

## *Chapter 7*

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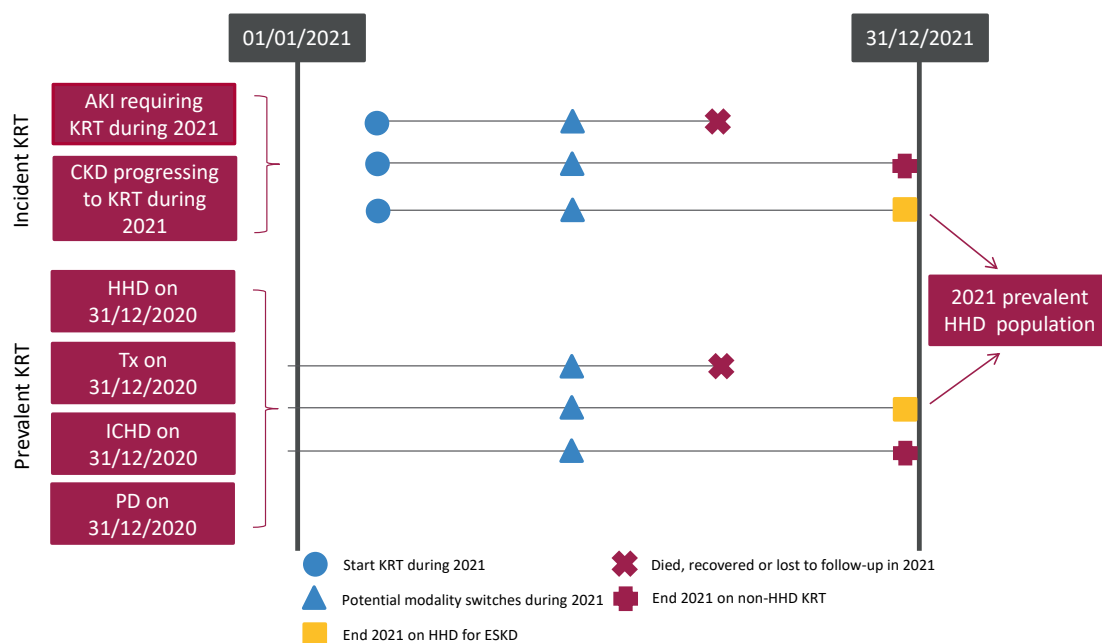
# **Adults on home haemodialysis (HHD) in the UK at the end of 2021**

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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 2021 (figure 7.1). This population comprises patients who were on HHD at the end of 2020 and remained on HHD throughout 2021, as well as patients who commenced/re-commenced HHD in 2021. This latter group includes both incident kidney replacement therapy (KRT) patients who ended 2021 on HHD and prevalent KRT patients who switched to HHD from in-centre haemodialysis (ICHD), peritoneal dialysis (PD), or a transplant (Tx) in 2021. 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 2021 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 2021 or if they had been on KRT for  $\geq 90$  days and were on HHD at the end of 2021  
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 available through the UKRR data portal ([ukkidney.org/audit-research/data-portals](http://ukkidney.org/audit-research/data-portals)).

# Rationale for analyses

The analyses begin with a description of the 2021 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 2021 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 who are not iron replete with a serum ferritin <200 µg/L	Table 7.7
	Proportion of patients with haemoglobin 100–120 g/L	
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.

Exeter was unable to submit patient level data for 2021. Aggregate numbers by modality were provided, enabling inclusion in Tables 7.2 and 7.3. Exeter is excluded from all other analyses.

## Key findings

- 1,396 adult patients were receiving HHD for ESKD in the UK on 31/12/2021, which represented 2.0% of the KRT population.
- The median age of HHD patients was 56.0 years and 62.8% were male.
- The median adjusted calcium for HHD patients was 2.4 mmol/L and 14.6% were above the target range 2.2–2.5 mmol/L.
- The median pre-dialysis bicarbonate for HHD patients was 23 mmol/L and 77.3% were within the target range 18–26 mmol/L.
- The median pre-dialysis potassium for HHD patients was 4.9 mmol/L and 78.6% were within the target range 4.0–6.0 mmol/L.
- The median ferritin for HHD patients was 344 µg/L and 28.8% had a ferritin <200 µg/L.
- The median haemoglobin for HHD patients was 109 g/L and 24.6% had a haemoglobin <100 g/L.
- There was no cause of death data available for 38.3% of deaths. For those with data, the leading cause of death in patients less than 65 years and those older than 65 years was cardiac disease at 35.6% and 29.4% respectively.

# 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).

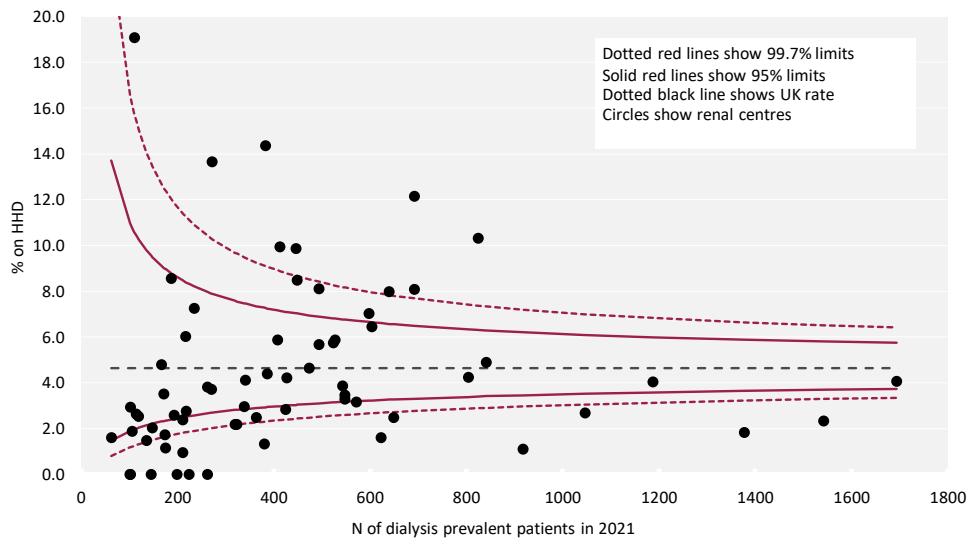
**Table 7.2** Number of prevalent adult HHD patients and proportion of adult KRT patients on HHD by year and by centre; number of HHD patients as a proportion of the catchment population

