

Chapter 5

Adults on in-centre haemodialysis (ICHHD) in the UK at the end of 2019

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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 2019 (figure 5.1). This population comprises patients who were on ICHD at the end of 2018 and remained on ICHD throughout 2019, as well as patients who commenced/re-commenced ICHD in 2019. This latter group includes both incident renal replacement therapy (RRT) patients who ended 2019 on ICHD and prevalent RRT patients who switched to ICHD from home haemodialysis (HHD), peritoneal dialysis (PD), or a transplant (Tx) in 2019. 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 RRT, 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.

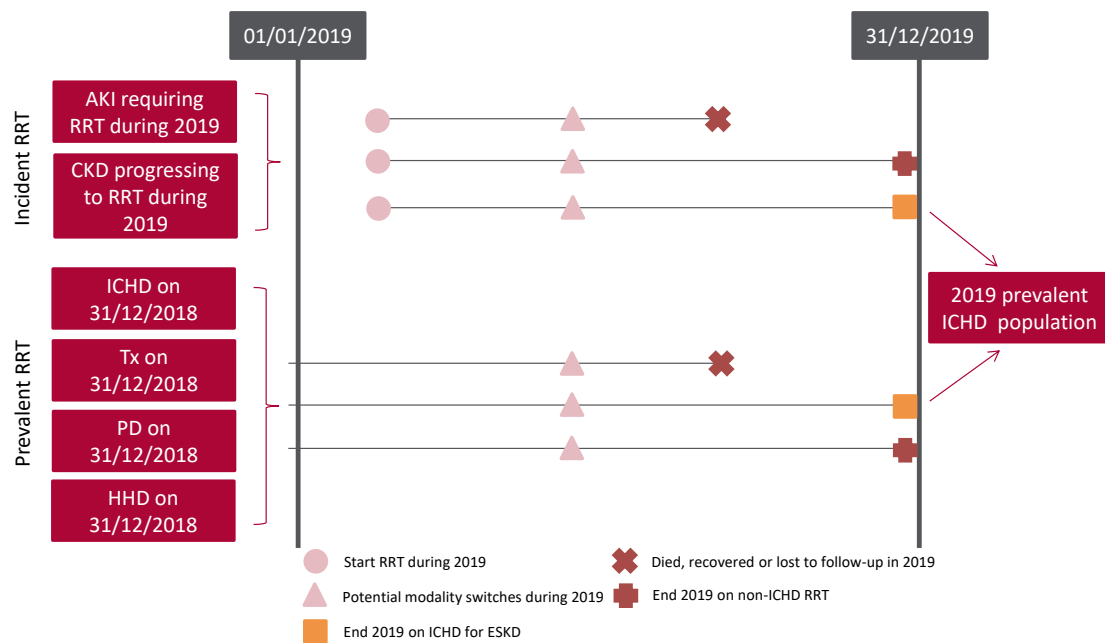


Figure 5.1 Pathways adult patients could follow to be included in the UK 2019 prevalent ICHD population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or RRT modality code for chronic ICHD at the end of 2019 or if they had been on RRT for ≥ 90 days and were on ICHD at the end of 2019.

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 Renal 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 renal 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*.

Rationale for analyses

The analyses begin with a description of the 2019 prevalent adult ICHD population, including the number on ICHD per million population (pmp), dialysis duration and frequency.

The Renal Association guidelines (renal.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 renal centres in 2019 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 (renal.org/audit-research/data-portal). 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 renal 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.

