>	<b>62.8</b>	<b>64.1</b>	<b>66.6</b>	<b>69.2</b>	<b>1.45</b>	<b>948</b>
<b>Scotland</b>	<b>2,809</b>	<b>2,966</b>	<b>3,106</b>	<b>3,243</b>	<b>3,273</b>	<b>56.9</b>	<b>58.2</b>	<b>59.3</b>	<b>60.6</b>	<b>61.4</b>	<b>4.44</b>	<b>737</b>
<b>Wales</b>	<b>1,700</b>	<b>1,736</b>	<b>1,787</b>	<b>1,825</b>	<b>1,810</b>	<b>55.7</b>	<b>54.8</b>	<b>55.0</b>	<b>55.1</b>	<b>55.3</b>	<b>2.54</b>	<b>713</b>
<b>UK</b>	<b>34,107</b>	<b>35,755</b>	<b>37,240</b>	<b>38,742</b>	<b>38,895</b>	<b>54.3</b>	<b>55.2</b>	<b>56.0</b>	<b>56.9</b>	<b>57.0</b>	<b>52.89</b>	<b>735</b>

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

## Demographics of prevalent adult kidney Tx patients

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

**Table 4.6** Demographics of adult patients prevalent to Tx on 31/12/2020 by centre

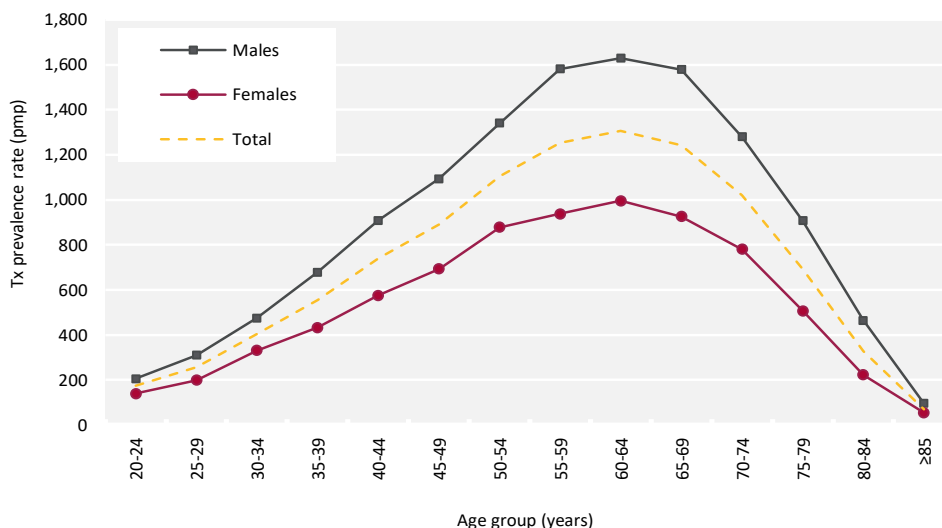
Centre	N on KRT	N with Tx	% with Tx	Median		Ethnicity				
				age (yrs)	% male	% White	% South Asian	% Black	% Other	% missing
<b>TX CENTRES</b>										
Belfast	890	722	81.1	56.3	59.7	97.5	2.0	0.4	0.1	1.7
Bham	3,272	1,614	49.3	53.2	58.2	61.6	28.5	7.4	2.5	0.6
Bristol	1,477	928	62.8	56.3	59.9	90.0	4.1	4.1	1.8	0.2
Camb	1,526	1,199	78.6	55.3	63.0	89.4	6.6	2.6	1.4	0.4
Cardff	1,678	1,065	63.5	55.8	62.4	92.5	4.8	0.6	2.1	0.7
Covnt	1,096	632	57.7	55.0	61.9	79.4	16.8	3.8	0.0	0.2
Edinb	888	565	63.6	56.2	63.5					74.3
Glasgw	1,844	1,239	67.2	55.7	59.3					42.1
L Barts	2,557	1,330	52.0	54.1	60.0	39.5	33.9	19.3	7.3	0.2
L Guys	2,320	1,515	65.3	53.6	59.5	66.1	10.2	19.4	4.3	0.7
L Rfree	2,337	1,426	61.0	55.7	59.4	47.9	21.6	18.7	11.8	3.7
L St.G	857	485	56.6	57.2	56.7	48.3	25.2	18.0	8.6	3.5
L West	3,537	2,031	57.4	57.9	63.0	43.6	33.4	15.2	7.8	0.1
Leeds	1,751	1,116	63.7	55.5	60.8	79.6	15.1	4.1	1.3	0.0
Leic	2,604	1,488	57.1	57.0	58.7	72.5	21.5	4.4	1.6	1.4
Liv Roy	1,142	755	66.1	56.0	61.7	92.6	3.2	2.4	1.9	0.4
M RI	1,985	1,326	66.8	55.4	60.5	76.2	15.2	6.3	2.4	1.1
Newc	1,207	790	65.5	56.9	59.2	93.9	4.9	0.8	0.4	0.1
Nottm	1,212	736	60.7	55.1	60.3	84.7	7.1	5.0	3.3	0.0
Oxford	2,021	1,457	72.1	56.0	62.8	81.0	11.7	3.2	4.1	8.8
Plymth	544	358	65.8	58.6	68.2	96.4	1.1	0.3	2.2	0.0
Ports	1,902	1,112	58.5	56.6	58.3	93.8	3.8	0.7	1.7	1.7
Sheff	1,491	805	54.0	55.6	62.6	90.2	5.8	1.8	2.3	1.1
<b>DIALYSIS CENTRES</b>										
Abrdn	565	349	61.8	52.9	56.5					56.5
Airdrie	514	292	56.8	55.0	58.9	96.0	2.2	0.4	1.4	4.8
Antrim	289	161	55.7	56.7	61.5	99.4	0.0	0.6	0.0	0.6
Bangor	216	107	49.5	57.0	65.4	98.1	0.0	1.0	1.0	1.9
Bradfd	727	417	57.4	52.0	60.0	54.7	43.4	1.7	0.2	0.0
Brightn	1,078	556	51.6	56.5	62.2	90.3	6.1	1.6	2.0	0.4
Carlis	297	152	51.2	56.9	67.1	98.0	2.0	0.0	0.0	0.0
Carsh	1,854	843	45.5	57.5	62.6	71.2	16.8	8.1	3.8	0.6
Colchr	151	0								
Clwyd	207	108	52.2	58.0	61.1	97.2	1.9	0.0	0.9	1.9
D&Gall	156	89	57.1	57.8	62.9	97.2	1.4	0.0	1.4	19.1
Derby	677	300	44.3	57.5	61.7	83.0	12.0	2.7	2.3	0.0
Donc	341	140	41.1	58.1	65.0	95.7	2.1	1.4	0.7	0.0
Dorset	798	450	56.4	60.2	58.7	97.1	0.9	0.4	1.6	0.0
Dudley	370	120	32.4	57.5	68.3	79.2	14.2	4.2	2.5	0.0
Dundee	430	252	58.6	56.8	59.5					56.8
EssexMS	884	349	39.5	56.5	63.3	87.9	4.9	3.7	3.5	0.3
Exeter	1,106	541	48.9	56.8	58.0	98.7	0.7	0.4	0.2	0.0
Glouc	521	265	50.9	58.3	59.6	92.4	5.3	1.1	1.1	0.4
Hull	914	498	54.5	55.3	63.9	96.8	1.4	0.6	1.2	0.2
Inverns	271	170	62.7	55.1	55.9					32.9
Ipswi	425	255	60.0	58.2	61.6	85.0	3.5	3.5	7.9	0.4
Kent	1,143	639	55.9	56.8	59.5	91.7	3.9	1.3	3.1	0.0

**Table 4.6** Continued

Centre	N on KRT	N with Tx	% with Tx	Median		Ethnicity				
				age (yrs)	% male	% White	% South Asian	% Black	% Other	% missing
Klmarnk	369	181	49.1	58.0	59.7					45.3
Krkcldy	291	136	46.7	57.5	60.3					72.1
L Kings	1,253	514	41.0	57.4	61.7	48.8	16.2	30.1	4.9	0.4
Liv Ain	216	41	19.0	52.4	58.5	92.7	0.0	0.0	7.3	0.0
Middlbr	942	572	60.7	57.3	62.9	95.3	3.9	0.4	0.5	0.0
Newry	264	173	65.5	57.2	56.7	98.8	0.0	0.6	0.6	0.0
Norwch	805	459	57.0	57.9	59.0	97.2	1.7	0.7	0.4	0.0
Prestn	1,370	773	56.4	55.9	61.2	85.3	13.6	0.8	0.4	0.0
Redng	871	501	57.5	58.0	62.5	66.1	23.0	5.0	5.9	4.6
Salford	1,264	687	54.4	56.5	59.7	83.0	14.1	2.0	0.9	0.0
Shrew	414	153	37.0	56.5	64.1	94.8	2.6	1.3	1.3	0.0
Stevng	963	365	37.9	55.9	61.1	68.8	19.1	9.1	3.0	0.8
Stoke	809	428	52.9	54.5	63.6	90.7	5.7	1.9	1.7	1.6
Sund	557	295	53.0	57.0	61.0	95.6	3.1	0.7	0.7	0.0
Swanse	850	353	41.5	57.0	61.8	96.9	2.0	0.0	1.1	0.6
Truro	445	259	58.2	57.5	58.3	97.3	0.8	0.0	1.9	0.0
Ulster	200	101	50.5	56.1	56.4	93.1	3.0	3.0	1.0	0.0
West NI	350	222	63.4	54.6	61.7	98.7	0.9	0.5	0.0	0.0
Wirral	406	189	46.6	58.1	64.0	94.7	3.7	1.1	0.5	0.0
Wolve	643	231	35.9	55.4	58.4	70.6	23.4	5.2	0.9	0.0
Wrexm	323	177	54.8	53.7	67.2	96.1	1.7	0.0	2.3	0.0
York	572	338	59.1	57.4	59.5	97.3	1.5	0.3	0.9	0.6
<b>TOTALS</b>										
England	57,654	32,433	56.3	56.1	60.8	76.1	14.1	6.6	3.2	1.1
N Ireland	1,993	1,379	69.2	56.3	59.6	97.7	1.4	0.7	0.2	0.9
Scotland	5,328	3,273	61.4	55.7	59.7					47.3
Wales	3,274	1,810	55.3	56.0	62.8	94.3	3.5	0.4	1.8	0.7
<b>UK</b>	<b>68,249</b>	<b>38,895</b>	<b>57.0</b>	<b>56.0</b>	<b>60.8</b>	<b>78.3</b>	<b>12.8</b>	<b>6.0</b>	<b>2.9</b>	<b>4.9</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.



**Figure 4.8** Adult Tx prevalence rate on 31/12/2020 by age group and sex  
pmp – per million population

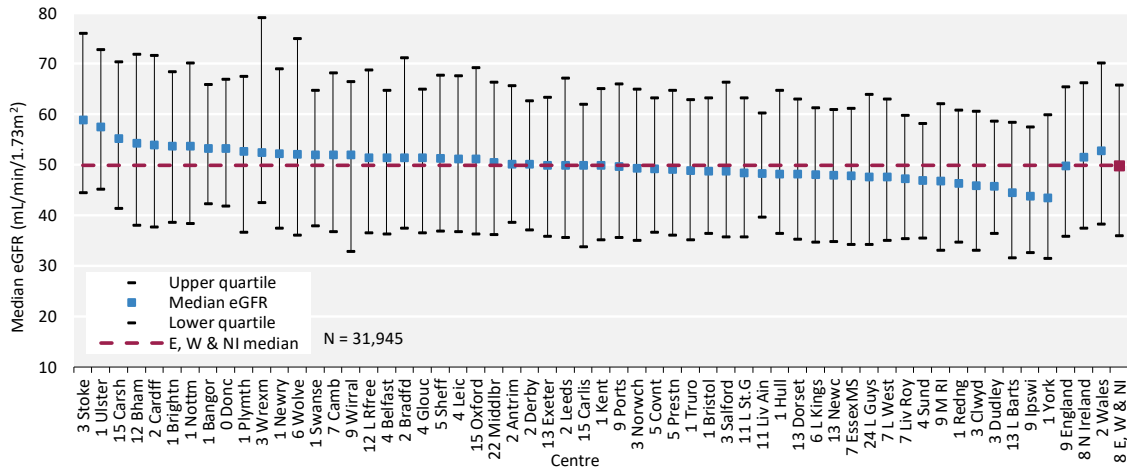
The distribution of primary renal diseases (PRDs) as a cause of ESKD in the incident Tx population is compared to the prevalent Tx population (table 4.7). Comparison to dialysis populations is shown in chapter 3. PRDs were grouped into categories, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of Tx patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

**Table 4.7** Primary renal diseases (PRDs) of adult patients incident to Tx in 2020 and adult patients prevalent to Tx on 31/12/2020

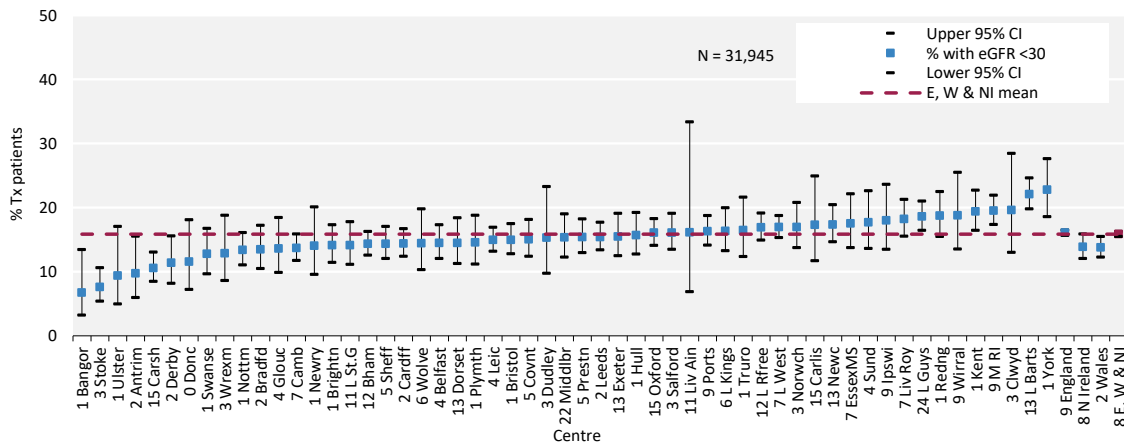
PRD	Incident Tx		Prevalent Tx	
	N	%	N	%
Diabetes	403	17.0	4,599	12.0
Glomerulonephritis	569	24.0	8,957	23.3
Hypertension	168	7.1	2,072	5.4
Polycystic kidney disease	262	11.0	5,276	13.7
Pyelonephritis	143	6.0	4,314	11.2
Renal vascular disease	43	1.8	462	1.2
Other	454	19.1	7,323	19.1
Uncertain aetiology	331	13.9	5,386	14.0
<b>Total (with data)</b>	<b>2,373</b>	<b>100.0</b>	<b>38,389</b>	<b>100.0</b>
Missing	96	3.9	506	1.3

## Graft function and anaemia in prevalent adult kidney Tx patients

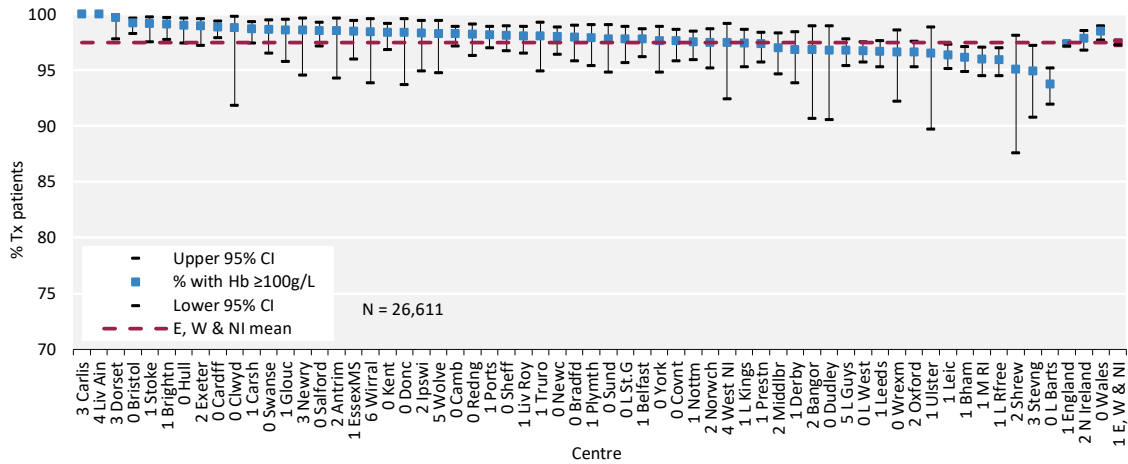
Accepting the limitations of interpreting eGFR in the post-Tx population, analyses by centres were divided into the proportion of patients with eGFR greater or less than 30 mL/min/1.73m<sup>2</sup> and the proportion of patients achieving an adequate haemoglobin level (defined as a haemoglobin ≥100 g/L).



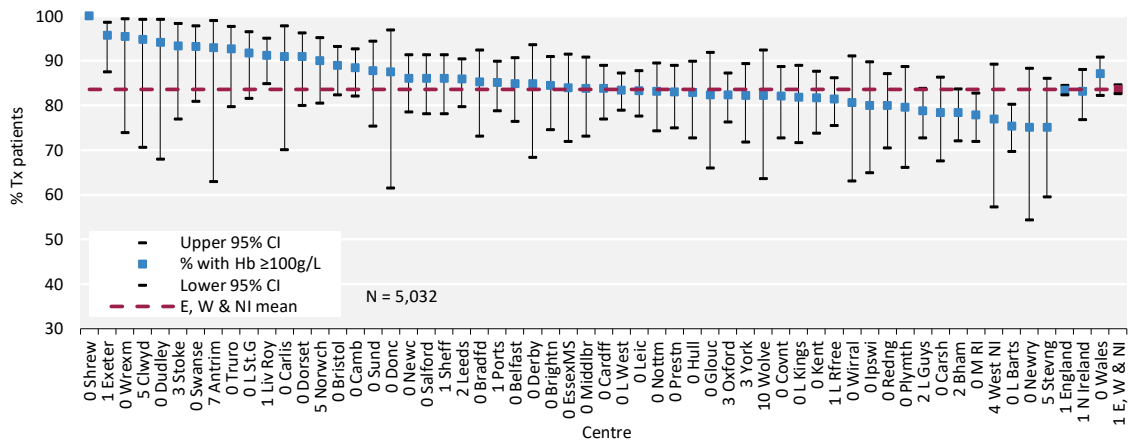
**Figure 4.9** Median estimated glomerular filtration rate (eGFR) in adult patients prevalent to Tx on 31/12/2020 by centre



**Figure 4.10** Percentage of adult patients prevalent to Tx on 31/12/2020 with an estimated glomerular filtration rate (eGFR) <30mL/min/1.73m<sup>2</sup> by centre  
CI – confidence interval



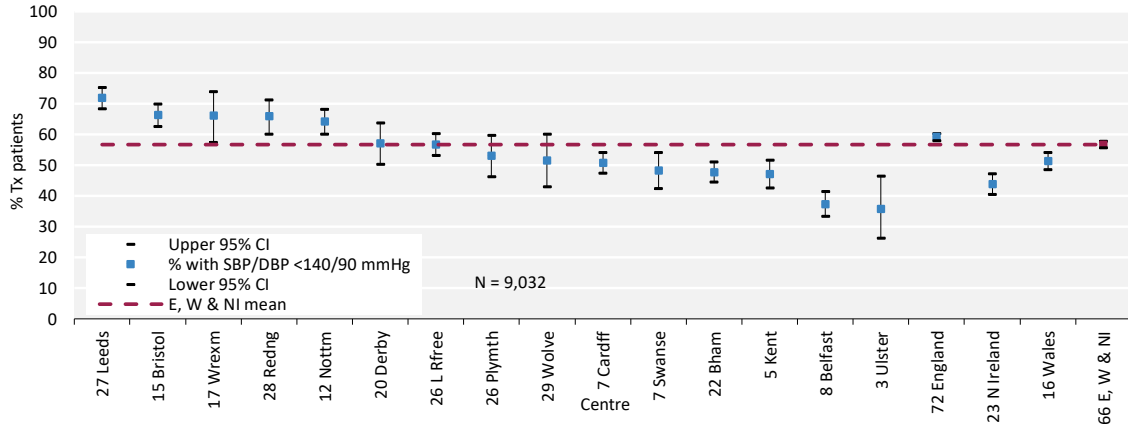
**Figure 4.11** Percentage of adult patients prevalent to Tx on 31/12/2020 with an estimated glomerular filtration rate (eGFR)  $\geq 30\text{mL}/\text{min}/1.73\text{m}^2$  achieving haemoglobin (Hb)  $\geq 100\text{g}/\text{L}$  by centre  
CI – confidence interval



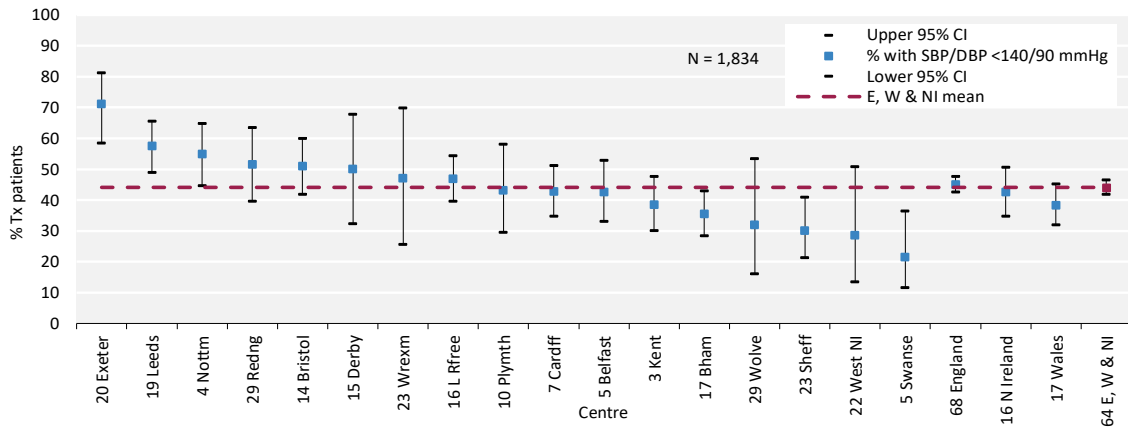
**Figure 4.12** Percentage of adult patients prevalent to Tx on 31/12/2020 with an estimated glomerular filtration rate (eGFR)  $< 30\text{mL}/\text{min}/1.73\text{m}^2$  achieving haemoglobin (Hb)  $\geq 100\text{g}/\text{L}$  by centre  
CI – confidence interval

## Blood pressure in prevalent adult kidney Tx patients

Blood pressure data completeness was variable (table 4.4) and only centres with  $\geq 70\%$  data completeness were included in the analysis. It is possible that bias may be introduced if blood pressure readings in particular ranges were more frequently reported. A lack of data on proteinuria did not allow differentiation for the purposes of reporting against the audit measure.



**Figure 4.13** Percentage of adult patients prevalent to Tx on 31/12/2020 with estimated glomerular filtration rate (eGFR)  $\geq 30$  mL/min/1.73m<sup>2</sup> achieving blood pressure of <140/90 mmHg by centre  
CI – confidence interval; DBP – diastolic blood pressure; SBP – systolic blood pressure



**Figure 4.14** Percentage of adult patients prevalent to Tx on 31/12/2020 with estimated glomerular filtration rate (eGFR) <30 mL/min/1.73m<sup>2</sup> achieving blood pressure of <140/90 mmHg by centre  
CI – confidence interval; DBP – diastolic blood pressure; SBP – systolic blood pressure



## Biochemistry parameters in prevalent adult kidney Tx patients

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

**Table 4.8** Estimated glomerular filtration rate (eGFR), blood pressure and biochemical parameters in adult patients prevalent to Tx on 31/12/2020 compared with adult patients prevalent to dialysis on 31/12/2020 by CKD stage

Characteristic	Tx CKD stage (eGFR)				Prevalent dialysis Stage 5D
	Stage 1-2T ( $\geq 60$ mL/min/1.73 m <sup>2</sup> )	Stage 3T (30-59 mL/min/1.73 m <sup>2</sup> )	Stage 4T (15-29 mL/min/1.73 m <sup>2</sup> )	Stage 5T (<15 mL/min/1.73 m <sup>2</sup> )	
N	10,516	16,361	4,277	790	22,714
%	32.9	51.2	13.4	2.5	
<b>eGFR (mL/min/1.73m<sup>2</sup>)</b>					
mean $\pm$ SD	76.6 $\pm$ 13.3	45.1 $\pm$ 8.4	23.6 $\pm$ 4.2	11.6 $\pm$ 2.5	
median	73.3	45.2	24.1	12.0	
<b>SBP (mmHg)</b>					
mean $\pm$ SD	135 $\pm$ 17	138 $\pm$ 18	141 $\pm$ 19	146 $\pm$ 21	137 $\pm$ 26
% $\geq 140$ mmHg	33.3	41.4	50.0	60.7	43.4
<b>DBP (mmHg)</b>					
mean $\pm$ SD	81 $\pm$ 10	80 $\pm$ 11	80 $\pm$ 11	82 $\pm$ 12	71 $\pm$ 16
% $\geq 90$ mmHg	18.9	18.5	19.5	23.9	11.0
<b>Total cholesterol (mmol/L)</b>					
mean $\pm$ SD	4.3 $\pm$ 1.0	4.4 $\pm$ 1.1	4.4 $\pm$ 1.2	4.4 $\pm$ 1.2	3.8 $\pm$ 1.1
% $\geq 4.0$ mmol/L	62.2	64.3	62.3	61.7	39.4
<b>Haemoglobin (g/L)</b>					
mean $\pm$ SD	138 $\pm$ 16	130 $\pm$ 17	116 $\pm$ 16	106 $\pm$ 16	111 $\pm$ 14
% <100 g/L	1.4	3.3	13.5	32.1	19.2
<b>Phosphate (mmol/L)</b>					
mean $\pm$ SD	1.0 $\pm$ 0.2	1.0 $\pm$ 0.2	1.1 $\pm$ 0.2	1.5 $\pm$ 0.4	1.7 $\pm$ 0.4
% >1.7 mmol/L	0.2	0.3	1.8	21.7	40.6
<b>Adjusted Ca (mmol/L)</b>					
mean $\pm$ SD	2.4 $\pm$ 0.1	2.4 $\pm$ 0.1	2.4 $\pm$ 0.1	2.3 $\pm$ 0.2	2.3 $\pm$ 0.2
% >2.5 mmol/L	20.5	21.8	17.5	11.9	15.0
% <2.2 mmol/L	3.4	4.0	7.4	18.0	17.6
<b>PTH (pmol/L)</b>					
median	8.7	9.8	16.1	27.9	32.7
% >72 pmol/L	0.3	0.8	3.9	12.6	17.7

Scottish centres are excluded from all analyses as they have not submitted any biochemistry or blood pressure data for 2020.

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

Differences in the median eGFR slope in Tx patients is reported by patient and Tx graft characteristics. All UK patients aged at least 18 years receiving their first kidney Tx between 01/01/2010 and 31/12/2018 were considered for inclusion. A minimum duration of 18 months graft function was required and three or more creatinine measurements from the second year of graft function onwards were used to plot eGFR slope. If a Tx failed, but there were at least three creatinine measurements between one year post-Tx and graft failure, the patient was included, but no creatinine measurements after the quarter preceding the recorded date of Tx failure were analysed.

**Table 4.9** Differences in median estimated glomerular filtration rate (eGFR) slope between demographic subgroups of adult patients who received their first kidney Tx between 01/01/2010 and 31/12/2018

Characteristic	N	Median slope	Lower quartile	Upper quartile
<b>Age at Tx (yrs)</b>				
<40	4,854	-1.48	-4.74	0.81
40-55	8,087	-0.62	-3.02	1.20
>55	7,247	-0.65	-3.08	1.14
<b>Ethnicity</b>				
White	14,372	-0.67	-3.09	1.12
Asian	2,704	-1.25	-4.16	1.03
Black	1,434	-1.77	-5.19	0.72
Other	591	-0.85	-3.63	0.80
<b>Sex</b>				
Male	12,460	-0.55	-3.03	1.29
Female	7,728	-1.26	-4.05	0.77
<b>Diabetes</b>				
No Diabetes	16,631	-0.71	-3.21	1.11
Diabetes	3,305	-1.38	-4.31	0.98
<b>Tx donor</b>				
Deceased	13,564	-0.82	-3.55	1.14
Living	6,624	-0.75	-3.18	1.04
<b>Year of Tx</b>				
2010	1,947	-0.94	-2.70	0.36
2011	1,938	-0.82	-2.99	0.56
2012	2,135	-1.00	-3.09	0.46
2013	2,339	-1.04	-3.24	0.64
2014	2,292	-0.78	-3.08	0.93
2015	2,279	-0.58	-3.04	1.26
2016	2,353	-0.65	-3.55	1.72
2017	2,512	-0.54	-4.41	2.38
2018	2,393	-0.54	-5.87	4.22
<b>Status of Tx patients at end of follow-up</b>				
Died	1,863	-1.28	-4.39	1.11
Graft failed	1,729	-6.45	-12.90	-3.24
Re-transplanted	77	-3.02	-6.66	-1.53
Graft functioning	16,596	-0.46	-2.58	1.29
<b>Total</b>	<b>20,188</b>	<b>-0.80</b>	<b>-3.42</b>	<b>1.11</b>

## Survival of adult kidney Tx patients

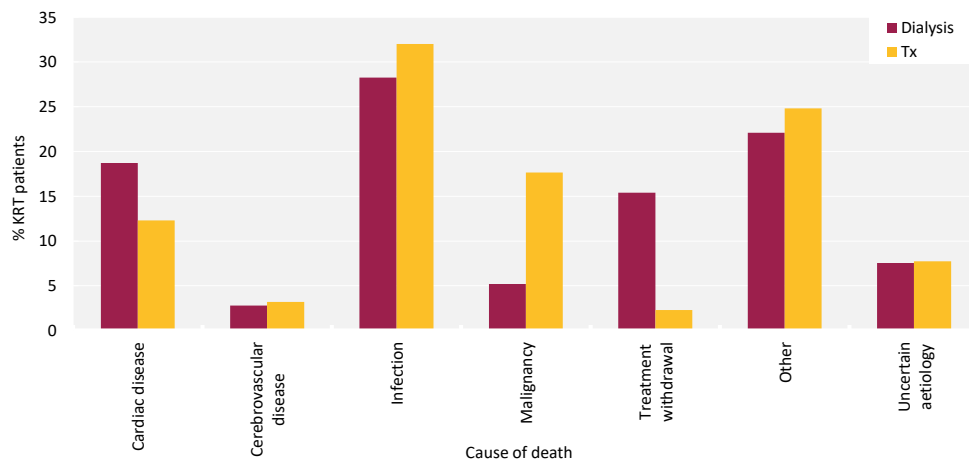
Survival of incident and prevalent KRT patients is described in detail in chapters 2 and 3, respectively. Survival of incident Tx patients is reported in table 4.3. NHSBT reports the survival of Tx recipients.

### Cause of death in adult kidney Tx patients

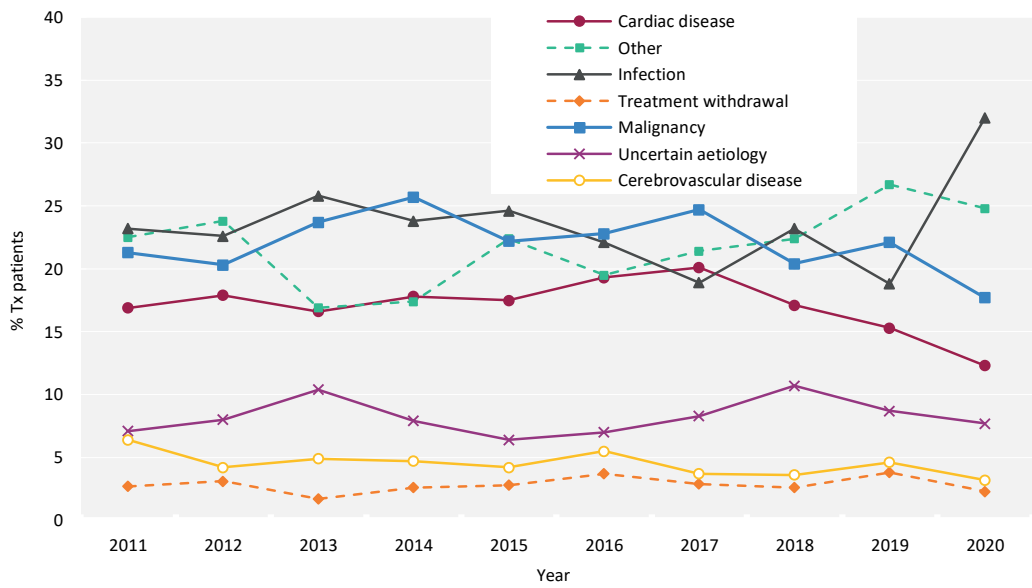
Cause of death was analysed in patients prevalent to KRT on 31/12/2019 and followed-up for one year in 2020, with comparisons between Tx and dialysis presented in table 4.10. Work is being undertaken to better understand and code the cause of death in Tx recipients. The proportion of KRT patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line.

**Table 4.10** Cause of death in adult patients prevalent to KRT on 31/12/2019 followed-up in 2020 by modality

Cause of death	All modalities		Dialysis		Tx	
	N	%	N	%	N	%
Cardiac disease	755	17.4	647	18.7	108	12.3
Cerebrovascular disease	124	2.9	96	2.8	28	3.2
Infection	1,258	29.0	977	28.3	281	32.0
Malignancy	335	7.7	180	5.2	155	17.7
Treatment withdrawal	552	12.7	532	15.4	20	2.3
Other	982	22.7	764	22.1	218	24.8
Uncertain aetiology	329	7.6	261	7.5	68	7.7
<b>Total (with data)</b>	<b>4,335</b>	<b>100.0</b>	<b>3,457</b>	<b>100.0</b>	<b>878</b>	<b>100.0</b>
Missing	2,330	35.0	1,782	34.0	548	38.4



**Figure 4.15** Cause of death for adult patients prevalent to KRT on 31/12/2019 followed-up in 2020 by modality



**Figure 4.16** Cause of death between for adult patients prevalent to transplant by year.

## *Chapter 5*

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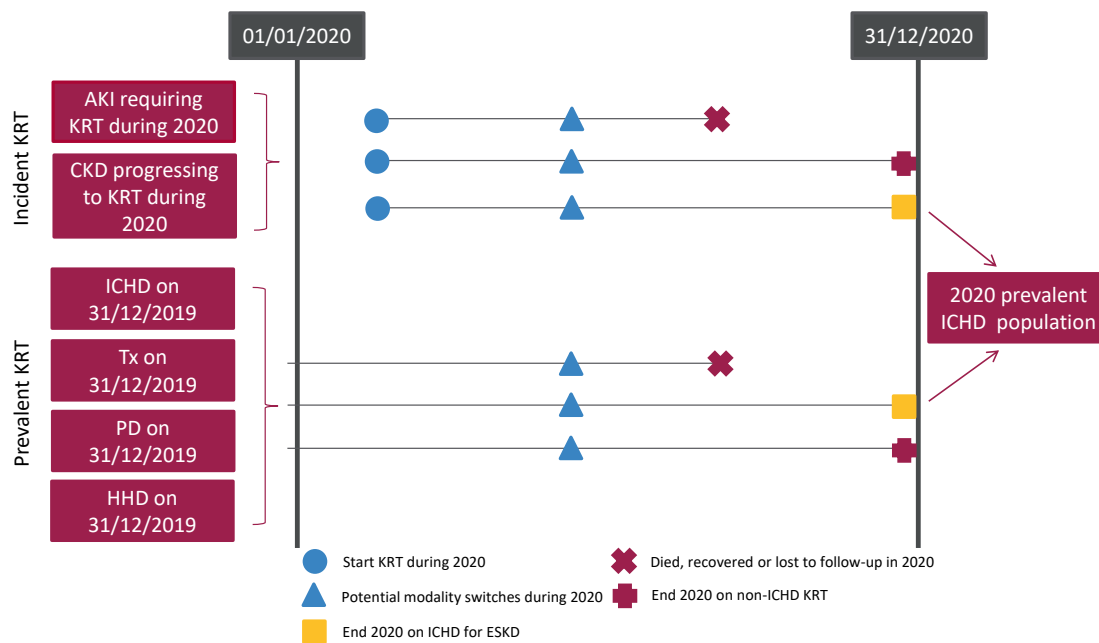
# **Adults on in-centre haemodialysis (ICHHD) in the UK at the end of 2020**

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# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were receiving regular in-centre haemodialysis (ICHD) in the UK at the end of 2020 (figure 5.1). This population comprises patients who were on ICHD at the end of 2019 and remained on ICHD throughout 2020, as well as patients who commenced/re-commenced ICHD in 2020. This latter group includes both incident kidney replacement therapy (KRT) patients who ended 2020 on ICHD and prevalent KRT patients who switched to ICHD from home haemodialysis (HHD), peritoneal dialysis (PD), or a transplant (Tx) in 2020. Consequently, the cohort of patients receiving ICHD in a centre not only reflects differences in underlying population case-mix, but also differences in the rates of acceptance onto KRT, survival on ICHD, transplantation and home therapies (HHD and PD), and the care of patients on those other modalities, as described in other chapters of this report.



**Figure 5.1** Pathways adult patients could follow to be included in the UK 2020 prevalent ICHD population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for chronic ICHD at the end of 2020 or if they had been on KRT for  $\geq 90$  days and were on ICHD at the end of 2020. CKD – chronic kidney disease

The infection analyses used a rolling two year cohort as per the audit measures (table 5.1). The cause of death analyses were undertaken on historic prevalent cohorts to allow sufficient follow-up time.

This chapter addresses the following key aspects of the care of patients on ICHD for which there are UK Kidney Association guidelines (table 5.1):

- **Complications associated with ESKD and ICHD:** these include anaemia and mineral bone disorders
- **Adequacy of ICHD:** measures of dialysis care include urea clearance and frequency and length of dialysis sessions. Currently, the urea reduction ratio (URR) is the only urea clearance measure routinely reported to the UK Renal Registry (UKRR)
- **Type of ICHD access:** definitive access – either a surgically created arteriovenous fistula (AVF) or arteriovenous graft (AVG). Alternatively, more temporary access can be provided through a central venous catheter – either a tunnelled line (TL) or a non-tunnelled line (NTL)
- **Infections associated with haemodialysis (ICHD and HHD):** analysis of infections is presented for ICHD and HHD combined because kidney centres are not required to submit changes in dialysis modality that last <30 days. It is therefore not possible to attribute accurately an infection to HHD or ICHD. Rates of the four infections subject to mandatory reporting to Public Health England (PHE) are reported in this chapter – methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-sensitive *Staphylococcus aureus* (MSSA), *Escherichia coli* bacteraemia and *Clostridium difficile* - to be updated when 2020 data available.



## Rationale for analyses

The analyses begin with a description of the 2020 prevalent adult ICHD population, including the number on ICHD per million population (pmp), dialysis duration and frequency.