Centre	N on HHD					% on HHD					Estimated catchment population (millions)	2021 crude rate (pmp)
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021		
ENGLAND												
Bham	75	68	76	76	69	2.4	2.1	2.3	2.3	2.1	2.05	34
Bradfd	9	9	6	6	7	1.3	1.3	0.8	0.8	1.0	0.49	14
Brightn	41	39	32	31	30	4.1	3.7	3.0	2.9	2.7	1.08	28
Bristol	17	15	16	17	18	1.2	1.0	1.1	1.2	1.2	1.22	15
Camb	26	32	32	26	24	1.9	2.3	2.2	1.7	1.5	0.94	26
Carlis	0	0	0	2	3	0.0	0.0	0.0	0.7	1.0	0.26	12
Carsh	27	29	35	28	28	1.6	1.7	2.0	1.5	1.5	1.63	17
Colchr	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.29	0
Covnt	14	22	20	20	22	1.4	2.3	1.9	1.8	2.0	0.80	28
Derby	52	53	58	63	55	9.4	9.0	8.9	9.3	8.0	0.56	98
Donc	9	9	5	5	5	2.7	2.7	1.5	1.5	1.5	0.38	13
Dorset	10	13	15	16	14	1.4	1.7	1.9	2.0	1.8	0.73	19
Dudley	13	12	12	9	10	3.6	3.3	3.3	2.4	2.5	0.34	29
EssexMS	15	17	24	29	21	1.8	2.0	2.8	3.3	2.3	0.99	21
Exeter	13	19	21	19	16	1.2	1.8	1.9	1.7	1.5	0.95	17
Glouc	5	0	0	0	0	1.0	0.0	0.0	0.0	0.0	0.51	0
Hull	6	5	7	7	12	0.7	0.6	0.8	0.8	1.3	0.80	15
Ipswi	8	5	4	3	2	1.8	1.2	0.9	0.7	0.5	0.31	6
Kent	21	18	20	18	18	1.9	1.6	1.8	1.6	1.5	1.07	17
L Barts	31	36	20	25	25	1.2	1.4	0.8	0.9	0.9	1.59	16
L Guys	42	38	45	48	41	1.9	1.7	1.9	2.1	1.8	1.01	41
L Kings	20	17	17	22	34	1.7	1.4	1.4	1.8	2.5	0.93	36
L Rfree	17	12	11	10	10	0.8	0.5	0.5	0.4	0.4	1.33	8
L St.G	5	6	6	6	5	0.6	0.7	0.7	0.7	0.6	0.67	8
L West	12	20	29	35	36	0.3	0.6	0.8	1.0	1.0	1.96	18
Leeds	23	23	26	22	16	1.4	1.4	1.5	1.3	0.9	1.37	12
Leic	72	64	54	50	48	3.1	2.6	2.1	1.9	1.8	2.09	23
Liv Ain	14	18	15	13	13	6.7	8.3	6.6	5.4	4.9	0.43	30
Liv Roy	39	39	39	47	44	3.1	3.1	3.1	3.9	3.6	0.81	54
M RI	77	74	75	71	84	3.8	3.6	3.7	3.6	4.0	1.33	63
Middlbr	12	13	19	18	17	1.3	1.4	2.0	1.9	1.8	0.81	21
Newc	21	22	19	15	18	1.9	1.9	1.6	1.3	1.5	0.95	19
Norwch	14	13	14	13	10	1.8	1.6	1.7	1.6	1.3	0.69	14
Nottm	34	34	31	32	28	2.9	2.8	2.5	2.6	2.3	0.93	30
Oxford	16	21	25	17	19	0.9	1.1	1.3	0.8	0.9	1.45	13
Plymth	10	10	7	0	0	1.8	1.9	1.3	0.0	0.0	0.40	0
Ports	65	70	70	83	85	3.7	4.0	3.7	4.4	4.4	1.75	49
Prestn	49	43	49	47	42	3.9	3.3	3.7	3.4	3.0	1.23	34
Redng	6	9	8	8	9	0.8	1.1	0.9	0.9	1.0	0.70	13
Salford	41	35	41	40	31	3.7	3.0	3.3	3.2	2.6	1.15	27
Sheff	50	49	55	61	56	3.5	3.3	3.7	4.1	3.7	1.13	49

**Table 7.2** Continued

Centre	N on HHD					% on HHD					Estimated catchment population (millions)	2021 crude rate (pmp)
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021		
Shrew	22	20	27	36	37	5.7	4.7	6.2	8.4	8.4	0.41	90
Stevng	30	43	36	31	39	3.4	4.6	3.7	3.2	3.8	1.11	35
Stoke	29	25	31	39	41	3.6	3.1	3.8	4.8	4.9	0.73	56
Sund	21	22	12	9	10	3.9	3.9	2.1	1.6	1.8	0.55	18
Truro	9	3	4	4	5	2.1	0.7	0.9	0.9	1.1	0.36	14
Wirral	9	8	8	7	6	2.3	2.0	1.9	1.7	1.5	0.47	13
Wolve	33	34	33	31	38	5.7	5.6	5.4	4.7	5.5	0.55	69
York	13	17	16	18	17	2.3	3.0	2.7	3.1	2.9	0.49	35
N IRELAND												
Antrim	4	4	4	4	2	1.6	1.5	1.4	1.4	0.7	0.25	8
Belfast	8	10	13	10	8	0.9	1.1	1.5	1.1	0.9	0.53	15
Newry	3	2	2	4	3	1.2	0.8	0.8	1.5	1.1	0.24	13
Ulster	1	0	0	0	0	0.5	0.0	0.0	0.0	0.0	0.20	0
West NI	3	2	1	3	3	1.0	0.6	0.3	0.9	0.9	0.25	12
SCOTLAND												
Abrdn	4	4	3	2	2	0.7	0.7	0.5	0.4	0.3	0.50	4
Airdrie	2	0	0	0	0	0.4	0.0	0.0	0.0	0.0	0.46	0
D&Gall	2	1	2	1	1	1.5	0.7	1.3	0.6	0.6	0.12	8
Dundee	2	8	7	6	6	0.5	1.8	1.6	1.4	1.5	0.37	16
Edinb	4	3	2	3	7	0.5	0.3	0.2	0.3	0.8	0.84	8
Glasgw	15	18	18	11	10	0.8	1.0	1.0	0.6	0.5	1.37	7
Inverns	5	7	7	3	2	1.9	2.5	2.5	1.1	0.7	0.22	9
Klmarnk	10	13	14	14	16	3.0	3.8	3.9	3.8	4.4	0.29	55
Krkldy	0	0	2	3	3	0.0	0.0	0.7	1.0	1.0	0.27	11
WALES												
Bangor	11	13	15	13	21	5.6	6.4	7.5	6.0	9.7	0.16	128
Cardff	38	34	33	34	51	2.3	2.0	1.9	2.0	3.0	1.16	44
Clwyd	2	2	2	0	0	1.1	1.1	1.0	0.0	0.0	0.18	0
Swanse	34	36	45	44	40	4.3	4.4	5.2	5.2	4.7	0.76	53
Wrexm	5	6	7	7	3	1.5	1.9	2.3	2.2	1.0	0.21	14
TOTALS												
England	1,197	1,203	1,225	1,233	1,218	2.2	2.1	2.1	2.1	2.1	44.77	27
N Ireland	19	18	20	21	16	1.0	0.9	1.0	1.1	0.8	1.47	11
Scotland	44	54	55	43	47	0.9	1.0	1.0	0.8	0.9	4.45	11
Wales	90	91	102	98	115	2.8	2.8	3.1	3.0	3.5	2.49	46
<b>UK</b>	<b>1,350</b>	<b>1,366</b>	<b>1,402</b>	<b>1,395</b>	<b>1,396</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.0</b>	<b>2.0</b>	<b>53.19</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) Exeter was unable to submit patient level data but provided aggregate numbers of patients on KRT at the end of 2021 by treatment modality  
pmp – per million population