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 Renal Association audit measures relevant to ICHD that are reported in this chapter

The Renal 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 (2017)	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)
	Proportion of patients with haemoglobin <100 g/L not on ESA	Table 5.9
	Proportion of patients on ESA with haemoglobin >120 g/L	Table 5.9, figure 5.15
	Mean (median) ESA dose in patients maintained on ESA therapy	Table 5.9
Vascular access (2015)	Proportion of prevalent dialysis patients with definitive access (AVF/AVG/PD catheter) – ≥80%	Figure 5.17
	Annual rate of MRSA <1 episode/100 patient-years (measured over 2 years)	Table 5.10, figures 5.18, 5.20
	Annual rate of MSSA <2.5 episodes/100 patient-years (measured over 2 years)	Table 5.10, figures 5.19, 5.21
Planning, initiating and withdrawing RRT (2014)	Number of patients withdrawing from ICHD as a proportion of all deaths on ICHD	Table 5.11, figure 5.22

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

Key findings

- 24,365 adult patients were receiving ICHD for ESKD in the UK on 31/12/2019, which represented 35.8% of the RRT population
- The median age of ICHD patients was 67.5 years and 62.1% were male
- 86.0% of ICHD patients achieved a dialysis adequacy of URR >65%
- 93.0% of ICHD patients had dialysis 3 times a week
- 70.9% of ICHD patients had dialysis for 4–5 hours per session
- The median adjusted calcium for ICHD patients was 2.3 mmol/L and 10.0% were above the target range 2.2–2.5 mmol/L
- The median pre-dialysis bicarbonate for ICHD patients was 23 mmol/L and 82.2% were within the target range 18–26 mmol/L
- The median haemoglobin and ferritin for ICHD patients was 111 g/L and 445 µg/L, respectively, and 91.2% were on an ESA at a median dose of 8,000 IU/week
- 1.2% of ICHD patients had a haemoglobin <100 g/L and not on an ESA and 18.1% had a haemoglobin >120 g/L and on an ESA
- Of the 43 centres that provided adequate data on long term dialysis access in England, Northern Ireland and Wales, 9 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 29.5% of deaths. For those with data, the leading cause of death in younger patients (<65 years) was cardiac disease (24.2%) and in older patients (≥65 years) was treatment withdrawal (24.2%).
- The 2 year rates (2018–2019) of MRSA and MSSA bacteraemia were 0.17/100 patient years and 2.72/100 patient years, respectively