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 on ICHD and, where data permit, their attainment by UK kidney centres in 2020 is reported in this chapter (table 5.1). 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 items is too low. Further detail about the completeness of data returned to the UKRR is available through the UKRR data portal ([ukkidney.org/audit-research/data-portals](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 was <70% and/or the number of patients reported was <10. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

**Table 5.1** The UK Kidney Association audit measures relevant to ICHD that are reported in this chapter

The UK Kidney Association guideline	Audit criteria	Related analysis/analyses
CKD mineral bone disorder (2018)	Percentage of patients with serum calcium above the normal reference range of 2.2–2.5 mmol/L	Table 5.6, figure 5.6
HD (2019)	Proportion of patients with pre-dialysis bicarbonate 18–26 mmol/L	Table 5.7, figure 5.8
	Proportion of patients with pre-dialysis potassium 4.0–6.0 mmol/L	Table 5.7, figure 5.9
Anaemia (2020)	Proportion of patients with serum ferritin <100 µg/L at start of treatment with erythropoiesis stimulating agent (ESA)	Table 5.8, figure 5.13 (the UKRR does not hold treatment with ESA start dates)
	Audit on ESA dose and use of ESA in patients with Hb out of range, normally reported in this chapter, have been omitted this year as the Registry is implementing improvements in how medications data are processed. ESA data will be processed and analysed again next year.	
Vascular access (2015)	Proportion of prevalent dialysis patients with definitive access (AVF/AVG/PD catheter) – ≥80%	Figure 5.16
	Annual rate of MRSA <1 episode/100 patient-years (measured over 2 years)	Table 5.9, figures 5.17, 5.19
	Annual rate of MSSA <2.5 episodes/100 patient-years (measured over 2 years)	Table 5.9, figures 5.18, 5.20
Planning, initiating and withdrawing KRT (2014)	Number of patients withdrawing from ICHD as a proportion of all deaths on ICHD	Table 5.10, figure 5.21

AVF – arteriovenous fistula; AVG – arteriovenous graft; ESA – erythropoiesis stimulating agent; MRSA – methicillin-resistant *Staphylococcus aureus*; MSSA – methicillin-sensitive *Staphylococcus aureus*

## Key findings

- 24,155 adult patients were receiving ICHD for ESKD in the UK on 31/12/2020, which represented 35.4% of the KRT population. 2020 represents the first year we have not seen a 1% increase in the number on ICHD and is likely as a result of COVID pandemic as mentioned in previous chapters.
- The median age of ICHD patients was 66.5 years and 62.2% were male.
- 85.6% of ICHD patients achieved a dialysis adequacy of URR >65%.
- 93.2% of ICHD patients had dialysis 3 times a week and a further 1.5% had dialysis more frequently than this.
- 66.4% of ICHD patients had dialysis for 4–5 hours per session compared to 70.9% last year (likely due to COVID related disruption).
- The median adjusted calcium for ICHD patients was 2.3 mmol/L and 9.5% were above the target range 2.2–2.5 mmol/L.
- The median pre-dialysis bicarbonate for ICHD patients was 23 mmol/L and 81.6% were within the target range 18–26 mmol/L.
- The median pre-dialysis potassium for ICHD patients was 4.8 mmol/L and 14.1% had a pre-dialysis potassium of >6 mmol/L.
- The median haemoglobin and ferritin for ICHD patients was 111 g/L and 479 µg/L, respectively.
- 19.6% of ICHD patients had a haemoglobin <100 g/L and 22.9% had a haemoglobin >120 g/L.
- Of the 40 centres that provided adequate data on long term dialysis access in England, Northern Ireland and Wales, 5 centres achieved the 80% target for definitive access amongst prevalent dialysis patients (AVF/AVG/PD catheter).
- There was no cause of death data available for 33.6% of deaths. For those with data, the leading cause of death in both older and younger patients was infection at 28.7 % and 27.8% respectively. This is likely due to the contribution of COVID related deaths as noted in previous chapters.
- The 2 year rates (2018–2019) of MRSA and MSSA bacteraemia were 0.17/100 patient years and 2.72/100 patient years, respectively. TO BE UPDATED WHEN 2020 DATA AVAILABLE.

# Analyses

## Changes to the prevalent adult ICHD population

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

**Table 5.2** Number of prevalent adult ICHD patients and proportion of adult KRT patients on ICHD by year and by centre; number of ICHD patients as a proportion of the catchment population

Centre	N on ICHD					% on ICHD					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020		
<b>ENGLAND</b>												
Bham	1,334	1,333	1,349	1,349	1,314	43.7	42.0	41.5	40.7	40.2	2.04	645
Bradfd	243	269	261	280	278	38.3	39.9	37.9	38.2	38.2	0.49	570
Brightn	418	425	446	432	425	42.1	42.0	42.3	40.6	39.4	1.07	397
Bristol	489	491	475	468	464	33.3	33.3	32.3	31.5	31.4	1.21	383
Camb	329	306	304	287	274	24.8	22.9	21.9	19.7	18.0	0.93	295
Carlis	95	98	101	111	111	34.1	34.9	34.5	36.9	37.4	0.25	438
Carsh	830	849	858	840	860	50.1	50.1	49.0	47.2	46.4	1.62	532
Colchr	123	129	122	145	151	100.0	100.0	100.0	100.0	100.0	0.29	521
Covnt	366	333	306	355	359	37.5	34.5	31.9	33.0	32.8	0.79	455
Derby	200	191	197	238	244	36.8	34.4	33.6	36.4	36.0	0.56	438
Donc	185	178	179	180	177	55.9	53.5	54.2	52.6	51.9	0.37	475
Dorset	272	291	291	289	298	39.7	39.9	38.1	37.4	37.3	0.72	411
Dudley	185	201	204	207	209	53.6	54.9	56.7	56.6	56.5	0.34	612
EssexMS	390	411	410	414	423	49.8	49.5	48.5	48.6	47.9	0.99	429
Exeter	443	455	450	443	460	43.7	43.0	41.6	40.7	41.6	0.95	486
Glouc	235	245	242	231	226	49.7	47.9	46.4	43.7	43.4	0.51	446
Hull	323	349	350	350	352	37.8	40.0	39.8	38.7	38.5	0.79	443
Ipswi	147	147	151	142	135	35.3	33.7	35.3	33.2	31.8	0.31	435
Kent	409	424	418	420	424	38.1	38.9	37.6	36.9	37.1	1.06	399
L Barts	1,007	1,031	1,061	1,032	935	42.4	41.3	40.8	38.8	36.6	1.58	592
L Guys	649	669	692	673	693	30.9	30.9	31.0	29.0	29.9	1.00	694
L Kings	567	576	597	610	616	51.0	49.9	50.5	48.9	49.2	0.93	664
L Rfree	709	684	683	742	719	32.6	31.2	30.6	31.6	30.8	1.32	545
L St.G	329	310	294	302	318	38.6	36.9	35.2	35.4	37.1	0.66	482
L West	1,454	1,449	1,430	1,381	1,271	42.8	41.7	40.2	38.2	35.9	1.95	652
Leeds	508	538	542	552	549	32.8	33.2	32.2	32.0	31.4	1.36	403
Leic	887	898	917	958	955	38.7	38.1	37.4	37.1	36.7	2.07	461
Liv Ain	174	160	154	149	145	76.0	76.2	71.0	71.3	67.1	0.43	338
Liv Roy*	326	352	360	352	322	26.8	28.1	28.3	28.8	28.2	0.81	399
M RI	466	497	501	497	505	23.4	24.2	24.2	24.3	25.4	1.32	381
Middlbr	321	332	349	344	324	36.0	36.7	37.5	36.1	34.4	0.80	404
Newc	294	327	339	329	356	28.0	29.3	29.4	28.1	29.5	0.95	376
Norwch	315	302	294	296	289	40.7	38.7	37.3	36.5	35.9	0.68	422
Nottm	364	354	350	359	349	31.6	29.9	29.2	29.5	28.8	0.92	378
Oxford	429	451	445	457	480	24.3	24.0	22.9	23.2	23.8	1.44	334
Plymth	135	141	128	126	153	26.3	26.1	23.7	23.6	28.1	0.40	384
Ports	561	544	529	590	606	33.2	31.2	30.0	31.4	31.9	1.74	349
Prestn	522	516	519	505	500	43.2	40.6	39.3	37.6	36.5	1.23	408
Redng	295	302	297	315	300	37.3	38.0	36.5	36.5	34.4	0.69	433
Salford	375	387	402	394	433	36.7	34.6	34.3	31.7	34.3	1.14	379
Sheff	560	549	550	538	548	39.4	38.1	37.1	36.2	36.8	1.13	487
Shrew	186	184	206	204	174	49.2	47.7	48.1	47.2	42.0	0.41	427

**Table 5.2** Continued

Centre	N on ICHD					% on ICHD					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020		
Stevng	501	465	489	507	542	56.4	52.6	52.1	52.7	56.3	1.10	492
Stoke	312	301	281	264	253	37.6	37.1	34.9	32.8	31.3	0.73	348
Sund	245	243	243	252	220	48.2	44.7	43.4	44.2	39.5	0.54	405
Truro	160	158	168	164	159	37.6	37.2	38.4	36.4	35.7	0.36	447
Wirral	188	202	203	207	195	55.6	51.9	51.0	50.2	48.0	0.47	418
Wolve	283	301	317	304	323	49.6	51.7	52.1	49.6	50.2	0.54	593
York	183	184	183	184	192	34.1	33.0	32.2	31.6	33.6	0.48	398
<b>N IRELAND</b>												
Antrim	123	117	119	118	112	48.8	45.9	43.4	41.3	38.8	0.24	460
Belfast	186	179	173	157	143	22.6	21.3	19.7	17.8	16.1	0.53	271
Newry	84	77	82	78	78	35.6	32.0	32.5	30.8	29.5	0.23	335
Ulster	101	109	106	96	96	60.8	59.6	55.5	52.2	48.0	0.20	477
West NI	125	113	114	106	118	40.8	36.1	34.9	32.3	33.7	0.25	475
<b>SCOTLAND</b>												
Abrdn	227	226	214	190	192	40.9	40.1	37.4	34.1	34.0	0.50	385
Airdrie	185	191	192	207	194	42.1	41.0	39.3	39.5	37.7	0.46	424
D&Gall	47	51	55	52	56	35.9	37.8	37.9	34.9	35.9	0.12	459
Dundee	176	183	161	162	158	42.1	42.1	36.2	36.1	36.7	0.37	430
Edinb	282	305	301	296	288	36.3	37.0	34.9	33.4	32.4	0.84	344
Glasgw	571	573	587	575	549	32.6	32.3	32.4	31.0	29.8	1.37	401
Inverns	86	83	90	92	89	33.3	31.7	32.3	32.6	32.8	0.22	399
Klmarnk	133	144	141	139	147	42.0	42.7	41.5	38.7	39.8	0.29	505
Krkldy	144	144	135	138	146	49.0	47.4	45.3	46.8	50.2	0.27	536
<b>WALES</b>												
Bangor	64	73	70	66	78	35.8	37.4	34.5	32.8	36.1	0.17	462
Cardff	486	530	554	551	512	29.8	31.5	32.2	31.9	30.5	1.19	430
Clwyd	69	71	75	86	84	39.0	39.7	39.5	42.0	40.6	0.19	451
Swanse	322	347	373	389	394	42.6	44.0	45.2	44.8	46.4	0.78	505
Wrexm	117	120	113	106	113	37.4	37.2	36.0	34.1	35.0	0.21	528
<b>TOTAL</b>												
England	20,321	20,532	20,637	20,768	20,608	38.3	37.5	36.8	36.1	35.7	44.46	464
N Ireland	619	595	594	555	547	34.7	32.4	30.9	28.7	27.4	1.45	376
Scotland	1,851	1,900	1,876	1,851	1,819	37.5	37.3	35.8	34.6	34.1	4.44	410
Wales	1,058	1,141	1,185	1,198	1,181	34.6	36.0	36.5	36.1	36.1	2.54	465
<b>UK</b>	<b>23,849</b>	<b>24,168</b>	<b>24,292</b>	<b>24,372</b>	<b>24,155</b>	<b>37.9</b>	<b>37.3</b>	<b>36.5</b>	<b>35.8</b>	<b>35.4</b>	<b>52.89</b>	<b>457</b>

Country ICHD populations were calculated by summing the ICHD 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

## Demographics of prevalent adult ICHD patients

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

**Table 5.3** Demographics of adult patients prevalent to ICHD on 31/12/2020 by centre

Centre	N on KRT	N on ICHD	% on ICHD	Median age (yrs)	% Male	Ethnicity				% missing
						% White	% Asian	% Black	% Other	
<b>ENGLAND</b>										
Bham	3,272	1,314	40.2	64.9	58.6	50.0	32.0	15.1	2.9	1.8
Bradfd	727	278	38.2	63.0	60.8	43.4	47.4	4.0	5.1	2.2
Brightn	1,078	425	39.4	69.8	64.9	88.0	7.0	2.8	2.3	5.9
Bristol	1,477	464	31.4	68.7	66.8	86.2	4.0	8.1	1.8	1.9
Camb	1,526	274	18.0	70.3	63.5	88.5	6.3	2.0	3.2	7.7
Carlis	297	111	37.4	65.7	53.2	100.0	0.0	0.0	0.0	0.0
Carsh	1,854	860	46.4	68.3	62.1	60.3	18.4	14.7	6.7	5.7
Colchr	151	151	100.0	73.9	63.6	95.9	1.4	0.7	2.0	2.6
Covnt	1,096	359	32.8	70.5	60.4	73.4	20.7	5.9	0.0	0.6
Derby	677	244	36.0	67.5	65.6	82.5	10.4	3.8	3.3	1.6
Donc	341	177	51.9	70.2	62.7	92.1	2.8	1.7	3.4	0.0
Dorset	798	298	37.3	71.3	60.4	96.0	2.3	0.0	1.7	0.0
Dudley	370	209	56.5	71.0	59.8	76.6	15.3	8.1	0.0	0.0
EssexMS	884	423	47.9	67.7	66.0	84.4	6.9	5.5	3.2	4.7
Exeter	1,106	460	41.6	72.3	66.7	95.9	0.9	1.3	2.0	0.4
Glouc	521	226	43.4	72.5	65.5	91.6	3.1	3.5	1.8	0.0
Hull	914	352	38.5	65.6	66.2	95.4	3.2	0.9	0.6	0.9
Ipswi	425	135	31.8	70.5	65.2	82.0	0.8	2.3	14.8	5.2
Kent	1,143	424	37.1	68.9	63.2	94.7	1.9	1.9	1.4	2.1
L Barts	2,557	935	36.6	62.1	59.1	24.5	34.2	30.4	10.9	3.0
L Guys	2,320	693	29.9	62.3	58.9	41.7	8.8	44.6	4.9	6.5
L Kings	1,253	616	49.2	61.7	60.2	38.1	12.1	45.6	4.1	2.1
L Rfree	2,337	719	30.8	63.7	59.9	37.5	21.6	29.5	11.4	8.5
L St.G	857	318	37.1	65.1	61.6	27.7	26.1	35.5	10.7	3.5
L West	3,537	1,271	35.9	65.8	59.7	30.8	39.2	24.6	5.4	0.0
Leeds	1,751	549	31.4	62.5	63.9	69.2	21.5	7.3	2.0	0.7
Leic	2,604	955	36.7	67.5	63.5	71.5	20.1	6.2	2.2	8.4
Liv Ain	216	145	67.1	65.2	65.5	95.8	0.7	2.1	1.4	2.1
Liv Roy*	1,142	322	28.2	63.7	59.3	85.1	4.2	6.5	4.2	4.3
M RI	1,985	505	25.4	64.8	59.4	42.3	12.5	43.8	1.4	1.8
Middlbr	942	324	34.4	65.1	68.8	92.2	6.6	0.3	0.9	1.2
Newc	1,207	356	29.5	65.8	62.1	91.6	3.9	1.7	2.8	0.0
Norwch	805	289	35.9	71.3	63.0	96.5	0.7	1.0	1.7	1.0
Nottm	1,212	349	28.8	66.7	64.8	75.4	10.0	12.3	2.3	0.0
Oxford	2,021	480	23.8	69.1	61.5	75.5	9.6	8.8	6.2	19.4
Plymth	544	153	28.1	69.0	65.4	98.0	0.7	0.7	0.7	0.0
Ports	1,902	606	31.9	67.3	65.8	88.3	5.5	2.0	4.2	16.5
Prestn	1,370	500	36.5	66.1	61.6	79.2	18.4	1.2	1.2	0.2
Redng	871	300	34.4	69.8	63.0	61.8	25.3	6.6	6.3	4.0
Salford	1,264	433	34.3	61.5	62.8	69.7	21.9	5.3	3.0	0.0
Sheff	1,491	548	36.8	66.0	64.1	84.4	8.1	3.9	3.6	2.9
Shrew	414	174	42.0	71.5	66.7	91.2	4.1	1.2	3.5	2.3
Stevng	963	542	56.3	66.9	64.0	70.9	14.5	9.2	5.4	17.5
Stoke	809	253	31.3	70.0	66.8	89.8	6.5	1.2	2.4	3.2
Sund	557	220	39.5	65.2	59.5	96.3	2.7	0.5	0.5	0.5
Truro	445	159	35.7	72.8	59.1	99.4	0.0	0.0	0.6	0.0
Wirral	406	195	48.0	64.4	62.1	96.4	1.5	1.0	1.0	0.5

**Table 5.3** Continued

Centre	N on KRT	N on ICHD	% on ICHD	Median age (yrs)	% Male	Ethnicity				% missing
						% White	% Asian	% Black	% Other	
Wolve York	643	323	50.2	64.2	63.2	54.7	28.6	12.7	4.0	0.3
	572	192	33.6	70.9	63.0	96.8	1.1	0.5	1.6	2.6
<b>N IRELAND</b>										
Antrim	289	112	38.8	74.0	65.2	100.0	0.0	0.0	0.0	3.6
Belfast	890	143	16.1	66.8	58.7	97.7	0.8	0.8	0.8	7.0
Newry	264	78	29.5	66.8	61.5	97.3	2.7	0.0	0.0	5.1
Ulster	200	96	48.0	77.9	60.4	95.8	4.2	0.0	0.0	0.0
West NI	350	118	33.7	69.5	61.0	100.0	0.0	0.0	0.0	1.7
<b>SCOTLAND</b>										
Abrdn	565	192	34.0	66.0	58.9					90.1
Airdrie	514	194	37.7	63.6	56.2					30.4
D&Gall	156	56	35.9	70.5	67.9					64.3
Dundee	430	158	36.7	66.3	60.1					82.3
Edinb	888	288	32.4	62.4	66.3					83.7
Glasgw	1,844	549	29.8	65.6	59.7					75.0
Inverns	271	89	32.8	72.0	62.9					78.7
Klmarnk	369	147	39.8	69.0	63.3					78.9
Krkcdly	291	146	50.2	67.3	63.7					91.1
<b>WALES</b>										
Bangor	216	78	36.1	73.3	61.5	98.6	0.0	0.0	1.4	10.3
Cardff	1,678	512	30.5	64.2	61.1	87.4	8.9	2.0	1.8	1.2
Clwyd	207	84	40.6	68.0	65.5	97.4	2.6	0.0	0.0	7.1
Swanse	850	394	46.4	69.3	66.2	97.9	1.5	0.5	0.0	1.0
Wrexm	323	113	35.0	67.0	63.7	97.3	0.9	0.9	0.9	2.7
<b>TOTALS</b>										
England	57,654	20,608	35.7	66.5	62.3	67.6	15.7	12.8	3.9	3.9
N Ireland	1,993	547	27.4	72.0	61.2	98.3	1.3	0.2	0.2	3.7
Scotland	5,328	1,819	34.1	65.6	61.4					75.3
Wales	3,274	1,181	36.1	66.6	63.4	93.2	4.7	1.1	1.0	2.3
<b>UK</b>	<b>68,249</b>	<b>24,155</b>	<b>35.4</b>	<b>66.5</b>	<b>62.2</b>	<b>70.1</b>	<b>14.6</b>	<b>11.6</b>	<b>3.6</b>	<b>9.2</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.

Primary renal diseases (PRDs) were grouped into categories as shown in table 5.4, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of ICHD patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

**Table 5.4** Primary renal diseases (PRDs) of adult patients prevalent to ICHD on 31/12/2020

PRD	N on ICHD	% ICHD population	Age <65 yrs		Age ≥65 yrs		M/F ratio
			N	%	N	%	
Diabetes	6,565	28.3	3,174	29.3	3,391	27.4	1.7
Glomerulonephritis	3,137	13.5	1,797	16.6	1,340	10.8	2.1
Hypertension	1,782	7.7	826	7.6	956	7.7	2.4
Polycystic kidney disease	1,342	5.8	722	6.7	620	5.0	1.1
Pyelonephritis	1,698	7.3	853	7.9	845	6.8	1.6
Renal vascular disease	1,130	4.9	175	1.6	955	7.7	2.1
Other	4,035	17.4	1,987	18.4	2,048	16.6	1.3
Uncertain aetiology	3,500	15.1	1,286	11.9	2,214	17.9	1.6
<b>Total (with data)</b>	<b>23,189</b>	<b>100.0</b>	<b>10,820</b>	<b>100.0</b>	<b>12,369</b>	<b>100.0</b>	
Missing	966	4.0	432	3.8	534	4.1	1.9

## Adequacy of dialysis in prevalent adult ICHD patients

URR and session duration were calculated only for patients who were undertaking ICHD three times per week. Patients who had missing data for the number of dialysis sessions per week were assumed to be dialysing three times per week for the purposes of calculating the median URR. These analyses were undertaken on the 2020 prevalent ICHD population, using data collected at the end of the third quarter.

**Table 5.5** Median urea reduction ratio (URR) and distribution of session frequency and time for adult patients prevalent to ICHD on 31/12/2020 using end of third quarter data (30/09/2020)

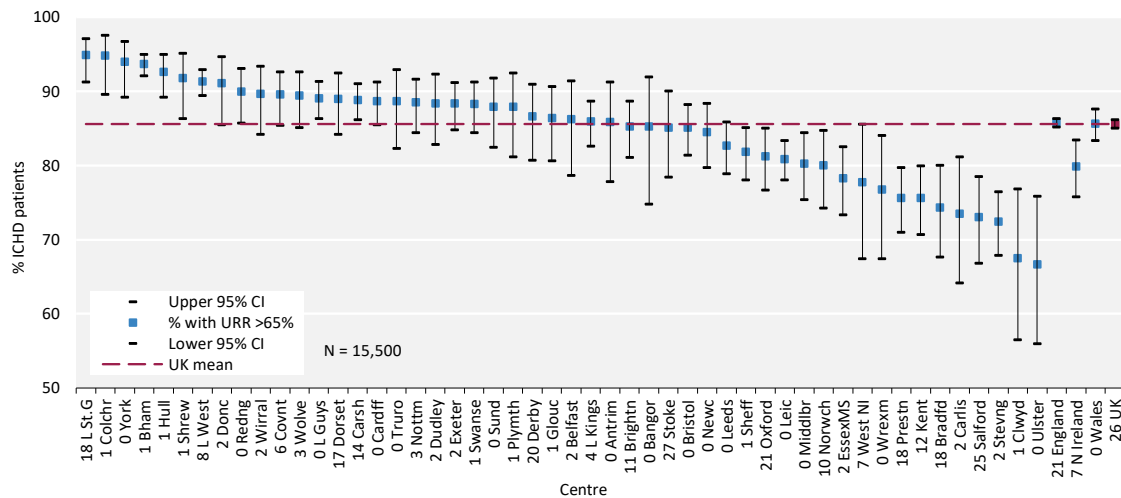
Centre	Median		% session frequency/week			% session time			% data completeness		
	URR (%)	% URR >65%	<3 sessions	3 sessions	>3 sessions	<4 hours	4–5 hours	>5 hours	URR	Session frequency	Session time
<b>ENGLAND</b>											
Bham	78	93.7	7.9	90.6	1.5	20.4	79.4	0.2	99.0	95.6	95.3
Bradfd	72	74.4	11.0	88.3	0.8	28.6	71.4	0.0	82.0	100.0	99.1
Brightn	73	85.3	2.3	97.2	0.5	16.3	83.7	0.0	89.2	99.7	99.7
Bristol	73	85.1	4.1	95.4	0.5	26.4	73.6	0.0	100.0	99.5	100.0
Camb			0.9	94.5	4.7	50.0	50.0	0.0	0.0	99.6	98.7
Carlisle	72	73.5	7.4	92.6	0.0	23.6	76.4	0.0	98.1	85.6	85.6
Carsh	76	88.8	3.4	96.1	0.5	11.5	88.5	0.0	86.0	99.4	98.3
Colchr	78	94.9	0.7	99.3	0.0	7.2	92.8	0.0	98.6	100.0	100.0
Covnt	76	89.6	7.6	91.2	1.2	33.6	66.4	0.0	94.4	98.5	97.0
Derby	75	86.6	0.5	97.3	2.3				80.0	100.0	14.4
Donc	76	91.1	0.7	99.3	0.0	28.3	71.7	0.0	97.5	94.4	94.4
Dorset	76	89.0	3.8	94.8	1.4	16.2	83.8	0.0	83.2	99.3	99.6
Dudley	76	88.4	4.2	94.7	1.1	17.3	82.7	0.0	97.8	96.9	96.8
EssexMS	72	78.3	18.4	80.9	0.8	35.8	63.8	0.3	97.8	99.2	99.4
Exeter	75	88.4	3.3	95.7	1.0	56.2	43.8	0.0	98.3	99.8	99.8
Glouc	73	86.4	7.6	92.4	0.0				99.5	98.5	0.0
Hull	77	92.6							99.1	0.6	1.2
Ipswi			11.2	88.8	0.0	9.4	90.6	0.0	67.3	99.2	92.3
Kent	70	75.6	4.8	94.4	0.8	80.9	19.1	0.0	88.3	99.3	100.0
L Barts			5.2	94.2	0.7	62.0	38.0	0.0	0.0	97.6	97.4
L Guys	75	89.1	3.0	96.3	0.6	23.1	76.9	0.0	99.7	100.0	99.8
L Kings	74	85.9	2.7	96.8	0.5	53.7	46.3	0.0	95.9	100.0	100.0
L Rfree									0.0	0.0	0.0
L St.G	77	94.9	2.1	97.9	0.0	8.8	91.2	0.0	82.2	98.0	87.4
L West	78	91.3	7.3	92.2	0.5	33.6	65.9	0.5	91.9	96.0	96.0
Leeds	74	82.7	10.0	89.6	0.4	25.2	74.8	0.0	99.6	98.0	99.6



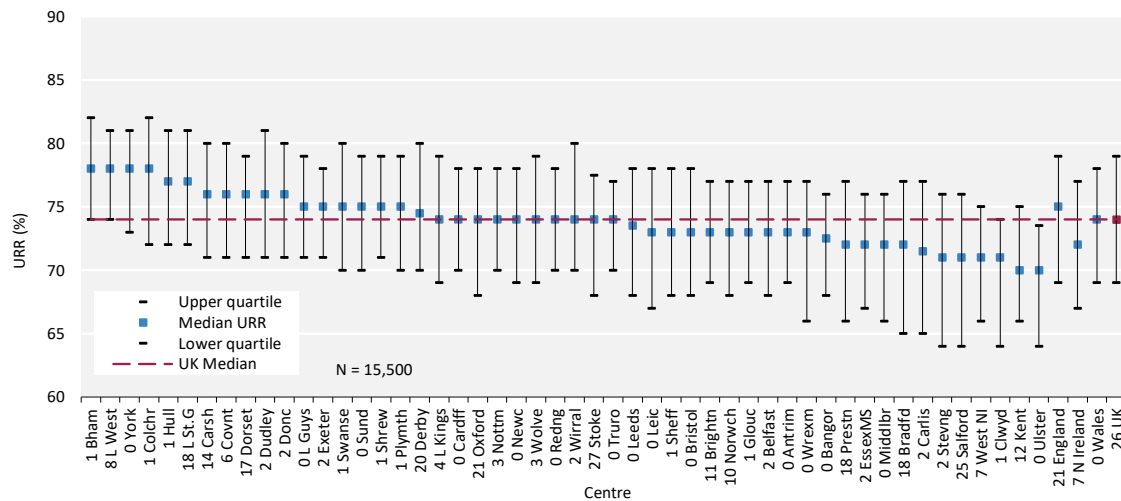
**Table 5.5** Continued

Centre	Median		% session frequency/week			% session time			% data completeness		
	URR (%)	% URR >65%	<3 sessions	3 sessions	>3 sessions	<4 hours	4-5 hours	>5 hours	URR	Session frequency	Session time
Leic	73	80.9	1.5	98.0	0.5	37.5	59.4	3.0	99.9	100.0	100.0
Liv Ain			4.4	93.3	2.2	11.1	88.9	0.0	0.0	97.8	97.7
Liv Roy			1.3	92.1	6.7	9.0	91.0	0.0	0.0	99.4	99.3
M RI			3.7	95.5	0.8	8.2	91.8	0.0	54.1	83.5	83.1
Middlbr	72	80.3	1.3	98.4	0.3				99.7	100.0	41.0
Newc	74	84.5	11.6	87.1	1.3	52.0	48.0	0.0	100.0	100.0	100.0
Norwch	73	80.0	5.0	93.4	1.6	63.1	36.9	0.0	90.4	97.0	96.8
Nottm	74	88.5	0.3	95.4	4.3	8.6	91.4	0.0	97.1	99.7	100.0
Oxford	74	81.3	0.0	100.0	0.0	20.5	79.5	0.0	78.7	99.3	99.3
Plymth	75	87.9	0.8	99.2	0.0				99.3	97.0	0.0
Ports			6.7	92.2	1.1	46.2	52.5	1.4	0.0	99.1	99.0
Prestn	72	75.6							82.3	0.0	0.2
Redng	74	90.0	5.5	94.5	0.0	22.8	77.2	0.0	100.0	98.9	97.7
Salford	71	73.1	10.5	74.5	15.1	18.8	81.3	0.0	74.7	99.8	98.3
Sheff	73	81.9	4.5	93.5	2.0	85.7	14.3	0.0	98.9	98.8	98.9
Shrew	75	91.8	1.2	95.2	3.6	17.7	82.3	0.0	98.8	98.8	98.8
Stevng	71	72.4	12.8	85.4	1.9	42.9	55.4	1.7	98.3	98.8	97.6
Stoke	74	85.1	13.6	83.9	2.5	15.8	84.2	0.0	72.9	100.0	100.0
Sund	75	87.9	5.2	87.8	7.0	26.3	73.7	0.0	100.0	98.6	87.9
Truro	74	88.7	1.4	97.2	1.4				100.0	100.0	0.0
Wirral	74	89.7	1.6	95.1	3.2	31.1	68.9	0.0	98.3	99.5	100.0
Wolve	74	89.4	2.1	97.1	0.7				97.1	99.6	3.7
York	78	94.0	2.3	94.7	2.9	20.1	79.9	0.0	100.0	97.7	98.8
N IRELAND											
Antrim	73	85.9	0.0	100.0	0.0	10.4	89.6	0.0	100.0	100.0	100.0
Belfast	73	86.2	2.5	93.4	4.1	19.7	78.6	1.7	98.3	96.8	99.2
Newry			15.6	84.4	0.0	64.9	35.1	0.0	60.3	94.1	98.3
Ulster	70	66.7	3.5	96.5	0.0	21.4	78.6	0.0	100.0	98.9	100.0
West NI	71	77.8	5.3	89.5	5.3	67.1	32.9	0.0	93.1	97.9	97.7
SCOTLAND											
Abrdn									0.0	0.0	0.0
Airdrie									0.0	0.0	0.0
D&Gall									0.0	0.0	0.0
Dundee									0.0	0.0	0.0
Edinb									0.0	0.0	0.0
Glasgw									0.0	0.0	0.0
Inverns									0.0	0.0	0.0
Klmarnk									0.0	0.0	0.0
Krkldy									0.0	0.0	0.0
WALES											
Bangor	73	85.3	2.9	97.1	0.0				100.0	100.0	0.0
Cardff	74	88.7	4.2	95.6	0.2				99.6	96.5	0.0
Clwyd	71	67.5							98.8	0.0	0.0
Swanse	75	88.3	6.9	91.0	2.1	36.7	63.0	0.3	99.4	100.0	100.0
Wrexm	73	76.8	3.9	96.1	0.0				100.0	100.0	0.0
TOTALS											
England	75	85.8	5.3	93.2	1.5	33.2	66.5	0.3	78.6	90.8	83.8
N Ireland	72	79.9	4.4	93.4	2.1	32.5	67.0	0.4	93.2	97.7	99.1
Scotland									0.0	0.0	0.0
Wales	74	85.6	5.1	94.0	0.9				99.5	91.3	32.3
<b>UK</b>	<b>74</b>	<b>85.6</b>	<b>5.3</b>	<b>93.2</b>	<b>1.5</b>	<b>33.3</b>	<b>66.4</b>	<b>0.3</b>	<b>73.6</b>	<b>84.0</b>	<b>74.8</b>

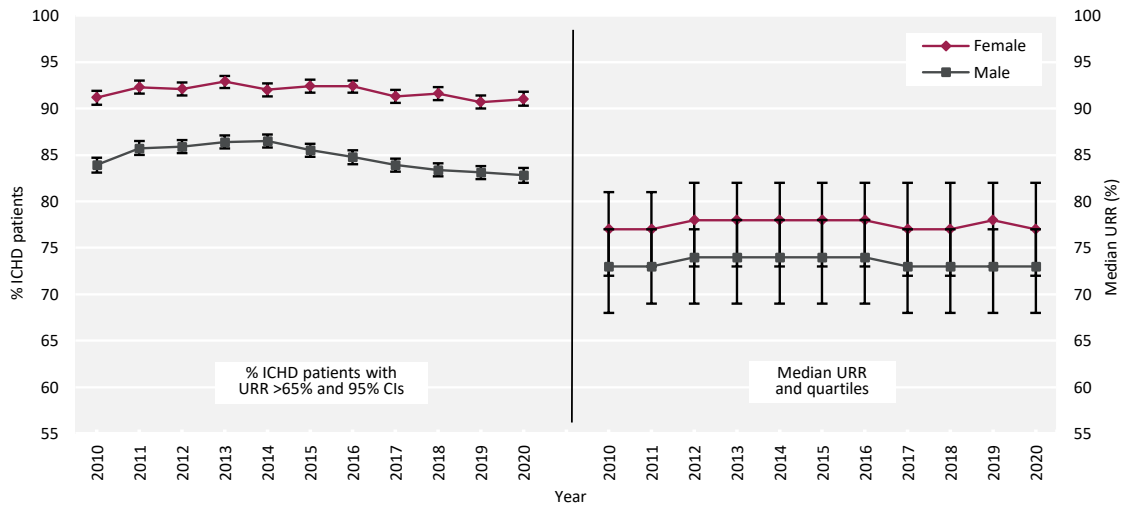
Blank cells – no data returned by the centre or data completeness <70%.



**Figure 5.2** Percentage of adult patients prevalent to ICHD on 31/12/2020 with urea reduction ratio (URR) >65% by centre  
CI – confidence interval

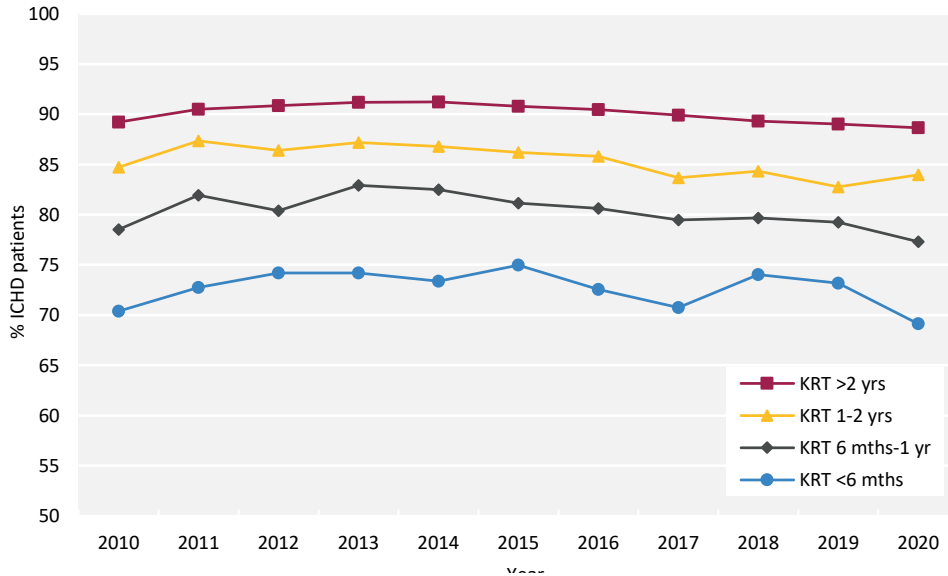


**Figure 5.3** Median urea reduction ratio (URR) achieved in adult patients prevalent to ICHD on 31/12/2020 by centre



**Figure 5.4** Change in the percentage of prevalent adult ICHD patients with urea reduction ratio (URR) >65% and the median URR by sex between 2010 and 2020

CI – confidence interval



**Figure 5.5** Percentage of prevalent adult ICHD patients achieving urea reduction ratio (URR) >65% by time on KRT between 2010 and 2020

## Biochemistry parameters in prevalent adult ICHD patients

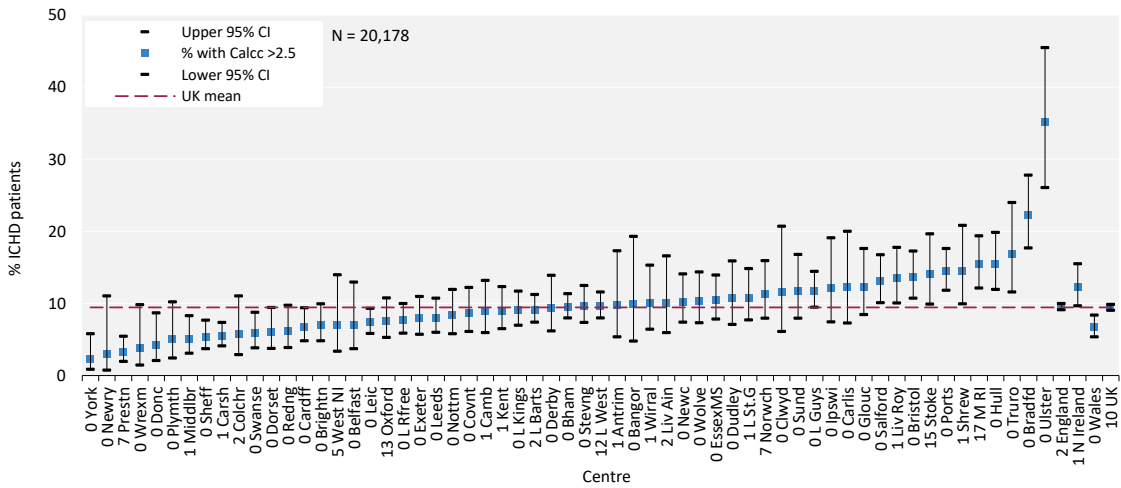
The UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which is the percentage of patients with adjusted calcium above the target range.