**Figure 7.2** Percentage of adult patients prevalent to dialysis on 31/12/2021 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 31/12/2021 by centre

Centre	N on KRT	N on HHD	% on HHD	Median age (yrs)	% male	Ethnicity				
						% White	% Asian	% Black	% Other	% missing
ENGLAND										
Bham	3,309	69	2.1	55.0	73.9	64.7	19.1	10.3	5.9	1.4
Bradfd	735	7	1.0	57.1	57.1	100.0	0.0	0.0	0.0	0.0
Brightn	1,092	30	2.7	58.6	66.7	96.6	3.4	0.0	0.0	3.3
Bristol	1,497	18	1.2	59.8	38.9	100.0	0.0	0.0	0.0	0.0
Camb	1,629	24	1.5	56.8	79.2	91.7	0.0	8.3	0.0	0.0
Carlis	305	3	1.0	52.2	66.7	100.0	0.0	0.0	0.0	0.0
Carsh	1,907	28	1.5	59.1	67.9	82.1	7.1	10.7	0.0	0.0
Colchr	145	0	0.0							
Covnt	1,119	22	2.0	54.3	72.7	81.8	13.6	4.5	0.0	0.0
Derby	689	55	8.0	63.1	70.9	83.6	14.5	1.8	0.0	0.0
Donc	339	5	1.5	54.3	60.0	100.0	0.0	0.0	0.0	0.0
Dorset	786	14	1.8	65.2	78.6	100.0	0.0	0.0	0.0	0.0
Dudley	398	10	2.5	55.2	70.0	100.0	0.0	0.0	0.0	0.0
EssexMS	895	21	2.3	58.4	47.6	89.5	10.5	0.0	0.0	9.5
Exeter	1,077	16	1.5							
Glouc	546	0	0.0							
Hull	919	12	1.3	45.0	66.7	91.7	0.0	0.0	8.3	0.0
Ipswi	421	2	0.5	56.5	0.0	100.0	0.0	0.0	0.0	0.0
Kent	1,192	18	1.5	55.9	55.6	94.4	0.0	0.0	5.6	0.0
L Barts	2,750	25	0.9	56.2	48.0	48.0	12.0	36.0	4.0	0.0
L Guys	2,322	41	1.8	49.5	53.7	53.7	9.8	36.6	0.0	0.0
L Kings	1,334	34	2.5	54.9	67.6	50.0	2.9	44.1	2.9	0.0
L Rfree	2,380	10	0.4	52.2	80.0	50.0	10.0	40.0	0.0	0.0
L St.G	866	5	0.6	47.4	60.0	80.0	0.0	20.0	0.0	0.0
L West	3,556	36	1.0	55.3	50.0	38.9	16.7	38.9	5.6	0.0
Leeds	1,784	16	0.9	49.2	68.8	100.0	0.0	0.0	0.0	0.0
Leic	2,640	48	1.8	57.4	72.9	84.4	11.1	4.4	0.0	6.3
Liv Ain	264	13	4.9	56.7	69.2	100.0	0.0	0.0	0.0	0.0
Liv Roy	1,207	44	3.6	51.2	47.7	90.7	0.0	2.3	7.0	2.3
M RI	2,077	84	4.0	52.5	65.5	62.8	7.7	26.9	2.6	7.1
Middlbr	955	17	1.8	53.7	47.1	88.2	0.0	0.0	11.8	0.0
Newc	1,226	18	1.5	61.2	66.7	94.4	5.6	0.0	0.0	0.0
Norwch	784	10	1.3	62.5	50.0	100.0	0.0	0.0	0.0	0.0
Nottm	1,220	28	2.3	55.7	32.1	82.1	3.6	10.7	3.6	0.0
Oxford	2,003	19	0.9	62.5	47.4	88.9	0.0	11.1	0.0	5.3
Plymth	548	0	0.0							
Ports	1,941	85	4.4	58.9	65.9	93.5	3.9	1.3	1.3	9.4
Prestn	1,379	42	3.0	55.3	54.8	90.5	7.1	2.4	0.0	0.0
Redng	877	9	1.0	54.7	55.6	50.0	0.0	37.5	12.5	11.1
Salford	1,215	31	2.6	53.7	64.5	90.3	0.0	9.7	0.0	0.0
Sheff	1,496	56	3.7	56.0	51.8	87.5	5.4	3.6	3.6	0.0
Shrew	442	37	8.4	62.1	70.3	94.6	0.0	2.7	2.7	0.0
Stevng	1,014	39	3.8	57.5	64.1	79.5	7.7	10.3	2.6	0.0
Stoke	845	41	4.9	55.7	70.7	92.5	0.0	5.0	2.5	2.4
Sund	547	10	1.8	59.1	70.0	100.0	0.0	0.0	0.0	10.0
Truro	461	5	1.1	56.3	40.0	100.0	0.0	0.0	0.0	0.0
Wirral	412	6	1.5	52.7	100.0	83.3	16.7	0.0	0.0	0.0
Wolve	691	38	5.5	52.4	78.9	86.8	10.5	2.6	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
York	581	17	2.9	55.2	82.4	100.0	0.0	0.0	0.0	0.0
N IRELAND										
Antrim	296	2	0.7	65.3	100.0	100.0	0.0	0.0	0.0	0.0
Belfast	911	8	0.9	55.2	75.0	100.0	0.0	0.0	0.0	0.0
Newry	281	3	1.1	67.8	100.0	100.0	0.0	0.0	0.0	0.0
Ulster	203	0	0.0							
West NI	339	3	0.9	53.5	33.3	100.0	0.0	0.0	0.0	0.0
SCOTLAND										
Abrdn	578	2	0.3	44.3	0.0					50.0
Airdrie	504	0	0.0							
D&Gall	154	1	0.6	56.3	0.0					100.0
Dundee	411	6	1.5	66.3	66.7					66.7
Edinb	926	7	0.8	36.6	57.1					57.1
Glasgw	1,865	10	0.5	54.2	80.0					60.0
Inverns	278	2	0.7	54.8	50.0					50.0
Klmarnk	365	16	4.4	63.0	56.3					81.3
Krkldy	295	3	1.0	78.5	66.7					100.0
WALES										
Bangor	217	21	9.7	49.0	76.2	100.0	0.0	0.0	0.0	9.5
Cardff	1,700	51	3.0	60.8	54.9	94.0	2.0	4.0	0.0	2.0
Clwyd	204	0	0.0							
Swanse	853	40	4.7	56.9	60.0	100.0	0.0	0.0	0.0	0.0
Wrexm	300	3	1.0	63.8	33.3	100.0	0.0	0.0	0.0	0.0
TOTALS										
England	58,817	1,218	2.1	55.6	63.1	81.5	6.3	10.1	2.1	2.2
N Ireland	2,030	16	0.8	58.6	75.0	100.0	0.0	0.0	0.0	0.0
Scotland	5,376	47	0.9	60.0	59.6					70.2
Wales	3,274	115	3.5	57.6	60.0	97.3	0.9	1.8	0.0	2.6
<b>UK</b>	<b>69,497</b>	<b>1,396</b>	<b>2.0</b>	<b>56.0</b>	<b>62.8</b>	<b>83.2</b>	<b>5.8</b>	<b>9.2</b>	<b>1.9</b>	<b>4.5</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  
Exeter was unable to submit patient level data but provided aggregate numbers of patients on KRT at the end of 2021 by treatment modality