Analyses

Changes to the prevalent adult ICHD population

For the 70 adult renal centres, the number of prevalent patients on ICHD was calculated as both a proportion of the prevalent patients on RRT 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 RRT 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)	2019 crude rate (pmp)
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019		
ENGLAND												
Basldn	160	151	165	172	188	58.2	55.3	54.8	54.3	58.4	0.34	551
Bham	1,361	1,332	1,321	1,346	1,339	47.0	43.8	41.9	41.6	40.5	2.03	659
Bradfd	229	244	269	262	280	39.3	38.4	40.0	38.1	38.2	0.49	576
Brightn	387	419	425	447	430	40.7	42.2	42.1	42.3	40.6	1.07	403
Bristol	503	489	491	475	468	34.1	33.3	33.4	32.3	31.5	1.21	387
Camb	332	328	305	304	288	25.5	24.8	22.9	21.9	19.6	0.93	311
Carlis	81	95	98	101	111	28.8	34.1	34.9	34.5	36.6	0.25	439
Carsh	802	831	848	870	837	50.5	50.2	50.1	49.3	47.3	1.61	519
Chelms	142	129	126	112	114	50.4	47.6	45.7	42.7	43.7	0.37	306
Colchr	120	123	129	124	145	100.0	100.0	100.0	100.0	100.0	0.29	502
Covnt	347	366	333	306	354	36.2	37.6	34.5	32.0	32.9	0.79	450
Derby	209	200	191	197	238	38.8	36.9	34.4	33.6	36.5	0.56	428
Donc	172	185	178	179	181	57.0	55.9	53.5	53.9	52.9	0.37	487
Dorset	285	273	295	291	289	41.9	39.8	40.2	38.1	37.4	0.72	400
Dudley	161	188	206	210	207	51.1	54.3	55.8	57.5	56.6	0.34	608
Exeter	435	443	457	455	443	44.9	43.7	43.2	41.7	40.6	0.94	469
Glouc	224	235	244	238	226	50.5	49.8	48.0	45.8	43.0	0.51	447
Hull	350	324	351	352	350	40.9	37.9	40.3	40.0	38.7	0.79	442
Ipswi	143	147	147	151	141	35.7	35.3	33.8	35.3	33.3	0.31	456
Kent	410	409	424	418	420	39.4	38.1	38.9	37.6	36.8	1.06	397
L Barts	982	1,005	1,030	1,061	1,037	43.1	42.4	41.3	40.8	39.0	1.57	659
L Guys	628	645	667	691	666	31.2	30.7	30.9	31.0	28.8	1.00	669
L Kings	554	567	573	597	607	51.1	51.1	49.9	50.4	48.8	0.92	656
L Rfree	694	709	686	687	743	33.2	32.6	31.3	30.7	31.7	1.32	565
L St.G	329	330	308	294	300	39.3	39.5	37.2	35.6	35.2	0.66	456
L West	1,422	1,453	1,446	1,428	1,379	43.2	42.8	41.6	40.2	38.2	1.95	709
Leeds	491	509	539	543	552	32.2	32.8	33.3	32.3	32.0	1.36	406
Leic	856	889	899	919	964	39.4	38.8	38.2	37.5	37.3	2.07	467
Liv Ain	159	173	160	153	151	71.6	76.2	76.6	70.8	71.9	0.43	353
Liv Roy	345	325	352	360	355	27.8	26.8	28.2	28.5	28.9	0.80	442
M RI	473	465	497	501	499	25.2	23.6	24.3	24.3	24.2	1.32	378
Middlbr	340	321	334	349	344	37.7	36.1	36.9	37.6	36.2	0.80	431
Newc	292	295	326	339	327	28.9	28.1	29.3	29.4	27.8	0.94	346
Norwch	311	315	302	294	297	43.2	40.9	38.9	37.5	36.7	0.68	435
Nottm	358	365	354	351	360	32.2	31.7	30.1	29.4	29.6	0.92	391
Oxford	412	429	450	445	455	24.4	24.3	24.0	23.0	23.1	1.43	318
Plymth	129	136	142	128	126	25.6	26.5	26.3	23.8	23.7	0.40	317
Ports	614	562	548	532	591	36.8	33.2	31.3	30.2	31.4	1.73	341
Prestn	533	522	517	520	507	43.9	43.4	40.7	39.4	37.8	1.22	415
Redng	295	295	303	297	312	38.1	37.4	38.1	36.5	36.3	0.69	452