**Table 5.6** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients prevalent to ICHD on 31/12/2020 by centre

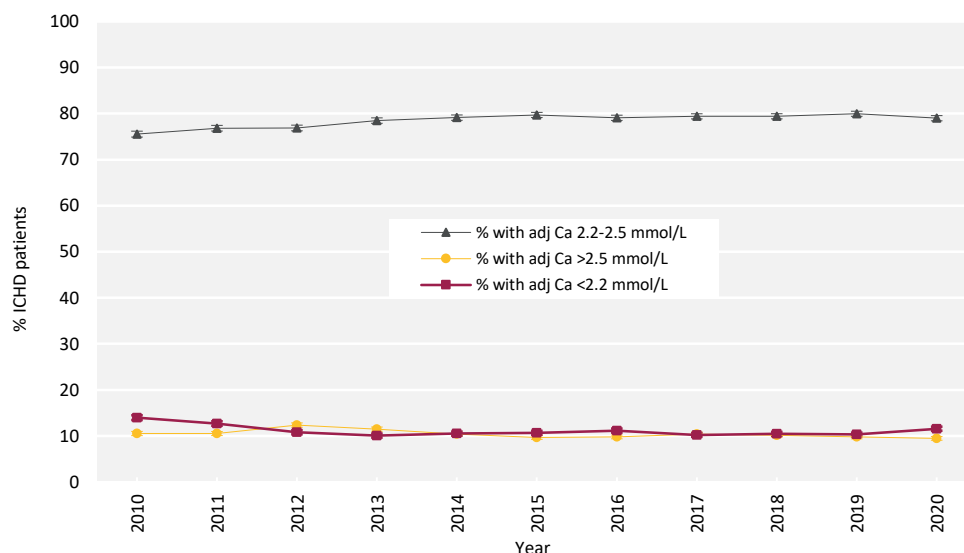
Centre	Median adj Ca (mmol/L)	% adj Ca 2.2-2.5 mmol/L	% adj Ca >2.5 mmol/L	% data completeness
<b>ENGLAND</b>				
Bham	2.3	77.8	9.5	99.8
Bradfd	2.4	71.9	22.3	99.6
Brightn	2.3	81.5	6.9	100.0
Bristol	2.4	83.8	13.7	100.0
Camb	2.3	77.7	8.9	98.8
Carlis	2.3	73.6	12.3	100.0
Carsh	2.3	69.9	5.5	98.9
Colchr	2.3	84.3	5.7	97.9
Covnt	2.3	74.0	8.7	100.0
Derby	2.4	84.4	9.3	100.0
Donc	2.3	82.9	4.3	100.0
Dorset	2.3	82.0	6.0	100.0
Dudley	2.4	85.7	10.7	100.0
EssexMS	2.4	82.6	10.5	100.0
Exeter	2.3	88.7	7.9	99.8
Glouc	2.4	82.8	12.3	100.0
Hull	2.4	77.7	15.5	100.0
Ipswi	2.3	71.8	12.1	100.0
Kent	2.3	77.0	9.0	98.7
L Barts	2.3	76.7	9.1	97.9
L Guys	2.4	79.2	11.7	100.0
L Kings	2.3	76.2	9.0	99.8
L Rfree	2.3	74.1	7.7	100.0
L St.G	2.3	74.1	10.8	99.3
L West	2.3	73.7	9.6	88.2
Leeds	2.3	82.4	8.0	99.6
Leic	2.3	78.2	7.4	99.7
Liv Ain	2.4	83.7	10.1	97.7
Liv Roy	2.4	80.3	13.4	99.0
M RI	2.4	78.3	15.4	82.7
Middlbr	2.3	83.3	5.1	99.0
Newc	2.4	78.9	10.3	100.0
Norwch	2.3	78.5	11.3	92.5
Nottm	2.3	81.4	8.4	100.0
Oxford	2.3	78.9	7.6	86.6
Plymth	2.3	82.7	5.0	100.0
Ports	2.4	73.7	14.5	100.0
Prestn	2.3	79.0	3.3	93.1
Redng	2.3	86.9	6.2	100.0
Salford	2.4	78.9	13.1	100.0
Sheff	2.3	78.8	5.4	99.6
Shrew	2.4	81.8	14.6	98.8
Stoke	2.4	83.4	14.1	85.0
Sund	2.4	74.8	11.7	100.0
Truro	2.4	81.7	16.9	100.0
Wirral	2.3	81.7	10.0	98.9
Wolve	2.4	81.1	10.3	99.7
York	2.4	92.2	2.2	100.0
<b>N IRELAND</b>				
Antrim	2.4	84.3	9.8	99.0
Belfast	2.3	82.0	7.0	100.0
Newry	2.3	85.3	2.9	100.0

**Table 5.6** Continued

Centre	Median adj Ca (mmol/L)	% adj Ca 2.2-2.5 mmol/L	% adj Ca >2.5 mmol/L	% data completeness
Ulster	2.5	63.7	35.2	100.0
West NI	2.3	79.0	7.0	95.2
<b>SCOTLAND</b>				
Abrdn				
Airdrie				
D&Gall				
Dundee				
Edinb				
Glasgw				
Inverns				
Klmarnk				
Krkcldy				
<b>WALES</b>				
Bangor	2.3	81.7	9.9	100.0
Cardff	2.3	82.7	6.8	99.8
Clwyd	2.4	87.2	11.5	100.0
Swanse	2.3	83.9	5.8	100.0
Wrexm	2.3	88.5	3.9	100.0
<b>TOTALS</b>				
England	2.3	78.7	9.5	97.7
N Ireland	2.4	78.9	12.3	98.8
Scotland				
Wales	2.3	83.9	6.7	99.9
<b>UK</b>	<b>2.3</b>	<b>79.0</b>	<b>9.5</b>	<b>90.3</b>



**Figure 5.6** Percentage of adult patients prevalent to ICHD on 31/12/2020 with adjusted calcium (Ca) above the target range (>2.5 mmol/L) by centre  
 CI – confidence interval



**Figure 5.7** Change in percentage of prevalent adult ICHD patients within, above and below the target range for adjusted calcium (Ca 2.2–2.5 mmol/L) between 2010 and 2020

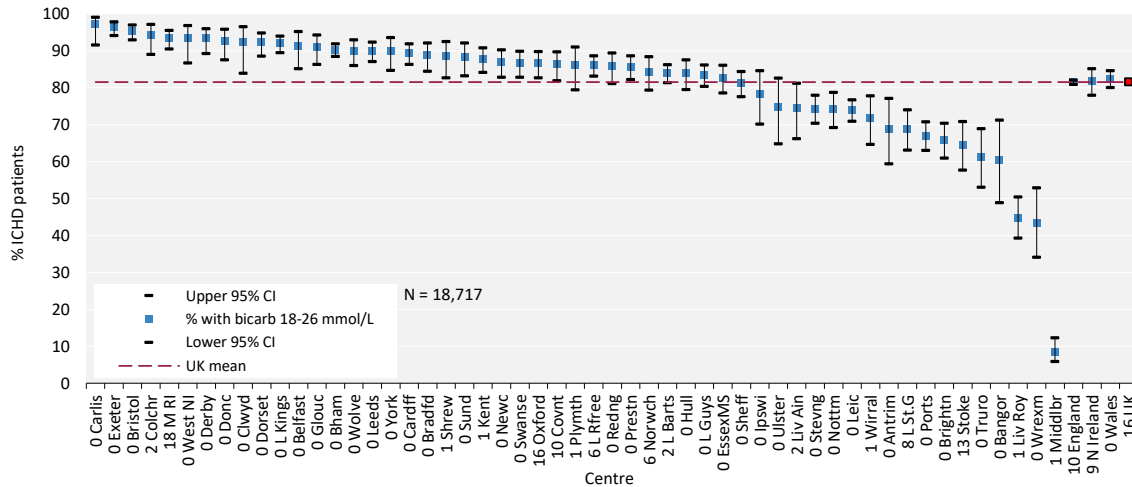
**Table 5.7** Median pre-dialysis potassium and bicarbonate and percentage attaining target ranges in adult patients prevalent to ICHD on 31/12/2020 by centre

Centre	Pre-dialysis potassium					Pre-dialysis bicarbonate				
	Median (mmol/L)	% <4.0 mmol/L	% 4.0–6.0 mmol/L	% >6.0 mmol/L	% complete	Median (mmol/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% complete
<b>ENGLAND</b>										
Bham	4.2	41.2	56.8	38.4	99.8	23	2.6	90.3	7.1	99.8
Bradfd	4.7	12.3	81.2	8.8	99.6	23	2.3	88.9	8.9	99.6
Brightn					0.0	25	0.3	65.8	33.9	100.0
Bristol	4.8	18.1	78.0	14.7	100.0	22	2.3	95.4	2.3	100.0
Camb	4.9	5.7	87.5	3.4	99.2					16.4
Carlis					0.0	21	1.9	97.2	0.9	100.0
Carsh					0.0					67.4
Colchr	4.9	5.7	90.7	2.9	97.9	22	0.7	94.3	5.0	97.9
Covnt					0.0	23	3.0	86.3	10.7	89.5
Derby					0.0	23	2.7	93.3	4.0	100.0
Donc	4.8	7.3	87.2	4.2	100.0	23	0.0	92.7	7.3	100.0
Dorset	4.8	6.3	87.3	4.0	100.0	22	3.5	92.3	4.2	100.0
Dudley	4.8	10.7	85.7	7.1	100.0					60.7
EssexMS	4.8	9.7	85.7	7.2	100.0	23	3.1	82.6	14.3	100.0
Exeter	4.4	23.1	74.3	19.3	99.8	22	2.6	96.4	1.0	99.8
Glouc					0.0	24	0.0	91.1	8.9	99.5
Hull	4.7	8.4	84.8	5.8	100.0	24	0.6	83.9	15.5	100.0
Ipswi					0.0	24	3.2	78.2	18.6	100.0
Kent	4.4	31.2	64.8	26.8	98.7	22	7.9	87.8	4.2	98.7
L Barts	4.8	14.8	80.9	12.6	97.9	23	3.1	84.0	12.9	97.7
L Guys	4.7	25.5	70.0	22.2	100.0	24	0.8	83.4	15.8	100.0
L Kings	5.2	7.1	78.2	5.2	99.8	21	6.4	92.0	1.6	99.7
L Rfree	5.0	10.0	83.0	7.9	100.0	23	4.1	86.1	9.8	93.9
L St.G					0.0	25	0.7	68.8	30.4	92.3
L West					0.0					52.9
Leeds	5.0	4.3	89.8	2.9	99.8	23	1.0	90.0	9.0	99.6
Leic	4.8	8.7	85.5	7.0	99.7	25	0.8	73.9	25.3	99.6

**Table 5.7** Continued

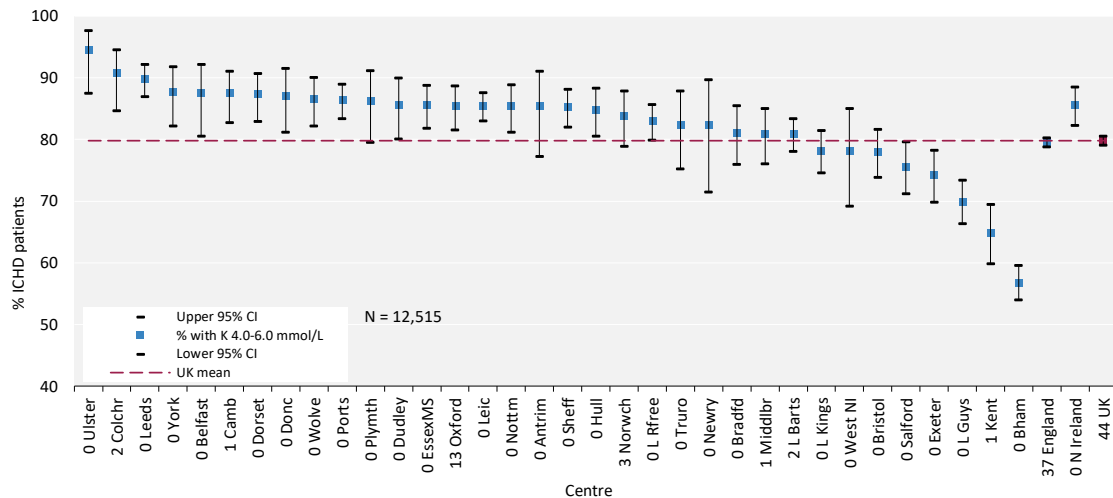
Centre	Pre-dialysis potassium					Pre-dialysis bicarbonate				
	Median (mmol/L)	% <4.0 mmol/L	% 4.0–6.0 mmol/L	% >6.0 mmol/L	% complete	Median (mmol/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% complete
Liv Ain					0.0	25	0.0	74.4	25.6	97.7
Liv Roy					0.0	27	0.3	44.7	54.9	98.7
M RI					0.0	23	0.8	93.4	5.8	82.3
Middlbr	4.7	16.0	81.0	12.2	99.0	30	0.0	8.5	91.5	99.0
Newc					0.0	23	2.2	87.0	10.9	100.0
Norwch	5.1	3.9	83.9	2.1	97.4	23	2.8	84.4	12.8	93.6
Nottm	4.8	10.8	85.5	7.9	100.0	25	0.6	74.2	25.2	99.7
Oxford	4.9	9.1	85.5	6.6	87.3	22	5.0	86.6	8.4	84.0
Plymth	4.7	10.1	86.3	6.1	100.0	21	11.6	86.2	2.2	99.3
Ports	4.8	10.4	86.4	8.2	100.0	25	1.2	67.0	31.8	100.0
Prestn					0.0	23	5.4	85.7	8.9	100.0
Redng					0.0	24	1.1	85.8	13.1	99.6
Salford	4.7	19.6	75.6	16.0	100.0					0.0
Sheff	5.0	7.7	85.4	5.7	99.6	24	1.0	81.2	17.8	99.6
Shrew					0.0	23	5.5	88.5	6.1	98.8
Sthend										
Stoke					0.0	25	0.0	64.5	35.5	86.8
Sund					0.0	22	3.9	88.4	7.8	100.0
Truro	4.9	9.9	82.4	5.9	100.0	26	0.0	61.3	38.7	100.0
Wirral					0.0	25	0.6	71.7	27.8	98.9
Wolve	4.9	4.8	86.6	2.9	99.7	21	8.6	90.0	1.4	99.7
York	5.1	2.2	87.8	0.8	100.0	23	1.1	90.0	8.9	100.0
N IRELAND										
Antrim	4.6	11.7	85.4	6.7	100.0	26	0.0	68.9	31.1	100.0
Belfast	5.1	5.5	87.5	2.6	100.0	23	3.1	91.4	5.5	100.0
Newry	4.7	14.7	82.4	8.1	100.0					35.3
Ulster	4.9	1.1	94.5	0.2	100.0	25	0.0	74.7	25.3	100.0
West NI	5.0	9.5	78.1	5.2	100.0	23	1.0	93.3	5.7	100.0
SCOTLAND										
Abrdn					0.0					0.0
Airdrie					0.0					0.0
D&Gall					0.0					0.0
Dundee					0.0					0.0
Edinb					0.0					0.0
Glasgw					0.0					0.0
Inverns					0.0					0.0
Klmarnk					0.0					0.0
Krkldy					0.0					0.0
WALES										
Bangor					0.0	26	1.4	60.6		100.0
Cardff					0.0	22	3.0	89.4		99.6
Clwyd					0.0	22	2.6	92.3		100.0
Swanse					0.0	23	3.1	86.7		100.0
Wrexm					0.0	27	1.0	43.3		100.0
TOTALS										
England	4.8	9.5	79.6	14.3	63.2	23	2.7	81.5	15.8	90.3
N Ireland	4.9		85.7	6.0	100.0	24	1.8	81.8	16.4	91.1
Scotland					0.0					0.0
Wales					0.0	23	2.7	82.4	14.9	99.8
<b>UK</b>	<b>4.8</b>		<b>79.8</b>	<b>14.1</b>	<b>56.0</b>	<b>23</b>	<b>2.7</b>	<b>81.6</b>	<b>15.8</b>	<b>83.8</b>

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



**Figure 5.8** Percentage of adult patients prevalent to ICHD on 31/12/2020 with pre-dialysis bicarbonate (bicarb) within the target range (18–26 mmol/L) by centre

CI – confidence interval

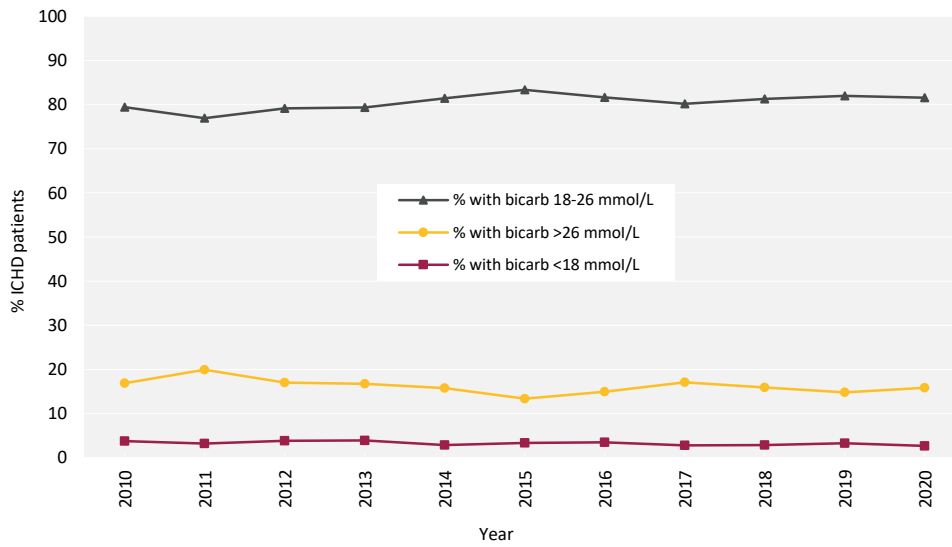


**Figure 5.9** Percentage of adult patients prevalent to ICHD on 31/12/2020 with pre-dialysis potassium (K) within the target range (4.0–6.0 mmol/L) by centre

CI – confidence interval

Pre-dialysis potassium has only been included in the UKRR report in the last few years and therefore longitudinal analyses are not shown.





**Figure 5.10** Change in percentage of prevalent adult ICHD patients within, above and below the target range for pre-dialysis bicarbonate (bicarb 18–26 mmol/L) between 2010 and 2020

## Anaemia in prevalent adult ICHD patients

UK Kidney Association anaemia guidelines recommend a target haemoglobin of 100-120 g/L. Data regarding target and median haemoglobin and ferritin levels attained are presented in table 5.8.

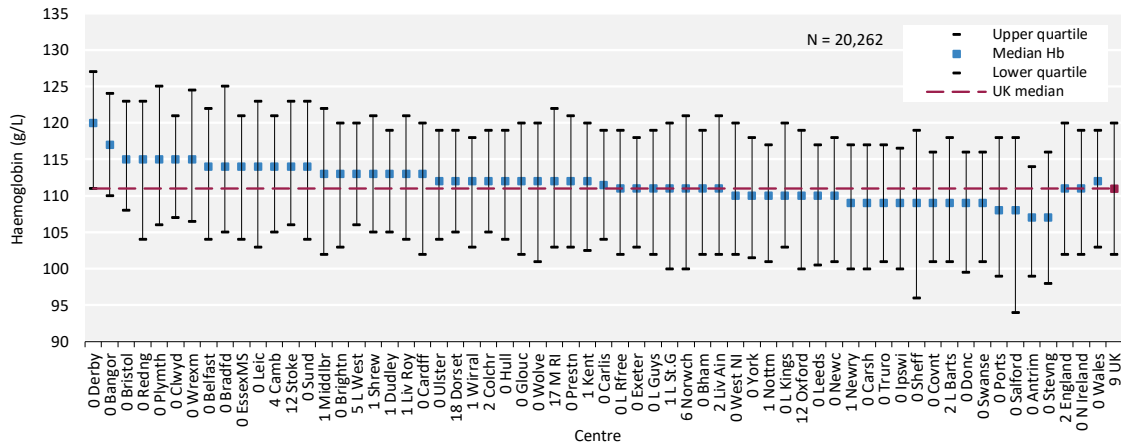
**Table 5.8** Median haemoglobin and ferritin and percentage attaining target ranges in adult patients prevalent to ICHD on 31/12/2020 by centre

Centre	Haemoglobin				Ferritin		
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <100 µg/L	% data completeness
ENGLAND							
Bham	111	20.8	21.7	99.8	407	6.0	99.8
Bradfd	114	16.5	34.6	99.6	566	3.8	99.6
Brightn	113	20.8	22.1	100.0	527	2.3	98.7
Bristol	115	4.4	32.6	100.0	690	0.9	100.0
Camb	114	12.9	27.8	96.4			54.0
Carlis	112	17.9	21.7	100.0	531	6.6	100.0
Carsh	109	23.5	18.1	99.6	476	6.8	98.9
Colchr	112	15.7	17.9	97.9	550	1.4	97.9
Covnt	109	21.6	13.5	100.0	502	4.2	100.0
Derby	120	8.9	46.7	100.0	581	3.6	99.6
Donc	109	25.0	17.1	100.0	443	1.2	100.0
Dorset	112	15.0	21.0	82.0	634	1.8	100.0
Dudley	113	14.4	14.4	99.5	231	15.8	74.5
EssexMS	114	16.4	25.1	99.7	438	6.9	100.0
Exeter	111	10.7	16.9	99.8	324	6.9	99.8
Glouc	112	18.7	23.6	100.0	424	8.3	95.1
Hull	112	17.0	22.0	100.0	439	1.9	99.7
Ipswi	109	24.2	14.5	100.0	484	9.7	100.0
Kent	112	18.7	23.9	99.2	535	4.0	98.2
L Barts	109	21.7	18.0	97.9	664	3.2	98.1
L Guys	111	18.8	21.7	100.0	491	3.3	99.8
L Kings	110	16.0	23.9	99.8	523	2.5	98.9
L Rfree	111	20.7	20.4	100.0	444	8.8	99.4
L St.G	111	23.9	22.6	99.3	582	3.8	98.0
L West	113	12.9	22.8	94.8	360	4.7	94.5
Leeds	110	23.4	17.4	99.8	372	7.2	99.6
Leic	114	19.0	30.3	99.7	433	5.0	99.6
Liv Ain	111	20.9	25.6	97.7	589	3.9	97.0
Liv Roy	113	16.8	26.0	98.7	465	4.7	97.7
M RI	112	21.0	30.1	83.4	387	5.3	81.4
Middlbr	113	20.4	28.9	99.0	930	7.8	99.0
Newc	110	22.4	19.9	100.0	548	3.1	100.0
Norwch	111	24.6	25.8	94.4	459	3.6	94.4
Nottm	110	20.9	17.8	99.1	422	5.3	100.0
Oxford	110	24.1	23.6	87.6	481	3.1	97.9
Plymth	115	10.8	37.4	100.0	380	7.9	100.0
Ports	108	25.0	20.6	100.0	279	13.5	98.1
Prestn	112	19.7	26.0	100.0	638	3.9	94.8
Redng	115	19.3	30.9	100.0	637	3.6	100.0
Salford	108	33.9	19.1	100.0	403	12.8	100.0
Sheff	109	31.7	20.8	99.6	458	2.4	99.6
Shrew	113	12.7	27.9	98.8	676	1.2	98.8
Stevng	107	28.2	14.3	99.8	437	4.7	99.8
Stoke	114	11.7	33.2	87.6	522	2.0	84.2
Sund	114	16.5	29.1	100.0	678	1.5	99.0
Truro	109	23.2	20.4	100.0	471	0.7	100.0

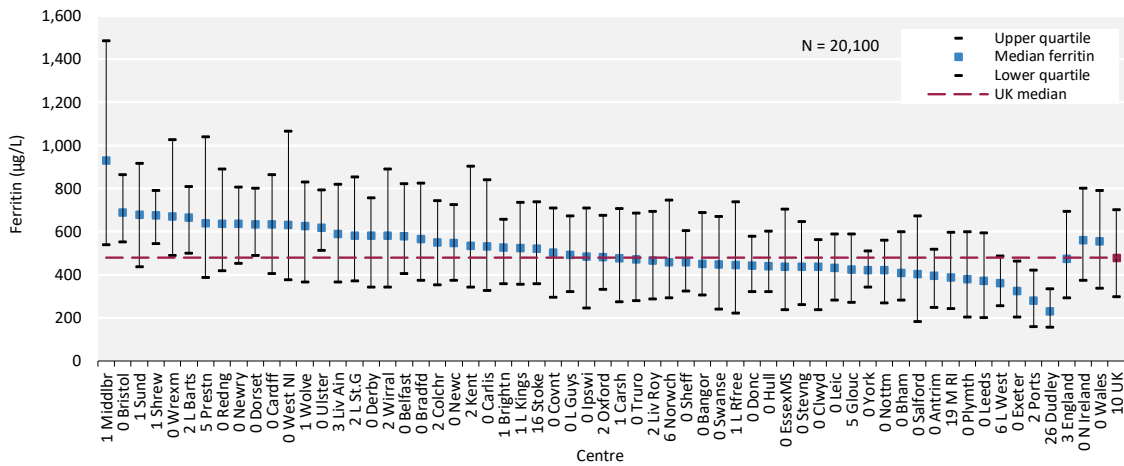
**Table 5.8** Continued

Centre	Haemoglobin				Ferritin		
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <100 µg/L	% data completeness
Wirral	112	19.4	18.9	98.9	580	5.6	98.4
Wolve	112	20.6	24.1	99.7	626	5.2	99.3
York	110	21.7	22.2	100.0	423	3.9	100.0
N IRELAND							
Antrim	107	26.2	10.7	100.0	395	2.9	100.0
Belfast	114	14.8	28.9	100.0	580	0.0	100.0
Newry	109	23.9	14.9	98.5	637	2.9	100.0
Ulster	112	16.5	17.6	100.0	619	2.2	100.0
West NI	110	22.9	22.9	100.0	630	2.9	100.0
SCOTLAND							
Abrdn				0.0			0.0
Airdrie				0.0			0.0
D&Gall				0.0			0.0
Dundee				0.0			0.0
Edinb				0.0			0.0
Glasgw				0.0			0.0
Inverns				0.0			0.0
Klmarnk				0.0			0.0
Krkldy				0.0			0.0
WALES							
Bangor	117	8.5	33.8	100.0	450	4.2	100.0
Cardff	113	17.9	24.2	100.0	633	3.2	99.8
Clwyd	115	14.1	26.9	100.0	437	5.1	100.0
Swanse	109	21.6	13.9	100.0	447	8.9	99.7
Wrexm	115	12.5	32.7	100.0	670	1.0	100.0
TOTALS							
England	111	19.7	23.0	98.1	475	5.1	97.3
N Ireland	111	20.4	19.8	99.8	559	2.0	100.0
Scotland				0.0			0.0
Wales	112	17.7	22.4	100.0	554	5.1	99.8
<b>UK</b>	<b>111</b>	<b>19.6</b>	<b>22.9</b>	<b>90.7</b>	<b>479</b>	<b>5.0</b>	<b>90.0</b>

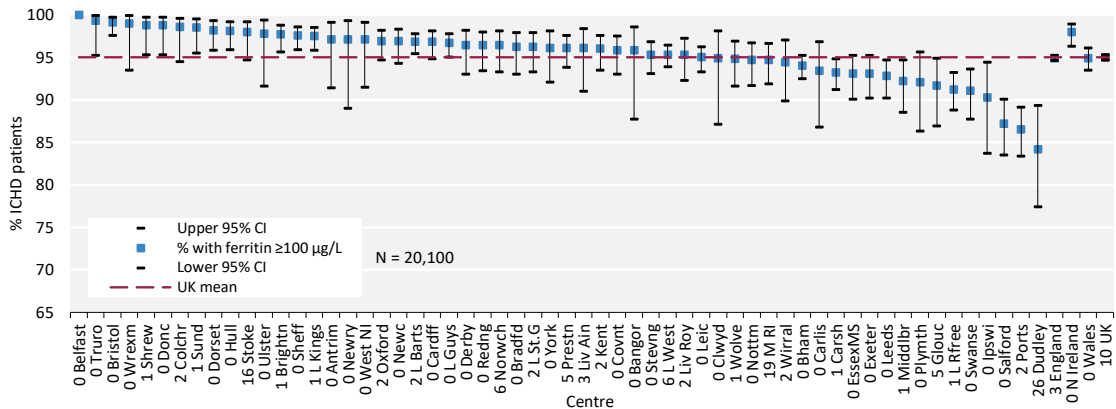
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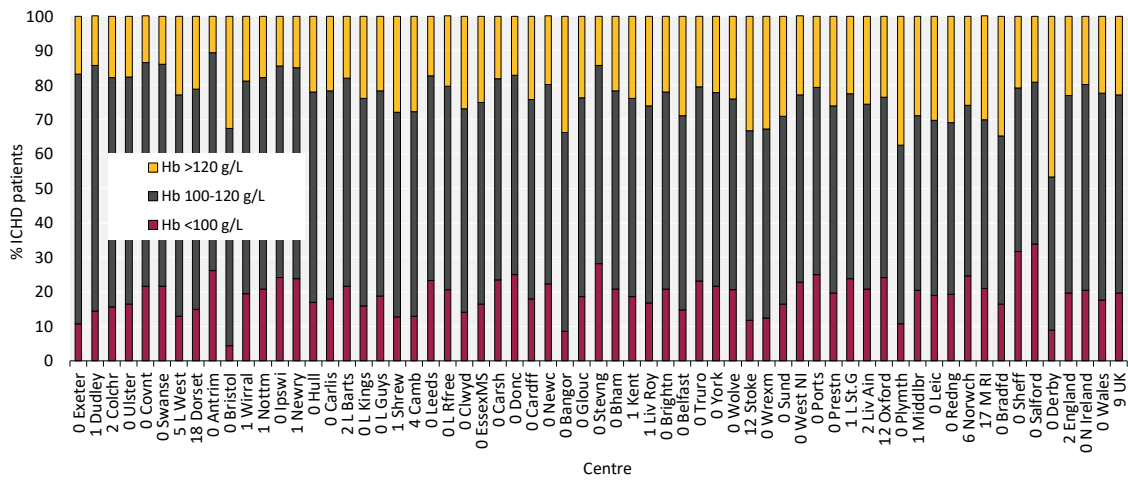
**Figure 5.11** Median haemoglobin (Hb) in adult patients prevalent to ICHD on 31/12/2020 by centre



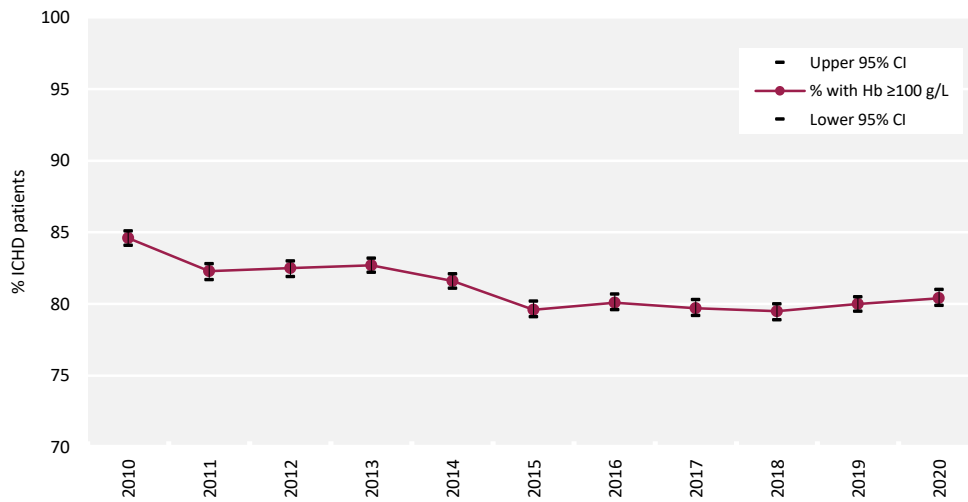
**Figure 5.12** Median ferritin in adult patients prevalent to ICHD on 31/12/2020 by centre



**Figure 5.13** Percentage of adult patients prevalent to ICHD on 31/12/2020 with ferritin  $\geq 100$   $\mu\text{g/L}$  by centre  
CI – confidence interval



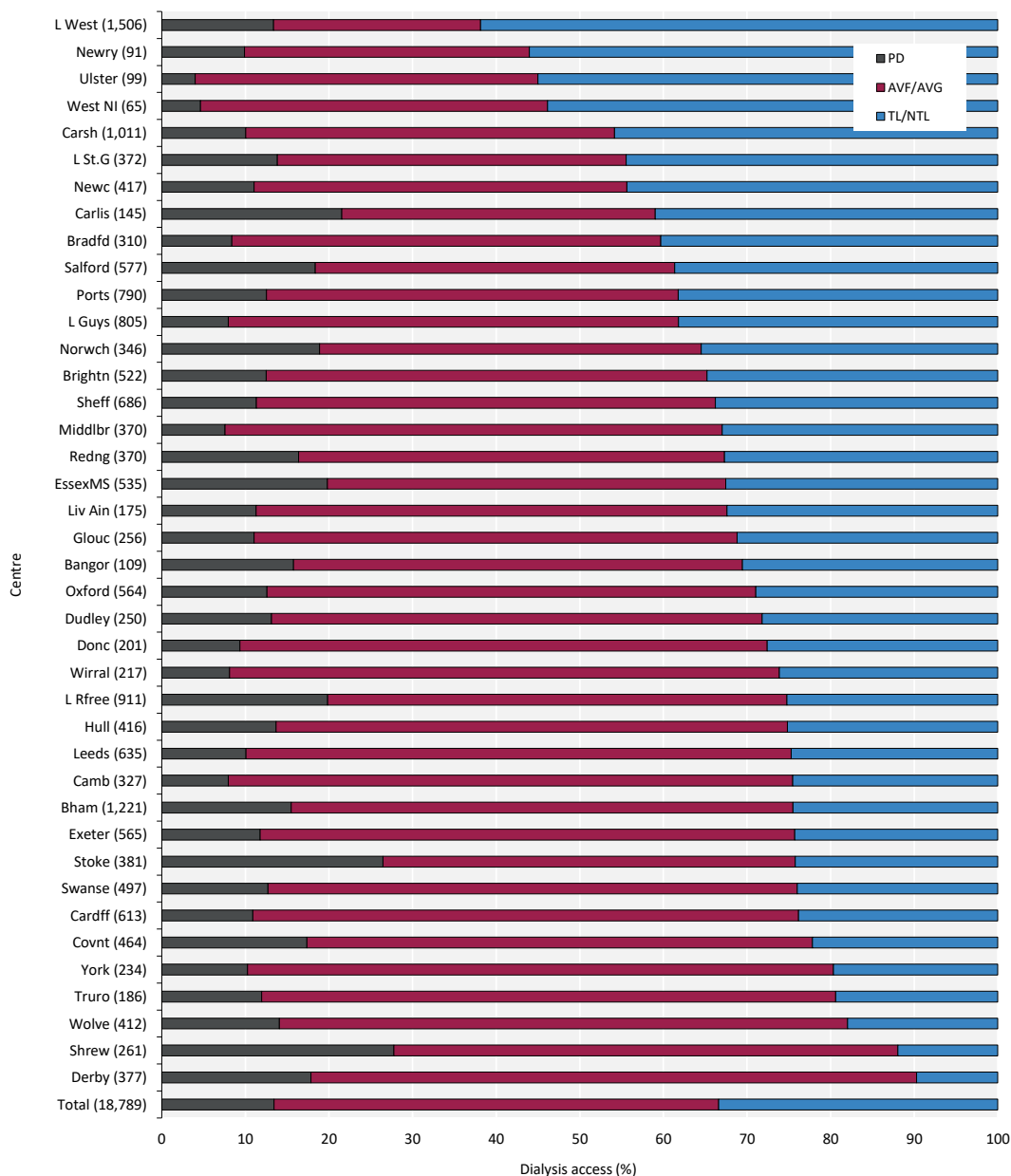
**Figure 5.14** Distribution of haemoglobin (Hb) in adult patients prevalent to ICHD on 31/12/2020 by centre



**Figure 5.15** Percentage of prevalent adult ICHD patients with haemoglobin (Hb)  $\geq 100$  g/L between 2010 and 2020  
CI – confidence interval

## Dialysis access in prevalent adult dialysis patients

Prevalent dialysis access data were collected separately to the main UKRR quarterly data returns via the 2020 Multisite Dialysis Access Audit (see appendix A). Scotland do not contribute data via the audit, and therefore are not included in the analysis of prevalent patients. They submit access data for incident patients separately to the audit (see chapter 2). The type of prevalent dialysis access is presented in figure 5.16 for the 40 of centres in England, Northern Ireland and Wales that returned vascular access data on  $\geq 70\%$  of their prevalent dialysis patients. Rates of PD may impact the types of vascular access used for ICHD and this is reflected in the combined audit measures for dialysis access. West NI is two centres combined, but only one submitted vascular access 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 5.16** Dialysis access in adult patients prevalent to dialysis on 31/12/2020 by centre (2020 Multisite Dialysis Access Audit)

Number of patients on dialysis in a centre in brackets (centres with  $<70\%$  access data for the prevalent dialysis population were excluded). AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

## Infections in adult haemodialysis patients- to be updated when 2020 data available

PHE has carried out mandatory enhanced surveillance of MRSA bacteraemia since October 2005 and of MSSA bacteraemia since January 2011 for NHS acute trusts, with the subsequent addition of *E. coli* bacteraemia and *C. difficile* reporting. Patient-level infection data are reported in real time to PHE. Wales provides infection data extracted locally from the kidney and hospital IT systems.

The definition of each type of infectious episode is detailed in appendix A.

A rolling two year cohort is reported in line with UK Kidney Association guidelines. These analyses included all patients on HD, whether on HHD or ICHD.

**Table 5.9** Rate of infection episodes per 100 HD patient-years in prevalent adult HD patients in England and Wales from January 2018 to December 2019 by centre

Centre	HD patient-years	Rate per 100 HD patient-years			
		MRSA	MSSA	C.difficile	E.coli
ENGLAND					
Basldn	368	0.27	4.62	2.72	0.54
Bham	2,886	0.14	2.36	1.32	1.70
Bradfd	558	0.36	2.69	0.18	1.97
Brightn	960	0.21	3.75	1.25	2.08
Bristol	993	0.91	2.42	0.81	2.32
Camb	782	0.13	2.17	0.51	1.15
Carlis	211	0.00	4.75	0.95	1.42
Carsh	1,776	0.06	1.75	0.84	2.08
Chelms	229	0.00	2.18	1.74	3.05
Colchr	271	0.37	1.84	0.00	1.48
Covnt	771	0.00	1.43	0.91	3.63
Derby	518	0.00	1.35	0.58	1.16
Donc	378	0.00	4.50	0.79	2.12
Dorset	610	0.16	2.30	1.15	1.97
Dudley	432	0.00	3.71	0.70	2.32
Exeter	949	0.11	1.48	0.95	1.79
Glouc	480	0.42	2.50	1.67	0.62
Hull	719	0.00	2.92	1.11	1.25
Ipswi	310	0.00	3.22	1.61	2.26
Kent	900	0.11	2.78	0.44	2.44
L Barts	2,172	0.14	3.08	0.74	1.98
L Guys	1,450	0.07	2.21	0.62	1.52
L Kings	1,212	0.00	2.56	1.07	1.65
L Rfree	1,430	0.00	1.68	1.68	2.87
L St.G	610	0.33	0.82	0.66	0.82
L West	2,932	0.17	2.05	1.23	1.77
Leeds	1,124	0.27	3.12	1.25	2.58
Leic	1,976	0.10	2.89	0.71	1.82
Liv Ain	343	0.00	3.21	2.04	4.37
Liv Roy	805	0.25	2.73	2.11	1.74
M RI	1,147	0.26	3.75	1.31	2.35
Middlbr	717	0.00	1.67	0.42	1.95
Newc	717	0.14	6.97	1.81	2.23
Norwch	619	0.00	1.29	0.65	0.81
Nottm	783	0.00	2.04	1.66	2.04
Oxford	967	0.10	1.03	0.72	1.96

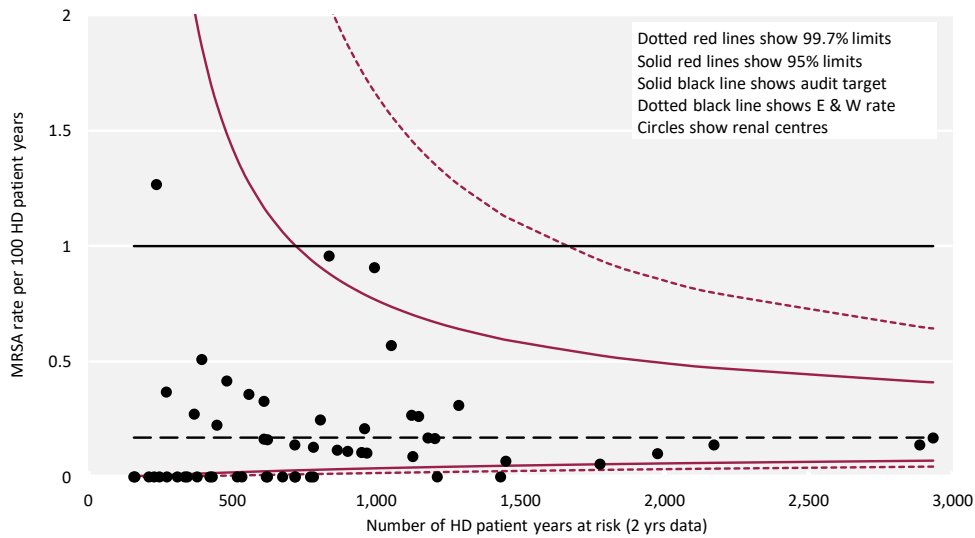
**Table 5.9** Continued

Centre	HD patient-years	Rate per 100 HD patient-years			
		MRSA	MSSA	C.difficile	E.coli
Plymth	274	0.00	2.56	1.10	1.83
Ports	1,286	0.31	4.35	1.09	1.32
Prestn	1,126	0.09	2.58	1.78	2.04
Redng	622	0.16	2.57	0.32	1.93
Salford	864	0.12	3.47	1.39	2.66
Sheff	1,202	0.17	2.50	0.75	1.58
Shrew	446	0.22	2.47	0.90	1.12
Stevng	1,053	0.57	2.28	1.33	2.00
Sthend	248	0.00	4.03	0.81	3.63
Stoke	622	0.00	1.61	1.13	3.54
Sund	534	0.00	2.81	1.69	1.87
Truro	337	0.00	2.38	0.89	2.08
Wirral	423	0.00	0.95	3.31	2.13
Wolve	675	0.00	1.93	0.30	2.37
York	394	0.51	5.59	0.25	1.27
WALES					
Bangor	162	0.00	4.95	1.24	2.48
Cardff	1,178	0.17	5.26	1.02	2.04
Clwyd	158	0.00	5.70	1.90	1.90
Swanse	836	0.96	3.71	0.48	3.23
Wrexm	237	1.27	7.60	0.42	0.84
TOTALS					
<b>England</b>	<b>44,207</b>	<b>0.15</b>	<b>2.59</b>	<b>1.08</b>	<b>1.95</b>
<b>Wales</b>	<b>2,571</b>	<b>0.51</b>	<b>4.98</b>	<b>0.86</b>	<b>2.33</b>
<b>E &amp; W</b>	<b>46,778</b>	<b>0.17</b>	<b>2.72</b>	<b>1.06</b>	<b>1.98</b>

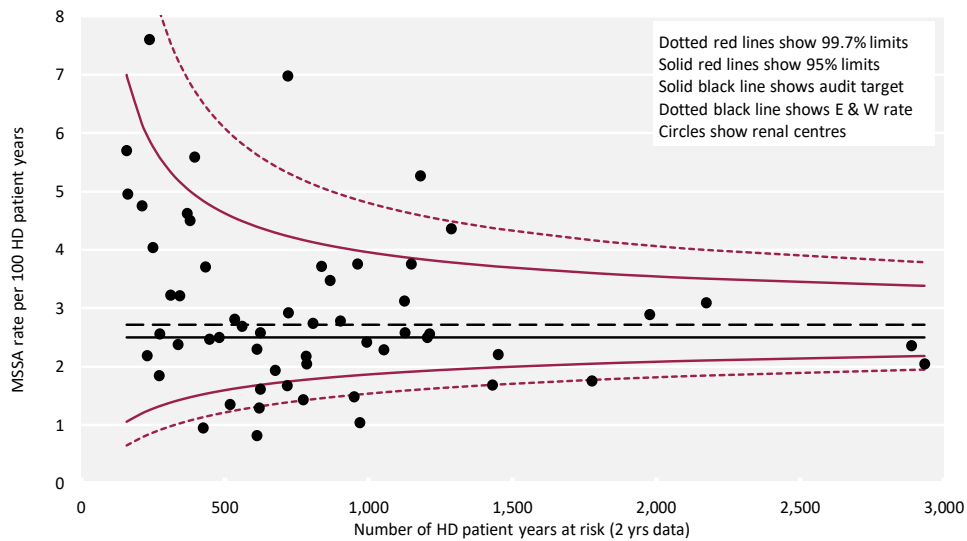
*C. difficile* – *Clostridium difficile*; *E. coli* – *Escherichia coli*; MRSA – methicillin-resistant *Staphylococcus aureus*;  
MSSA – methicillin-sensitive *Staphylococcus aureus*



Funnel plots show each centre's estimated infection rate per 100 HD patient-years for MRSA and MSSA against the number of patient-years at risk to take into account the greater variation expected as centre size decreases.