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 31/12/2021

PRD	N on HHD	% HHD population	Age <65 yrs		Age ≥65 yrs		M/F ratio
			N	%	N	%	
Diabetes	186	14.1	124	12.4	62	19.0	1.6
Glomerulonephritis	344	26.0	293	29.4	51	15.6	2.1
Hypertension	73	5.5	52	5.2	21	6.4	3.1
Polycystic kidney disease	149	11.3	110	11.0	39	12.0	1.6
Pyelonephritis	135	10.2	101	10.1	34	10.4	1.3
Renal vascular disease	22	1.7	8	0.8	14	4.3	2.1
Other	266	20.1	207	20.8	59	18.1	1.4
Uncertain aetiology	148	11.2	102	10.2	46	14.1	1.6
<b>Total (with data)</b>	<b>1,323</b>	<b>100.0</b>	<b>997</b>	<b>100.0</b>	<b>326</b>	<b>100.0</b>	
Missing	57	4.1	41	3.9	16	4.7	1.6

## 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.

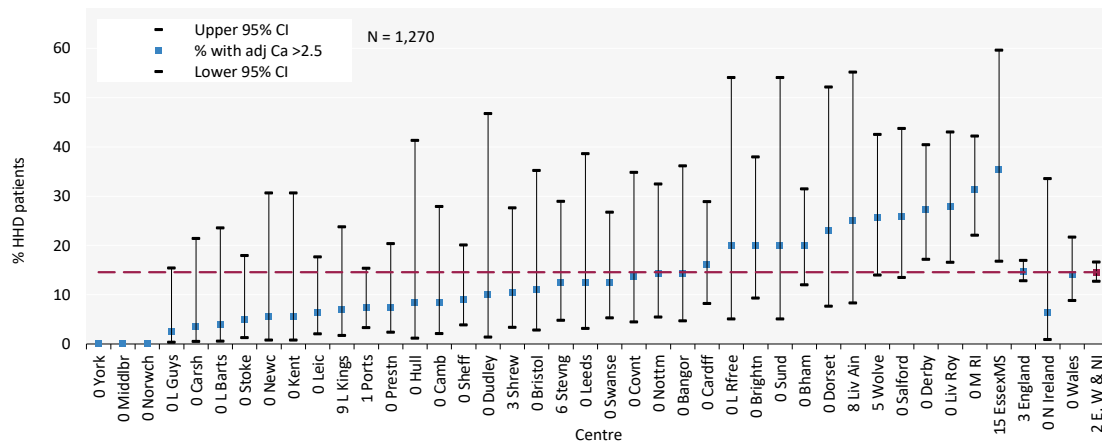
**Table 7.5** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients prevalent to HHD on 31/12/2021 by centre