Table 5.2 Continued

Centre	N on ICHD					% on ICHD					Estimated catchment population (millions)	2019 crude rate (pmp)
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019		
Salford	387	375	387	404	392	39.7	36.8	34.8	34.4	31.7	1.14	344
Sheff	546	560	549	550	539	39.5	39.4	38.2	37.2	36.2	1.12	480
Shrew	178	186	183	207	204	48.2	49.3	47.7	48.4	47.7	0.41	502
Stevng	480	501	465	489	507	59.0	56.6	52.7	52.2	52.5	1.10	461
Sthend	124	111	121	128	118	50.4	47.0	47.6	48.7	44.7	0.27	435
Stoke	300	311	302	284	267	38.1	37.7	37.3	35.3	33.3	0.72	369
Sund	219	245	243	243	252	47.7	48.3	44.8	43.6	44.4	0.54	465
Truro	150	160	158	168	166	36.2	37.6	37.3	38.4	37.0	0.35	468
Wirral	174	188	202	202	207	61.9	55.8	52.3	51.1	50.4	0.47	445
Wolve	295	286	304	320	302	50.7	50.2	52.1	52.6	50.5	0.54	556
York	149	184	183	183	184	30.4	34.4	33.0	32.3	31.7	0.48	382
N IRELAND												
Antrim	120	123	117	119	118	49.8	48.8	45.9	43.4	42.1	0.24	485
Belfast	174	185	179	173	157	22.6	22.8	21.4	19.9	17.6	0.53	297
Newry	85	86	77	81	78	37.8	36.4	32.0	32.4	31.1	0.23	335
Ulster	106	101	109	106	97	62.7	60.8	59.9	55.5	53.3	0.20	483
West NI	119	125	113	113	106	40.6	40.7	36.1	34.7	32.3	0.25	427
SCOTLAND												
Abrdn	213	227	226	214	190	40.1	40.9	40.1	37.3	34.1	0.50	381
Airdrie	195	185	192	192	207	45.9	42.1	41.1	39.4	39.5	0.46	453
D&Gall	51	47	51	55	52	39.2	35.9	37.8	37.9	34.9	0.12	426
Dundee	184	176	183	161	162	43.9	42.1	42.1	36.2	36.1	0.37	442
Edinb	279	282	305	300	296	36.3	36.3	37.0	34.8	33.4	0.84	354
Glasgw	579	571	574	589	575	33.9	32.6	32.4	32.5	31.0	1.37	420
Inverns	90	86	83	90	92	35.7	33.3	31.7	32.3	32.6	0.22	413
Klmarnk	126	133	144	141	139	40.6	42.0	42.7	41.6	38.7	0.29	478
Krkldy	149	144	144	135	138	50.5	49.0	47.4	45.3	46.8	0.27	507
WALES												
Bangor	69	64	73	70	66	37.9	35.8	37.4	34.7	32.8	0.16	407
Cardff	470	486	529	555	552	29.1	29.9	31.4	32.3	31.9	1.15	482
Clwyd	77	69	72	75	86	41.6	39.0	40.0	39.5	42.0	0.18	480
Swanse	338	340	353	376	389	44.2	43.9	44.4	45.4	44.8	0.75	518
Wrexm	107	115	120	113	106	36.5	37.1	37.3	36.1	34.1	0.21	515
TOTALS												
England	20,072	20,328	20,533	20,677	20,759	39.1	38.4	37.6	36.9	36.1	44.33	468
N Ireland	604	620	595	592	556	35.6	35.0	32.6	31.0	28.8	1.45	383
Scotland	1,866	1,851	1,902	1,877	1,851	38.6	37.5	37.3	35.8	34.6	4.43	418
Wales	1,061	1,074	1,147	1,189	1,199	34.9	35.0	36.1	36.6	36.2	2.45	490
UK	23,603	23,873	24,177	24,335	24,365	38.8	38.1	37.4	36.6	35.8	52.67	463

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 renal centre. 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 31/12/2019 by centre