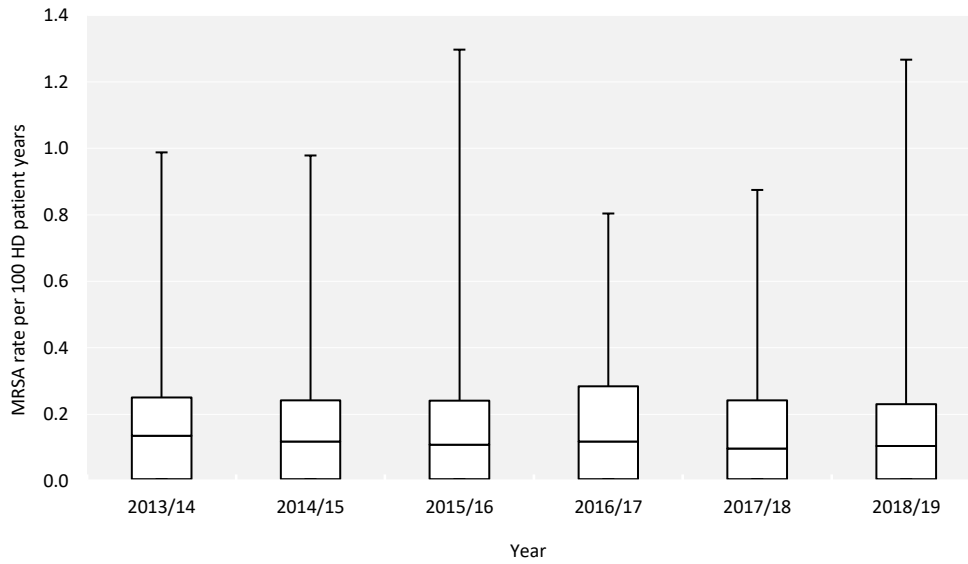


**Figure 5.17** Methicillin-resistant *Staphylococcus aureus* (MRSA) rates by centre per 100 HD adult patient-years (2018–2019 data) compared to the England and Wales average, with the audit target also shown.

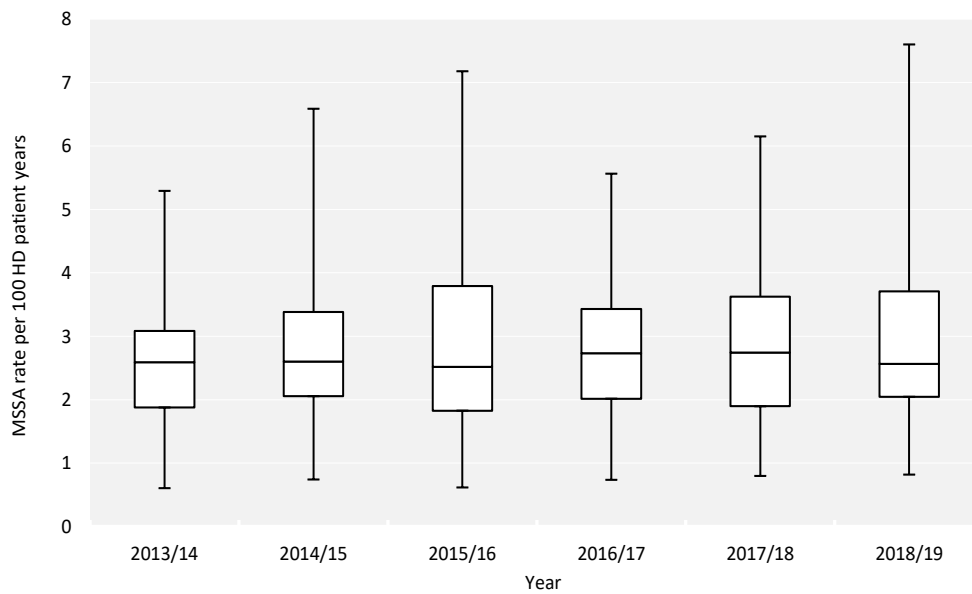


**Figure 5.18** Methicillin-sensitive *Staphylococcus aureus* (MSSA) rates by centre per 100 HD adult patient-years (2018–2019 data) compared to the England and Wales average, with the audit target also shown.

Trends in MRSA and MSSA rates are displayed using box and whisker plots, displaying the median, interquartile range and range of centre rates (more detail is available in appendix A).



**Figure 5.19** Distribution of methicillin-resistant *Staphylococcus aureus* (MRSA) centre rates per 100 HD adult patient-years by rolling 2 calendar year cohort (Wales included from 2016 onwards)



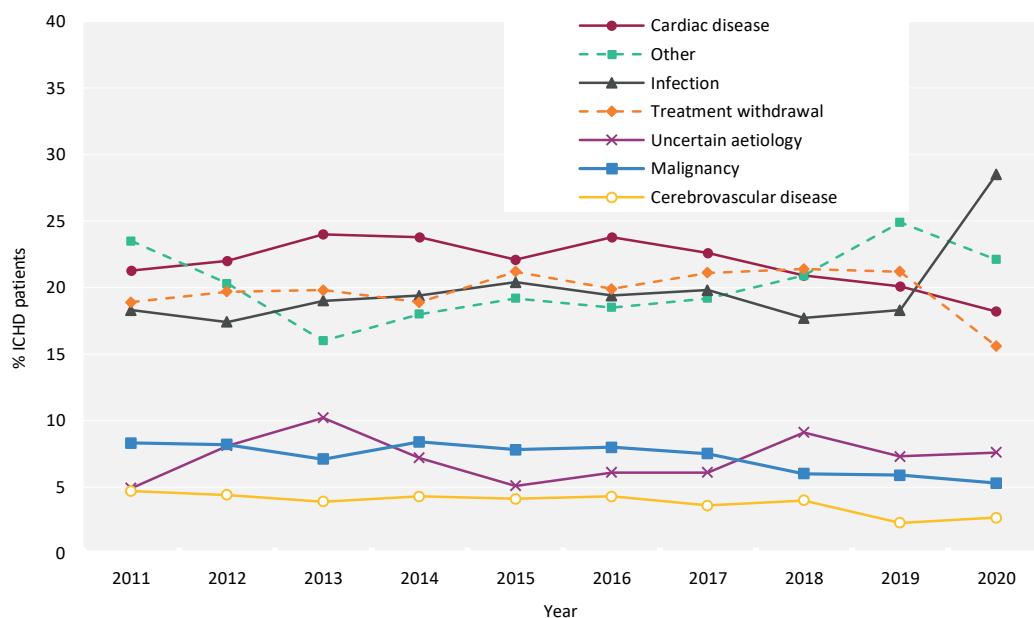
**Figure 5.20** Distribution of methicillin-sensitive *Staphylococcus aureus* (MSSA) centre rates per 100 HD adult patient-years by rolling 2 calendar year cohort (Wales included from 2016 onwards)

## Cause of death in adult ICHD patients

Cause of death was analysed in prevalent patients receiving ICHD on 31/12/2019 and followed-up for one year in 2020. The proportion of ICHD 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. Further detail on the survival of prevalent KRT patients is in chapter 3.

**Table 5.10** Cause of death in adult patients prevalent to ICHD on 31/12/2019 followed-up in 2020 by age group

Cause of death	ICHD all ages		ICHD <65 years		ICHD ≥65 years	
	N	%	N	%	N	%
Cardiac disease	556	18.2	198	25.8	358	15.7
Cerebrovascular disease	82	2.7	28	3.7	54	2.4
Infection	868	28.5	213	27.8	655	28.7
Malignancy	162	5.3	42	5.5	120	5.3
Treatment withdrawal	476	15.6	65	8.5	411	18.0
Other	674	22.1	168	21.9	506	22.2
Uncertain aetiology	231	7.6	53	6.9	178	7.8
<b>Total (with data)</b>	<b>3,049</b>	<b>100.0</b>	<b>767</b>	<b>100.0</b>	<b>2,282</b>	<b>100.0</b>
Missing	1,540	33.6	427	35.8	1,113	32.8



**Figure 5.21** Cause of death between 2011 and 2020 for adult patients prevalent to ICHD at the beginning of the year.

## *Chapter 6*

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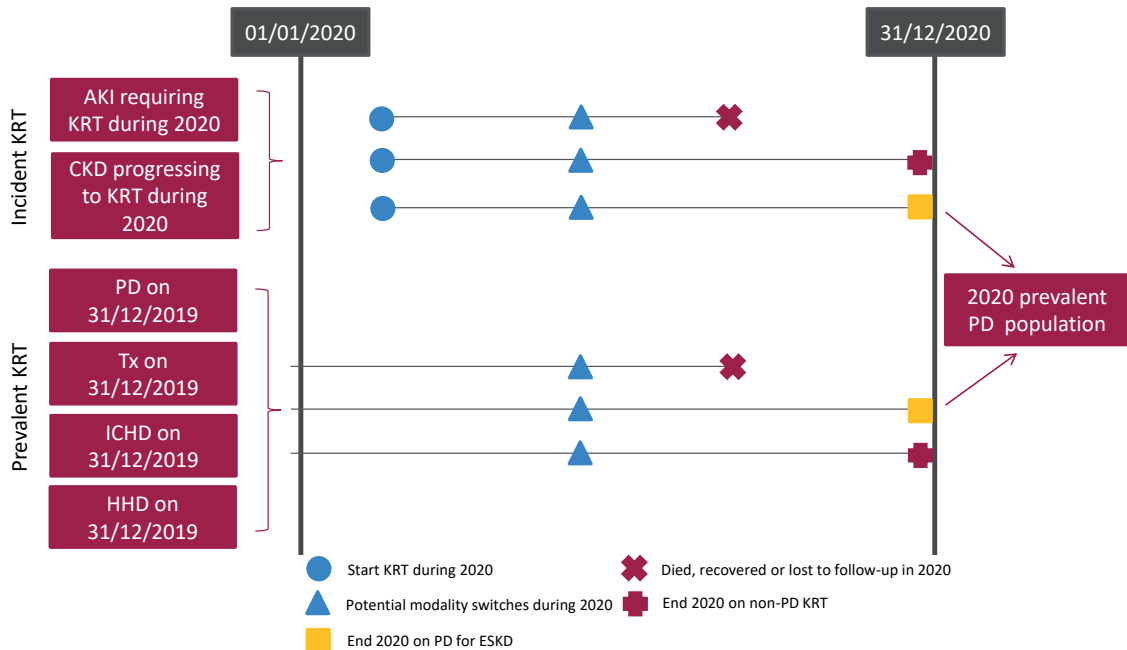
# **Adults on peritoneal dialysis (PD) in the UK at the end of 2020**

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# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were receiving regular peritoneal dialysis (PD) in the UK at the end of 2020 (figure 6.1). This population comprises patients who were on PD at the end of 2019 and remained on PD throughout 2020, as well as patients who commenced/re-commenced PD in 2020. This latter group includes both incident kidney replacement therapy (KRT) patients who ended 2020 on PD and prevalent KRT patients who switched to PD from in-centre haemodialysis (ICHD), home haemodialysis (HHD) or a transplant (Tx) in 2020. Consequently, the cohort of patients receiving PD in a centre not only reflects differences in underlying population case-mix, but also differences in the rates of acceptance onto KRT, survival on PD, transplantation and haemodialysis (ICHD and HHD), and the care of patients on those other modalities, as described in other chapters of this report.



**Figure 6.1** Pathways adult patients could follow to be included in the UK 2020 prevalent PD population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for chronic PD at the end of 2020 or if they had been on KRT for  $\geq 90$  days and were on PD at the end of 2020. CKD – chronic kidney disease

The cause of death analyses were undertaken on historic prevalent cohorts to allow sufficient follow-up time.

This chapter addresses the following key aspects of the care of patients on PD for which there are UK Kidney Association guidelines (table 6.1):

- **Complications associated with ESKD and PD:** these include anaemia, mineral bone disorders and metabolic acidosis
- **Infections associated with PD:** rates of PD peritonitis and the four infections subject to mandatory reporting to Public Health England (PHE) are reported in this chapter – methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-sensitive *Staphylococcus aureus* (MSSA), *Escherichia coli* bacteraemia and *Clostridium difficile* - to be updated when 2020 data available.

## Rationale for analyses

The analyses begin with a description of the 2020 prevalent adult PD population, including the number on PD per million population (pmp).

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 on PD and, where data permit, their attainment by UK kidney centres in 2020 is reported in this chapter (table 6.1). 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 items is too low. 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 was <70% and/or the number of patients reported was <10. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

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

**Table 6.1** The UK Kidney Association audit measures relevant to PD that are reported in this chapter

The UK Kidney Association guideline	Audit criteria	Related analysis/analyses
CKD mineral bone disorder (2018)	Percentage of patients with serum calcium above the normal reference range of 2.2–2.5 mmol/L	Table 6.5, figure 6.3
PD (2017)	Plasma bicarbonate should be maintained in the normal reference range 22–30 mmol/L – 100%	Table 6.5, figure 6.5
Anaemia (2020)	Proportion of patients with serum ferritin <100 µg/L at start of treatment with erythropoiesis stimulating agent (ESA)	Table 6.6, figure 6.9 (the UKRR does not hold treatment with ESA start dates)
	Audit on ESA dose and use of ESA in patients with Hb out of range, normally reported in this chapter, have been omitted this year as the Registry is implementing improvements in how medications data are processed. ESA data will be processed and analysed again next year.	
Planning, initiating and withdrawing KRT (2014)	Number of patients withdrawing from PD as a proportion of all deaths on PD	Table 6.9, figure 6.13

ESA – erythropoiesis stimulating agent



## Key findings

- 3,822 adult patients were receiving PD for ESKD in the UK on 31/12/2020, compared to 3636 in 2019, which represented 5.6% of the KRT population.
- The median age of PD patients was 63.5 years and 60.0% were male.
- The median adjusted calcium for PD patients was 2.4 mmol/L and 12.0% were above the target range of 2.2–2.5 mmol/L.
- The median bicarbonate for PD patients was 25 mmol/L and 80.2% were within the target range of 22–30 mmol/L.
- The median haemoglobin and ferritin for PD patients was 111 g/L and 331 µg/L, respectively.
- The PD peritonitis rate in 2020 (England only) was 0.38/1 PD patient-year.
- There was no cause of death data available for 36.6% of deaths. For those with data, the leading cause of death was infection in both younger patients and those  $\geq 65$  years at 36.3% and 23.8% respectively with a likely contribution from COVID related deaths. Treatment withdrawal accounted for 17.0% of deaths in those  $\geq 65$  years.

# Analyses

## Changes to the prevalent adult PD population

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

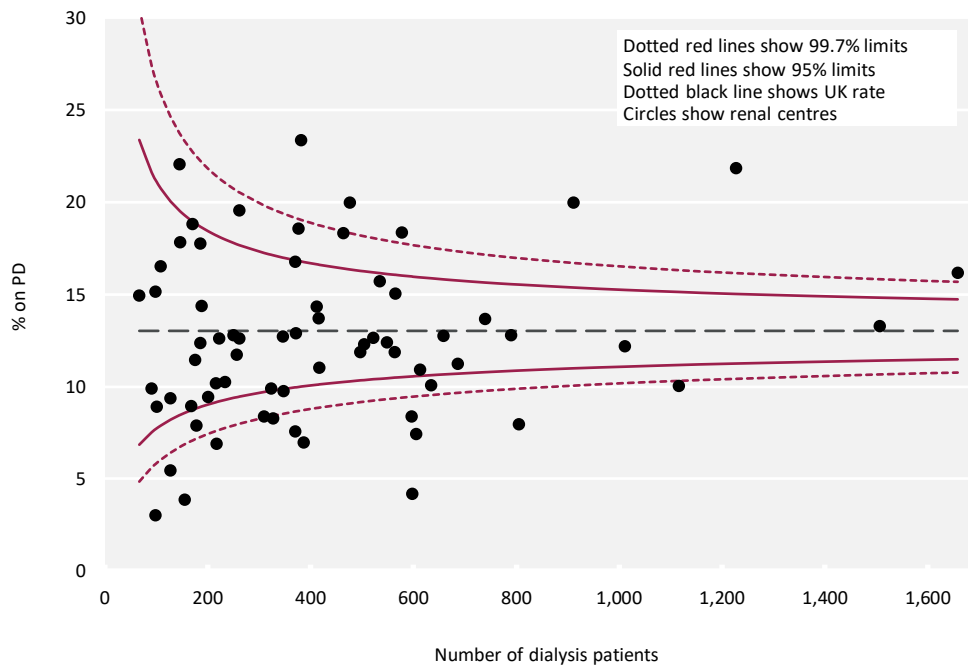
**Table 6.2** Number of prevalent adult PD patients and proportion of adult KRT patients on PD by year and by centre; number of PD patients as a proportion of the catchment population

Centre	N on PD					% on PD					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020		
ENGLAND												
Bham	231	249	257	257	268	7.6	7.8	7.9	7.8	8.2	2.04	131
Bradfd	25	20	26	34	26	3.9	3.0	3.8	4.6	3.6	0.49	53
Brightn	64	59	60	55	66	6.4	5.8	5.7	5.2	6.1	1.07	62
Bristol	53	58	56	63	68	3.6	3.9	3.8	4.2	4.6	1.21	56
Camb	22	26	32	28	27	1.7	1.9	2.3	1.9	1.8	0.93	29
Carlis	36	27	30	35	32	12.9	9.6	10.2	11.6	10.8	0.25	126
Carsh	113	96	99	72	123	6.8	5.7	5.7	4.0	6.6	1.62	76
Colchr	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.29	0
Covnt	67	52	52	81	85	6.9	5.4	5.4	7.5	7.8	0.79	108
Derby	77	79	79	62	70	14.2	14.2	13.5	9.5	10.3	0.56	126
Donc	27	29	23	25	19	8.2	8.7	7.0	7.3	5.6	0.37	51
Dorset	36	35	38	33	34	5.3	4.8	5.0	4.3	4.3	0.72	47
Dudley	52	57	38	36	32	15.1	15.6	10.6	9.8	8.6	0.34	94
EssexMS	96	93	87	85	84	12.3	11.2	10.3	10.0	9.5	0.99	85
Exeter	84	75	77	84	85	8.3	7.1	7.1	7.7	7.7	0.95	90
Glouc	42	45	37	31	30	8.9	8.8	7.1	5.9	5.8	0.51	59
Hull	72	56	45	49	57	8.4	6.4	5.1	5.4	6.2	0.79	72
Ipswi	34	45	40	42	32	8.2	10.3	9.3	9.8	7.5	0.31	103
Kent	57	51	43	50	62	5.3	4.7	3.9	4.4	5.4	1.06	58
L Barts	203	236	237	228	268	8.6	9.4	9.1	8.6	10.5	1.58	170
L Guys	39	39	43	53	64	1.9	1.8	1.9	2.3	2.8	1.00	64
L Kings	91	97	89	95	101	8.2	8.4	7.5	7.6	8.1	0.93	109
L Rfree	159	145	166	168	182	7.3	6.6	7.4	7.2	7.8	1.32	138
L St.G	44	37	40	43	48	5.2	4.4	4.8	5.0	5.6	0.66	73
L West	100	120	135	155	200	2.9	3.5	3.8	4.3	5.7	1.95	103
Leeds	47	59	64	67	64	3.0	3.6	3.8	3.9	3.7	1.36	47
Leic	88	96	108	126	112	3.8	4.1	4.4	4.9	4.3	2.07	54
Liv Ain	27	21	25	18	20	11.8	10.0	11.5	8.6	9.3	0.43	47
Liv Roy	71	70	57	32	27	5.8	5.6	4.5	2.6	2.4	0.81	33
M RI	63	71	69	76	84	3.2	3.5	3.3	3.7	4.2	1.32	63
Middlbr	26	23	29	32	28	2.9	2.5	3.1	3.4	3.0	0.80	35
Newc	53	58	60	59	46	5.0	5.2	5.2	5.0	3.8	0.95	49
Norwch	48	43	36	46	44	6.2	5.5	4.6	5.7	5.5	0.68	64
Nottm	81	69	70	76	95	7.0	5.8	5.8	6.2	7.8	0.92	103
Oxford	95	67	69	57	67	5.4	3.6	3.6	2.9	3.3	1.44	47
Plymth	41	49	40	42	33	8.0	9.1	7.4	7.9	6.1	0.40	83
Ports	75	84	94	87	101	4.4	4.8	5.3	4.6	5.3	1.74	58
Prestn	40	35	39	43	50	3.3	2.8	3.0	3.2	3.6	1.23	41
Redng	56	39	40	56	62	7.1	4.9	4.9	6.5	7.1	0.69	90
Salford	106	117	115	120	106	10.4	10.5	9.8	9.7	8.4	1.14	93
Sheff	55	55	61	60	77	3.9	3.8	4.1	4.0	5.2	1.13	68

**Table 6.2** Continued

Centre	N on PD					% on PD					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020		
Shrew	39	42	58	55	51	10.3	10.9	13.6	12.7	12.3	0.41	125
Stevng	21	23	28	37	25	2.4	2.6	3.0	3.8	2.6	1.10	23
Stoke	79	72	81	71	89	9.5	8.9	10.0	8.8	11.0	0.73	123
Sund	17	16	17	26	33	3.3	2.9	3.0	4.6	5.9	0.54	61
Truro	18	15	17	21	23	4.2	3.5	3.9	4.7	5.2	0.36	65
Wirral	22	20	20	17	15	6.5	5.1	5.0	4.1	3.7	0.47	32
Wolve	69	54	54	49	59	12.1	9.3	8.9	8.0	9.2	0.54	108
York	33	35	29	33	24	6.2	6.3	5.1	5.7	4.2	0.48	50
<b>N IRELAND</b>												
Antrim	16	14	20	19	12	6.3	5.5	7.3	6.6	4.2	0.24	49
Belfast	24	16	22	18	15	2.9	1.9	2.5	2.0	1.7	0.53	28
Newry	21	23	16	11	9	8.9	9.5	6.3	4.3	3.4	0.23	39
Ulster	6	6	10	8	3	3.6	3.3	5.2	4.3	1.5	0.20	15
West NI	10	9	9	14	7	3.3	2.9	2.8	4.3	2.0	0.25	28
<b>SCOTLAND</b>												
Abrdn	21	22	26	22	22	3.8	3.9	4.5	3.9	3.9	0.50	44
Airdrie	24	16	22	21	28	5.5	3.4	4.5	4.0	5.4	0.46	61
D&Gall	10	6	6	8	10	7.6	4.4	4.1	5.4	6.4	0.12	82
Dundee	21	18	22	21	14	5.0	4.1	4.9	4.7	3.3	0.37	38
Edinb	36	33	36	41	32	4.6	4.0	4.2	4.6	3.6	0.84	38
Glasgw	54	48	52	45	45	3.1	2.7	2.9	2.4	2.4	1.37	33
Inverns	11	10	13	12	9	4.3	3.8	4.7	4.3	3.3	0.22	40
Klmarnk	33	24	19	24	27	10.4	7.1	5.6	6.7	7.3	0.29	93
Krkldy	18	11	10	12	6	6.1	3.6	3.4	4.1	2.1	0.27	22
<b>WALES</b>												
Bangor	16	17	20	14	18	8.9	8.7	9.9	7.0	8.3	0.17	107
Cardff	74	71	59	63	67	4.5	4.2	3.4	3.6	4.0	1.19	56
Clwyd	15	12	15	13	15	8.5	6.7	7.9	6.3	7.2	0.19	80
Swanse	67	74	70	77	59	8.9	9.4	8.5	8.9	6.9	0.78	76
Wrexm	32	27	24	23	26	10.2	8.4	7.6	7.4	8.0	0.21	122
<b>TOTALS</b>												
England	3,094	3,059	3,109	3,170	3,398	5.8	5.6	5.5	5.5	5.9	44.46	76
N Ireland	77	68	77	70	46	4.3	3.7	4.0	3.6	2.3	1.45	32
Scotland	228	188	206	206	193	4.6	3.7	3.9	3.8	3.6	4.44	43
Wales	204	201	188	190	185	6.7	6.3	5.8	5.7	5.7	2.54	73
<b>UK</b>	<b>3,603</b>	<b>3,516</b>	<b>3,580</b>	<b>3,636</b>	<b>3,822</b>	<b>5.7</b>	<b>5.4</b>	<b>5.4</b>	<b>5.3</b>	<b>5.6</b>	<b>52.89</b>	<b>72</b>

Country PD populations were calculated by summing the PD 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. pmp – per million population



**Figure 6.2** Percentage of adult patients prevalent to dialysis on 31/12/2020 who were on PD by centre

## Demographics of prevalent adult PD patients

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

**Table 6.3** Demographics of adult patients prevalent to PD on 31/12/2020 by centre

Centre	N on KRT	N on PD	% on PD	Median age (yrs)	% male	Ethnicity				
						% White	% Asian	% Black	% Other	% missing
<b>ENGLAND</b>										
Bham	3,272	268	8.2	61.5	62.3	58.2	28.0	11.9	1.9	2.6
Bradfd	727	26	3.6	62.7	65.4	61.5	30.8	0.0	7.7	0.0
Brightn	1,078	66	6.1	69.0	66.7	91.7	6.7	0.0	1.7	9.1
Bristol	1,477	68	4.6	59.6	70.6	92.1	0.0	4.8	3.2	7.4
Camb	1,526	27	1.8	73.7	70.4	100.0	0.0	0.0	0.0	11.1
Carlis	297	32	10.8	66.2	62.5	100.0	0.0	0.0	0.0	0.0
Carsh	1,854	123	6.6	65.8	56.1	67.5	12.8	12.0	7.7	4.9
Colchr	151	0	0.0							
Covnt	1,096	85	7.8	67.9	62.4	82.4	9.4	8.2	0.0	0.0
Derby	677	70	10.3	67.7	61.4	89.7	8.8	1.5	0.0	2.9
Donc	341	19	5.6	59.5	36.8	100.0	0.0	0.0	0.0	0.0
Dorset	798	34	4.3	67.9	67.6	94.1	2.9	0.0	2.9	0.0
Dudley	370	32	8.6	68.1	56.3	87.5	9.4	3.1	0.0	0.0
EssexMS	884	84	9.5	71.3	66.7	93.8	3.7	0.0	2.5	3.6
Exeter	1,106	85	7.7	71.0	64.7	95.2	1.2	0.0	3.6	1.2
Glouc	521	30	5.8	59.8	56.7	89.7	0.0	3.4	6.9	3.3
Hull	914	57	6.2	66.1	66.7	94.7	1.8	3.5	0.0	0.0
Ipswi	425	32	7.5	73.8	65.6	84.6	0.0	3.8	11.5	18.8
Kent	1,143	62	5.4	61.0	61.3	93.2	5.1	1.7	0.0	4.8
L Barts	2,557	268	10.5	60.9	58.6	28.2	42.7	24.0	5.0	2.2
L Guys	2,320	64	2.8	55.6	54.7	48.2	16.1	32.1	3.6	12.5
L Kings	1,253	101	8.1	57.1	60.4	52.0	14.0	28.0	6.0	1.0
L Rfree	2,337	182	7.8	62.5	58.2	34.1	32.3	21.0	12.6	8.2
L St.G	857	48	5.6	62.8	50.0	34.1	26.8	24.4	14.6	14.6
L West	3,537	200	5.7	66.3	53.5	42.5	39.0	16.0	2.5	0.0
Leeds	1,751	64	3.7	56.8	54.7	76.6	15.6	6.3	1.6	0.0
Leic	2,604	112	4.3	63.3	54.5	83.5	11.7	3.9	1.0	8.0
Liv Ain	216	20	9.3	68.6	40.0	100.0	0.0	0.0	0.0	0.0
Liv Roy	1,142	27	2.4	52.7	44.4	96.0	0.0	0.0	4.0	7.4
M RI	1,985	84	4.2	59.2	51.2	65.4	17.3	13.6	3.7	3.6
Middlbr	942	28	3.0	63.8	60.7	92.6	3.7	0.0	3.7	3.6
Newc	1,207	46	3.8	57.9	69.6	95.7	2.2	2.2	0.0	0.0
Norwch	805	44	5.5	66.5	75.0	97.7	2.3	0.0	0.0	0.0
Nottm	1,212	95	7.8	60.3	60.0	70.5	17.9	9.5	2.1	0.0
Oxford	2,021	67	3.3	63.7	50.7	80.0	9.1	5.5	5.5	17.9
Plymth	544	33	6.1	69.0	72.7	100.0	0.0	0.0	0.0	0.0
Ports	1,902	101	5.3	68.5	69.3	94.2	3.5	0.0	2.3	14.9
Prestn	1,370	50	3.6	64.2	58.0	80.0	18.0	2.0	0.0	0.0
Redng	871	62	7.1	61.3	61.3	74.1	12.1	6.9	6.9	6.5
Salford	1,264	106	8.4	64.2	60.4	88.7	10.4	0.0	0.9	0.0
Sheff	1,491	77	5.2	65.8	68.8	92.1	6.6	1.3	0.0	1.3
Shrew	414	51	12.3	68.5	62.7	85.4	8.3	2.1	4.2	5.9
Stevng	963	25	2.6	65.4	56.0	71.4	14.3	4.8	9.5	16.0
Stoke	809	89	11.0	66.5	56.2	91.3	6.3	2.5	0.0	10.1
Sund	557	33	5.9	54.0	39.4	93.9	6.1	0.0	0.0	0.0
Truro	445	23	5.2	61.9	60.9	100.0	0.0	0.0	0.0	0.0
Wirral	406	15	3.7	55.7	53.3	100.0	0.0	0.0	0.0	0.0

**Table 6.3** Continued

Centre	N on KRT	N on PD	% on PD	Median age (yrs)	% male	Ethnicity				
						% White	% Asian	% Black	% Other	% missing
Wolve	643	59	9.2	59.5	55.9	64.4	23.7	10.2	1.7	0.0
York	572	24	4.2	70.4	70.8	100.0	0.0	0.0	0.0	12.5
N IRELAND										
Antrim	289	12	4.2	81.8	66.7	100.0	0.0	0.0	0.0	8.3
Belfast	890	15	1.7	78.3	53.3					46.7
Newry	264	9	3.4	76.5	66.7	100.0	0.0	0.0	0.0	0.0
Ulster	200	3	1.5	64.4	100.0	100.0	0.0	0.0	0.0	0.0
West NI	350	7	2.0	61.9	42.9	100.0	0.0	0.0	0.0	0.0
SCOTLAND										
Abrdn	565	22	3.9	61.2	81.8					95.5
Airdrie	514	28	5.4	62.8	57.1					50.0
D&Gall	156	10	6.4	57.3	40.0					80.0
Dundee	430	14	3.3	71.3	78.6					100.0
Edinb	888	32	3.6	60.5	71.9					93.8
Glasgw	1,844	45	2.4	58.0	53.3					75.6
Inverns	271	9	3.3	63.2	44.4					88.9
Klmarnk	369	27	7.3	62.2	33.3					81.5
Krkldy	291	6	2.1	56.6	83.3					100.0
WALES										
Bangor	216	18	8.3	69.0	72.2	100.0	0.0	0.0	0.0	11.1
Cardff	1,678	67	4.0	65.5	49.3	89.1	7.8	3.1	0.0	4.5
Clwyd	207	15	7.2	69.7	86.7	92.3	7.7	0.0	0.0	13.3
Swanse	850	59	6.9	66.0	67.8	96.6	3.4	0.0	0.0	0.0
Wrexm	323	26	8.0	62.9	65.4	92.0	0.0	8.0	0.0	3.8
TOTALS										
England	57,654	3,398	5.9	63.3	59.9	71.4	16.2	9.1	3.3	4.3
N Ireland	1,993	46	2.3	75.6	60.9	100.0	0.0	0.0	0.0	17.4
Scotland	5,328	193	3.6	61.7	59.1					81.3
Wales	3,274	185	5.7	66.5	62.7	93.2	4.5	2.3	0.0	4.3
<b>UK</b>	<b>68,249</b>	<b>3,822</b>	<b>5.6</b>	<b>63.5</b>	<b>60.0</b>	<b>73.0</b>	<b>15.4</b>	<b>8.6</b>	<b>3.1</b>	<b>8.3</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.

Primary renal diseases (PRDs) were grouped into categories as shown in table 6.4, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of PD patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

**Table 6.4** Primary renal diseases (PRDs) of adult patients prevalent to PD on 31/12/2020

PRD	N on PD	% PD population	Age <65 yrs		Age ≥65 yrs		M/F ratio
			N	%	N	%	
Diabetes	898	24.7	506	26.1	392	23.1	1.7
Glomerulonephritis	606	16.7	391	20.2	215	12.7	1.5
Hypertension	306	8.4	149	7.7	157	9.2	2.1
Polycystic kidney disease	270	7.4	161	8.3	109	6.4	1.0
Pyelonephritis	238	6.5	123	6.3	115	6.8	1.6
Renal vascular disease	184	5.1	43	2.2	141	8.3	2.1
Other	544	15.0	317	16.3	227	13.4	1.0
Uncertain aetiology	591	16.2	249	12.8	342	20.1	1.5
<b>Total (with data)</b>	<b>3,637</b>	<b>100.0</b>	<b>1,939</b>	<b>100.0</b>	<b>1,698</b>	<b>100.0</b>	
Missing	185	4.8	90	4.4	95	5.3	1.9

## Biochemistry parameters in prevalent adult PD patients

The UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which is the percentage of patients with adjusted calcium above the target range. The UK Kidney Association guideline on PD contains one biochemical audit measure, which is the proportion of patients with bicarbonate in the target range.