Centre	Median adj Ca (mmol/L)	% adj Ca 2.2-2.5 mmol/L	% adj Ca >2.5 mmol/L	% data completeness
ENGLAND				
Bham	2.4	72.3	20.0	100.0
Bradfd				100.0
Brightn	2.4	73.3	20.0	100.0
Bristol	2.4	88.9	11.1	100.0
Camb	2.3	79.2	8.3	100.0
Carlis				100.0
Carsh	2.3	85.7	3.6	100.0
Colchr				
Covnt	2.3	59.1	13.6	100.0
Derby	2.4	67.3	27.3	100.0
Donc				100.0
Dorset	2.4	76.9	23.1	100.0
Dudley	2.5	80.0	10.0	100.0
EssexMS	2.4	58.8	35.3	85.0
Exeter				
Glouc				
Hull	2.4	83.3	8.3	100.0
Ipswi				100.0
Kent	2.3	61.1	5.6	100.0
L Barts	2.3	84.0	4.0	100.0
L Guys	2.3	78.1	2.4	100.0
L Kings	2.3	86.2	6.9	90.6
L Rfree	2.4	60.0	20.0	100.0
L St.G				100.0
L West				66.7
Leeds	2.3	87.5	12.5	100.0
Leic	2.4	77.1	6.3	100.0
Liv Ain	2.5	75.0	25.0	92.3
Liv Roy	2.5	65.1	27.9	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	65.0	31.3	100.0
Middlbr	2.3	94.1	0.0	100.0
Newc	2.4	88.9	5.6	100.0
Norwch	2.3	90.0	0.0	100.0
Nottm	2.4	85.7	14.3	100.0
Oxford				68.4
Plymth				
Ports	2.4	84.2	7.3	98.8
Prestn	2.3	90.2	7.3	100.0
Redng				100.0
Salford	2.4	64.5	25.8	100.0
Sheff	2.3	76.4	9.1	100.0
Shrew	2.4	75.9	10.3	96.7
Stoke	2.4	92.5	5.0	100.0
Sund	2.3	60.0	20.0	100.0
Truro				100.0
Wirral				100.0
Wolve	2.4	68.6	25.7	94.6
York	2.3	94.1	0.0	100.0
N IRELAND				
Antrim				100.0
Belfast				100.0
Newry				100.0
Ulster				
West NI				100.0
WALES				
Bangor	2.4	76.2	14.3	100.0
Cardff	2.4	76.0	16.0	100.0
Clwyd				
Swanse	2.4	82.5	12.5	100.0
Wrexm				100.0
TOTALS				
England	2.4	76.0	14.7	97.4
N Ireland	2.4	87.5	6.3	100.0
Wales	2.4	79.0	14.0	100.0
<b>E, W &amp; NI</b>	<b>2.4</b>	<b>76.4</b>	<b>14.6</b>	<b>97.6</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 31/12/2021 with adjusted calcium (Ca) above the target range (>2.5 mmol/L) by centre

CI – confidence interval

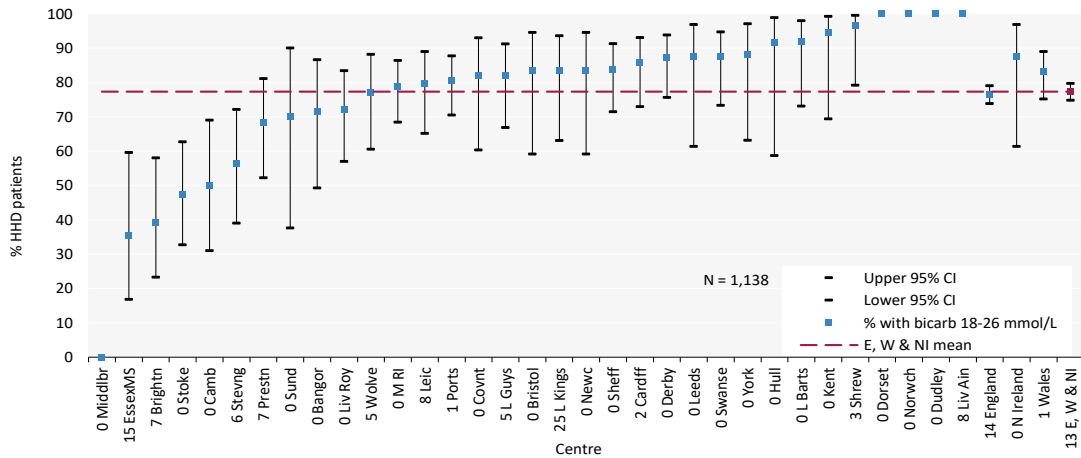
**Table 7.6** Median pre-dialysis potassium and bicarbonate and percentage attaining target ranges in adult patients prevalent to HHD on 31/12/2021 by centre

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 complete	Median (mmol/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% data complete
<b>ENGLAND</b>										
Bham	4.6	20.0	76.9	3.1	100.0					69.2
Bradfd					100.0					100.0
Brightn					0.0	27	0.0	39.3	60.7	93.3
Bristol	4.7	11.1	88.9	0.0	100.0	21	5.6	83.3	11.1	100.0
Camb	5.0	4.2	83.3	12.5	100.0	27	0.0	50.0	50.0	100.0
Carlis					0.0					100.0
Carsh					0.0					0.0
Colchr										
Covnt					0.0	24	9.1	81.8	9.1	100.0
Derby	4.5	16.4	83.6	0.0	100.0	23	7.3	87.3	5.5	100.0
Donc					100.0					100.0
Dorset	5.1	0.0	92.3	7.7	100.0	22	0.0	100.0	0.0	100.0
Dudley	5.0	0.0	100.0	0.0	100.0	23	0.0	100.0	0.0	100.0
EssexMS	4.0	45.0	55.0	0.0	100.0	27	0.0	35.3	64.7	85.0
Exeter										
Glouc										
Hull	5.2	8.3	91.7	0.0	100.0	24	0.0	91.7	8.3	100.0
Ipswi					0.0					100.0
Kent	3.8	61.1	38.9	0.0	100.0	20	5.6	94.4	0.0	100.0
L Barts	5.4	12.0	76.0	12.0	100.0	20	8.0	92.0	0.0	100.0
L Guys	4.4	22.0	73.2	4.9	100.0	24	2.6	82.1	15.4	95.1
L Kings	5.1	3.6	67.9	28.6	87.5	21	12.5	83.3	4.2	75.0
L Rfree	5.6	20.0	40.0	40.0	100.0					80.0
L St.G					0.0					60.0
L West					0.0					30.6
Leeds	5.0	0.0	81.3	18.8	100.0	23	0.0	87.5	12.5	100.0
Leic	5.2	14.6	77.1	8.3	100.0	24	0.0	79.6	20.5	91.7
Liv Ain					0.0	23	0.0	100.0	0.0	92.3
Liv Roy					0.0	24	2.3	72.1	25.6	100.0
M RI					0.0	24	1.3	78.8	20.0	100.0
Middlbr	5.2	11.8	82.4	5.9	100.0	34	0.0	0.0	100.0	100.0
Newc					0.0	24	0.0	83.3	16.7	100.0

