

## *Chapter 7*

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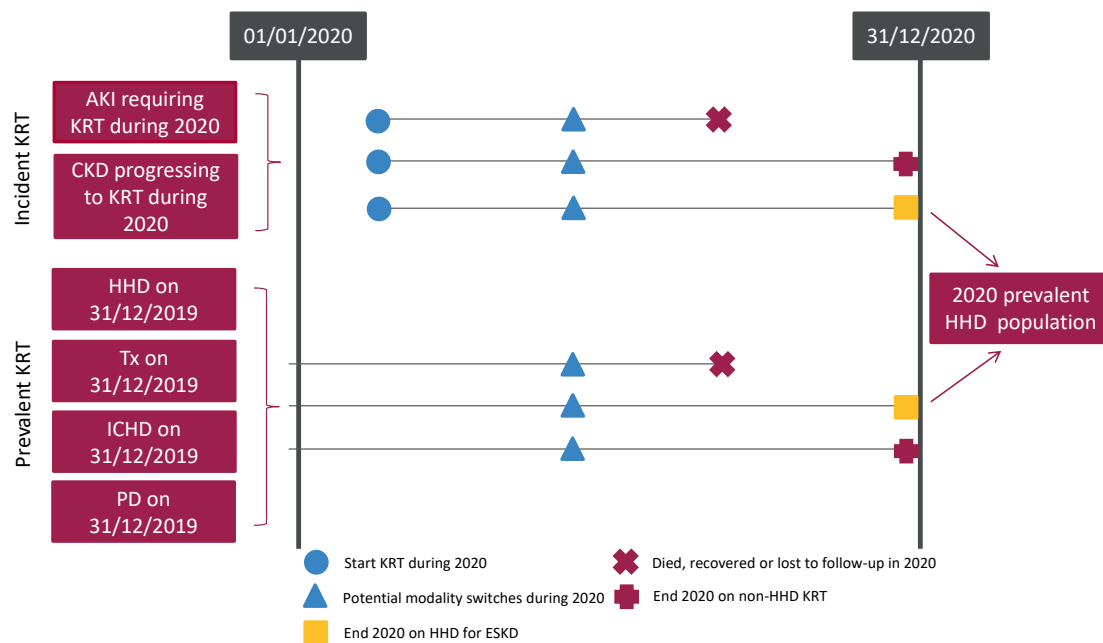
# **Adults on home haemodialysis (HHD) in the UK at the end of 2020**

# Contents

Introduction .....	2
Rationale for analyses .....	3
Key findings .....	4
Analyses .....	5
Changes to the prevalent adult HHD population .....	5
Demographics of prevalent adult HHD patients .....	8
Biochemistry parameters in prevalent adult HHD patients .....	10
Anaemia in prevalent adult HHD patients .....	15
Cause of death in adult HHD patients .....	19

# 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).

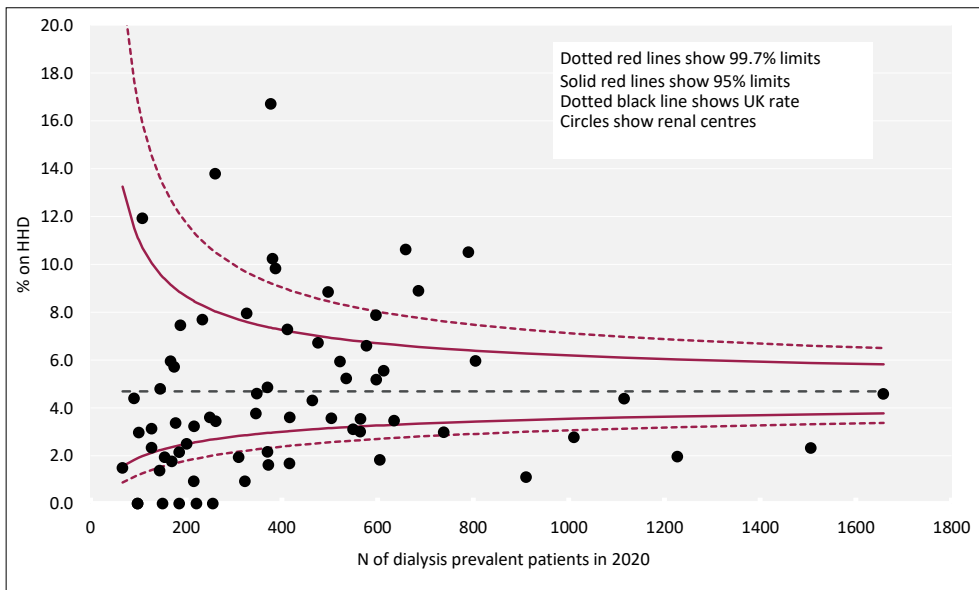
**Table 7.2** Number of prevalent adult HHD patients and proportion of adult KRT patients on HHD by year and by centre; number of HHD patients as a proportion of the catchment population