Centre	N on RRT	N on ICHD	% on ICHD	Median age (yrs)	% male	Ethnicity				
						% White	% Asian	% Black	% Other	% missing
ENGLAND										
Basldn	322	188	58.4	67.0	67.0	83.2	8.1	6.5	2.2	1.6
Bham	3,308	1,339	40.5	66.7	57.1	49.6	32.7	14.7	3.0	1.9
Bradfd	733	280	38.2	64.3	60.7	44.7	50.5	3.3	1.5	1.8
Brightn	1,059	430	40.6	71.4	62.6	89.7	6.0	2.3	2.0	7.2
Bristol	1,486	468	31.5	69.2	64.3	85.1	4.4	8.5	2.0	2.4
Camb	1,469	288	19.6	72.5	63.5	91.2	5.4	1.9	1.5	9.4
Carlis	303	111	36.6	68.2	58.6	100.0	0.0	0.0	0.0	0.0
Carsh	1,771	837	47.3	69.8	63.1	62.2	17.4	14.0	6.3	5.5
Chelms	261	114	43.7	71.5	71.9	90.6	4.7	2.8	1.9	7.0
Colchr	145	145	100.0	72.5	61.4	95.1	1.4	0.7	2.8	0.7
Covnt	1,076	354	32.9	69.7	61.0	73.7	19.5	6.8	0.0	0.0
Derby	652	238	36.5	68.3	61.8	81.8	10.2	5.1	3.0	0.8
Donc	342	181	52.9	70.6	61.9	91.7	3.9	1.7	2.8	0.0
Dorset	772	289	37.4	72.6	63.7	95.4	2.1	0.0	2.5	1.7
Dudley	366	207	56.6	69.9	60.4	80.7	12.6	6.8	0.0	0.0
Exeter	1,091	443	40.6	73.6	67.7	96.1	0.7	1.6	1.6	0.5
Glouc	525	226	43.0	74.2	67.7	91.2	2.7	3.5	2.7	0.0
Hull	904	350	38.7	66.2	63.4	95.4	2.9	0.9	0.9	0.9
Ipswi	424	141	33.3	71.3	63.8	79.9	1.5	4.5	14.2	5.0
Kent	1,140	420	36.8	68.8	61.9	96.3	1.0	1.5	1.2	3.6
L Barts	2,660	1,037	39.0	62.7	60.2	24.1	33.3	28.5	14.1	1.8
L Guys	2,310	666	28.8	63.2	58.6	41.4	8.6	45.6	4.4	4.5
L Kings	1,244	607	48.8	63.0	61.8	38.0	12.5	45.3	4.2	2.1
L Rfree	2,344	743	31.7	65.4	62.6	38.4	23.6	28.4	9.6	7.5
L St.G	852	300	35.2	67.1	61.7	22.3	27.8	38.5	11.3	3.0
L West	3,613	1,379	38.2	67.0	59.1	31.2	39.4	24.4	4.9	0.0
Leeds	1,723	552	32.0	63.4	64.5	69.5	21.8	7.1	1.6	0.2
Leic	2,587	964	37.3	67.2	64.1	72.0	19.5	6.1	2.5	7.5
Liv Ain	210	151	71.9	71.0	64.9	96.6	0.7	1.3	1.3	1.3
Liv Roy	1,227	355	28.9	63.8	61.4	86.9	3.8	5.8	3.5	3.4
M RI	2,060	499	24.2	65.0	59.7	46.0	13.8	37.6	2.7	2.4
Middlbr	949	344	36.2	67.9	69.5	91.9	7.0	1.2	0.0	0.0
Newc	1,175	327	27.8	65.8	61.5	90.8	4.0	2.1	3.1	0.0
Norwch	809	297	36.7	72.9	63.6	96.6	0.7	1.0	1.7	1.0
Nottm	1,218	360	29.6	67.4	62.5	74.2	11.7	10.6	3.6	0.0
Oxford	1,969	455	23.1	70.0	61.1	75.5	11.6	8.1	4.8	18.2
Plymth	531	126	23.7	72.5	67.5	97.6	0.0	0.8	1.6	0.0
Ports	1,883	591	31.4	67.5	64.5	89.6	4.4	2.3	3.7	12.0
Prestn	1,341	507	37.8	68.0	60.4	79.3	18.9	1.2	0.6	0.0
Redng	860	312	36.3	69.6	63.8	64.3	26.4	7.2	2.2	11.2
Salford	1,237	392	31.7	63.9	65.6	70.9	21.4	4.3	3.3	0.0
Sheff	1,491	539	36.2	68.3	63.1	84.6	8.2	4.0	3.2	2.6
Shrew	428	204	47.7	72.3	67.2	93.1	3.9	0.5	2.5	0.5
Stevng	966	507	52.5	66.8	63.5	71.0	12.9	10.0	6.1	12.8
Sthend	264	118	44.7	69.3	63.6	83.9	8.5	6.8	0.8	0.0