**Table 6.5** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L); and median bicarbonate and percentage with bicarbonate below, within and above the target range (22–30 mmol/L) in adult patients prevalent to PD on 31/12/2020 by centre

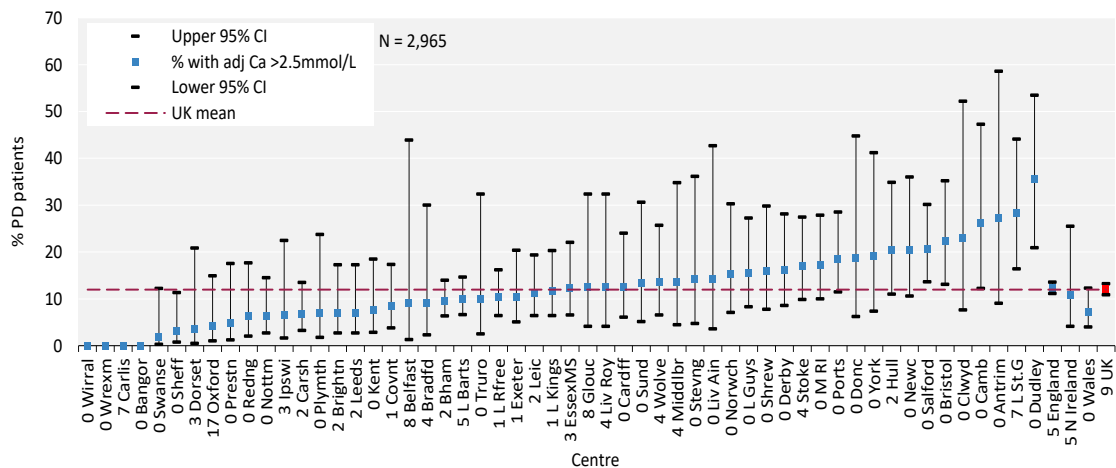
Centre	Adjusted calcium				Bicarbonate				
	Median (mmol/L)	% 2.2-2.5 mmol/L	% >2.5 mmol/L	% data completeness	Median (mmol/L)	% <22 mmol/L	% 22-30 mmol/L	% >30 mmol/L	% data completeness
ENGLAND									
Bham	2.4	85.4	9.4	98.3					64.1
Bradfd	2.4	86.4	9.1	95.7	27	4.6	81.8	13.6	95.7
Brightn	2.4	91.2	7.0	98.3	25	15.5	77.6	6.9	100.0
Bristol	2.4	75.9	22.2	100.0	24	22.2	75.9	1.9	100.0
Camb	2.4	73.9	26.1	100.0	26	9.5	76.2	14.3	91.3
Carlis	2.3	85.7	0.0	93.3	23	32.1	67.9	0.0	93.3
Carsh	2.2	63.5	6.7	98.1					0.0
Colchr									
Covnt	2.3	81.9	8.3	98.6	25	12.9	82.9	4.3	95.9
Derby	2.4	82.1	16.1	100.0	25	19.6	76.8	3.6	100.0
Donc	2.3	81.3	18.8	100.0	25	12.5	87.5	0.0	100.0
Dorset	2.3	75.9	3.5	96.7	22	37.9	62.1	0.0	96.7
Dudley	2.5	64.5	35.5	100.0	26	6.5	93.6	0.0	100.0
EssexMS	2.4	83.6	12.3	97.3	27	4.1	80.8	15.1	97.3
Exeter	2.3	85.1	10.5	98.5	25	13.6	86.4	0.0	97.1
Glouc	2.4	83.3	12.5	92.3	24	13.0	87.0	0.0	88.5
Hull	2.4	77.3	20.5	97.8	27	4.6	86.4	9.1	97.8
Ipswi	2.3	83.9	6.5	96.9	25	10.0	86.7	3.3	93.8
Kent	2.3	81.1	7.6	100.0	23	30.8	69.2	0.0	98.1
L Barts	2.3	76.1	9.9	95.3	25	15.4	81.0	3.6	94.9
L Guys	2.4	75.9	15.5	100.0	25	15.5	79.3	5.2	100.0
L Kings	2.3	76.7	11.6	98.9	23	29.1	69.8	1.2	98.9
L Rfree	2.3	77.4	10.3	99.4	25	12.9	84.4	2.7	94.2
L St.G	2.5	69.2	28.2	92.9	24	17.1	82.9	0.0	83.3

**Table 6.5** Continued

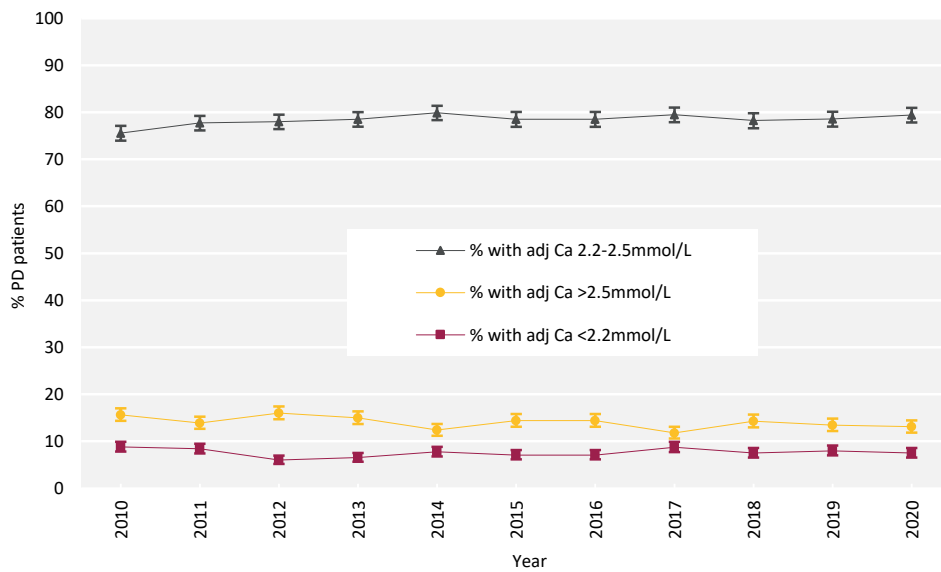
Centre	Adjusted calcium				Bicarbonate				
	Median	% 2.2-2.5	% >2.5	% data	Median	% <22	% 22-30	% >30	% data
	(mmol/L)	mmol/L	mmol/L	completeness	(mmol/L)	mmol/L	mmol/L	mmol/L	completeness
L West				48.8					47.5
Leeds	2.4	89.5	7.0	98.3	28	1.8	80.7	17.5	98.3
Leic	2.4	85.6	11.3	98.0	25	10.2	88.8	1.0	99.0
Liv Ain	2.4	85.7	14.3	100.0	27	0.0	71.4	28.6	100.0
Liv Roy	2.4	87.5	12.5	96.0	25	0.0	91.7	8.3	96.0
M RI	2.4	75.7	17.1	100.0	25	17.1	82.9	0.0	100.0
Middlbr	2.4	72.7	13.6	95.7	27	0.0	90.9	9.1	95.7
Newc	2.4	74.4	20.5	100.0	25	23.1	76.9	0.0	100.0
Norwch	2.4	82.1	15.4	100.0	24	20.5	79.5	0.0	100.0
Nottm	2.3	82.1	6.4	100.0					24.4
Oxford	2.3	91.8	4.1	83.1					62.7
Plymth	2.3	86.2	6.9	100.0	23	24.0	76.0	0.0	86.2
Ports	2.4	76.5	18.5	100.0	26	11.5	85.9	2.6	96.3
Prestn	2.3	73.2	4.9	100.0	25	15.4	82.1	2.6	95.1
Redng	2.4	89.6	6.3	100.0	26	6.3	85.4	8.3	100.0
Salford	2.4	79.4	20.7	100.0					0.0
Sheff	2.3	86.4	3.0	100.0	25	24.2	75.8	0.0	100.0
Shrew	2.4	79.6	15.9	100.0	24	14.0	86.1	0.0	97.7
Stoke	2.4	81.7	16.9	96.0	26	4.1	91.9	4.1	100.0
Sund	2.4	76.7	13.3	100.0					13.3
Truro	2.4	80.0	10.0	100.0	25	10.0	90.0	0.0	100.0
Wirral	2.4	100.0	0.0	100.0	23	9.1	72.7	18.2	100.0
Wolve	2.4	80.8	13.5	96.3	23	23.1	76.9	0.0	96.3
York	2.4	81.0	19.1	100.0	26	9.5	90.5	0.0	100.0
N IRELAND									
Antrim	2.3	72.7	27.3	100.0	27	0.0	90.9	9.1	100.0
Belfast	2.3	90.9	9.1	91.7	27	0.0	100.0	0.0	100.0
Newry				100.0					100.0
Ulster				100.0					100.0
West NI				83.3					100.0
SCOTLAND									
Abrdn				0.0					0.0
Airdrie				0.0					0.0
D&Gall				0.0					0.0
Dundee				0.0					0.0
Edinb				0.0					0.0
Glasgw				0.0					0.0
Inverns				0.0					0.0
Klmarnk				0.0					0.0
Krkldy				0.0					0.0
WALES									
Bangor	2.4	100.0	0.0	100.0	26	18.2	72.7	9.1	100.0
Cardff	2.4	80.4	12.5	100.0	24	14.3	85.7	0.0	100.0
Clwyd	2.4	69.2	23.1	100.0	23	38.5	61.5	0.0	100.0
Swanse	2.4	98.1	1.9	100.0	26	11.5	84.6	3.9	98.1
Wrexm	2.4	95.7	0.0	100.0	27	4.4	87.0	8.7	100.0
TOTALS									
England	2.4	80.0	12.3	95.3	25	16.6	79.8	3.6	81.4
N Ireland	2.3	83.8	10.8	94.9	27	0.0	94.9	5.1	100.0
Scotland				0.0					0.0
Wales	2.4	89.1	7.1	100.0	25	14.2	82.6	3.2	99.4
<b>UK</b>	<b>2.4</b>	<b>80.5</b>	<b>12.0</b>	<b>90.6</b>	<b>25</b>	<b>16.2</b>	<b>80.2</b>	<b>3.6</b>	<b>78.3</b>

Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%.



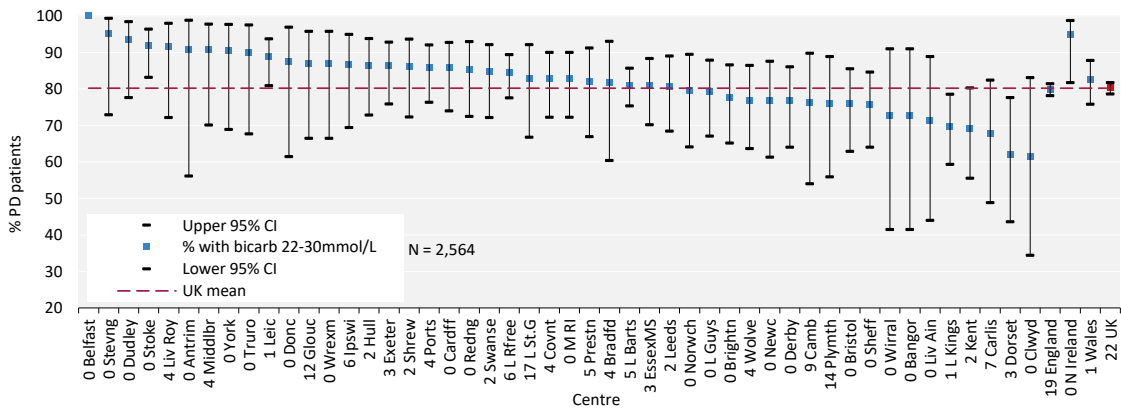


**Figure 6.3** Percentage of adult patients prevalent to PD on 31/12/2020 with adjusted calcium (Ca) above the target range (>2.5 mmol/L) by centre  
 CI – confidence interval

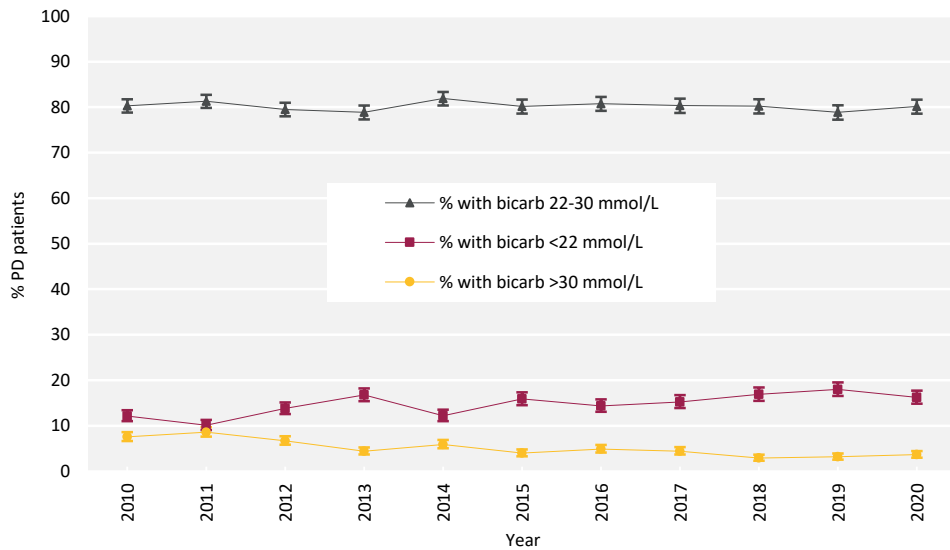


**Figure 6.4** Change in percentage of prevalent adult PD patients within, above and below the target range for adjusted calcium (Ca 2.2–2.5 mmol/L) between 2010 and 2020

PD



**Figure 6.5** Percentage of adult patients prevalent to PD on 31/12/2020 with bicarbonate (bicarb) within the target range (22–30 mmol/L) by centre  
 CI – confidence interval



**Figure 6.6** Percentage of prevalent adult PD patients within, above and below the target range for bicarbonate (bicarb) 22–30 mmol/L) between 2010 and 2020

## Anaemia in prevalent adult PD patients

UK Kidney Association anaemia guidelines recommend a target haemoglobin of 100-120 g/L. Data regarding target and median haemoglobin and ferritin levels attained are presented in table 6.6.

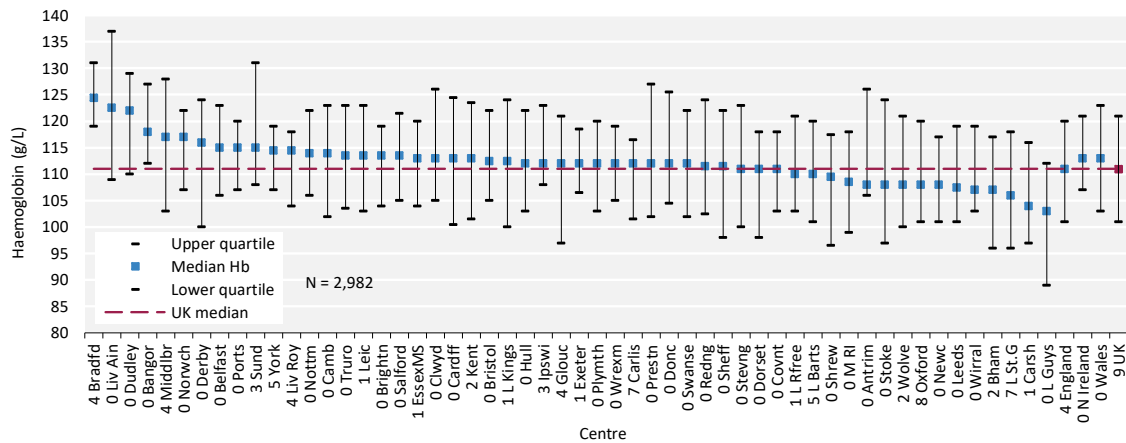
**Table 6.6** Median haemoglobin and ferritin and percentage attaining target ranges in adult patients prevalent to PD on 31/12/2020 by centre

Centre	Haemoglobin				Ferritin		
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <100 µg/L	% data completeness
<b>ENGLAND</b>							
Bham	107	33.0	13.7	98.3	338	9.4	98.7
Bradfd	125	13.6	68.2	95.7	308	4.5	95.7
Brightn	114	20.7	20.7	100.0	295	3.8	89.7
Bristol	113	7.4	29.6	100.0	295	5.7	98.2
Camb	114	17.4	30.4	100.0	390	4.5	95.7
Carlis	112	17.9	14.3	93.3	228	26.9	86.7
Carsh	104	31.4	14.3	99.1	186	22.1	98.1
Colchr							
Covnt	111	19.2	19.2	100.0	259	23.3	100.0
Derby	116	23.2	39.3	100.0	473	0.0	100.0
Donc	112	6.3	37.5	100.0	310	12.5	100.0
Dorset	111	26.7	13.3	100.0	325	7.1	93.3
Dudley	122	16.1	51.6	100.0			3.2
EssexMS	113	13.5	24.3	98.7	266	16.4	97.3
Exeter	112	2.9	19.1	98.6	223	10.1	100.0
Glouc	112	32.0	36.0	96.2	118	30.0	76.9
Hull	112	15.6	31.1	100.0	508	6.8	97.8
Ipswi	112	12.9	29.0	96.9	302	22.6	96.9
Kent	113	19.2	34.6	98.1	254	12.0	94.3
L Barts	110	22.6	24.0	94.9	329	17.2	89.7
L Guys	103	43.1	13.8	100.0	204	17.9	96.6
L Kings	113	22.1	33.7	98.9	234	15.5	96.6
L Rfree	110	20.0	25.2	99.4	575	11.7	98.7
L St.G	106	30.8	12.8	92.9	292	2.6	90.5
L West				48.8			45.1
Leeds	108	22.4	24.1	100.0	515	6.9	100.0
Leic	114	15.3	29.6	99.0	293	15.3	99.0
Liv Ain	123	0.0	57.1	100.0	419	0.0	100.0
Liv Roy	115	12.5	20.8	96.0	336	4.0	100.0
M RI	109	28.6	17.1	100.0	299	10.1	98.6
Middlbr	117	13.6	45.5	95.7	255	4.8	91.3
Newc	108	23.1	20.5	100.0	428	10.3	100.0
Norwch	117	15.4	30.8	100.0	267	20.5	100.0
Nottm	114	14.1	26.9	100.0	429	1.3	100.0
Oxford	108	18.5	24.1	91.5	324	3.4	100.0
Plymth	112	17.2	20.7	100.0	290	17.2	100.0
Ports	115	11.1	23.5	100.0	386	11.5	96.3
Prestn	112	19.5	34.1	100.0	727	0.0	100.0
Redng	112	20.8	29.2	100.0	372	10.9	95.8
Salford	114	16.3	26.1	100.0	672	5.4	100.0
Sheff	112	25.8	30.3	100.0	517	4.8	95.5
Shrew	110	29.5	18.2	100.0	289	14.0	97.7
Stevng	111	23.8	28.6	100.0	246	27.8	85.7
Stoke	108	27.0	29.7	100.0	301	6.9	97.3
Sund	115	10.3	34.5	96.7	444	17.2	96.7
Truro	114	25.0	25.0	100.0	163	33.3	90.0
Wirral	107	9.1	9.1	100.0	423	9.1	100.0
Wolve	108	20.8	26.4	98.2	147	38.5	96.3
York	115	10.0	20.0	95.2	372	19.0	100.0
<b>N IRELAND</b>							
Antrim	108	0.0	27.3	100.0	536	0.0	100.0
Belfast	115	8.3	41.7	100.0	446	0.0	100.0

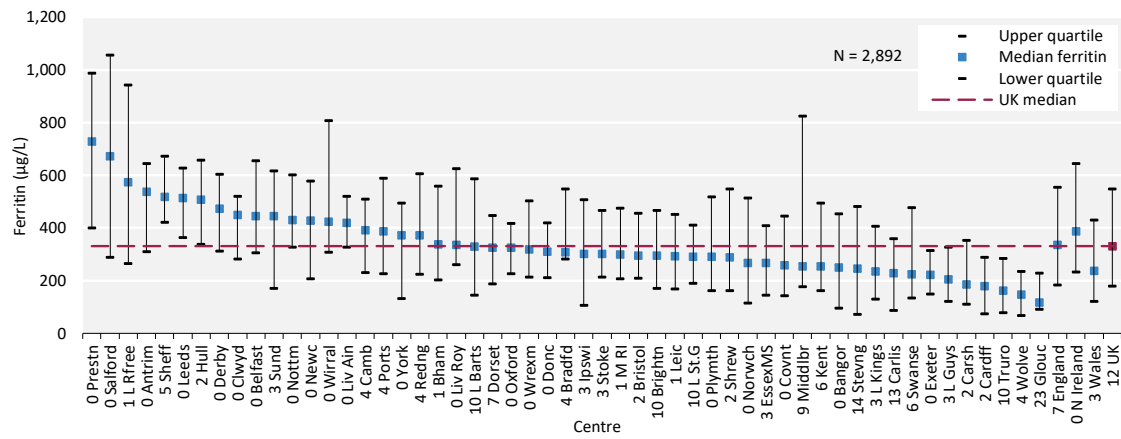
**Table 6.6** Continued

Centre	Haemoglobin				Ferritin		
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <100 µg/L	% data completeness
Newry				100.0			100.0
Ulster				100.0			100.0
West NI				100.0			100.0
<b>SCOTLAND</b>							
Abrdn				0.0			0.0
Airdrie				0.0			0.0
D&Gall				0.0			0.0
Dundee				0.0			0.0
Edinb				0.0			0.0
Glasgw				0.0			0.0
Inverns				0.0			0.0
Klmarnk				0.0			0.0
Krkldy				0.0			0.0
<b>WALES</b>							
Bangor	118	18.2	36.4	100.0	250	27.3	100.0
Cardff	113	21.4	28.6	100.0	180	34.5	98.2
Clwyd	113	15.4	46.2	100.0	450	0.0	100.0
Swanse	112	20.8	32.1	100.0	225	14.0	94.3
Wrexm	112	13.0	17.4	100.0	319	8.7	100.0
<b>TOTALS</b>							
England	111	21.4	24.7	95.7	335	12.0	92.8
N Ireland	113	10.3	25.6	100.0	388	5.1	100.0
Scotland				0.0			0.0
Wales	113	19.2	30.1	100.0	238	20.4	97.4
<b>UK</b>	<b>111</b>	<b>21.2</b>	<b>25.0</b>	<b>91.1</b>	<b>331</b>	<b>12.3</b>	<b>88.3</b>

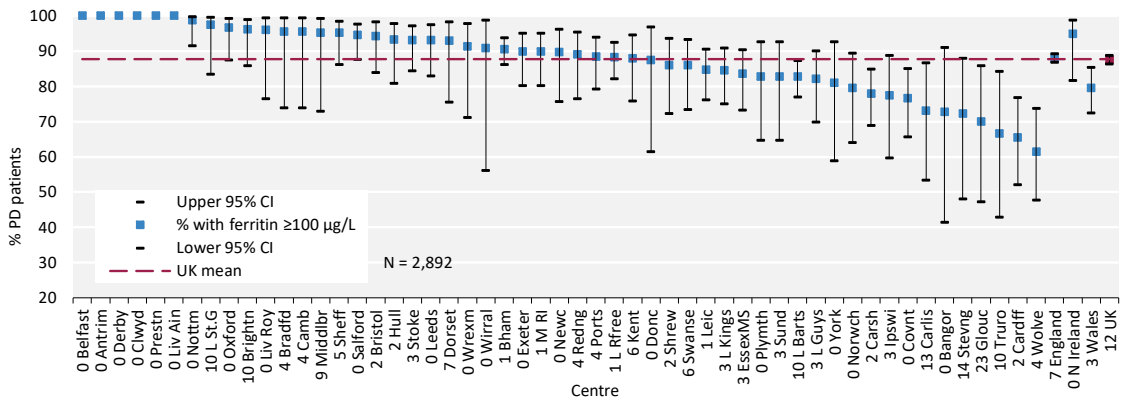
Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%



**Figure 6.7** Median haemoglobin (Hb) in adult patients prevalent to PD on 31/12/2020 by centre

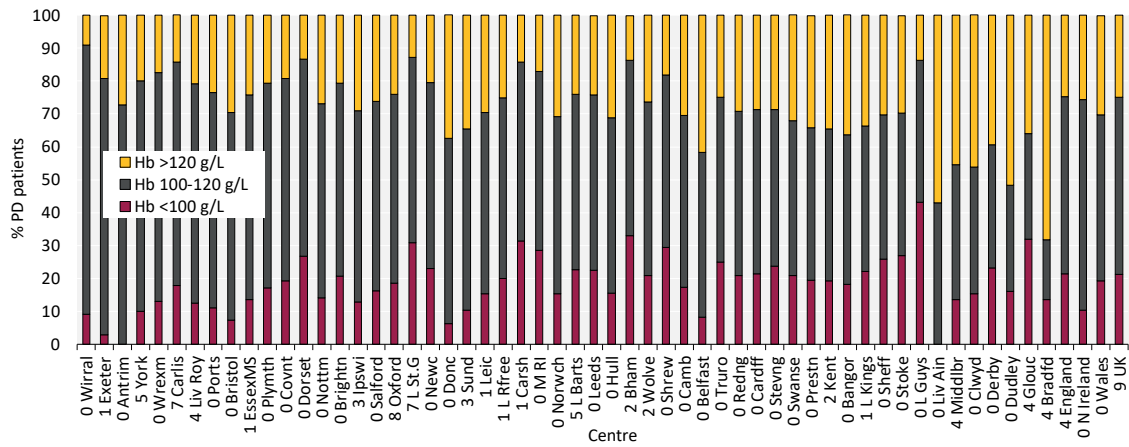


**Figure 6.8** Median ferritin in adult patients prevalent to PD on 31/12/2020 by centre

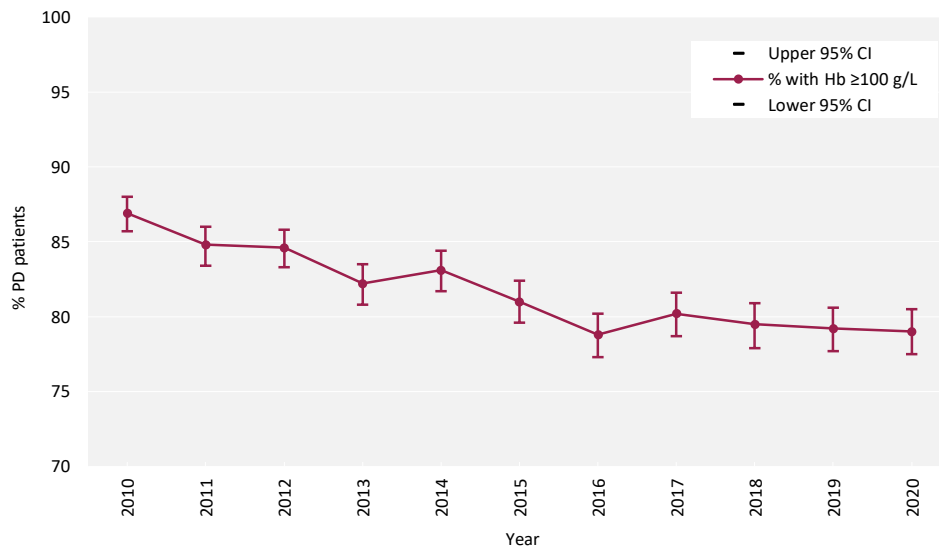


**Figure 6.9** Percentage of adult patients prevalent to PD on 31/12/2020 with ferritin  $\geq 100$   $\mu\text{g/L}$  by centre

CI – confidence interval



**Figure 6.10** Distribution of haemoglobin (Hb) in adult patients prevalent to PD on 31/12/2020 by centre



**Figure 6.11** Percentage of prevalent adult PD patients with haemoglobin (Hb)  $\geq 100$  g/L between 2010 and 2020  
CI – confidence interval

## Infections in adult PD patients - to be updated when 2020 data available

PHE has carried out mandatory enhanced surveillance of MRSA bacteraemia since October 2005 and of MSSA bacteraemia since January 2011 for NHS acute trusts, with the subsequent addition of *E. coli* bacteraemia and *C. difficile* reporting. Patient-level infection data are reported in real time to the UKHSA. Wales provides infection data extracted locally from the kidney and hospital IT systems.

Given the small numbers of infections in PD patients, data are only shown at the national level and are compared to infection rates in haemodialysis (HD) patients. The definition of each type of infectious episode is detailed in appendix A.

A rolling two year cohort is reported to be consistent with the reporting of infections in chapter 5. These analyses included all patients on HD, whether on HHD or ICHD.

**Table 6.7** Number and rate of infection episodes per 100 patient-years in prevalent adult PD patients in England and Wales compared to prevalent adult HD patients in England and Wales from January 2018 to December 2019

Infections during 2019	Infection			
	MRSA	MSSA	<i>C. difficile</i>	<i>E.coli</i>
Number of episodes				
HD	80	1,271	498	924
PD	1	29	56	67
Rate per 100 patient-years (with range between centres)				
HD	0.17 (0.0 - 1.27)	2.72 (0.82 - 7.60)	1.06 (0.0 - 3.31)	1.96 (0.54 - 4.37)
PD	0.01 (0.0 - 0.67)	0.43 (0.0 - 5.36)	0.83 (0.0 - 6.26)	0.99 (0.0 - 7.34)

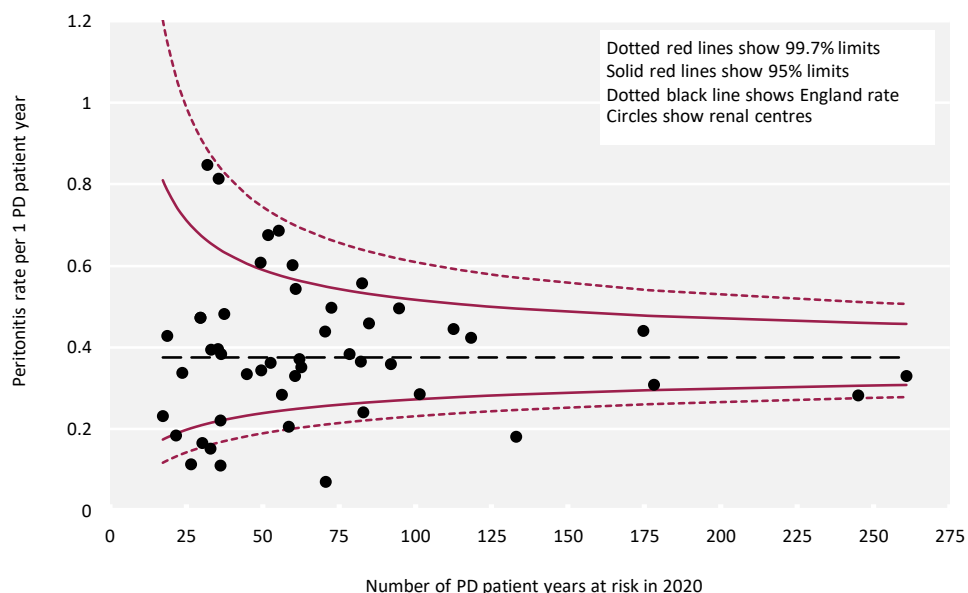
*C. difficile* – *Clostridium difficile*; *E. coli* – *Escherichia coli*; MRSA – methicillin-resistant *Staphylococcus aureus*; MSSA – methicillin-sensitive *Staphylococcus aureus*

**PD peritonitis** infection rates are collected for English kidney centres by the UKRR in collaboration with NHS England for the Renal Dialysis Quality Dashboard ([ukkidney.org/audit-research/data-permissions/data/ukrr-nhs-england-quality-dashboard-dataset](http://ukkidney.org/audit-research/data-permissions/data/ukrr-nhs-england-quality-dashboard-dataset)) and are listed in the table below. The funnel plot (figure 6.12) shows each centre's 2020 peritonitis rate per one PD patient-year against the number of patient-years at risk to take into account the greater variation expected as centre size decreases.

**Table 6.8** Number of patient-years and peritonitis rate in adult patients receiving PD in 2020 by centre in England

Centre	PD patient years	Peritonitis rate per 1 PD patient year
Bham	261	0.33
Bradfd	30	0.47
Brightn	59	0.21
Bristol	73	0.50
Camb	35	0.40
Carlis	24	0.34
Carsh	118	0.42
Covnt	85	0.46
Derby	61	0.33
Donc	19	0.43
Dorset	32	0.85
Dudley	36	0.11
EssexMS	83	0.24
Exeter	82	0.37
Glouc	36	0.38
Hull	53	0.36
Ipswi	37	0.48
Kent	56	0.28
L Barts	245	0.28
L Guys	61	0.54
L Kings	101	0.29
L Rfree	175	0.44
L St.G	49	0.34
L West	178	0.31
Leeds	71	0.44
Leic	133	0.18
Liv Ain	30	0.17
Liv Roy	36	0.81
M RI	83	0.56
Middlbr	30	0.47
Newc	49	0.61
Norwch	45	0.34
Nottm	95	0.50
Oxford	62	0.37
Plymth	33	0.15
Ports	92	0.36
Prestn	52	0.68
Redng	60	0.60
Salford	113	0.44
Sheff	71	0.07
Shrew	63	0.35
Stevng	33	0.39
Stoke	78	0.38
Sund	36	0.22
Truro	22	0.18
Wirral	17	0.23
Wolve	55	0.69
York	26	0.11
TOTAL		
<b>England</b>	<b>3,371</b>	<b>0.38</b>





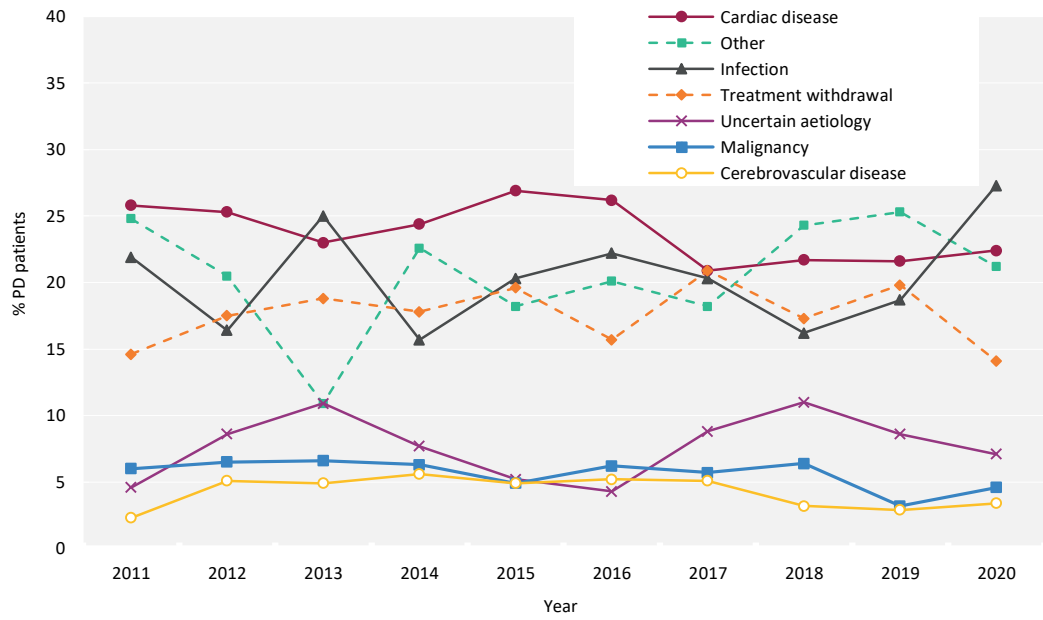
**Figure 6.12** PD peritonitis rates in adult patients receiving PD in 2020 per 1 PD patient-year by centre in England  
Please visit the UKRR data portal ([ukkidney.org/audit-research/data-portals](http://ukkidney.org/audit-research/data-portals)) to identify individual kidney centres.

## Cause of death in adult PD patients

Cause of death was analysed in prevalent patients receiving PD on 31/12/2019 and followed-up for one year in 2020. The proportion of PD 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. Further detail on the survival of prevalent KRT patients is in chapter 3.

**Table 6.9** Cause of death in adult patients prevalent to PD on 31/12/2019 followed-up in 2020 by age group

Cause of death	PD all ages		PD <65 years		PD ≥65 years	
	N	%	N	%	N	%
Cardiac disease	73	22.4	23	25.3	50	21.3
Cerebrovascular disease	11	3.4	6	6.6	5	2.1
Infection	89	27.3	33	36.3	56	23.8
Malignancy	15	4.6	5	5.5	10	4.3
Treatment withdrawal	46	14.1	6	6.6	40	17.0
Other	69	21.2	16	17.6	53	22.6
Uncertain aetiology	23	7.1	2	2.2	21	8.9
<b>Total (with data)</b>	<b>326</b>	<b>100.0</b>	<b>91</b>	<b>100.0</b>	<b>235</b>	<b>100.0</b>
<b>Missing</b>	<b>188</b>	<b>36.6</b>	<b>52</b>	<b>36.4</b>	<b>136</b>	<b>36.7</b>



**Figure 6.13** Cause of death between 2011 and 2020 for adult patients prevalent to PD at the beginning of the year

## *Chapter 7*

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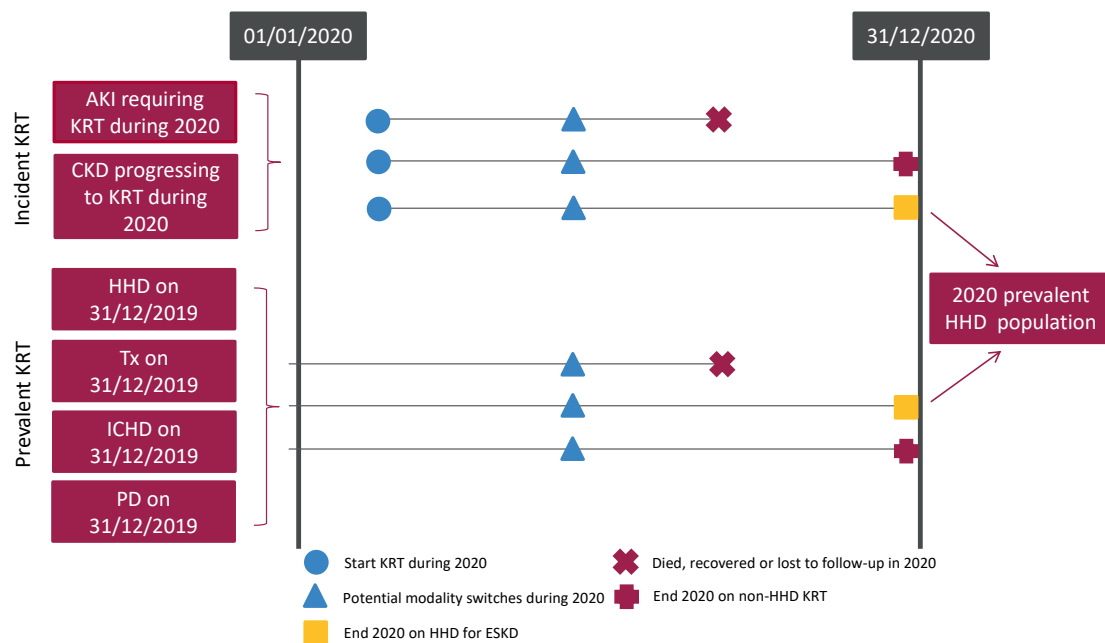
# **Adults on home haemodialysis (HHD) in the UK at the end of 2020**

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# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were receiving regular home haemodialysis (HHD) in the UK at the end of 2020 (figure 7.1). This population comprises patients who were on HHD at the end of 2019 and remained on HHD throughout 2020, as well as patients who commenced/re-commenced HHD in 2020. This latter group includes both incident kidney replacement therapy (KRT) patients who ended 2020 on HHD and prevalent KRT patients who switched to HHD from in-centre haemodialysis (ICHD), peritoneal dialysis (PD), or a transplant (Tx) in 2020. Consequently, the cohort of patients receiving HHD in a centre not only reflects differences in underlying population case-mix, but also differences in the rates of acceptance onto KRT, survival on HHD, transplantation and other dialysis therapies (ICHD and PD), and the care of patients on those other modalities, as described in other chapters of this report.



**Figure 7.1** Pathways adult patients could follow to be included in the UK 2020 prevalent HHD population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for chronic HHD at the end of 2020 or if they had been on KRT for  $\geq 90$  days and were on HHD at the end of 2020  
CKD – chronic kidney disease

Where possible, the chapter addresses key aspects of the care of patients on HHD for which there are UK Kidney Association guidelines (table 7.1). This includes complications associated with ESKD and HHD, for example anaemia and mineral bone disorders.

Data on infections associated with haemodialysis (HD) are described in chapter 5 on a combined ICHD and HHD population.

# Rationale for analyses

The analyses begin with a description of the 2020 prevalent adult HHD population, including the number on HHD per million population (pmp).

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 on HHD and, where data permit, their attainment by UK kidney centres in 2020 is reported in this chapter (table 7.1). 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 items is too low. Further detail about the completeness of data returned to the UKRR is available through the UKRR data portal ([ukkidney.org/audit-research/data-portals](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.

**Table 7.1** The UK Kidney Association audit measures relevant to HHD that are reported in this chapter

The UK Kidney Association guideline	Audit criteria	Related analysis/analyses
CKD mineral bone disorder (2018)	Percentage of patients with serum calcium above the normal reference range of 2.2–2.5 mmol/L	Table 7.5, figure 7.3
HD (2019)	Proportion of patients with pre-dialysis bicarbonate 18–26 mmol/L	Table 7.6, figure 7.4
	Proportion of patients with pre-dialysis potassium 4.0–6.0 mmol/L	Table 7.6, figure 7.5
Anaemia (2020)	Proportion of patients with serum ferritin <100 µg/L at start of treatment with erythropoiesis stimulating agent (ESA)	Table 7.7 (the UKRR does not hold treatment with ESA start dates)
	Audit on ESA dose and use of ESA in patients with Hb out of range, normally reported in this chapter, have been omitted this year as the Registry is implementing improvements in how medications data are processed. ESA data will be processed and analysed again next year.	
Planning, initiating and withdrawing KRT (2014)	Number of patients withdrawing from HHD as a proportion of all deaths on HHD	Table 7.9, figure 7.10

ESA – erythropoiesis stimulating agent

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

## Key findings

- 1,377 adult patients were receiving HHD for ESKD in the UK on 31/12/2020, which represented 2.0% of the KRT population.
- The median age of HHD patients was 55.3 years and 61.9% were male.
- The median adjusted calcium for HHD patients was 2.4 mmol/L and 13.2% were above the target range 2.2–2.5 mmol/L.
- The median pre-dialysis bicarbonate for HHD patients was 24 mmol/L and 74.6% were within the target range 18–26 mmol/L.
- The median pre-dialysis potassium for HHD patients was 4.9 mmol/L and 79.8% were within the target range 4.0–6.0 mmol/L.
- The median haemoglobin and ferritin for HHD patients was 110 g/L and 300 µg/L, respectively.
- 24.3% of HHD patients had a haemoglobin <100 g/L and 23.5% had a haemoglobin >120 g/L.
- There was no cause of death data available for 39.7% of deaths. For those with data, the leading cause of death in patients less than 65 years was infection at 30.2% with a likely contribution of COVID related deaths. For those 65 years or over, 20.5% of deaths were due to cardiac disease, followed by 18 % due to treatment withdrawal and 18% due to infection.