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 York	643	30	4.7	50.9	80.0	76.7	16.7	3.3	3.3	0.0
	572	18	3.1	50.8	72.2	94.4	0.0	5.6	0.0	0.0
N IRELAND										
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
SCOTLAND										
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
WALES										
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
TOTALS										
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.

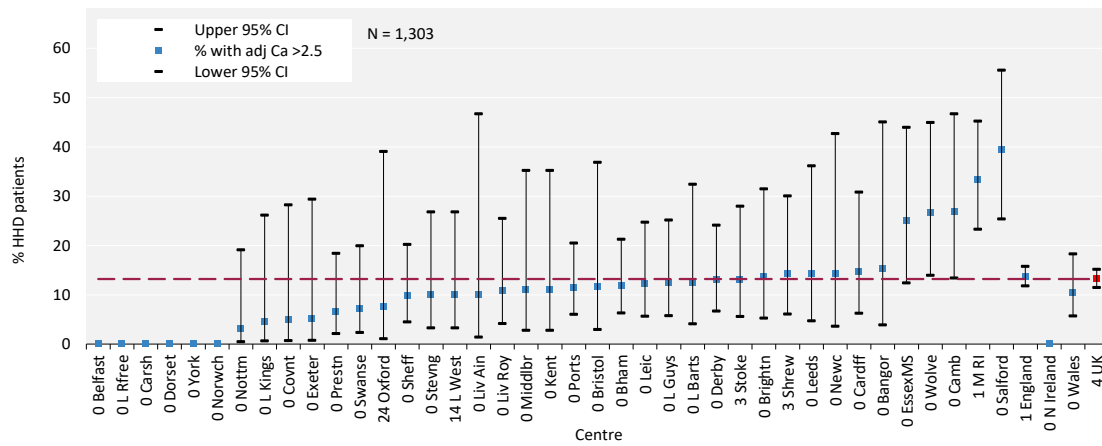
**Table 7.5** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients prevalent to HHD on 31/12/2020 by centre

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

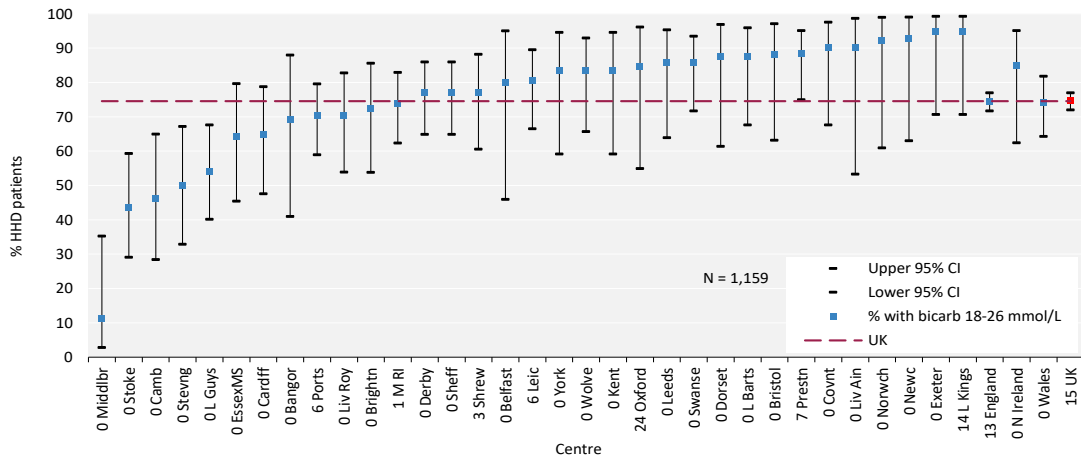
Centre	Pre-dialysis potassium					Pre-dialysis bicarbonate				
	Median (mmol/L)	% <4.0 mmol/L	% 4.0–6.0 mmol/L	% >6.0 mmol/L	% data completeness	Median (mmol/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% data completeness
ENGLAND										
Bham	4.4	19.7	75.0	5.3	100.0					60.5
Bradfd					100.0					100.0
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