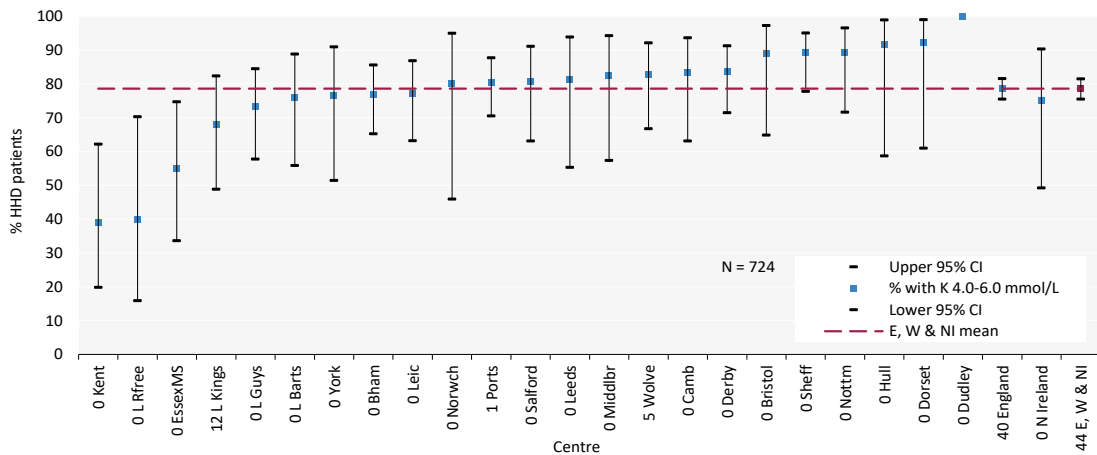
**Table 7.6** Continued

Centre	Pre-dialysis potassium					Pre-dialysis bicarbonate				
	Median (mmol/L)	% <4.0 mmol/L	% 4.0–6.0 mmol/L	% >6.0 mmol/L	% data complete	Median (mmol/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% data complete
Norwch	5.4	0.0	80.0	20.0	100.0	23	0.0	100.0	0.0	100.0
Nottm	5.1	3.6	89.3	7.1	100.0					32.1
Oxford					68.4					68.4
Plymth										
Ports	4.6	17.1	80.5	2.4	98.8	24	1.2	80.5	18.3	98.8
Prestn					0.0	23	10.5	68.4	21.1	92.7
Redng					0.0					100.0
Salford	4.6	16.1	80.7	3.2	100.0					0.0
Sheff	5.2	3.6	89.1	7.3	100.0	22	7.3	83.6	9.1	100.0
Shrew					0.0	21	3.5	96.6	0.0	96.7
Sthend										
Stoke					0.0	27	0.0	47.5	52.5	100.0
Sund					0.0	22	10.0	70.0	20.0	100.0
Truro					100.0					100.0
Wirral					0.0					100.0
Wolve	4.9	11.4	82.9	5.7	94.6	19	17.1	77.1	5.7	94.6
York	5.5	0.0	76.5	23.5	100.0	23	0.0	88.2	11.8	100.0
<b>N IRELAND</b>										
Antrim					100.0					100.0
Belfast					100.0					100.0
Newry					100.0					100.0
Ulster										
West NI					100.0					100.0
<b>WALES</b>										
Bangor					0.0	24	0.0	71.4	28.6	100.0
Cardff					0.0	23	0.0	85.7	14.3	98.0
Clwyd										
Swanse					0.0	23	5.0	87.5	7.5	100.0
Wrexm					0.0					100.0
<b>TOTALS</b>										
England	4.9	14.0	78.7	7.3	60.5	23	3.8	76.5	19.7	86.2
N Ireland	5.2	12.5	75.0	12.5	100.0	23	0.0	87.5	12.5	100.0
Wales					0.0	23	1.8	83.2	15.0	99.1
<b>E, W &amp; NI</b>	<b>4.9</b>	<b>14.0</b>	<b>78.6</b>	<b>7.5</b>	<b>55.7</b>	<b>23</b>	<b>3.5</b>	<b>77.3</b>	<b>19.2</b>	<b>87.5</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 31/12/2021 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 31/12/2021 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 31/12/2021 by centre

Centre	Haemoglobin				Ferritin		
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <200 µg/L	% data completeness
ENGLAND							
Bham	112	16.9	23.1	100.0	526	21.5	100.0
Bradfd				100.0			100.0
Brightn	103	36.7	20.0	100.0	417	13.3	100.0
Bristol	111	5.6	16.7	100.0	454	16.7	100.0
Camb				8.3			4.2
Carlis				100.0			100.0
Carsh	108	14.3	25.0	100.0	359	17.9	100.0
Colchr							
Covnt	105	27.3	27.3	100.0	340	22.7	100.0
Derby	113	9.1	29.1	100.0	556	7.3	100.0
Donc				100.0			100.0
Dorset	113	15.4	15.4	100.0	340	23.1	100.0
Dudley	114	20.0	10.0	100.0			0.0
EssexMS	109	30.0	30.0	100.0	208	47.4	95.0
Exeter							
Glouc							
Hull	118	8.3	33.3	100.0	370	25.0	100.0
Ipswi				100.0			100.0
Kent	108	27.8	16.7	100.0	161	61.1	100.0
L Barts	107	24.0	12.0	100.0	718	4.0	100.0
L Guys	107	29.3	19.5	100.0	430	22.5	97.6
L Kings	103	34.5	17.2	90.6	487	13.8	90.6
L Rfree	111	10.0	30.0	100.0	450	20.0	100.0
L St.G				100.0			100.0
L West	105	30.8	15.4	72.2	220	40.7	75.0
Leeds	101	50.0	6.3	100.0	260	43.8	100.0
Leic	111	16.7	18.8	100.0	245	31.3	100.0
Liv Ain				69.2	180	61.5	100.0
Liv Roy				67.4	287	34.9	100.0
M RI	110	28.8	27.5	100.0	239	37.5	100.0
Middlbr	107	23.5	11.8	100.0	669	17.6	100.0
Newc	113	22.2	22.2	100.0	607	5.6	100.0
Norwch	112	10.0	30.0	100.0	235	50.0	100.0
Nottm	106	28.6	7.1	100.0	349	32.1	100.0
Oxford	114	28.6	14.3	73.7	555	10.5	100.0
Plymth							
Ports	112	26.8	25.6	98.8	328	33.7	100.0
Prestn	112	14.6	12.2	100.0	487	9.8	100.0
Redng				100.0			100.0
Salford	109	16.1	12.9	100.0	176	56.7	96.8
Sheff	106	36.4	10.9	100.0	479	23.6	100.0
Shrew	111	20.7	24.1	96.7	317	31.0	96.7
Stevng	116	33.3	36.4	97.1	402	11.8	100.0
Stoke	112	17.5	25.0	100.0	347	22.5	100.0
Sund	114	20.0	0.0	100.0	453	20.0	100.0
Truro				100.0			100.0