# Analyses

## Changes to the prevalent adult HHD population

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

**Table 7.2** Number of prevalent adult HHD patients and proportion of adult KRT patients on HHD by year and by centre; number of HHD patients as a proportion of the catchment population

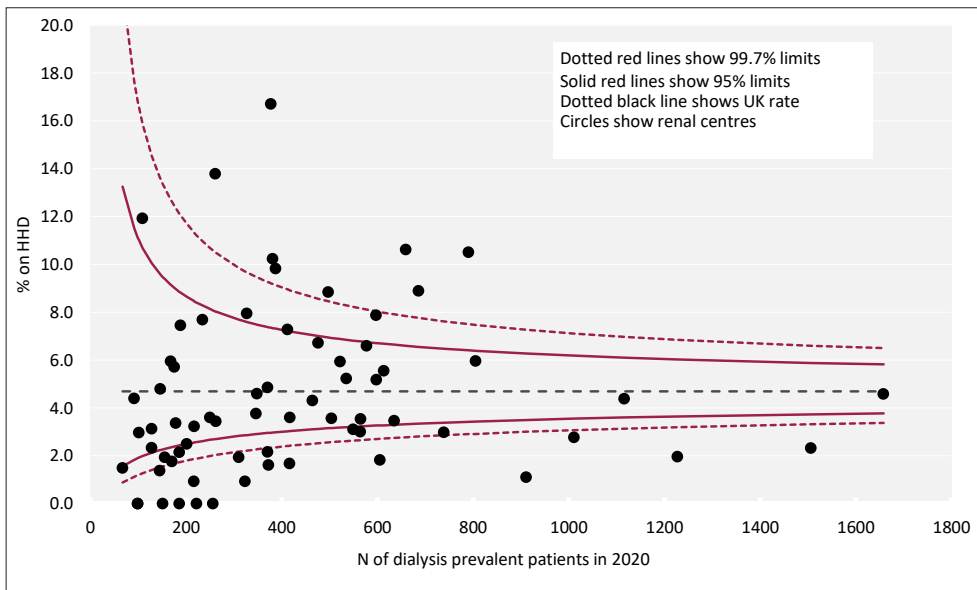
Centre	N on HHD					% on HHD					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020		
ENGLAND												
Bham	75	75	68	76	76	2.5	2.4	2.1	2.3	2.3	2.04	37
Bradfd	7	9	9	6	6	1.1	1.3	1.3	0.8	0.8	0.49	12
Brightn	38	41	39	32	31	3.8	4.1	3.7	3.0	2.9	1.07	29
Bristol	19	17	15	16	17	1.3	1.2	1.0	1.1	1.2	1.21	14
Camb	22	26	32	32	26	1.7	1.9	2.3	2.2	1.7	0.93	28
Carlis	0	0	0	0	2	0.0	0.0	0.0	0.0	0.7	0.25	8
Carsh	29	27	29	35	28	1.8	1.6	1.7	2.0	1.5	1.62	17
Colchr	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.29	0
Covnt	12	14	22	20	20	1.2	1.5	2.3	1.9	1.8	0.79	25
Derby	42	52	53	58	63	7.7	9.4	9.0	8.9	9.3	0.56	113
Donc	9	9	9	5	5	2.7	2.7	2.7	1.5	1.5	0.37	13
Dorset	9	10	13	15	16	1.3	1.4	1.7	1.9	2.0	0.72	22
Dudley	14	13	12	12	9	4.1	3.6	3.3	3.3	2.4	0.34	26
EssexMS	15	15	17	24	28	1.9	1.8	2.0	2.8	3.2	0.99	28
Exeter	9	13	19	21	20	0.9	1.2	1.8	1.9	1.8	0.95	21
Glouc	9	5	0	0	0	1.9	1.0	0.0	0.0	0.0	0.51	0
Hull	4	6	5	7	7	0.5	0.7	0.6	0.8	0.8	0.79	9
Ipswi	3	8	5	4	3	0.7	1.8	1.2	0.9	0.7	0.31	10
Kent	23	21	18	20	18	2.1	1.9	1.6	1.8	1.6	1.06	17
L Barts	23	31	36	20	24	1.0	1.2	1.4	0.8	0.9	1.58	15
L Guys	48	42	38	45	48	2.3	1.9	1.7	1.9	2.1	1.00	48
L Kings	18	20	17	17	22	1.6	1.7	1.4	1.4	1.8	0.93	24
L Rfree	20	17	12	11	10	0.9	0.8	0.5	0.5	0.4	1.32	8
L St.G	4	5	6	6	6	0.5	0.6	0.7	0.7	0.7	0.66	9
L West	15	12	20	29	35	0.4	0.3	0.6	0.8	1.0	1.95	18
Leeds	17	23	23	26	22	1.1	1.4	1.4	1.5	1.3	1.36	16
Leic	73	72	64	54	49	3.2	3.1	2.6	2.1	1.9	2.07	24
Liv Ain	13	14	18	13	10	5.7	6.7	8.3	6.2	4.6	0.43	23
Liv Roy	39	39	39	36	38	3.2	3.1	3.1	2.9	3.3	0.81	47
M RI	61	77	74	75	70	3.1	3.8	3.6	3.7	3.5	1.32	53
Middlbr	11	12	13	19	18	1.2	1.3	1.4	2.0	1.9	0.80	22
Newc	24	21	22	19	15	2.3	1.9	1.9	1.6	1.2	0.95	16
Norwch	16	14	13	14	13	2.1	1.8	1.6	1.7	1.6	0.68	19
Nottm	29	34	34	31	32	2.5	2.9	2.8	2.5	2.6	0.92	35
Oxford	19	16	21	25	17	1.1	0.9	1.1	1.3	0.8	1.44	12
Plymth	8	10	10	7	0	1.6	1.8	1.9	1.3	0.0	0.40	0
Ports	75	65	70	70	83	4.4	3.7	4.0	3.7	4.4	1.74	48
Prestn	41	49	43	49	47	3.4	3.9	3.3	3.6	3.4	1.23	38
Redng	7	6	9	8	8	0.9	0.8	1.1	0.9	0.9	0.69	12
Salford	28	41	35	41	38	2.7	3.7	3.0	3.3	3.0	1.14	33
Sheff	53	50	49	55	61	3.7	3.5	3.3	3.7	4.1	1.13	54



**Table 7.2** Continued

Centre	N on HHD					% on HHD					Estimated catchment population (millions)	2020 crude rate (pmp)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020		
Shrew	19	22	20	27	36	5.0	5.7	4.7	6.3	8.7	0.41	88
Stevng	26	30	43	36	31	2.9	3.4	4.6	3.7	3.2	1.10	28
Stoke	34	29	25	31	39	4.1	3.6	3.1	3.9	4.8	0.73	54
Sund	6	21	22	12	9	1.2	3.9	3.9	2.1	1.6	0.54	17
Truro	9	9	3	4	4	2.1	2.1	0.7	0.9	0.9	0.36	11
Wirral	10	9	8	8	7	3.0	2.3	2.0	1.9	1.7	0.47	15
Wolve	30	32	33	32	30	5.3	5.5	5.4	5.2	4.7	0.54	55
York	14	13	17	16	18	2.6	2.3	3.0	2.7	3.1	0.48	37
<b>N IRELAND</b>												
Antrim	1	4	4	4	4	0.4	1.6	1.5	1.4	1.4	0.24	16
Belfast	9	8	10	13	10	1.1	1.0	1.1	1.5	1.1	0.53	19
Newry	3	3	2	2	4	1.3	1.2	0.8	0.8	1.5	0.23	17
Ulster	1	1	0	0	0	0.6	0.5	0.0	0.0	0.0	0.20	0
West NI	3	3	2	1	3	1.0	1.0	0.6	0.3	0.9	0.25	12
<b>SCOTLAND</b>												
Abrdn	4	4	4	3	2	0.7	0.7	0.7	0.5	0.4	0.50	4
Airdrie	0	2	0	0	0	0.0	0.4	0.0	0.0	0.0	0.46	0
D&Gall	3	2	1	2	1	2.3	1.5	0.7	1.3	0.6	0.12	8
Dundee	2	2	8	7	6	0.5	0.5	1.8	1.6	1.4	0.37	16
Edinb	6	4	3	2	3	0.8	0.5	0.3	0.2	0.3	0.84	4
Glasgw	23	15	18	18	11	1.3	0.8	1.0	1.0	0.6	1.37	8
Inverns	7	5	7	7	3	2.7	1.9	2.5	2.5	1.1	0.22	13
Klmarnk	8	10	13	14	14	2.5	3.0	3.8	3.9	3.8	0.29	48
Krkldy	0	0	0	2	3	0.0	0.0	0.0	0.7	1.0	0.27	11
<b>WALES</b>												
Bangor	10	11	13	15	13	5.6	5.6	6.4	7.5	6.0	0.17	77
Cardff	31	38	34	33	34	1.9	2.3	2.0	1.9	2.0	1.19	29
Clwyd	4	2	2	2	0	2.3	1.1	1.1	1.0	0.0	0.19	0
Swanse	39	34	36	45	44	5.2	4.3	4.4	5.2	5.2	0.78	56
Wrexm	8	5	6	7	7	2.6	1.5	1.9	2.3	2.2	0.21	33
<b>TOTALS</b>												
England	1,129	1,196	1,202	1,219	1,215	2.1	2.2	2.1	2.1	2.1	44.46	27
N Ireland	17	19	18	20	21	1.0	1.0	0.9	1.0	1.1	1.45	14
Scotland	53	44	54	55	43	1.1	0.9	1.0	1.0	0.8	4.44	10
Wales	92	90	91	102	98	3.0	2.8	2.8	3.1	3.0	2.54	39
<b>UK</b>	<b>1,291</b>	<b>1,349</b>	<b>1,365</b>	<b>1,396</b>	<b>1,377</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.0</b>	<b>2.0</b>	<b>52.89</b>	<b>26</b>

Country HHD populations were calculated by summing the HHD 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. pmp – per million population



**Figure 7.2** Percentage of adult patients prevalent to dialysis on 31/12/2020 who were on HHD by centre

## Demographics of prevalent adult HHD patients

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

**Table 7.3** Demographics of adult patients prevalent to HHD on 31/12/2020 by centre

Centre	N on KRT	N on HHD	% on HHD	Median age (yrs)	% male	Ethnicity				
						% White	% Asian	% Black	% Other	% missing
<b>ENGLAND</b>										
Bham	3,272	76	2.3	54.3	75.0	64.5	17.1	9.2	9.2	0.0
Bradfd	727	6	0.8	48.8	66.7	100.0	0.0	0.0	0.0	0.0
Brightn	1,078	31	2.9	59.2	67.7	96.6	3.4	0.0	0.0	6.5
Bristol	1,477	17	1.2	58.8	47.1	100.0	0.0	0.0	0.0	0.0
Camb	1,526	26	1.7	59.3	69.2	92.3	0.0	7.7	0.0	0.0
Carlisle	297	2	0.7							
Carsh	1,854	28	1.5	60.0	67.9	85.7	3.6	10.7	0.0	0.0
Colchr	151	0	0.0							
Covnt	1,096	20	1.8	53.3	65.0	80.0	20.0	0.0	0.0	0.0
Derby	677	63	9.3	61.0	65.1	82.5	14.3	1.6	1.6	0.0
Donc	341	5	1.5	61.0	60.0	100.0	0.0	0.0	0.0	0.0
Dorset	798	16	2.0	58.0	75.0	100.0	0.0	0.0	0.0	0.0
Dudley	370	9	2.4	56.5	66.7	100.0	0.0	0.0	0.0	0.0
EssexMS	884	28	3.2	58.7	46.4	88.9	11.1	0.0	0.0	3.6
Exeter	1,106	20	1.8	55.0	60.0	100.0	0.0	0.0	0.0	0.0
Glouc	521	0	0.0							
Hull	914	7	0.8	53.1	71.4	85.7	0.0	0.0	14.3	0.0
Ipswi	425	3	0.7	60.2	33.3	100.0	0.0	0.0	0.0	0.0
Kent	1,143	18	1.6	56.1	61.1	94.4	0.0	0.0	5.6	0.0
L Barts	2,557	24	0.9	55.1	45.8	41.7	4.2	50.0	4.2	0.0
L Guys	2,320	48	2.1	48.5	60.4	56.3	12.5	31.3	0.0	0.0
L Kings	1,253	22	1.8	53.9	59.1	50.0	4.5	40.9	4.5	0.0
L Rfree	2,337	10	0.4	51.2	80.0	60.0	10.0	30.0	0.0	0.0
L St.G	857	6	0.7	53.9	33.3	83.3	0.0	16.7	0.0	0.0
L West	3,537	35	1.0	53.4	37.1	37.1	17.1	42.9	2.9	0.0
Leeds	1,751	22	1.3	47.7	54.5	86.4	4.5	9.1	0.0	0.0
Leic	2,604	49	1.9	57.5	65.3	89.4	8.5	2.1	0.0	4.1
Liv Ain	216	10	4.6	55.2	60.0	100.0	0.0	0.0	0.0	0.0
Liv Roy	1,142	38	3.3	53.3	52.6	94.7	0.0	2.6	2.6	0.0
M RI	1,985	70	3.5	53.7	62.9	60.9	11.6	24.6	2.9	1.4
Middlbr	942	18	1.9	54.5	55.6	94.4	0.0	0.0	5.6	0.0
Newc	1,207	15	1.2	59.3	60.0	93.3	6.7	0.0	0.0	0.0
Norwch	805	13	1.6	59.2	69.2	100.0	0.0	0.0	0.0	0.0
Nottm	1,212	32	2.6	54.3	40.6	84.4	3.1	9.4	3.1	0.0
Oxford	2,021	17	0.8	63.1	52.9	81.3	12.5	6.3	0.0	5.9
Plymth	544	0	0.0							
Ports	1,902	83	4.4	56.7	68.7	92.2	1.3	2.6	3.9	7.2
Prestn	1,370	47	3.4	55.4	55.3	95.7	4.3	0.0	0.0	0.0
Redng	871	8	0.9	52.7	62.5	57.1	0.0	42.9	0.0	12.5
Salford	1,264	38	3.0	51.9	60.5	86.8	2.6	7.9	2.6	0.0
Sheff	1,491	61	4.1	56.5	57.4	91.8	3.3	3.3	1.6	0.0
Shrew	414	36	8.7	60.4	72.2	100.0	0.0	0.0	0.0	0.0
Stevng	963	31	3.2	54.6	67.7	77.8	7.4	11.1	3.7	12.9
Stoke	809	39	4.8	54.7	71.8	92.1	0.0	5.3	2.6	2.6
Sund	557	9	1.6	56.6	77.8	100.0	0.0	0.0	0.0	0.0
Truro	445	4	0.9	60.5	50.0	100.0	0.0	0.0	0.0	0.0
Wirral	406	7	1.7	52.8	85.7	85.7	14.3	0.0	0.0	0.0

**Table 7.3** Continued

Centre	N on KRT	N on HHD	% on HHD	Median age (yrs)	% male	Ethnicity				
						% White	% Asian	% Black	% Other	% missing
Wolve	643	30	4.7	50.9	80.0	76.7	16.7	3.3	3.3	0.0
York	572	18	3.1	50.8	72.2	94.4	0.0	5.6	0.0	0.0
<b>N IRELAND</b>										
Antrim	289	4	1.4	62.0	75.0	100.0	0.0	0.0	0.0	0.0
Belfast	890	10	1.1	54.2	70.0	100.0	0.0	0.0	0.0	0.0
Newry	264	4	1.5	62.2	100.0	100.0	0.0	0.0	0.0	0.0
Ulster	200	0	0.0							
West NI	350	3	0.9	52.5	33.3	100.0	0.0	0.0	0.0	0.0
<b>SCOTLAND</b>										
Abrdn	565	2	0.4	43.3	0.0					50.0
Airdrie	514	0	0.0							
D&Gall	156	1	0.6	55.3	0.0					100.0
Dundee	430	6	1.4	65.3	66.7					66.7
Edinb	888	3	0.3	60.0	66.7					33.3
Glasgw	1,844	11	0.6	55.0	54.5					27.3
Inverns	271	3	1.1	50.3	33.3					33.3
Klmarnk	369	14	3.8	63.3	50.0					78.6
Krkldy	291	3	1.0	77.5	66.7					100.0
<b>WALES</b>										
Bangor	216	13	6.0	49.1	84.6	100.0	0.0	0.0	0.0	0.0
Cardff	1,678	34	2.0	55.5	50.0	97.0	3.0	0.0	0.0	2.9
Clwyd	207	0	0.0							
Swanse	850	44	5.2	59.5	61.4	100.0	0.0	0.0	0.0	0.0
Wrexm	323	7	2.2	61.1	28.6	100.0	0.0	0.0	0.0	0.0
<b>TOTALS</b>										
England	57,654	1,215	2.1	55.0	62.4	82.2	6.4	9.2	2.2	1.6
N Ireland	1,993	21	1.1	57.6	71.4	100.0	0.0	0.0	0.0	0.0
Scotland	5,328	43	0.8	59.0	51.2					58.1
Wales	3,274	98	3.0	57.0	58.2	99.0	1.0	0.0	0.0	1.0
<b>UK</b>	<b>68,249</b>	<b>1,377</b>	<b>2.0</b>	<b>55.3</b>	<b>61.9</b>	<b>83.9</b>	<b>5.9</b>	<b>8.3</b>	<b>2.0</b>	<b>3.3</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.

Primary renal diseases (PRDs) were grouped into categories as shown in table 7.4, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of HHD patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

**Table 7.4** Primary renal diseases (PRDs) of adult patients prevalent to HHD on 31/12/2020

PRD	N on HHD	% HHD population	Age <65 yrs		Age ≥65 yrs		M/F ratio
			N	%	N	%	
Diabetes	184	13.8	125	12.3	59	18.7	1.6
Glomerulonephritis	341	25.6	291	28.6	50	15.9	2.1
Hypertension	65	4.9	47	4.6	18	5.7	2.6
Polycystic kidney disease	131	9.8	96	9.4	35	11.1	1.5
Pyelonephritis	143	10.7	114	11.2	29	9.2	1.0
Renal vascular disease	26	1.9	9	0.9	17	5.4	2.3
Other	280	21.0	224	22.0	56	17.8	1.3
Uncertain aetiology	164	12.3	113	11.1	51	16.2	1.9
<b>Total (with data)</b>	<b>1,334</b>	<b>100.0</b>	<b>1,019</b>	<b>100.0</b>	<b>315</b>	<b>100.0</b>	
Missing	43	3.1	29	2.8	14	4.3	1.9

## Biochemistry parameters in prevalent adult HHD patients

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

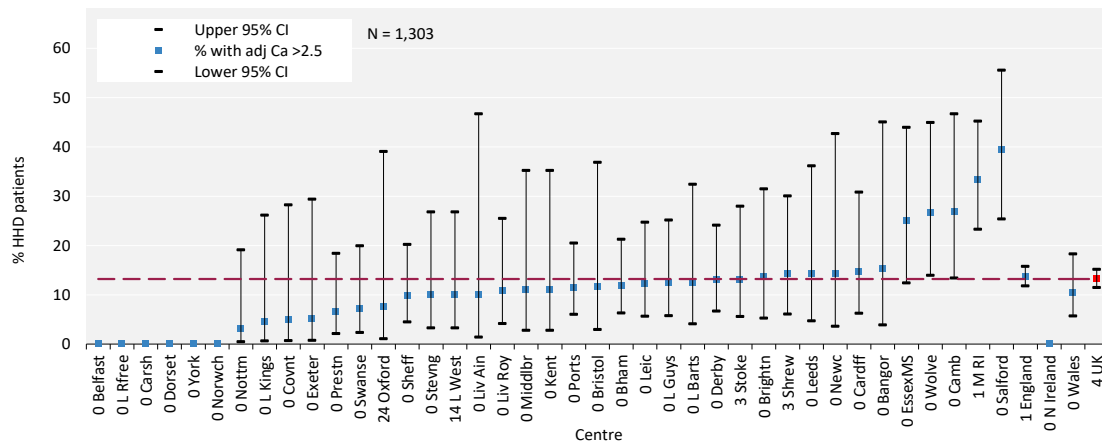
**Table 7.5** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients prevalent to HHD on 31/12/2020 by centre

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	76.3	11.8	100.0
Bradfd				100.0
Brightn	2.4	82.8	13.8	100.0
Bristol	2.3	88.2	11.8	100.0
Camb	2.4	69.2	26.9	100.0
Carlisle				100.0
Carsh	2.2	70.4	0.0	100.0
Colchr				
Covnt	2.3	85.0	5.0	100.0
Derby	2.4	80.3	13.1	100.0
Donc				100.0
Dorset	2.2	68.8	0.0	100.0
Dudley				100.0
EssexMS	2.45	67.9	25.0	100.0
Exeter	2.3	89.5	5.3	100.0
Glouc				
Hull				100.0
Ipswi				100.0
Kent	2.3	72.2	11.1	100.0
L Barts	2.3	66.7	12.5	100.0
L Guys	2.4	72.9	12.5	100.0
L Kings	2.3	86.4	4.6	100.0
L Rfree	2.35	90.0	0.0	100.0
L St.G				100.0
L West	2.3	63.3	10.0	85.7
Leeds	2.3	66.7	14.3	100.0
Leic	2.4	77.6	12.2	100.0
Liv Ain	2.4	90.0	10.0	100.0
Liv Roy	2.4	75.7	10.8	100.0

**Table 7.5** Continued

Centre	Median adj Ca (mmol/L)	% adj Ca 2.2-2.5 mmol/L	% adj Ca >2.5 mmol/L	% data completeness
M RI	2.5	66.7	33.3	98.6
Middlbr	2.3	77.8	11.1	100.0
Newc	2.4	71.4	14.3	100.0
Norwch	2.3	92.3	0.0	100.0
Nottm	2.35	90.6	3.1	100.0
Oxford	2.4	76.9	7.7	76.5
Plymth				
Ports	2.4	82.3	11.4	100.0
Prestn	2.3	76.1	6.5	100.0
Redng				100.0
Salford	2.5	55.3	39.5	100.0
Sheff	2.4	78.7	9.8	100.0
Shrew	2.4	68.6	14.3	97.2
Stoke	2.4	84.2	13.2	97.4
Sund				100.0
Truro				100.0
Wirral				100.0
Wolve	2.4	60.0	26.7	100.0
York	2.35	100.0	0.0	100.0
N IRELAND				
Antrim				100.0
Belfast	2.35	90.0	0.0	100.0
Newry				100.0
Ulster				
West NI				100.0
SCOTLAND				
Abrdn				0.0
Airdrie				
D&Gall				0.0
Dundee				0.0
Edinb				0.0
Glasgw				0.0
Inverns				0.0
Klmarnk				0.0
Krkldy				0.0
WALES				
Bangor	2.4	53.9	15.4	100.0
Cardff	2.3	70.6	14.7	100.0
Clwyd				
Swanse	2.4	92.9	7.1	100.0
Wrexm				100.0
TOTALS				
England	2.4	76.1	13.7	99.0
N Ireland	2.3	90.0	0.0	100.0
Scotland				0.0
Wales	2.4	79.2	10.4	100.0
<b>UK</b>	<b>2.4</b>	<b>76.5</b>	<b>13.2</b>	<b>96.0</b>

Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%.



**Figure 7.3** Percentage of adult patients prevalent to HHD on 31/12/2020 with adjusted calcium (Ca) above the target range (>2.5 mmol/L) by centre

CI – confidence interval

**Table 7.6** Median pre-dialysis potassium and bicarbonate and percentage attaining target ranges in adult patients prevalent to HHD on 31/12/2020 by centre

Centre	Pre-dialysis potassium					Pre-dialysis bicarbonate				
	Median (mmol/L)	% <4.0 mmol/L	% 4.0–6.0 mmol/L	% >6.0 mmol/L	% data completeness	Median (mmol/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% data completeness
ENGLAND										
Bham	4.4	19.7	75.0	5.3	100.0					60.5
Bradfd					100.0					100.0
Brightn					0.0	25	0.0	72.4	27.6	100.0
Bristol	4.9	5.9	94.1	0.0	100.0	23	5.9	88.2	5.9	100.0
Camb	5.2	7.7	65.4	26.9	100.0	27	0.0	46.2	53.9	100.0
Carlis					0.0					100.0
Carsh					0.0					3.7
Colchr										
Covnt					0.0	22	10.0	90.0	0.0	100.0
Derby					0.0	25	0.0	77.1	23.0	100.0
Donc					100.0					100.0
Dorset	5.0	0.0	100.0	0.0	100.0	22	6.3	87.5	6.3	100.0
Dudley					100.0					100.0
EssexMS	5.0	10.7	85.7	3.6	100.0	26	0.0	64.3	35.7	100.0
Exeter	4.7	21.1	68.4	10.5	100.0	22	5.3	94.7	0.0	100.0
Glouc										
Hull					100.0					100.0
Ipswi					0.0					100.0
Kent	3.9	55.6	38.9	5.6	100.0	22	5.6	83.3	11.1	100.0
L Barts	5.2	16.7	58.3	25.0	100.0	24	4.2	87.5	8.3	100.0
L Guys	4.5	16.7	83.3	0.0	100.0	25	2.1	54.2	43.8	100.0
L Kings	5.5	4.6	63.6	31.8	100.0	22	0.0	94.7	5.3	86.4
L Rfree	5.3	0.0	80.0	20.0	100.0					80.0
L St.G					0.0					100.0
L West					0.0					45.7
Leeds	5.1	0.0	85.7	14.3	100.0	23	0.0	85.7	14.3	100.0
Leic	5.3	2.0	87.8	10.2	100.0	24	0.0	80.4	19.6	93.9
Liv Ain					0.0	23	10.0	90.0	0.0	100.0
Liv Roy					0.0	23	2.7	70.3	27.0	100.0
M RI					0.0	25	0.0	73.9	26.1	98.6
Middlbr	5.3	5.6	94.4	0.0	100.0	32.5	0.0	11.1	88.9	100.0

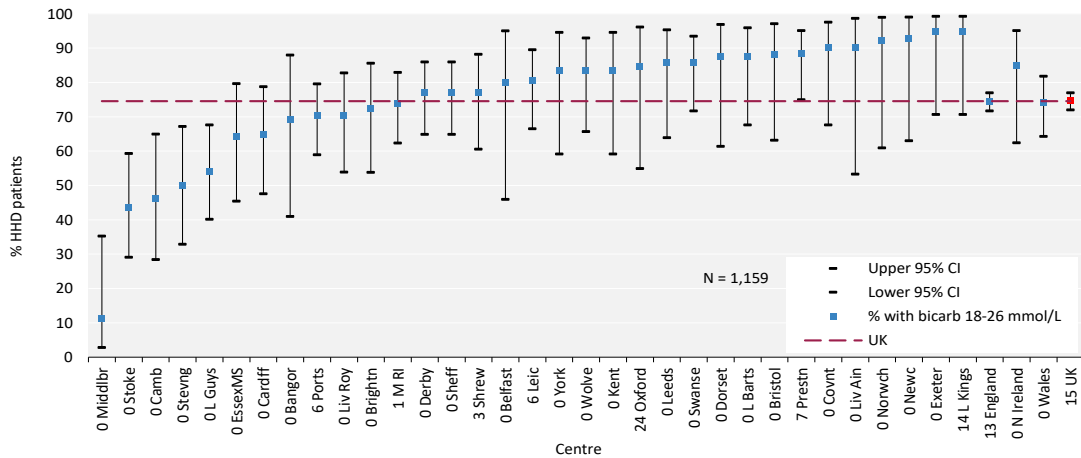
HHD

**Table 7.6** Continued

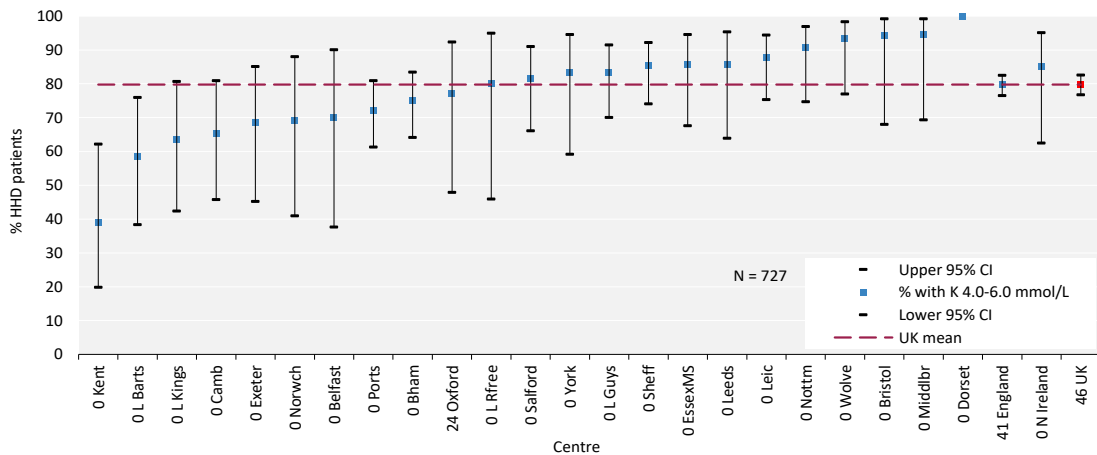
Centre	Pre-dialysis potassium					Pre-dialysis bicarbonate				
	Median (mmoI/L)	% <4.0 mmol/L	% 4.0–6.0 mmol/L	% >6.0 mmol/L	% data completeness	Median (mmoI/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% data completeness
Newc					0.0	23	0.0	92.9	7.1	100.0
Norwch	5.3	15.4	69.2	15.4	100.0	24	0.0	92.3	7.7	100.0
Nottm	5.2	6.3	90.6	3.1	100.0					34.4
Oxford	5.3	0.0	76.9	23.1	76.5	22	7.7	84.6	7.7	76.5
Plymth										
Ports	4.5	21.5	72.2	6.3	100.0	25	1.4	70.3	28.4	93.7
Prestn					0.0	23	4.7	88.4	7.0	93.5
Redng					0.0					100.0
Salford	4.9	13.2	81.6	5.3	100.0					0.0
Sheff	5.0	6.6	85.3	8.2	100.0	25	1.6	77.1	21.3	100.0
Shrew					0.0	23	2.9	77.1	20.0	97.2
Sthend										
Stoke					0.0	27	0.0	43.6	56.4	100.0
Sund					0.0					100.0
Truro					100.0					100.0
Wirral					0.0					100.0
Wolve	4.7	6.7	93.3	0.0	100.0	21	10.0	83.3	6.7	100.0
York	5.6	0.0	83.3	16.7	100.0	23	11.1	83.3	5.6	100.0
<b>N IRELAND</b>										
Antrim					100.0					100.0
Belfast	5.1	0.0	70.0	30.0	100.0	23	0.0	80.0	20.0	100.0
Newry					100.0					100.0
Ulster										
West NI					100.0					100.0
<b>SCOTLAND</b>										
Abrdn					0.0					0.0
Airdrie										
D&Gall					0.0					0.0
Dundee					0.0					0.0
Edinb					0.0					0.0
Glasgw					0.0					0.0
Inverns					0.0					0.0
Klmarnk					0.0					0.0
Krkldy					0.0					0.0
<b>WALES</b>										
Bangor					0.0	25	0.0	69.2	30.8	100.0
Cardff					0.0	25	2.9	64.7	32.4	100.0
Clwyd										
Swanse					0.0	25	2.4	85.7	11.9	100.0
Wrexm					0.0					100.0
<b>TOTALS</b>										
England	4.9	11.7	79.6	8.6	59.0	24	2.2	74.4	23.4	87.0
N	5.3	0.0	85.0	15.0	100.0	24	0.0	85.0	15.0	100.0
Ireland										
Scotland					0.0					0.0
Wales					0.0	25	2.1	74.0	24.0	100.0
<b>UK</b>	<b>4.9</b>	<b>11.4</b>	<b>79.8</b>	<b>8.8</b>	<b>53.5</b>	<b>24</b>	<b>2.2</b>	<b>74.6</b>	<b>23.3</b>	<b>85.4</b>

Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%.





**Figure 7.4** Percentage of adult patients prevalent to HHD on 31/12/2020 with pre-dialysis bicarbonate (bicarb) within the target range (18–26 mmol/L) by centre  
CI – confidence interval



**Figure 7.5** Percentage of adult patients prevalent to HHD on 31/12/2020 with pre-dialysis potassium (K) within the target range (4.0–6.0 mmol/L) by centre  
CI – confidence interval

## Anaemia in prevalent adult HHD patients

UK Kidney Association anaemia guidelines recommend a target haemoglobin of 100-120 g/L. Data are presented in table 7.7 regarding target and median haemoglobin and ferritin levels attained.

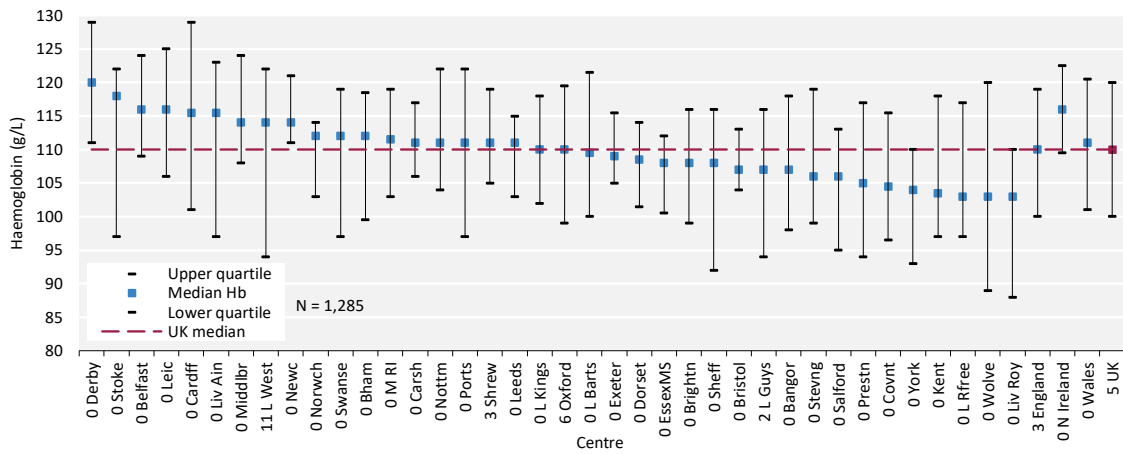
**Table 7.7** Median haemoglobin and ferritin and percentage attaining target ranges in adult patients prevalent to HHD on 31/12/2020 by centre

Centre	Haemoglobin				Ferritin		
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <100 µg/L	% data completeness
ENGLAND							
Bham	112	25.0	21.1	100.0	335	6.6	100.0
Bradfd				100.0			100.0
Brightn	108	27.6	10.3	100.0	428	10.7	96.6
Bristol	107	5.9	17.6	100.0	280	0.0	100.0
Camb				7.7			3.9
Carlis				100.0			100.0
Carsh	111	7.4	14.8	100.0	289	3.7	100.0
Colchr							
Covnt	105	30.0	15.0	100.0	566	0.0	100.0
Derby	120	9.8	49.2	100.0	569	1.6	100.0
Donc				100.0			100.0
Dorset	109	12.5	12.5	100.0	372	6.3	100.0
Dudley				100.0			0.0
EssexMS	108	21.4	14.3	100.0	240	32.1	100.0
Exeter	109	5.0	15.0	100.0	167	25.0	100.0
Glouc							
Hull				100.0			100.0
Ipswi				100.0			100.0
Kent	104	27.8	16.7	100.0	133	22.2	100.0
L Barts	110	20.8	29.2	100.0	712	0.0	100.0
L Guys	107	34.0	21.3	97.9	365	13.0	95.8
L Kings	110	22.7	18.2	100.0	511	0.0	95.5
L Rfree	103	40.0	10.0	100.0	564	0.0	100.0
L St.G				100.0			100.0
L West	114	32.3	29.0	88.6	243	20.0	85.7
Leeds	111	19.0	9.5	100.0	234	9.5	100.0
Leic	116	20.4	38.8	100.0	293	14.3	100.0
Liv Ain	116	30.0	40.0	100.0	168	30.0	100.0
Liv Roy	103	40.5	16.2	100.0	174	32.4	100.0
M RI	112	18.6	18.6	100.0	160	31.4	100.0
Middlbr	114	11.1	33.3	100.0	901	12.5	88.9
Newc	114	7.1	28.6	100.0	519	7.1	100.0
Norwch	112	23.1	15.4	100.0	131	38.5	100.0
Nottm	111	9.4	34.4	100.0	384	6.3	100.0
Oxford	110	25.0	18.8	94.1	439	0.0	100.0
Plymth							
Ports	111	26.6	30.4	100.0	244	11.7	97.5
Prestn	105	32.6	13.0	100.0	238	28.3	100.0
Redng				100.0			100.0
Salford	106	39.5	2.6	100.0	225	15.8	100.0
Sheff	108	34.4	21.3	100.0	413	9.8	100.0
Shrew	111	11.4	22.9	97.2	441	5.7	97.2
Stevng	106	26.7	16.7	100.0	411	10.3	96.7
Stoke	118	25.6	38.5	100.0	287	8.1	94.9

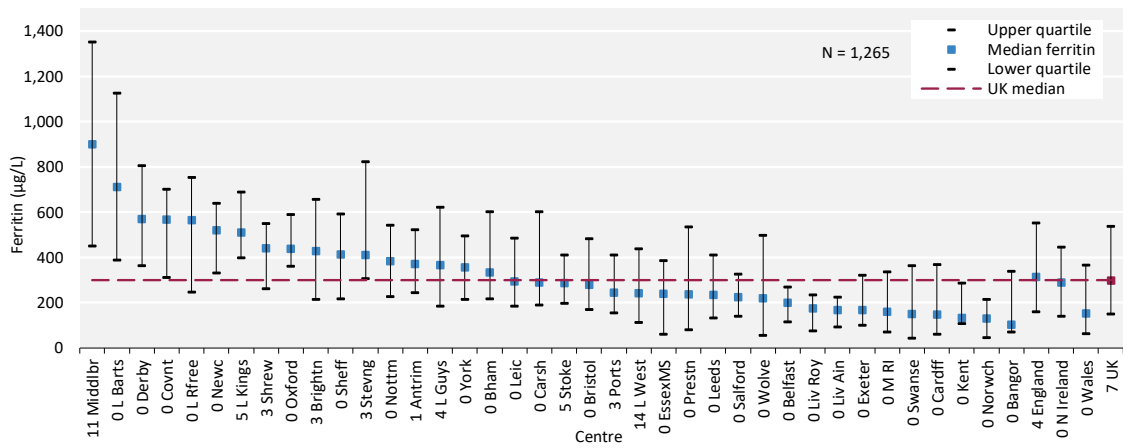
**Table 7.7** Continued

Centre	Haemoglobin				Ferritin		
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <100 µg/L	% data completeness
Sund				100.0			100.0
Truro				100.0			100.0
Wirral				100.0			100.0
Wolve	103	46.7	20.0	100.0	219	36.7	100.0
York	104	44.4	16.7	100.0	358	5.6	100.0
<b>N IRELAND</b>							
Antrim				100.0			100.0
Belfast	116	10.0	40.0	100.0	200	20.0	100.0
Newry				100.0			100.0
Ulster							
West NI				100.0			100.0
<b>SCOTLAND</b>							
Abrdn				0.0			0.0
Airdrie							
D&Gall				0.0			0.0
Dundee				0.0			0.0
Edinb				0.0			0.0
Glasgw				0.0			0.0
Inverns				0.0			0.0
Klmarnk				0.0			0.0
Krkldy				0.0			0.0
<b>WALES</b>							
Bangor	107	38.5	23.1	100.0	103	38.5	100.0
Cardff	116	17.6	44.1	100.0	149	35.3	100.0
Clwyd							
Swanse	112	26.2	14.3	100.0	150	28.6	100.0
Wrexm				100.0			100.0
<b>TOTALS</b>							
England	110	24.6	23.1	97.4	315	14.4	95.8
N Ireland	116	10.0	40.0	100.0	290	15.0	100.0
Scotland				0.0			0.0
Wales	111	22.9	25.0	100.0	153	31.3	100.0
<b>UK</b>	<b>110</b>	<b>24.3</b>	<b>23.5</b>	<b>94.6</b>	<b>300</b>	<b>15.7</b>	<b>93.1</b>

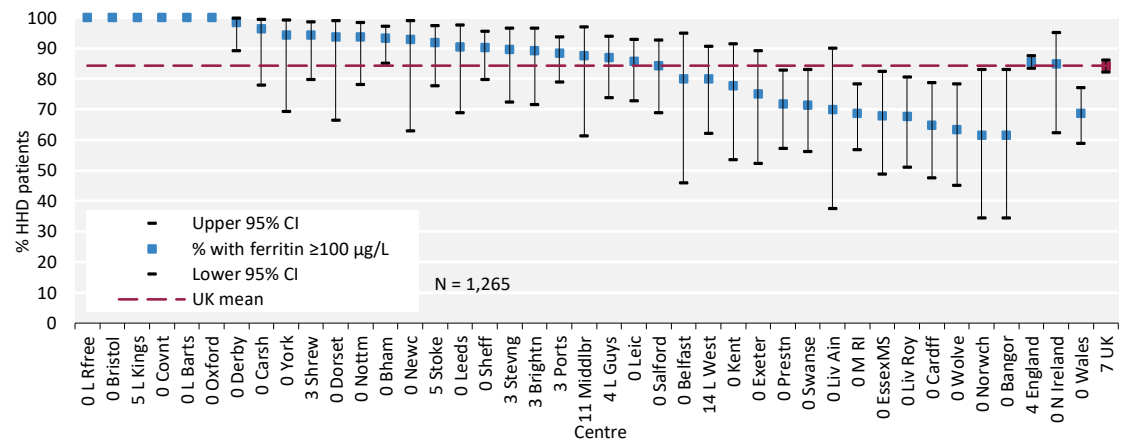
Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%.