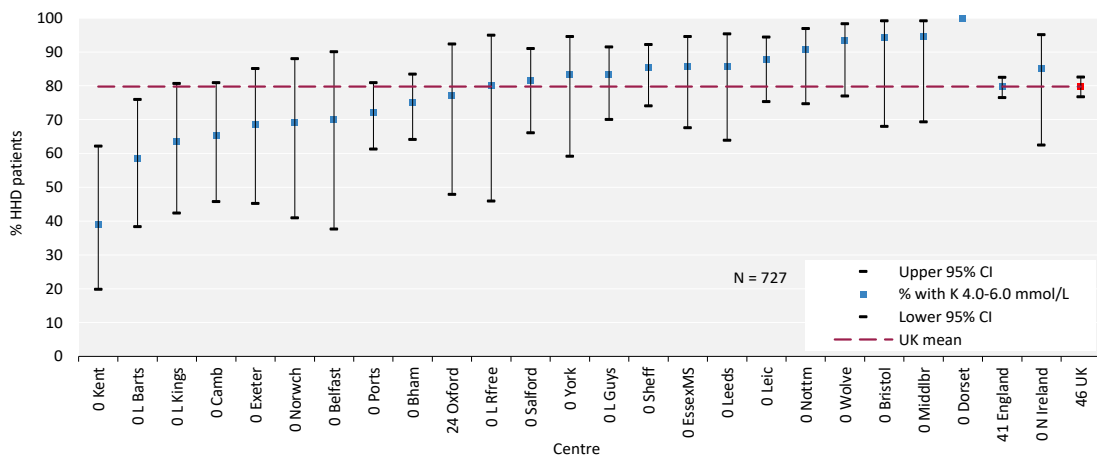
**Table 7.6** Continued

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
N IRELAND										
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
SCOTLAND										
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
WALES										
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
TOTALS										
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

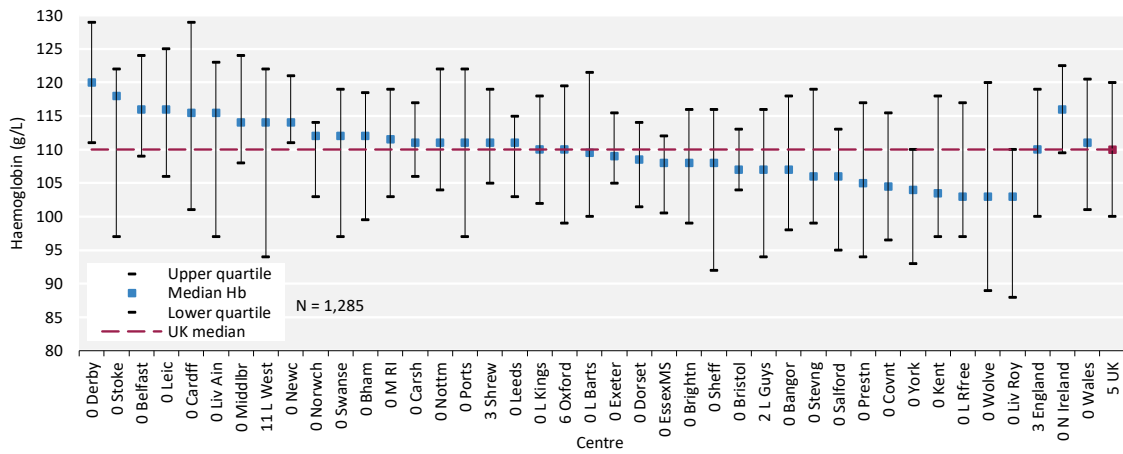
Centre	Haemoglobin				Ferritin		
	Median (g/L)	% <100 g/L	% >120 g/L	% data completeness	Median (µg/L)	% <100 µg/L	% data completeness
ENGLAND							
Bham	112	25.0	21.1	100.0	335	6.6	100.0
Bradfd				100.0			100.0
Brightn	108	27.6	10.3	100.0	428	10.7	96.6
Bristol	107	5.9	17.6	100.0	280	0.0	100.0
Camb				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