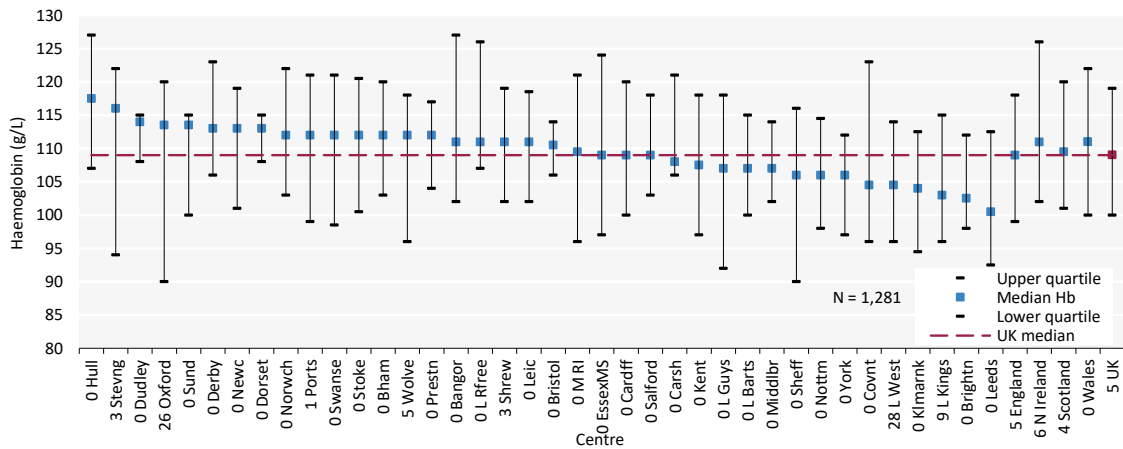


**Table 7.7** Continued

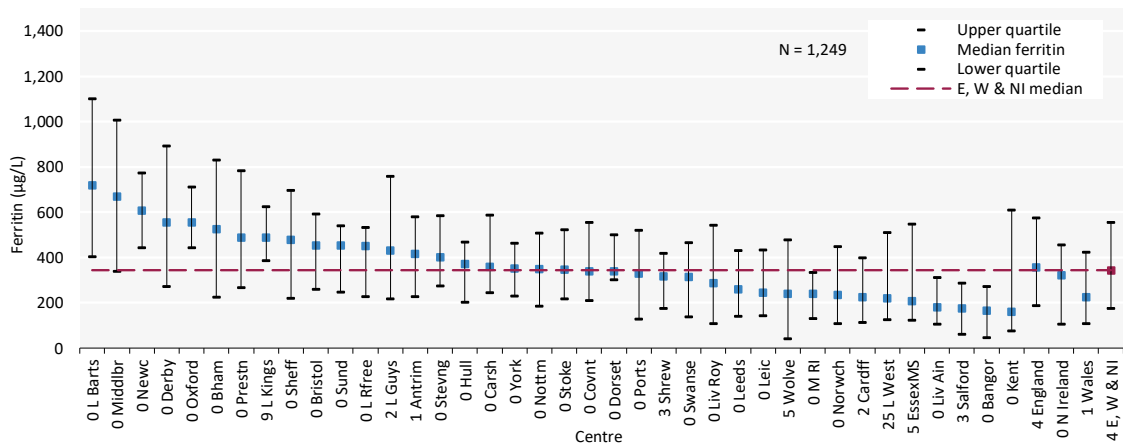
Centre	Haemoglobin			Ferritin			
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <200 µg/L	% data completeness
Wirral				83.3			100.0
Wolve	112	28.6	17.1	94.6	240	42.9	94.6
York	106	35.3	11.8	100.0	351	23.5	100.0
N IRELAND							
Antrim				100.0			100.0
Belfast				100.0			100.0
Newry				100.0			100.0
Ulster							
West NI				66.7			100.0
SCOTLAND							
Abrdn				100.0			
Airdrie							
D&Gall				100.0			
Dundee				100.0			
Edinb				85.7			
Glasgw				90.0			
Inverns				100.0			
Klmarnk	104	37.5	0.0	100.0			
Krkldy				100.0			
WALES							
Bangor	111	19.0	33.3	100.0	164	57.1	100.0
Cardff	109	24.0	24.0	100.0	224	44.9	98.0
Clwyd							
Swanse	112	25.0	27.5	100.0	314	40.0	100.0
Wrexm				100.0			100.0
TOTALS							
England	109	25.1	20.0	94.5	357	27.1	95.6
N Ireland	111	13.3	26.7	93.8	321	31.3	100.0
Scotland	110	21.1	21.1	95.7			0.0
Wales	111	22.8	27.2	100.0	225	45.1	99.1
<b>UK</b>	<b>109</b>	<b>24.6</b>	<b>20.7</b>	<b>95.0</b>	<b>344</b>	<b>28.8</b>	<b>96.0</b>