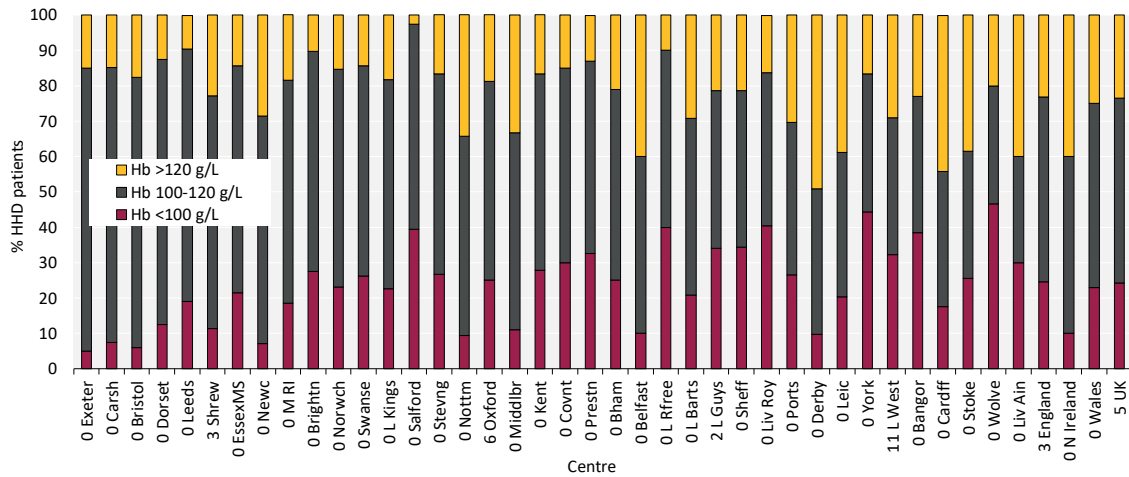
**Figure 7.6** Median haemoglobin (Hb) in adult patients prevalent to HHD on 31/12/2020 by centre



**Figure 7.7** Median ferritin in adult patients prevalent to HHD on 31/12/2020 by centre



**Figure 7.8** Percentage of adult patients prevalent to HHD on 31/12/2020 with ferritin  $\geq 100$   $\mu\text{g/L}$  by centre  
CI – confidence interval



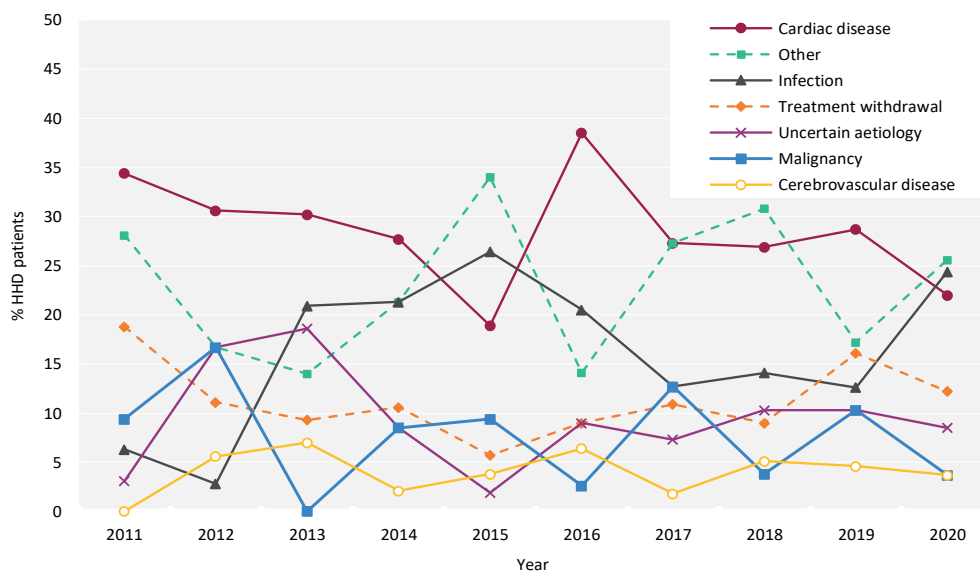
**Figure 7.9** Distribution of haemoglobin (Hb) in adult patients prevalent to HHD on 31/12/2020 by centre

## Cause of death in adult HHD patients

Cause of death was analysed in prevalent patients receiving HHD on 31/12/2019 and followed-up for one year in 2020. The proportion of HHD 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. Further detail on the survival of prevalent KRT patients is in chapter 3.

**Table 7.8** Cause of death in adult patients prevalent to HHD on 31/12/2019 followed-up in 2020 by age group

Cause of death	HHD all ages		HHD <65 yrs		HHD ≥65 yrs	
	N	%	N	%	N	%
Cardiac disease	18	22.0	10	23.3	8	20.5
Cerebrovascular disease	3	3.7	3	7.0	0	0.0
Infection	20	24.4	13	30.2	7	18.0
Malignancy	3	3.7	1	2.3	2	5.1
Treatment withdrawal	10	12.2	3	7.0	7	18.0
Other	21	25.6	9	20.9	12	30.8
Uncertain aetiology	7	8.5	4	9.3	3	7.7
<b>Total (with data)</b>	<b>82</b>	<b>100.0</b>	<b>43</b>	<b>100.0</b>	<b>39</b>	<b>100.0</b>
Missing	54	39.7	28	39.4	26	40.0



**Figure 7.10** Cause of death between 2011 and 2020 for adult patients prevalent to HHD at the beginning of the year

## *Chapter 8*

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# **Children and young people on kidney replacement therapy (KRT) for end-stage kidney disease (ESKD) in the UK in 2020**

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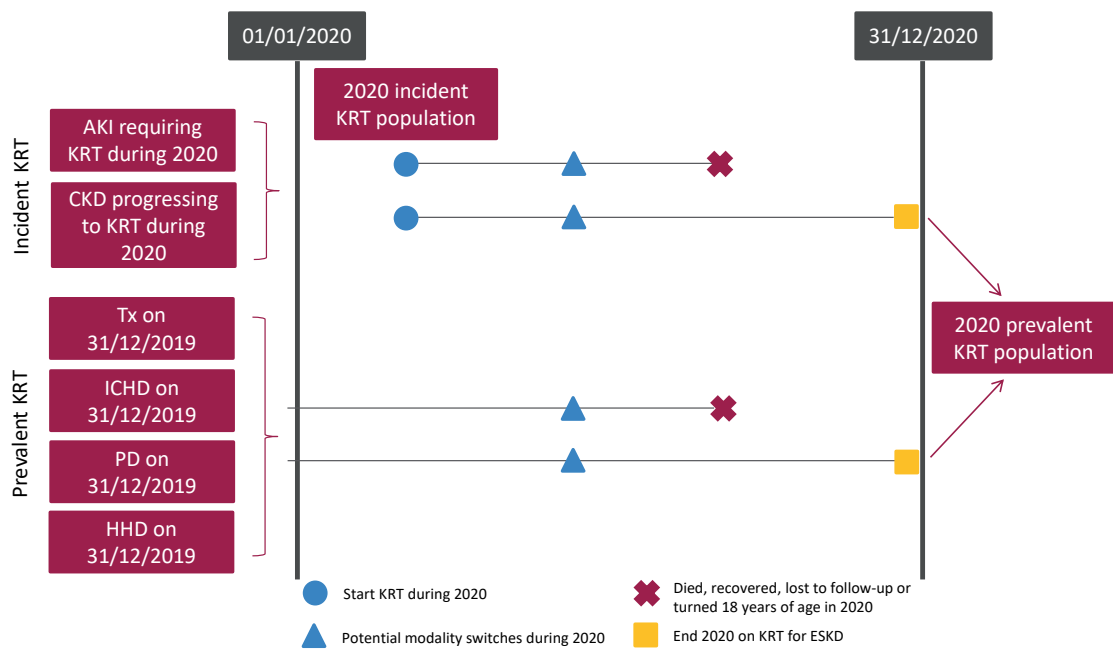
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# Introduction

This chapter describes the population of children and young people aged <18 years with end-stage kidney disease (ESKD) who were on kidney replacement therapy (KRT) in the UK for at least 90 days in 2020 (figure 8.1). This included patients with a transplant (Tx) and patients on dialysis – in-centre haemodialysis (ICHD), home haemodialysis (HHD) and peritoneal dialysis (PD). Patients coded as acute kidney injury (AKI) or ESKD who recovered within the first 90 days of KRT were excluded from the analyses.

There are 13 paediatric kidney centres in the UK, all of which are equipped to provide both haemodialysis (HD) and PD. Ten of these centres also perform kidney transplantation. Children aged 16 to <18 years may be managed in either paediatric or adult services. This is variable across the UK and dependent on local practices, social factors and patient/family wishes. Children (aged <16 years) and young people (aged 16 to <18 years) are reported separately. Data about young people also include those managed in adult centres, to provide a more complete epidemiological picture for this population.



**Figure 8.1** Pathways children and young people could follow to be included in the UK 2020 incident and/or prevalent KRT populations

Note that patients who recovered kidney function before 90 days on dialysis are not included in this chapter.

CKD – chronic kidney disease

For children aged <16 years, the following populations included in this chapter are:

- **Incident population:** patients who started KRT during 2020 and remained on KRT for at least 90 days.
- **Prevalent population:** patients who were on KRT at the end of 2020 and still under the care of a paediatric kidney centre.
- **Five-year populations:** patients who started KRT and remained on KRT for at least 90 days in the periods 2006–2010, 2011–2015 and 2016–2020.

For young people aged 16 to <18 years, the following populations included in this chapter are:

- **Incident population:** patients who started KRT during 2020 in either an adult or paediatric centre and remained on KRT for at least 90 days.
- **Prevalent population:** patients who were on KRT at the end of 2020 in either an adult or paediatric centre.

This chapter addresses the following key aspects of the care of children incident to or on KRT for which there are evidence-based guidelines (table 8.1):

- **Growth:** this includes age- and sex-adjusted heights and weights
- **Cardiovascular risk factors:** these include age-adjusted blood pressure, cholesterol and body mass index (BMI)
- **Complications associated with KRT:** these include anaemia and mineral and bone disorders.

For young people, the following aspects of care are addressed:

- **Cardiovascular risk factors:** these include blood pressure using raw systolic and diastolic values which are audited against European Society of Hypertension guidelines for the management of high blood pressure in children and adolescents (2016)
- **Complications associated with KRT:** these include anaemia and mineral and bone disorders. Paediatric reference ranges for children and young people up to 18 years are used as the standard measure.

## Rationale for analyses

For both the children and young people sections, the analyses begin with a description of the 2020 incident and prevalent KRT populations, including the number on KRT per million age-related population (pmarp).

For children, height and weight are measures of healthy growth, which may be affected by kidney disease as well as its treatment. These measures are therefore presented for each centre in comparison to the UK median for this cohort.

The published guidelines listed below provide audit measures relevant to the care of children and young people on KRT and, where data permit, their attainment by UK paediatric kidney centres in 2020 is reported in this chapter (table 8.1). Due to the small numbers of young people identified, we have omitted reporting by centre for this population.

For children, reporting estimated glomerular filtration rate (eGFR) is dependent on the completeness of both creatinine and height data. For young people, the Full Age Spectrum (FAS) equation was used to calculate eGFR – height data for young people managed in adult centres were incomplete and therefore a height-free calculation was used to standardise reporting and enable direct comparison within this population.

**Table 8.1** Audit measures relevant to KRT incidence and prevalence that are reported in this chapter

Audit guideline	Audit criteria	Related analysis/analyses
The UK Kidney Association: Treatment of adults and children with kidney failure: standards and audit measures (2002)	Height and weight to be monitored at each clinic visit and plotted on the growth charts of healthy children and adolescents	<a href="#">Figures 8.6–8.13</a>
	Blood pressure during PD or after HD to be maintained at <90 <sup>th</sup> percentile for age, sex and height. Blood pressure in Tx patients to be maintained at <90 <sup>th</sup> percentile for age, sex and height	<a href="#">Tables 8.14–8.15, figures 8.14–8.15</a>
	Serum phosphate and calcium should be kept within the normal range. Parathyroid hormone (PTH) levels should be maintained within twice the upper limit of the normal range but, contrary to adult standards, may be kept within the normal range if growth is normal	<a href="#">Table 8.17</a>
	Serum bicarbonate concentrations should be 20–26 mmol/L	<a href="#">Table 8.17</a>
	Typically maintain the aspirational haemoglobin range 100–120 g/L for young people and children aged ≥2 years and 95–115 g/L for children <2 years, reflecting the lower normal range in that age group	<a href="#">Table 8.17</a>
National Heart Lung and Blood Institute and Kidney Disease Improving Global Outcomes (KDIGO) (2013)	Screening children at risk of secondary dyslipidaemias including those with CKD is recommended	<a href="#">Tables 8.2–8.3, 8.15</a>

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)). The completeness of both transferrin saturation and percentage hypochromic red cells was too low to be reported as measures of iron stores. Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted – this includes reticulocyte haemoglobin content.

For children, data for height, weight, BMI and blood pressure vary with age, sex and size and are therefore presented as z-scores. Z-scores are a way of expressing the deviation of a given measurement from the age and size-specific population mean. This relies on the completeness of height data during the period in question.

For definitions and methods relating to this chapter see appendix A. Centres were excluded from caterpillar plots and cells were blanked in tables where data completeness for a biochemical variable was <70% and/or the number of patients reported was <10. This suppression of small numbers to minimise risk of patient re-identification limits in-depth analysis of centre-level data. 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'.

# Key findings

## Children

- 106 patients aged <16 years started KRT for ESKD in the UK in 2020 compared to 101 patients in 2019.
- KRT incidence in patients aged <16 years was 8.3 pmarp compared to 8.0 pmarp in 2019.
- 812 patients aged <16 years were receiving KRT at UK paediatric kidney centres on 31/12/2020, a decrease from 832 patients in 2019.
- KRT prevalence in patients aged <16 years was 63.8 pmarp. 76.2% had a functioning Tx (48.9% living donor and 27.3% deceased donor), 11.3% were receiving HD and 12.4% were receiving PD.
- Tubulointerstitial disease accounted for >50% of all primary renal diseases (PRDs) in prevalent paediatric patients, with a high male:female ratio (3:1).
- Between 2006 and 2020, about a third of patients aged <16 years who were referred early received a pre-emptive Tx.
- At the time of transfer to adult services, 85.5% of paediatric patients had a functioning kidney Tx.
- The median height z-score for children on dialysis was -1.7 compared with -1.0 for those with a functioning Tx.
- The median weight z-score for children on dialysis was -1.0 compared with 0.1 for those with a functioning Tx.
- The overall median eGFR of the 619 children with a kidney transplant on 31/12/2020 was 60 mL/min/1.73m<sup>2</sup> and 9.9% had an eGFR of <30 mL/min/1.73m<sup>2</sup>.
- Of those with complete data, 76.8% of the prevalent paediatric KRT population had 1 or more risk factors for cardiovascular disease; 6.3% had 3 risk factors.
- 66.7% and 79.3% of prevalent HD patients achieved systolic blood pressure (SBP) and diastolic blood pressure (DBP) values <90th percentile, respectively.
- 63.8% and 66.0% of prevalent PD patients achieved SBP and DBP values <90th percentile, respectively.
- 72.3% and 76.5% of prevalent Tx patients achieved SBP and DBP values <90th percentile, respectively.

## Young people

- 26 patients aged 16 to <18 years started KRT for ESKD in the UK in 2020.
- KRT incidence in young people was 17.8 pmarp.
- 208 patients aged 16 to <18 years were receiving KRT on 31/12/2020, of whom the majority (88.5%) were managed in paediatric kidney centres.
- KRT prevalence in patients aged 16 to <18 years was 142.1 pmarp.
- Tubulointerstitial disease accounted for 46.6% of all PRDs in prevalent young people, followed by familial/hereditary nephropathies (17.1%) and glomerular disease (18.7%).
- The overall median eGFR of young people with a kidney transplant on 31/12/2020 was 68 mL/min/1.73m<sup>2</sup> and 3.1% had an eGFR of <30 mL/min/1.73m<sup>2</sup>.
- The proportion of young people prevalent to KRT on 31/12/2020 with a blood pressure within the 'normal' range (<130/80 mmHg) was 41.9% of dialysis and 66.7% of transplanted patients.

# Analyses – children

## Data completeness for prevalent paediatric KRT patients

Data returns of key variables for Tx and dialysis patients <16 years old at the end of 2020 are shown in tables 8.2 and 8.3, respectively, with further detail available through the UKRRR data portal ([ukkidney.org/audit-research/data-portals](http://ukkidney.org/audit-research/data-portals)).

**Table 8.2** Data completeness for paediatric patients (<16 years old) prevalent to Tx on 31/12/2020 by centre

Centre	N with Tx	Data completeness (%)											
		Height	Weight	BMI	SBP	DBP	Hb	Creat	Chol	Bicarb	PTH	Ca	Phos
Bham_P	65	98.5	98.5	98.5	96.9	96.9	98.5	100.0	92.3	100.0	50.8	100.0	100.0
Blfst_P	26	23.1	92.3	23.1	30.8	30.8	100.0	100.0	69.2	100.0	92.3	100.0	100.0
Brstl_P	35	0.0	94.3	0.0	94.3	71.4	100.0	97.1	25.7	100.0	74.3	100.0	97.1
Cardf_P	22	0.0	100.0	0.0	100.0	22.7	100.0	100.0	4.6	100.0	31.8	100.0	100.0
Glasg_P	45	100.0	100.0	100.0	100.0	100.0	80.0	80.0	73.3	80.0	80.0	80.0	80.0
L Eve_P	63	100.0	100.0	100.0	100.0	100.0	100.0	100.0	60.3	100.0	93.7	100.0	100.0
L GOSH_P	119	100.0	100.0	100.0	62.2	62.2	100.0	100.0	58.8	16.8	99.2	100.0	100.0
Leeds_P	45	100.0	100.0	100.0	100.0	93.3	100.0	100.0	13.3	100.0	97.8	100.0	100.0
Livpl_P	21	0.0	14.3	0.0	9.5	4.8	95.2	95.2	57.1	95.2	90.5	95.2	95.2
Manch_P	66	0.0	0.0	0.0	98.5	95.5	100.0	100.0	84.9	100.0	97.0	100.0	100.0
Newc_P	27	0.0	0.0	0.0	100.0	3.7	100.0	100.0	85.2	100.0	85.2	100.0	100.0
Nottm_P	58	96.6	98.3	96.6	94.8	94.8	98.3	98.3	44.8	89.7	84.5	98.3	98.3
Soton_P	27	100.0	100.0	100.0	88.9	85.2	96.3	96.3	51.9	96.3	96.3	96.3	96.3
<b>UK</b>	<b>619</b>	<b>68.7</b>	<b>81.1</b>	<b>68.7</b>	<b>85.0</b>	<b>75.6</b>	<b>97.9</b>	<b>97.9</b>	<b>59.1</b>	<b>81.3</b>	<b>85.3</b>	<b>98.1</b>	<b>97.9</b>

Bicarb – bicarbonate; BMI – body mass index; Ca – calcium; Chol – cholesterol; Creat – creatinine; DBP – diastolic blood pressure; Hb – haemoglobin; Phos – phosphate; PTH – parathyroid hormone; SBP – systolic blood pressure

**Table 8.3** Data completeness for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2020 by centre

Centre	N on dialysis	Data completeness (%)											
		Height	Weight	BMI	SBP	DBP	Hb	Chol	Bicarb	PTH	Ca	Phos	
Bham_P	34	85.3	88.2	85.3	88.2	76.5	91.2	85.3	97.1	88.2	97.1	97.1	
Blfst_P	1	100.0	100.0	100.0	0.0	0.0	100.0	0.0	100.0	100.0	100.0	100.0	
Brstl_P	12	0.0	100.0	0.0	100.0	58.3	100.0	83.3	100.0	100.0	100.0	100.0	
Cardf_P	7	0.0	85.7	0.0	85.7	28.6	100.0	71.4	100.0	100.0	100.0	100.0	
Glasg_P	12	100.0	100.0	100.0	100.0	100.0	100.0	66.7	100.0	100.0	91.7	91.7	
L Eve_P	18	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
L GOSH_P	33	97.0	97.0	97.0	81.8	81.8	100.0	66.7	24.2	100.0	100.0	100.0	
Leeds_P	12	83.3	100.0	83.3	100.0	75.0	100.0	66.7	100.0	100.0	100.0	100.0	
Livpl_P	8	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	100.0	100.0	100.0	
Manch_P	23	0.0	0.0	0.0	100.0	47.8	100.0	43.5	100.0	100.0	100.0	100.0	
Newc_P	8	0.0	0.0	0.0	62.5	0.0	100.0	12.5	100.0	100.0	100.0	100.0	
Nottm_P	21	95.2	95.2	95.2	95.2	61.9	100.0	33.3	100.0	100.0	100.0	100.0	
Soton_P	4	100.0	100.0	100.0	75.0	50.0	100.0	50.0	100.0	100.0	100.0	100.0	
<b>UK</b>	<b>193</b>	<b>65.3</b>	<b>76.2</b>	<b>65.3</b>	<b>87.1</b>	<b>65.8</b>	<b>98.5</b>	<b>62.2</b>	<b>86.5</b>	<b>97.9</b>	<b>99.0</b>	<b>99.0</b>	

Bicarb – bicarbonate; BMI – body mass index; Ca – calcium; Chol – cholesterol; DBP – diastolic blood pressure; Hb – haemoglobin; Phos – phosphate; PTH – parathyroid hormone; SBP – systolic blood pressure

## Changes to the incident paediatric KRT population

The number of incident patients on KRT <16 years old was calculated as an estimated age-related rate per million population (calculated as detailed in appendix A) and grouped by age, sex, five year time period, ethnicity, centre and PRD.

**Table 8.4** Paediatric patients (<16 years old) incident to KRT in 2020 by age and sex

Age group (yrs)	All patients		Male		Female	
	N	pmarp	N	pmarp	N	pmarp
0-<2	17	11.9	9	12.2	8	11.5
2-<4	7	4.5	4	5.1	3	4.0
4-<8	15	4.6	9	5.4	6	3.8
8-<12	31	9.3	19	11.1	12	7.4
12-<16	36	11.4	23	14.2	13	8.5
<b>&lt;16 yrs</b>	<b>106</b>	<b>8.3</b>	<b>64</b>	<b>9.8</b>	<b>42</b>	<b>6.8</b>

pmarp – per million age-related population

**Table 8.5** Paediatric patients (<16 years old) incident to KRT by age and 5 year time period

Age group (yrs)	2006-2010		2011-2015		2016-2020	
	N	pmarp	N	pmarp	N	pmarp
0-<2	96	12.4	107	13.3	99	13.1
2-<4	49	6.7	77	9.6	61	7.7
4-<8	95	6.9	109	7.0	95	5.7
8-<12	122	8.4	138	9.8	131	8.1
12-<16	214	14.0	174	12.0	183	12.3
<b>&lt;16 yrs</b>	<b>576</b>	<b>9.8</b>	<b>605</b>	<b>10.0</b>	<b>569</b>	<b>9.0</b>

pmarp – per million age-related population

**Table 8.6** Paediatric patients (<16 years old) incident to KRT by ethnicity and 5 year time period

Ethnicity	2006-2010		2011-2015		2016-2020	
	N	%	N	%	N	%
White	428	75.0	422	69.9	338	65.4
Asian	95	16.6	119	19.7	108	20.9
Black	25	4.4	28	4.6	36	7.0
Other	23	4.0	35	5.8	35	6.8
<b>&lt;16 yrs</b>	<b>571</b>	<b>100.0</b>	<b>604</b>	<b>100.0</b>	<b>517</b>	<b>100.0</b>

5 children in 2006–2010, 13 in 2011–2015 and 52 in 2016–2020 with no ethnicity recorded were excluded.

**Table 8.7** Paediatric patients (<16 years old) incident to KRT by centre and 5 year time period

Centre	2006-2010		2011-2015		2016-2020	
	N	%	N	%	N	%
Bham_P	66	11.5	73	12.1	81	14.2
Blfst_P	24	4.2	12	2.0	12	2.1
Brstl_P	35	6.1	37	6.1	27	4.7
Cardf_P	16	2.8	20	3.3	19	3.3
Glasg_P	44	7.6	40	6.6	44	7.7
L Eve_P	51	8.9	52	8.6	39	6.9
L GOSH_P	19	3.3	34	5.6	24	4.2
Leeds_P	64	11.1	69	11.4	60	10.5
Livpl_P	115	20.0	99	16.4	103	18.1
Manch_P	46	8.0	81	13.4	57	10.0
Newc_P	25	4.3	19	3.1	29	5.1
Nottm_P	58	10.1	49	8.1	56	9.8
Soton_P	13	2.3	20	3.3	18	3.2
<b>&lt;16 yrs</b>	<b>576</b>	<b>100.0</b>	<b>605</b>	<b>100.0</b>	<b>569</b>	<b>100.0</b>

PRDs were grouped into categories as shown in table 8.8, with the mapping of disease codes into groups explained in more detail in appendix A.

**Table 8.8** Paediatric patients (<16 years old) incident to KRT by primary renal disease (PRD) and 5 year time period

PRD	2006-2010		2011-2015		2016-2020	
	N	%	N	%	N	%
Tubulointerstitial disease	275	48.7	289	48.8	235	46.8
- CAKUT	263	46.5	277	46.8	227	45.2
- Non-CAKUT	12	2.1	12	2.0	8	1.6
Glomerular disease	77	13.6	86	14.5	94	18.7
Familial/hereditary nephropathies	112	19.8	114	19.3	76	15.1
Systemic diseases affecting the kidney	32	5.7	16	2.7	24	4.8
Miscellaneous kidney disorders	69	12.2	87	14.7	73	14.5

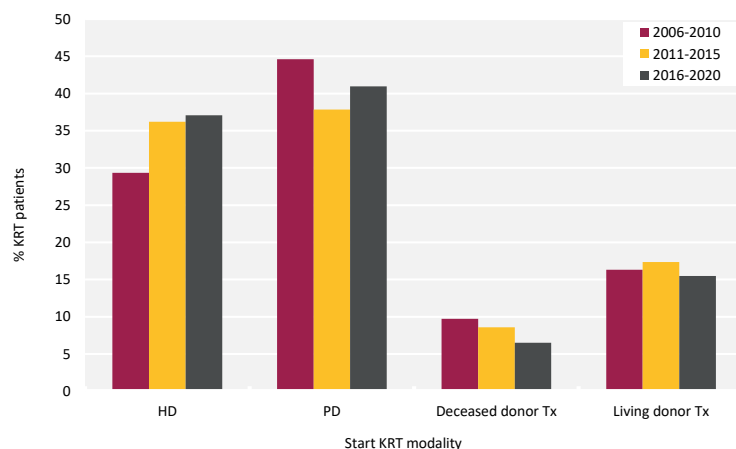
11 children in 2006–2010, 13 in 2011–2015 and 67 in 2016–2020 with no PRD recorded were excluded.

CAKUT – congenital anomalies of the kidneys and urinary tract

## Start modality of incident paediatric KRT patients

Start modality used by patients <16 years old starting KRT between 2006 and 2020 was grouped by five year time periods.





**Figure 8.2** Start KRT modality for paediatric patients (<16 years old) incident to KRT by 5 year time period

## Pre-emptive transplantation in incident paediatric KRT patients

The analysis of pre-emptive transplantation excluded patients starting KRT aged <3 months and patients presenting late.

**Table 8.9** Pre-emptive transplantation in the incident paediatric KRT population aged 3 months to 16 years by 5 year time period, sex, ethnicity, age at start of KRT and primary renal disease (PRD)

	N on KRT	N (%) with pre-emptive Tx
Total cohort analysed (2006-2020)	1,300	426 (32.8)
<b>Time period</b>		
2006-2010	415	148 (35.7)
2011-2015	446	155 (34.8)
2016-2020	439	123 (28)
<b>Sex</b>		
Male	841	297 (35.3)
Female	459	129 (28.1)
<b>Ethnicity</b>		
White	881	335 (38)
Asian	244	52 (21.3)
Black	60	10 (16.7)
Other	68	15 (22.1)
<b>Age at start of KRT (yrs)</b>		
3 mths-<2	152	6 (3.9)
2-<4	161	49 (30.4)
4-<8	243	104 (42.8)
8-<12	304	101 (33.2)
12-<16	440	166 (37.7)
<b>PRD</b>		
Tubulointerstitial disease	650	286 (44)
Glomerular disease	181	6 (3.3)
Familial/hereditary nephropathies	223	61 (27.4)
Miscellaneous kidney disorders	130	35 (26.9)
Systemic diseases affecting the kidney	39	15 (38.5)

91 children were excluded because they were aged <3 months; 359 children were excluded because they presented late.

## Demographics of prevalent paediatric KRT patients

The number of prevalent patients on KRT <16 years old was calculated as an estimated age-related rate per million population (calculated as detailed in appendix A) and grouped by age, sex and ethnicity.

**Table 8.10** Age and sex breakdown of paediatric patients (<16 years old) prevalent to KRT on 31/12/2020

Age group (yrs)	All patients		Male		Female		M/F ratio
	N	pmarp	N	pmarp	N	pmarp	
0-<2	15	10.5	7	9.5	8	11.5	0.8
2-<4	47	30.5	27	34.1	20	26.6	1.3
4-<8	151	46.3	102	61.0	49	30.9	2.0
8-<12	261	78.1	170	99.3	91	55.9	1.8
12-<16	338	107.1	198	122.4	140	91.1	1.3
<b>&lt;16 yrs</b>	<b>812</b>	<b>63.8</b>	<b>504</b>	<b>77.2</b>	<b>308</b>	<b>49.7</b>	<b>1.6</b>

pmarp – per million age-related population

**Table 8.11** Age and ethnicity breakdown of paediatric patients (<16 years old) prevalent to KRT on 31/12/2020

Age group (yrs)	N			
	White	Asian	Black	Other
0-<4	39	8	4	3
4-<8	97	26	7	16
8-<12	166	49	11	20
12-<16	213	69	19	18
<b>&lt;16 yrs</b>	<b>515</b>	<b>152</b>	<b>41</b>	<b>57</b>

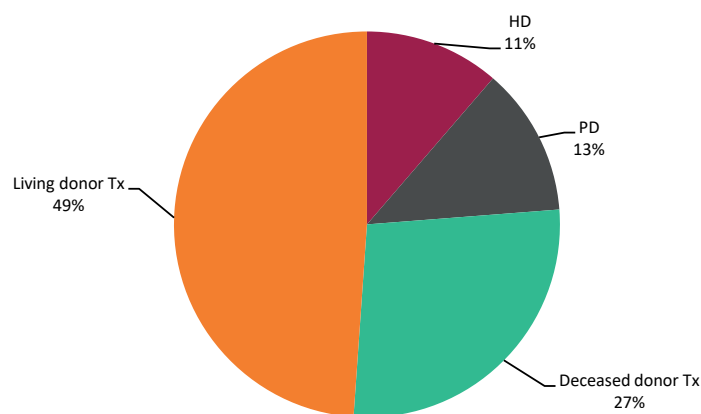
47 children with no ethnicity recorded were excluded

## Treatment modality in prevalent paediatric KRT patients

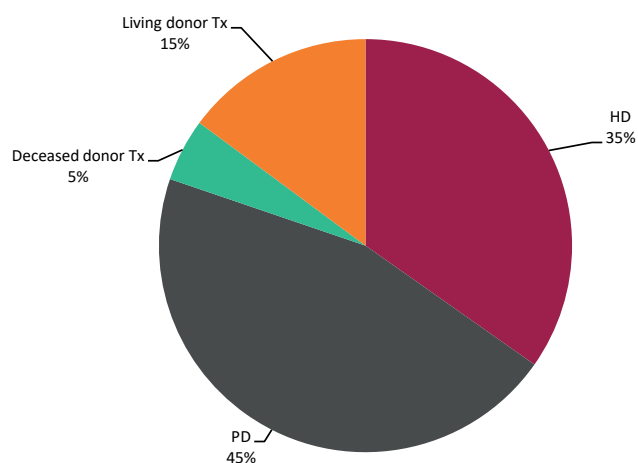
The current and start KRT modalities for prevalent KRT patients aged <16 years are shown in figures 8.3 and 8.4, respectively. Table 8.12 breaks down current modality for prevalent patients by age group.

**Table 8.12** KRT modality used by paediatric patients (<16 years old) prevalent to KRT on 31/12/2020 by age group

Age group (yrs)	Total N	HD		PD		Living donor Tx		Deceased donor Tx	
		N	%	N	%	N	%	N	%
0-<2	15	2	13.3	13	86.7	0	0.0	0	0.0
2-<4	47	13	27.7	18	38.3	14	29.8	2	4.3
4-<8	151	16	10.6	15	9.9	87	57.6	33	21.9
8-<12	261	24	9.2	29	11.1	137	52.5	71	27.2
12-<16	338	37	10.9	26	7.7	159	47.0	116	34.3
<b>&lt;16 yrs</b>	<b>812</b>	<b>92</b>	<b>11.3</b>	<b>101</b>	<b>12.4</b>	<b>397</b>	<b>48.9</b>	<b>222</b>	<b>27.3</b>



**Figure 8.3** KRT modality used by paediatric patients (<16 years old) prevalent to KRT on 31/12/2020



**Figure 8.4** KRT modality used at the start of KRT by paediatric patients (<16 years old) prevalent to KRT on 31/12/2020

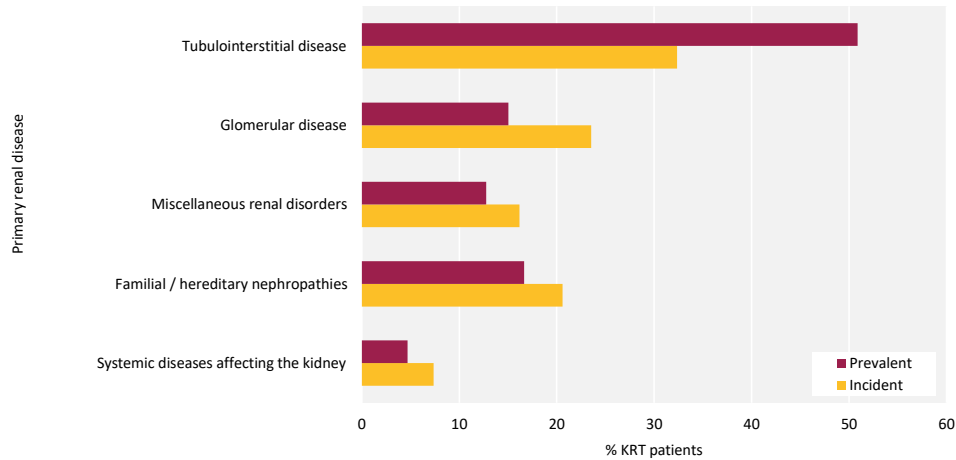
## Causes of ESKD in prevalent paediatric KRT patients

PRDs were grouped into categories as shown in table 8.13.

**Table 8.13** Primary renal diseases (PRDs) of paediatric patients (<16 years old) prevalent to KRT on 31/12/2020 by sex and ethnicity

PRD	N	%	N male	N female	% non-White
Tubulointerstitial disease	379	50.9	284	95	28.2
- CAKUT	370	49.7	278	92	28.8
- Non-CAKUT	9	1.2	6	3	44.4
Glomerular disease	112	15.0	59	53	35.5
Familial/hereditary nephropathies	124	16.6	60	64	40.3
Systemic diseases affecting the kidney	35	4.7	19	16	12.1
Miscellaneous kidney disorders	95	12.8	44	51	27.2
<b>Total (with data)</b>	<b>745</b>	<b>100.0</b>	<b>466</b>	<b>279</b>	<b>30.9</b>
Missing	67	8.3	38	29	63.4

CAKUT – congenital anomalies of the kidneys and urinary tract

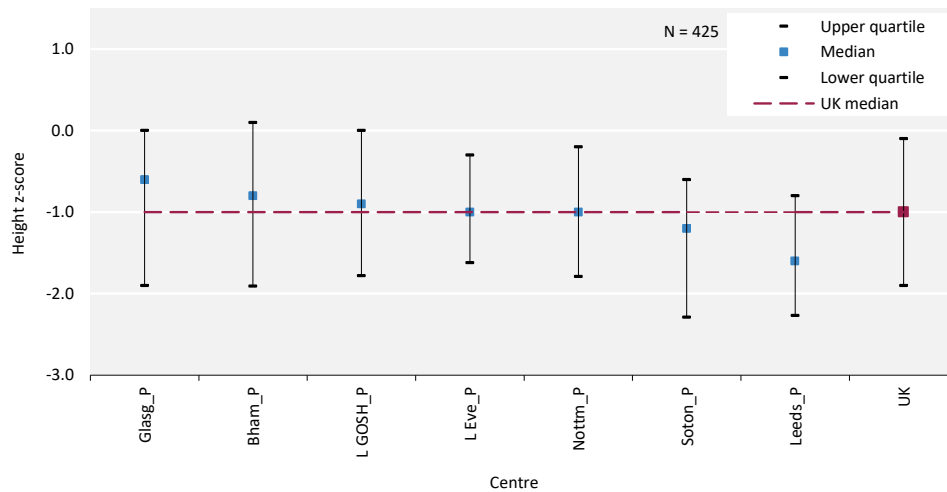


**Figure 8.5** Comparison of primary renal diseases for paediatric patients (<16 years old) incident and prevalent to KRT in 2020 with no missing data

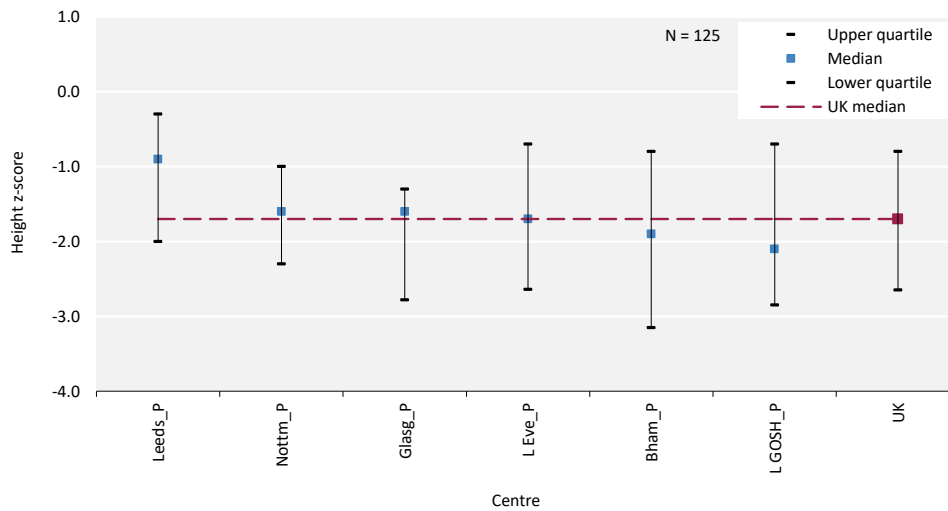
## Growth of prevalent paediatric KRT patients

The height and weight of children receiving KRT were compared to the age- and sex-matched general childhood population. The UK median score for each measure is represented by a red dotted line.