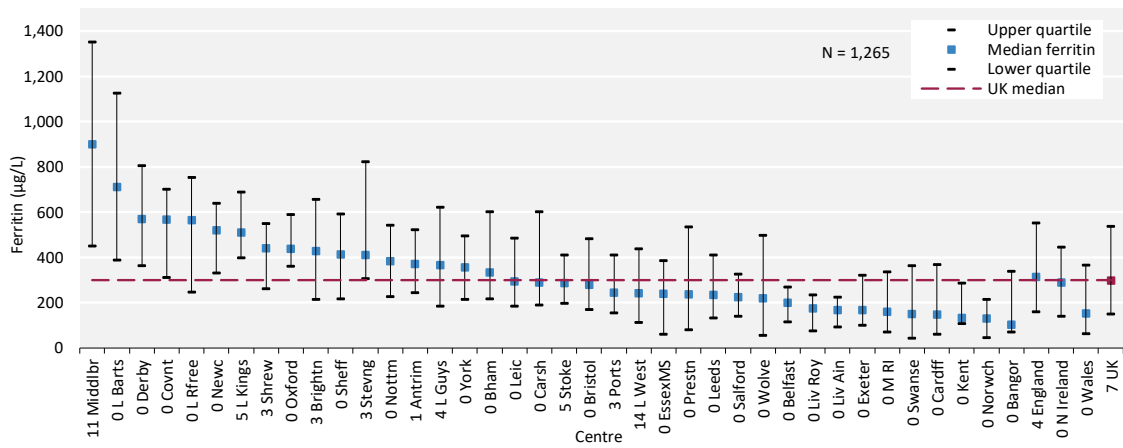
**Table 7.7** Continued

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
N IRELAND							
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
SCOTLAND							
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
WALES							
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
TOTALS							
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>

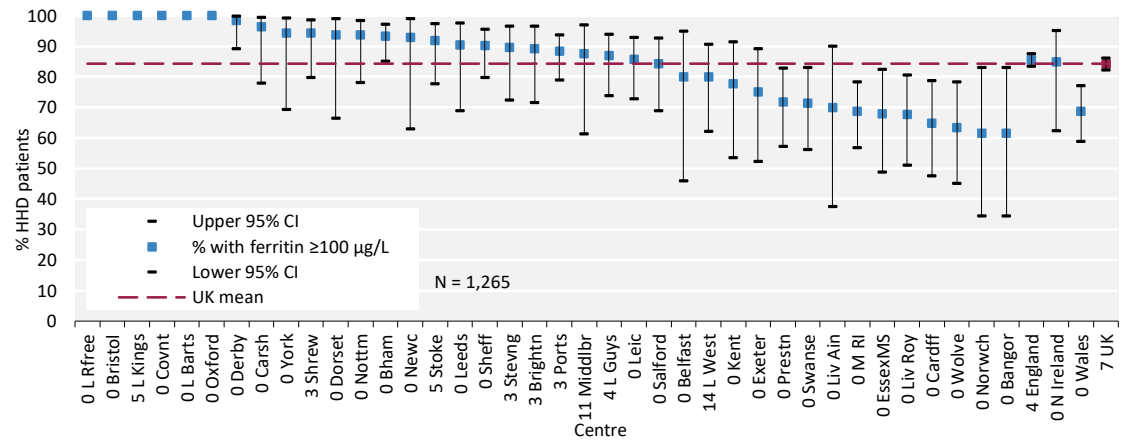
Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%.