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

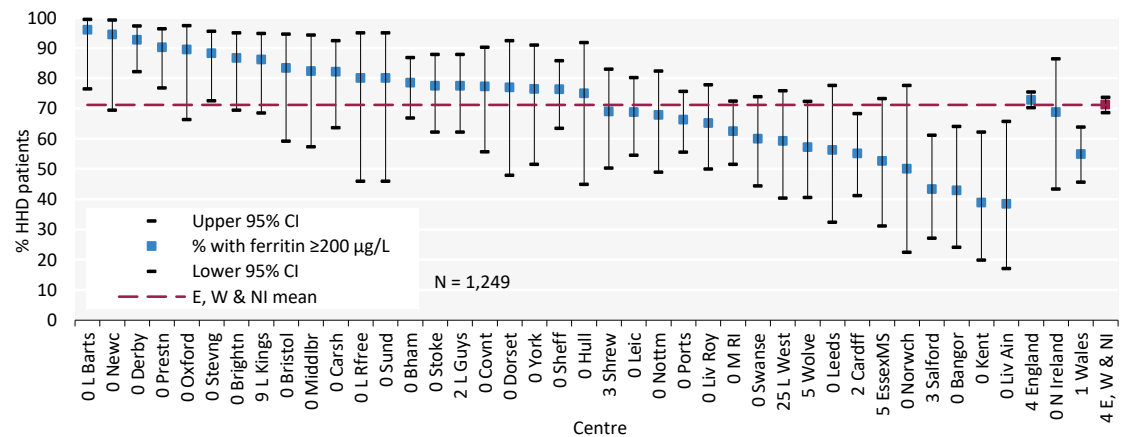
UK National average for ferritin does not include Scotland



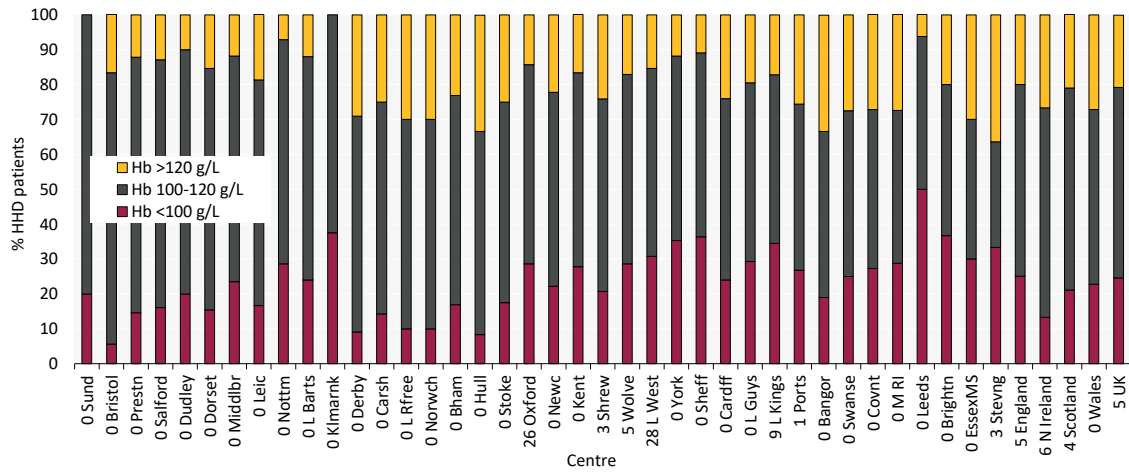
**Figure 7.6** Median haemoglobin (Hb) in adult patients prevalent to HHD on 31/12/2021 by centre



**Figure 7.7** Median ferritin in adult patients prevalent to HHD on 31/12/2021 by centre



**Figure 7.8** Percentage of adult patients prevalent to HHD on 31/12/2021 with ferritin <200 µg/L by centre  
CI – confidence interval



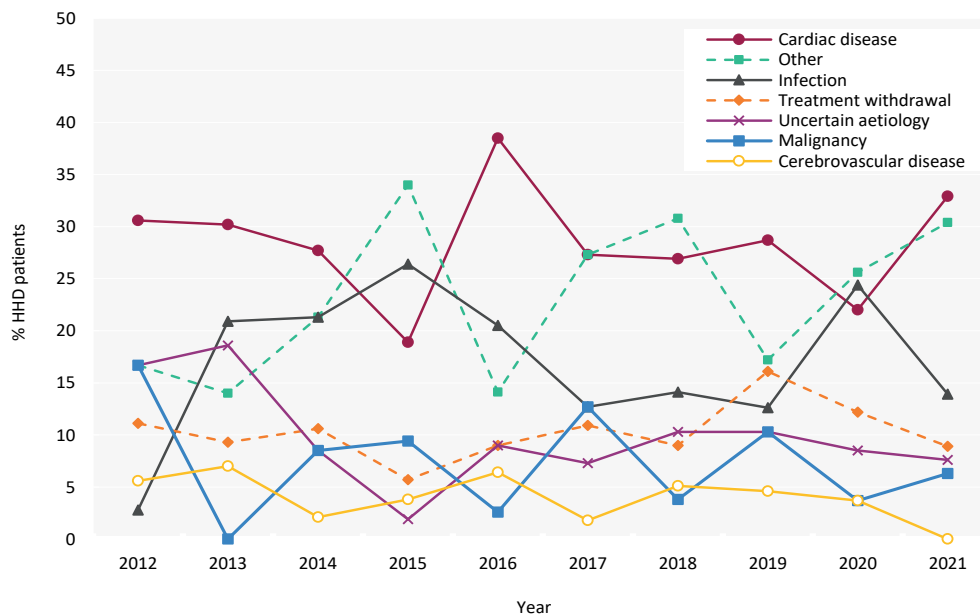
**Figure 7.9** Distribution of haemoglobin (Hb) in adult patients prevalent to HHD on 31/12/2021 by centre

## Cause of death in adult HHD patients

Cause of death was analysed in prevalent patients receiving HHD on 31/12/2020 and followed-up for one year in 2021. 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 31/12/2020 followed-up in 2021 by age group

Cause of death	HHD all ages		HHD < 65 years		HHD ≥ 65 years	
	N	%	N	%	N	%
Cardiac disease	26	32.9	16	35.6	10	29.4
Cerebrovascular disease	0	0.0	0	0.0	0	0.0
Infection	11	13.9	7	15.6	4	11.8
Malignancy	5	6.3	2	4.4	3	8.8
Treatment withdrawal	7	8.9	4	8.9	3	8.8
Other	24	30.4	12	26.7	12	35.3
Uncertain aetiology	6	7.6	4	8.9	2	5.9
<b>Total (with data)</b>	<b>79</b>	<b>100.0</b>	<b>45</b>	<b>100.0</b>	<b>34</b>	<b>100.0</b>
Missing	49	38.3	25	35.7	24	41.4



**Figure 7.10** Cause of death between 2012 and 2021 for adult patients prevalent to HHD at the beginning of the year