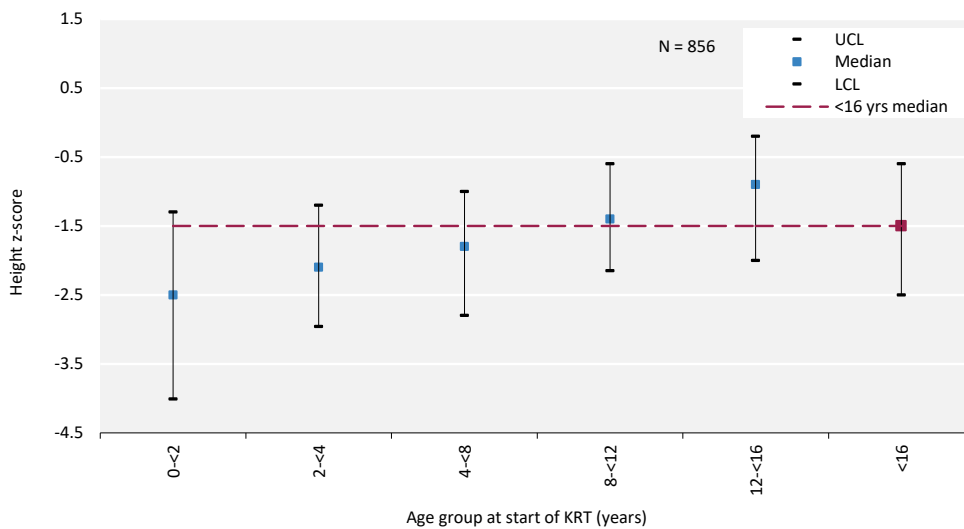
### Height of paediatric KRT patients



**Figure 8.6** Median height z-scores for paediatric patients (<16 years old) prevalent to Tx on 31/12/2020 by centre

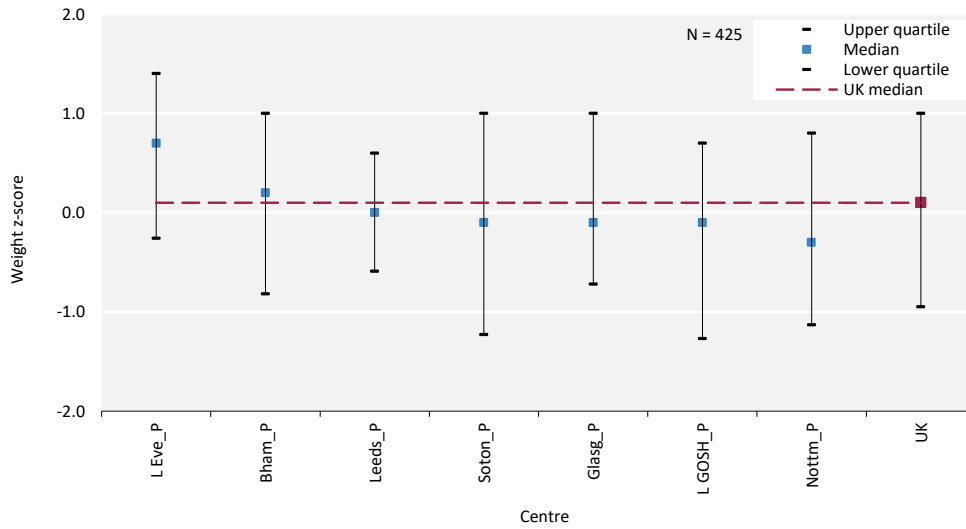


**Figure 8.7** Median height z-scores for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2020 by centre

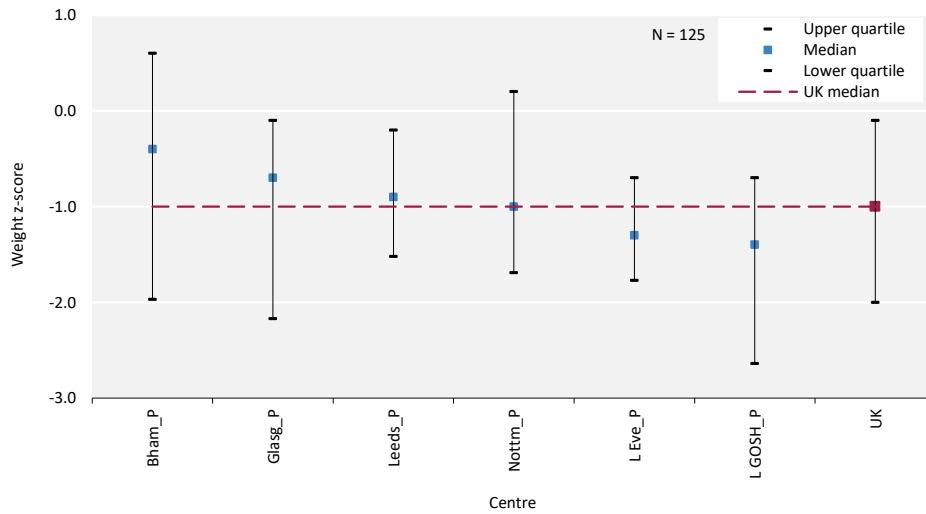


**Figure 8.8** Median height z-scores at start of KRT for incident paediatric KRT patients (<16 years old) between 2006 and 2020 by age group at start of KRT

## Weight of paediatric KRT patients



**Figure 8.9** Median weight z-scores for paediatric patients (<16 years old) prevalent to Tx on 31/12/2020 by centre

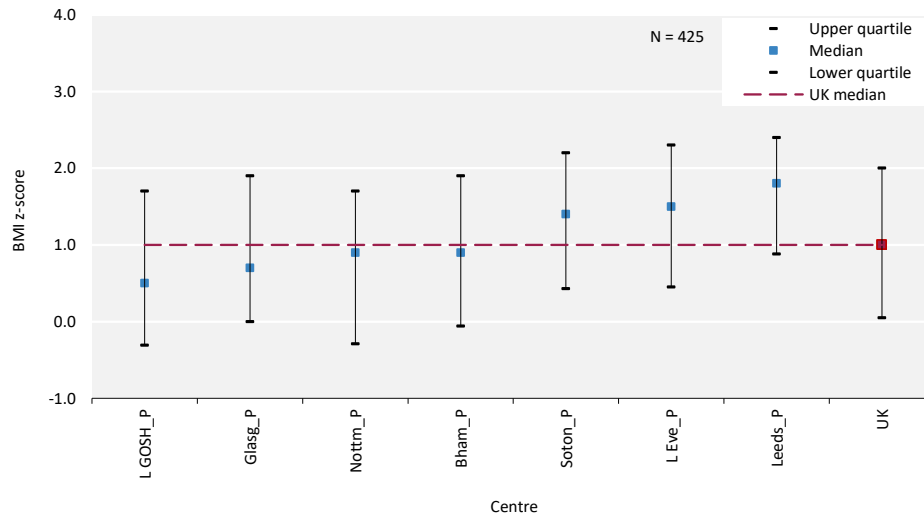


**Figure 8.10** Median weight z-scores for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2020 by centre

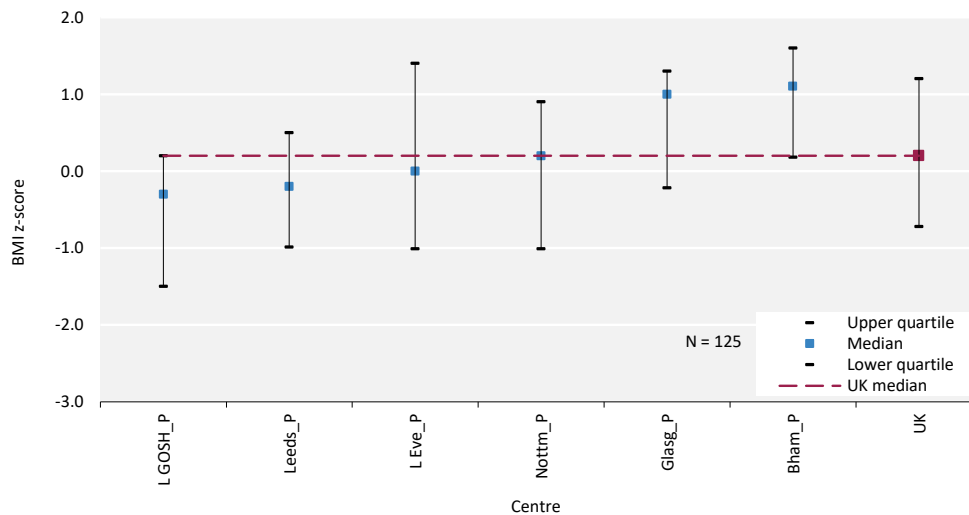
## Cardiovascular risk factor evaluation in prevalent paediatric KRT patients

### Obesity in paediatric KRT patients

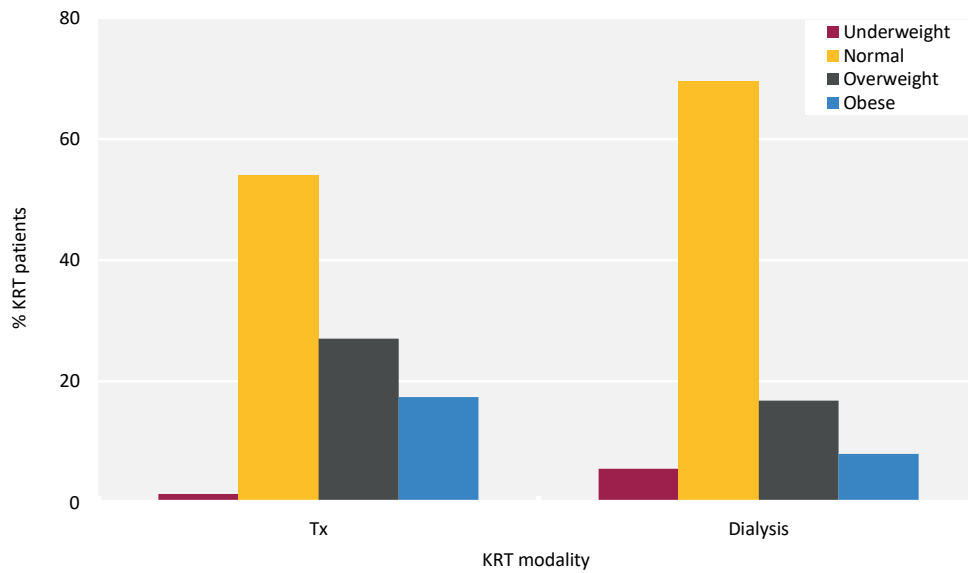
BMI was calculated using the formula  $BMI = \text{weight (kg)}/\text{height}^2 \text{ (m)}$ . Height and weight were adjusted for age. To account for discrepancies in linear growth secondary to kidney disease, BMI was expressed according to height age, rather than chronological age. Height age corresponds to the age when a child's height is plotted at the 50th percentile on a UK growth chart.



**Figure 8.11** Median body mass index (BMI) z-scores for paediatric patients (<16 years old) prevalent to Tx on 31/12/2020 by centre



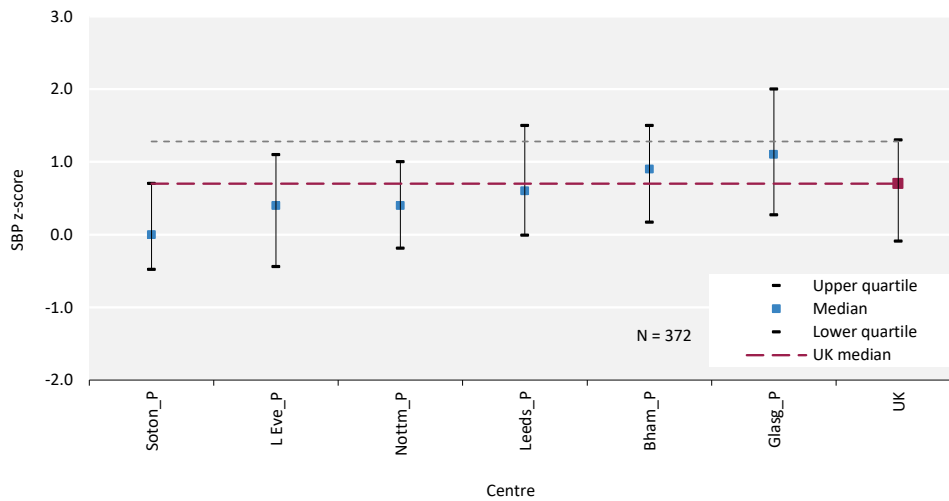
**Figure 8.12** Median body mass index (BMI) z-scores for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2020 by centre



**Figure 8.13** Body mass index categorisation of paediatric patients (<16 years old) prevalent to KRT on 31/12/2020 by KRT modality

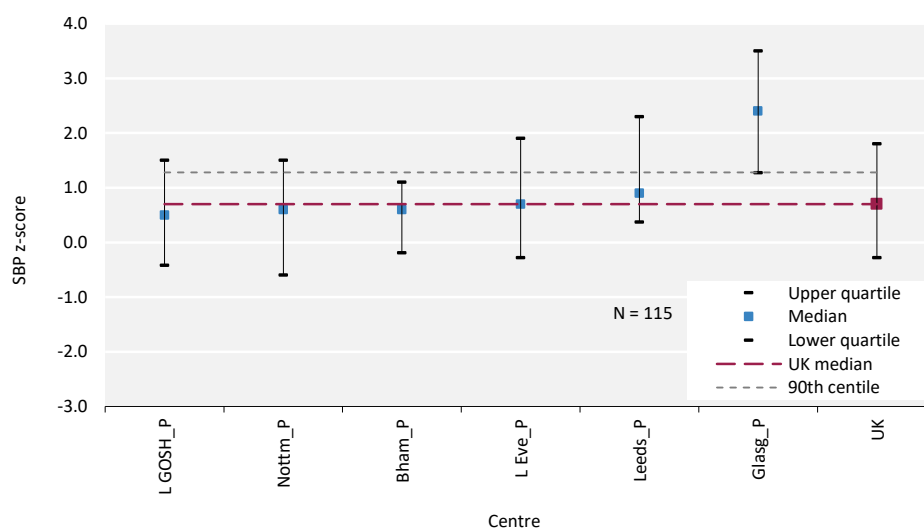
### **Hypertension in paediatric KRT patients**

In paediatric KRT patients, the systolic blood pressure should be maintained at <90th percentile for age, sex and height.



**Figure 8.14** Median systolic blood pressure (SBP) z-scores for paediatric patients (<16 years old) prevalent to Tx on 31/12/2020 by centre





**Figure 8.15** Median systolic blood pressure (SBP) z-scores for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2020 by centre

**Table 8.14** Percentage of paediatric patients (<16 years old) prevalent to KRT on 31/12/2020 achieving the standards for blood pressures

Characteristic	SBP		DBP	
	N	% <90th percentile	N	% <90th percentile
<b>Total</b>	487	70.6	441	75.7
<b>Age group (yrs)</b>				
0-<5	49	67.4	39	64.1
5-<12	229	66.4	202	76.7
12-<16	209	76.1	200	77.0
<b>Sex</b>				
Male	299	70.6	273	76.9
Female	188	70.7	168	73.8
<b>Ethnicity</b>				
White	284	71.5	257	79.0
Asian	100	74.0	88	71.6
Black	33	72.7	32	71.9
Other	41	53.7	38	63.2
<b>Modality</b>				
HD	57	66.7	53	79.3
PD	58	63.8	47	66.0
Tx	372	72.3	341	76.5

DBP – diastolic blood pressure; SBP – systolic blood pressure

## Cardiovascular risk factors in paediatric KRT patients

The analysis of the percentage of prevalent KRT patients with identified cardiovascular risk factors was restricted to the 315 of the 812 patients (38.8%) with data for all three risk factors.

**Table 8.15** Frequency of number of cardiovascular risk factors in paediatric patients (<16 years old) prevalent to KRT on 31/12/2020

N cardiovascular risk factors	Hypertensive	Overweight/Obese	Hypercholesterolaemic	N	%	Total %
0	No	No	No	73	23.2	23.2
1	Yes	No	No	42	13.3	44.1
	No	Yes	No	49	15.6	
	No	No	Yes	48	15.2	
2	Yes	Yes	No	28	8.9	26.3
	Yes	No	Yes	31	9.8	
	No	Yes	Yes	24	7.6	
3	Yes	Yes	Yes	20	6.3	6.3
				<b>315</b>		<b>100.0</b>
<b>Total N with the risk factor</b>	<b>121</b>	<b>121</b>	<b>123</b>			
<b>Total % with the risk factor</b>	<b>38.4</b>	<b>38.4</b>	<b>39.0</b>			

## Biochemistry parameters in prevalent paediatric KRT patients

The median values and the percentage with eGFR <30 mL/min/1.73m<sup>2</sup> for prevalent 2020 paediatric Tx patients are presented in table 8.16.

**Table 8.16** Median estimated glomerular filtration rate (eGFR) and percentage with eGFR <30 mL/min/1.73m<sup>2</sup> in paediatric patients (<16 years old) prevalent to Tx on 31/12/2020 by centre

Centre	N with Tx	Median eGFR (mL/min/1.73m <sup>2</sup> )	% eGFR <30 mL/ min/1.73m <sup>2</sup>	% data completeness
Bham_P	65	54	10.9	98.5
Blfst_P	26			23.1
Brstl_P	35			0.0
Cardf_P	22			0.0
Glasg_P	45	79	8.3	80.0
L Eve_P	63	60	6.4	100.0
L GOSH_P	119	54	16.8	100.0
Leeds_P	45	78	2.2	100.0
Livpl_P	21			0.0
Manch_P	66			0.0
Newc_P	27			0.0
Nottm_P	58	55	7.1	96.6
Soton_P	27	66	7.7	96.3
<b>UK</b>	<b>619</b>	<b>60</b>	<b>9.9</b>	<b>67.0</b>

Blank cells – centres with <70% data completeness or <10 patients.

Although completeness of creatinine data was good, height data completeness was very low – heights are needed to calculate eGFRs from creatinine.

**Table 8.17** Attainment of targets for haemoglobin, calcium, phosphate, parathyroid hormone and bicarbonate in paediatric patients (<16 years old) (a) prevalent to dialysis on 31/12/2020 by centre and (b) prevalent to Tx on 31/12/2020 with estimated glomerular filtration rate (eGFR) <30 mL/min/1.73 m<sup>2</sup> in the UK

Centre	N	% Hb below target	% Hb within target	% Ca below target	% Ca within target	% phos below target	% phos within target	% PTH within target	% bicarb below target	% bicarb within target
<b>DIALYSIS PATIENTS</b>										
Bham_P	34	9.7	51.6	0.0	87.9	6.1	60.6	23.3	2.9	70.6
Blfst_P	1									
Brstl_P	12	0.0	66.7	0.0	91.7	0.0	100.0	50.0	33.3	58.3
Cardf_P	7									
Glasg_P	12	8.3	66.7	18.2	81.8	72.7	27.3	33.3	0.0	66.7
L Eve_P	18	27.8	38.9	0.0	77.8	0.0	55.6	38.9	5.6	88.9
L GOSH_P	33	24.2	33.3	0.0	90.9	18.2	48.5	42.4		
Leeds_P	12	16.7	50.0	0.0	75.0	16.7	58.3	41.7	8.3	66.7
Livpl_P	8									
Manch_P	23	43.5	30.4	4.4	69.6	26.1	47.8	39.1	4.4	78.3
Newc_P	8									
Nottm_P	21	28.6	38.1	0.0	66.7	4.8	19.1	38.1	4.8	81.0
Soton_P	4									
<b>UK</b>	<b>193</b>	<b>20.0</b>	<b>43.7</b>	<b>2.1</b>	<b>81.2</b>	<b>13.6</b>	<b>53.4</b>	<b>37.6</b>	<b>18.7</b>	<b>66.3</b>
<b>TX PATIENTS WITH EGFR &lt;30 ML/MIN/1.73 M<sup>2</sup></b>										
<b>UK</b>	<b>41</b>	<b>22.0</b>	<b>78.1</b>	<b>2.4</b>	<b>85.4</b>	<b>4.9</b>	<b>65.9</b>	<b>65.8</b>	<b>58.5</b>	<b>39.0</b>

Blank cells – centres with <70% data completeness or <10 patients.

See appendix A for biochemical target ranges.

Bicarb – bicarbonate; Ca – calcium; Hb – haemoglobin; Phos – phosphate; PTH – parathyroid hormone

**Table 8.18** Median estimated glomerular filtration rate (eGFR) in paediatric patients (<16 years old) prevalent to Tx on 31/12/2020 by time since transplantation and age group

Time since transplantation	Age group (yrs)					
	0-<5		5-<12		12-<16	
	N	Median eGFR (mL/min/1.73 m <sup>2</sup> )	N	Median eGFR (mL/min/1.73 m <sup>2</sup> )	N	Median eGFR (mL/min/1.73 m <sup>2</sup> )
< 3 mths	2		9		3	
0.25-<2 years	16	75	36	63	35	61
2-<4 years	4		54	72	32	63
4-<7 years			68	61	44	55
≥ 7 years			31	53	74	49
<b>Total (IQR)</b>	<b>22</b>	<b>71 (59-83)</b>	<b>201</b>	<b>61 (47-79)</b>	<b>192</b>	<b>56 (41-67)</b>

IQR – interquartile range

## Transfer to adult kidney services for prevalent paediatric KRT patients

Seventy-six paediatric patients transitioned to adult kidney centres in 2020. The median age of patients at transfer was 18.0 years with an IQR of 17.6–18.4 years. Overall, the demographics of this population reflected those of the prevalent paediatric KRT population.

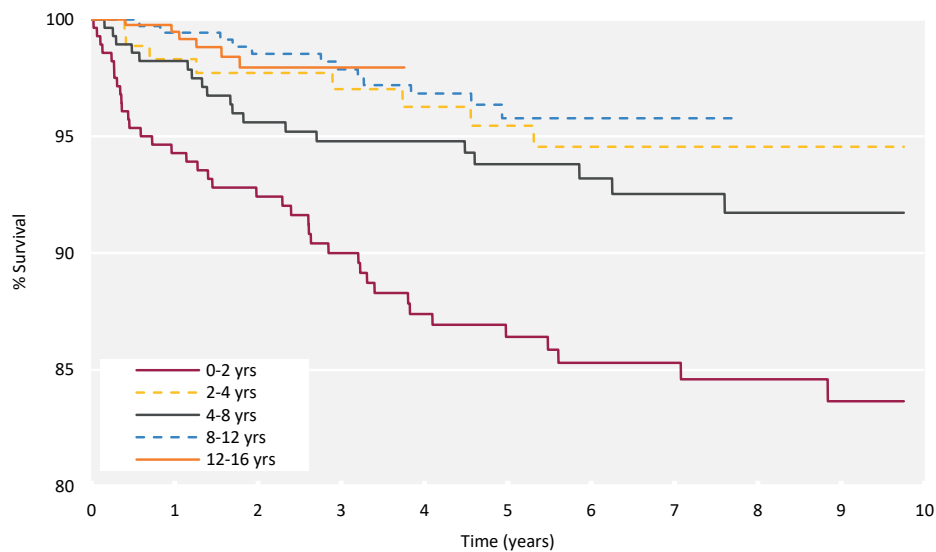
## Survival in paediatric KRT patients

Of patients aged <16 years, 1,596 started KRT between 2006 and 2019 at paediatric kidney centres and were included in survival analyses, to allow at least one year follow-up. At the end of 2020, 86 deaths had been reported in these children before they reached 16 years of age and when still under the care of a paediatric kidney centre. Patients included in the analysis must have been alive on KRT for 90 days. The median follow-up time (beyond day 90) was 3.84 years (range 8 days to 14.7 years).

**Table 8.19** Survival of incident paediatric KRT patients (<16 years old) at 1 year intervals of KRT by age at start of KRT

Survival	Age group (yrs)				
	0-<2	2-<4	4-<8	8-<12	12-<16
Survival at 1 year (%)	94.3	98.3	98.2	99.4	99.5
95% CI	90.8-96.5	94.8-99.5	95.8-99.3	97.8-99.9	97.9-99.9
Survival at 2 years (%)	92.4	97.7	95.6	98.5	97.9
95% CI	88.6-95	94-99.1	92.4-97.5	96.5-99.4	95.4-99.1
Survival at 3 years (%)	90.0	97.0	94.8	97.9	97.9
95% CI	85.7-93	93-98.8	91.4-96.9	95.6-99	95.4-99.1
Survival at 4 years (%)	87.4	96.3	94.8	96.8	
95% CI	82.7-90.9	91.8-98.3	91.4-96.9	94.2-98.3	
Survival at 5 years (%)	86.4	95.5	93.8	95.8	
95% CI	81.5-90.1	90.6-97.8	90.1-96.2	92.5-97.6	

CI – confidence interval



**Figure 8.16** Unadjusted Kaplan-Meier survival (from day 90) of incident paediatric KRT patients (<16 years old) between 2006 and 2019 by age group at start of KRT

The 8–12 yrs and 12–16 yrs lines stop before 10 years, because the analysis was censored at age 16 years.

# Analyses – young people

## KRT incidence and prevalence in young people

Table 8.20 reports the numbers of young people who started KRT in 2020 (incidence) as well as those on KRT as of 31/12/2020 (prevalence) in both paediatric and adult centres, as an estimated total pmarp and grouped by sex, ethnicity and PRD. For incident young people, start modality is reported; current treatment modality is reported for prevalent patients.

**Table 8.20** Demographics of young people (16–<18 years) incident to KRT in 2020 and/or prevalent to KRT on 31/12/2020, by care setting

Characteristic	Incident			Prevalent		
	Paediatric centres	Adult centres	All	Paediatric centres	Adult centres	All
N	13	13	26	184	24	208
pmarp			17.8			142.1
Median age (yrs)	16.4	16.9	16.6	17.0	17.7	17.1
% male	53.9	53.9	53.9	63.0	75.0	64.4
<b>Ethnicity<sup>1</sup> (%)</b>						
White	58.3	63.6	60.9	67.0	57.1	65.2
Asian	25.0	9.1	17.4	18.4	23.8	19.8
Black	0.0	27.3	13.0	7.8	19.1	10.1
Other	16.7	0.0	8.7	6.7	0.0	4.8
Missing	7.7	15.4	11.5	2.7	12.5	3.8
<b>PRD<sup>1</sup> (%)</b>						
Tubulointerstitial disease	25.0	30.0	27.8	46.8	45.0	46.6
Glomerular disease	37.5	10.0	22.2	19.7	10.0	18.7
Familial/hereditary nephropathies	12.5	10.0	11.1	17.9	10.0	17.1
Systemic diseases affecting the kidney	12.5	10.0	11.1	4.6	5.0	4.7
Miscellaneous kidney disorders	12.5	40.0	27.8	11.0	30.0	13.0
Missing	38.6	23.1	30.8	6.0	16.7	7.2
<b>Modality (%)</b>						
HD	38.5	76.9	57.7	10.9	29.2	13.0
PD	46.2	15.4	30.8	7.1	20.8	8.7
Tx	15.4	7.7	11.5	82.1	50.0	78.4

<sup>1</sup>Percentages by ethnicity and PRD were calculated for those with data (excluding patients with missing data).

pmarp – per million age-related population; PRD – primary renal disease

Table 8.21 details the number and type of centres (adult or paediatric) that have contributed to the incident and prevalent numbers reported. The small proportion of adult centres identified may reflect that young people are often directed to centres with an established transition programme for early adult care; however, under-reporting of young people may also account for this finding.

**Table 8.21** Number of centres that submitted data for young people (16–<18 years) incident to KRT in 2020 and/or prevalent to KRT on 31/12/2020, by care setting

	Incident	Prevalent
Paediatric centres	7 out of 13	13 out of 13
Adult centres	12 out of 68	16 out of 68

## Transplant parameters in young people

The median values for age, creatinine and eGFR, and the proportion with an eGFR <30 mL/min/1.73 m<sup>2</sup> for young people prevalent to Tx on 31/12/2020 are presented by care setting (adult or paediatric centre).

**Table 8.22** Measures of graft function in young people (16–<18 years) prevalent to Tx on 31/12/2020, by care setting

	N on Tx	Median age (yrs)	N with creatinine data	Creatinine (µmol/L)	Median FAS-eGFR (mL/min/1.73m <sup>2</sup> )	% FAS-eGFR <30 mL/min/1.73m <sup>2</sup>	% creatinine completeness
Paediatric centres	151	17.0	151	111	68	3.3	100.0
Adult centres	12	18.0	11	121	63	0.0	91.7

Table 8.23 reports the median eGFR for all young people prevalent to Tx on 31/12/2020 by time since transplantation. Small numbers preclude further analysis by care setting (adult or paediatric centre).

**Table 8.23** Estimated glomerular filtration rate (eGFR) in young people (16–<18 years) prevalent to Tx on 31/12/2020 by time since transplantation

Time since transplantation	N	Median FAS-eGFR (mL/min/1.73m <sup>2</sup> )
< 3 months	1	
0.25–<2 years	33	75
2–<4 years	26	73
4–<7 years	32	68
≥ 7 years	65	60
<b>Total (IQR)</b>	<b>157</b>	<b>68 (54-85)</b>

eGFR – estimated glomerular filtration rate; FAS – Full Age Spectrum

## Biochemical and blood pressure measures in young people

Table 8.24 shows attainment of biochemical and blood pressure measures for young people prevalent to dialysis and transplant on 31/12/2020 for the total population and by care setting (adult or paediatric). Attainment of targets including haemoglobin, calcium, phosphate and bicarbonate are shown; median systolic and diastolic blood pressure values and the percentage of young people with blood pressure values within 'normal' range or that are 'high' are also reported. Data completeness was satisfactory (>70%) for the majority of biochemical parameters, although a higher proportion of incomplete blood pressure data was noted among young people managed in adult centres.

**Table 8.24** Attainment of biochemical and blood pressure measures in young people (16–<18 years) prevalent to KRT on 31/12/2020, by modality and care setting

Characteristic	Dialysis			Tx		
	Paediatric centres	Adult centres	All	Paediatric centres	Adult centres	All
N	33	12	45	151	12	163
Median (IQR) Hb (g/L)	111 (100-123)	112 (103-118)	111 (100-123)	130 (116-141)		129 (116-141)
% Hb <100g/L	24.2	20	23.3	5.8		5.6
Median (IQR) Ca (mmol/L)	2.5 (2.4-2.6)	2.5 (2.2-2.6)	2.5 (2.3-2.6)	2.4 (2.3-2.5)	2.4 (2.4-2.5)	2.4 (2.3-2.5)
% Ca in range	69.7	58.3	66.7	92.7	90.9	92.6
Median (IQR) Phos (mmol/L)	1.8 (1.4-2.1)	1.7 (1.4-2.1)	1.8 (1.4-2.1)	1.2 (1-1.3)	1.1 (1-1.2)	1.2 (1-1.3)
% phos in range	30.3	33.3	31.1	71.3	54.5	70.2
Median (IQR) bicarb (mmol/L)	26 (24-28)	24.5 (23-27)	25 (24-27)	23 (21-25)	26 (25-29)	24 (21-26)
% bicarb in range	66.7	58.3	64.1	71.7	60	70.8
Median (IQR) SBP (mmHg)	120 (112-131)		126 (112-135)	118 (110-124)		118 (110-125)
Median (IQR) DBP (mmHg)	79 (69-89)		75 (67-88)	72 (66-79)		72 (66-79)
% 'normal' BP range (<130/80 mmHg)	45.8		41.9	68.1		66.7
% high BP (≥140/90 mmHg)	33.3		35.5	3.4		4.9

bicarb – bicarbonate; BP – blood pressure; Ca – calcium; DBP – diastolic blood pressure; Hb – haemoglobin; IQR – inter-quartile range; phos – phosphate; SBP – systolic blood pressure

## *Abbreviations*

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# **UK kidney centre abbreviations and other shortened forms used in the 24th Annual Report**



# UK kidney centre abbreviations

## Adult kidney centres

Abbreviation	City	Hospital
ENGLAND		
Bham	Birmingham	Heartlands Hospital and Queen Elizabeth Hospital
Basldn	Basildon	Basildon Hospital
Bradfd	Bradford	St Luke's Hospital
Brightn	Brighton	Royal Sussex County Hospital
Bristol	Bristol	Southmead Hospital
Camb	Cambridge	Addenbrooke's Hospital
Carlis	Carlisle	Cumberland Infirmary
Carsh	Carshalton	St Helier Hospital
Chelms	Chelmsford	Broomfield Hospital
Colchr	Colchester	Colchester General Hospital
Covnt	Coventry	University Hospital Coventry and Warwick
Derby	Derby	Royal Derby Hospital
Donc	Doncaster	Doncaster Royal Infirmary
Dorset	Dorchester	Dorset County Hospital
Dudley	Dudley	Russells Hall Hospital
Exeter	Exeter	Royal Devon and Exeter Hospital
Glouc	Gloucester	Gloucestershire Royal Hospital
Hull	Hull	Hull Royal Infirmary
Ipswi	Ipswich	Ipswich Hospital
Kent	Kent	Kent and Canterbury Hospital
L Barts	London	St Bartholomew's Hospital and The Royal London Hospital
L Guys	London	Guy's Hospital and St Thomas' Hospital
L Kings	London	King's College Hospital
L Rfree	London	Royal Free, Middlesex and UCL Hospitals
L St.G	London	St George's Hospital and Queen Mary's Hospital
L West	London	Hammersmith, Charing Cross and St Mary's Hospitals
Leeds	Leeds	St James's University Hospital and Leeds General Infirmary
Leic	Leicester	Leicester General Hospital
Liv Ain	Liverpool	Aintree University Hospital
Liv Roy	Liverpool	Royal Liverpool University Hospital
M RI	Manchester	Manchester Royal Infirmary
Middlbr	Middlesbrough	The James Cook University Hospital
Newc	Newcastle	Freeman Hospital and Royal Victoria Infirmary
Norwch	Norwich	Norfolk and Norwich University Hospital
Nottm	Nottingham	Nottingham City Hospital
Oxford	Oxford	Oxford Radcliffe Hospital
Plymth	Plymouth	Derriford Hospital
Ports	Portsmouth	Queen Alexandra Hospital
Prestn	Preston	Royal Preston Hospital
Redng	Reading	Royal Berkshire Hospital
Salford	Salford	Salford Royal Hospital
Sheff	Sheffield	Northern General Hospital
Shrew	Shrewsbury	Royal Shrewsbury Hospital
Stevng	Stevenage	Lister Hospital
Sthend	Southend	Southend Hospital
Stoke	Stoke	University Hospital of North Staffordshire
Sund	Sunderland	Sunderland Royal Hospital
Truro	Truro	Royal Cornwall Hospital
Wirral	Birkenhead	Arrowe Park Hospital

## Adult kidney centres Continued

Abbreviation	City	Hospital
Wolve	Wolverhampton	New Cross Hospital
York	York	York District General Hospital
NORTHERN IRELAND		
Antrim	Antrim	Antrim Hospital (Northern Trust)
Belfast	Belfast	Belfast City Hospital
Newry	Newry	Daisy Hill Hospital (Southern Trust)
Ulster	Belfast	Ulster Hospital
West NI	Londonderry and Omagh	Tyrone County Hospital (Western Trust)
SCOTLAND		
Abrdn	Aberdeen	Aberdeen Royal Infirmary
Airdrie	Airdrie	Monklands Hospital
D&Gall	Dumfries	Dumfries and Galloway Royal Infirmary
Dundee	Dundee	Ninewells Hospital
Edinb	Edinburgh	Royal Infirmary of Edinburgh
Glasgw	Glasgow	Queen Elizabeth University, Glasgow Royal Infirmary and Stobhill Hospitals
Inverns	Inverness	Raigmore Hospital
Klmarnk	Kilmarnock	University Hospital Crosshouse
Krkldy	Kirkcaldy	Victoria Hospital
WALES		
Bangor	Bangor	Ysbyty Gwynedd
Cardff	Cardiff	University Hospital of Wales
Clwyd	Clwyd	Ysbyty Glan Clwyd Hospital
Swanse	Swansea	Morrison Hospital
Wrexm	Wrexham	Wrexham Maelor Hospital

## Paediatric kidney centres

Abbreviation	City	Hospital
ENGLAND		
Bham_P	Birmingham	Birmingham Children's Hospital
Brstl_P	Bristol	Bristol Royal Hospital for Children
L Eve_P	London	Evelina London Children's Hospital
L GOSH_P	London	Great Ormond Street Hospital for Children
Leeds_P	Leeds	Leeds Children's Hospital
Livpl_P	Liverpool	Alder Hey Children's Hospital
Manch_P	Manchester	Royal Manchester Children's Hospital
Newc_P	Newcastle	Great North Children's Hospital
Nottm_P	Nottingham	Nottingham Children's Hospital
Soton_P	Southampton	Southampton Children's Hospital
NORTHERN IRELAND		
Blfst_P	Belfast	Royal Belfast Hospital for Sick Children
SCOTLAND		
Glasg_P	Glasgow	Royal Hospital for Children Glasgow
WALES		
Cardf_P	Cardiff	Children's Kidney Centre University Hospital Wales

## Other shortened forms

AKI	acute kidney injury
APD	automated peritoneal dialysis
AVF	arteriovenous fistula
AVG	arteriovenous graft
Bicarb	bicarbonate
BMI	body mass index
Ca	calcium
CAKUT	congenital abnormalities of the kidneys and urinary tract
CAPD	continuous ambulatory peritoneal dialysis
CC	conservative care
<i>C. difficile</i>	<i>Clostridium difficile</i>
Chol	cholesterol
CI	confidence interval
CKD	chronic kidney disease
CL	confidence limit
Creat	creatinine
DBD	donor after brain death
DBP	diastolic blood pressure
DCD	donor after circulatory death
E	England
<i>E. coli</i>	<i>Escherichia coli</i>
eGFR	estimated glomerular filtration rate
ESA	erythropoiesis stimulating agent
ESKD	end-stage kidney disease
FAS	Full Age Spectrum
Ferr	ferritin
Hb	haemoglobin
HbA1c	glycated haemoglobin
HD	haemodialysis
HHD	home haemodialysis
ICHD	in-centre haemodialysis
IQR	interquartile range
IV	intravenous
K	potassium
KDIGO	Kidney Disease: Improving Global Outcomes
KRT	kidney replacement therapy
LKD	living kidney donor
MRSA	methicillin-resistant <i>Staphylococcus aureus</i>
MSSA	methicillin-sensitive <i>Staphylococcus aureus</i>
NHSBT	NHS Blood and Transplant

NI	Northern Ireland
NTL	non-tunnelled line
PD	peritoneal dialysis
PEDW	Patient Episode Database for Wales
Phos	phosphate
pmarp	per million age-related population
pmp	per million population
PRD	primary renal disease
PTH	parathyroid hormone
SBP	systolic blood pressure
SD	standard deviation
TL	tunnelled line
Tx	transplant
UKHSA	UK Health Security Agency
UKRDC	UK Renal Data Collaboration
UKRR	UK Renal Registry
URR	urea reduction ratio
W	Wales

# Prepared by UK Kidney Association staff

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# UK Renal Registry 24th Annual Report

Data to 31/12/2020

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## The UK Renal Registry

The UKRR was established by the Renal Association in 1995 (now the UK Kidney Association after merging with the British Renal Society in 2020) to collate data centrally from all adult UK kidney centres to improve the care of patients with end-stage kidney disease. Although originally limited to patients on kidney replacement therapies (KRT) – dialysis treatments and kidney transplant recipients – the UKRR now collects cases of acute kidney injury in primary and secondary care and cases of advanced chronic kidney disease in secondary care not on dialysis. Data on children on KRT have been collated by the UKRR since 2009. The UKRR team manages data collection, analysis and reporting on both new and existing patients on KRT each year. The UK Kidney Association has an active and involved Patient Council. Each year the UKRR publishes an annual report comprising centre comparisons, attainment of the UK Kidney Association audit standards, national averages and long term trends.



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