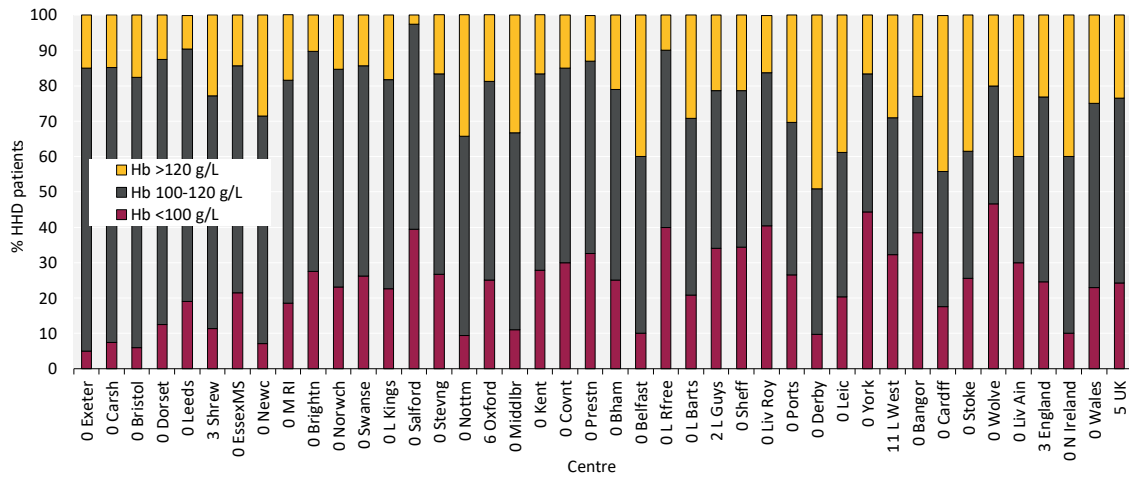
**Figure 7.6** Median haemoglobin (Hb) in adult patients prevalent to HHD on 31/12/2020 by centre



**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



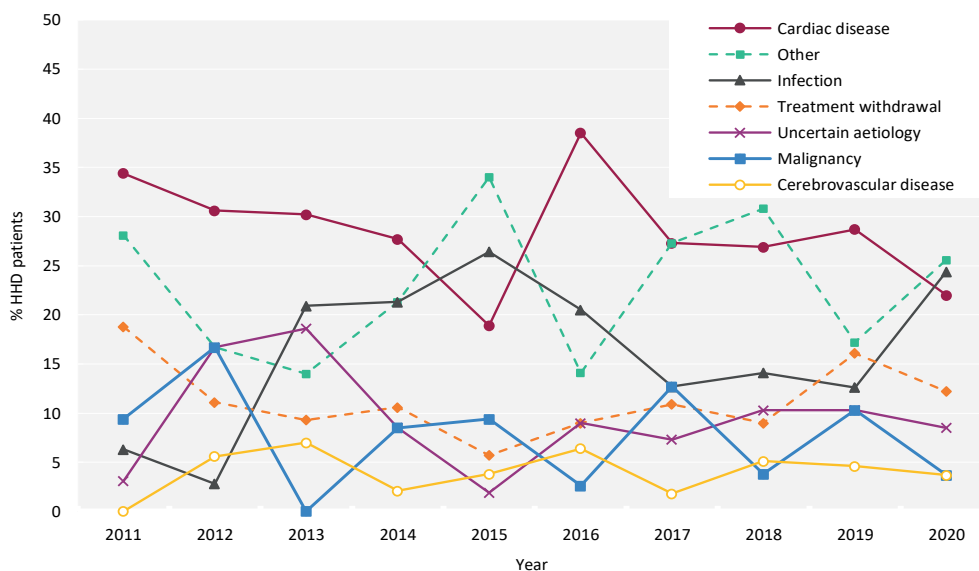
**Figure 7.9** Distribution of haemoglobin (Hb) in adult patients prevalent to HHD on 31/12/2020 by centre

## 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