Table 5.3 Continued

Centre	N on RRT	N on ICHD	% on ICHD	Median age (yrs)	% male	Ethnicity				
						% White	% Asian	% Black	% Other	% missing
Stoke	803	267	33.3	70.9	65.5	89.9	5.4	1.2	3.5	3.4
Sund	568	252	44.4	67.5	59.5	96.0	3.2	0.4	0.4	0.4
Truro	449	166	37.0	73.1	60.8	99.4	0.6	0.0	0.0	0.0
Wirral	411	207	50.4	65.7	58.0	96.1	1.9	0.5	1.4	0.0
Wolve	598	302	50.5	66.0	62.3	59.3	26.7	12.3	1.7	0.7
York	581	184	31.7	72.0	65.8	96.7	1.1	0.6	1.7	2.2
N IRELAND										
Antrim	280	118	42.1	73.5	64.4	100.0	0.0	0.0	0.0	0.0
Belfast	890	157	17.6	68.4	63.7	97.0	1.5	0.0	1.5	14.6
Newry	251	78	31.1	68.7	61.5	98.7	1.3	0.0	0.0	3.8
Ulster	182	97	53.3	77.7	53.6	95.9	4.1	0.0	0.0	0.0
West NI	328	106	32.3	69.4	58.5	99.1	0.9	0.0	0.0	0.0
SCOTLAND										
Abrdn	558	190	34.1	67.0	60.0					86.8
Airdrie	524	207	39.5	63.0	58.5	97.3	2.7	0.0	0.0	10.6
D&Gall	149	52	34.9	71.8	67.3					61.5
Dundee	449	162	36.1	66.7	59.3					82.1
Edinb	885	296	33.4	62.4	61.5					80.4
Glasgw	1,854	575	31.0	65.4	59.8					65.7
Inverns	282	92	32.6	70.5	58.7					77.2
Klmarnk	359	139	38.7	67.3	59.7					71.9
Krkldy	295	138	46.8	66.8	58.0					88.4
WALES										
Bangor	201	66	32.8	73.5	65.2	98.4	0.0	0.0	1.6	6.1
Cardff	1,730	552	31.9	66.3	62.1	88.5	8.8	1.3	1.5	0.9
Clwyd	205	86	42.0	70.4	68.6	98.7	1.3	0.0	0.0	10.5
Swanse	868	389	44.8	70.6	65.8	97.2	1.6	0.8	0.5	0.8
Wrexm	311	106	34.1	68.2	63.2	98.1	1.0	1.0	0.0	1.9
TOTALS										
England	57,510	20,759	36.1	67.5	62.2	67.7	16.0	12.5	3.8	3.4
N Ireland	1,931	556	28.8	72.2	60.8	98.1	1.5	0.0	0.4	4.7
Scotland	5,355	1,851	34.6	65.4	59.9					68.1
Wales	3,315	1,199	36.2	68.4	64.1	93.4	4.8	0.9	0.9	1.9
UK	68,111	24,365	35.8	67.5	62.1	70.3	14.8	11.4	3.5	8.3

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 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 31/12/2019

PRD	N on ICHD	% ICHD population	Age <65 yrs		Age ≥65 yrs		M/F ratio
			N	%	N	%	
Diabetes	6,540	27.8	3,023	28.9	3,517	27.0	1.6
Glomerulonephritis	3,222	13.7	1,806	17.3	1,416	10.9	2.1
Hypertension	1,816	7.7	775	7.4	1,041	8.0	2.3
Polycystic kidney disease	1,297	5.5	680	6.5	617	4.7	1.1
Pyelonephritis	1,706	7.3	803	7.7	903	6.9	1.6
Renal vascular disease	1,196	5.1	167	1.6	1,029	7.9	2.0
Other	4,065	17.3	1,914	18.3	2,151	16.5	1.3
Uncertain aetiology	3,646	15.5	1,284	12.3	2,362	18.1	1.6
Total (with data)	23,488	100.0	10,452	100.0	13,036	100.0	
Missing	877	3.6	402	3.7	475	3.5	1.7

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 2019 prevalent ICHD population, using data collected at the end of the third quarter, because of better data completeness compared to the fourth quarter of the year.

Table 5.5 Median urea reduction ratio (URR) and distribution of session frequency and time for adult patients prevalent to ICHD on 31/12/2019 using end of third quarter data (30/09/2019)

Centre	Median URR (%)	% URR >65%	% session frequency/week			% session time			% data completeness		
			<3 sessions	3 sessions	>3 sessions	<4 hours	4–5 hours	>5 hours	URR	Session frequency	Session time
ENGLAND											
Basldn	71	80.0	11.3	85.1	3.6	42.0	58.0	0.0	97.9	100.0	100.0
Bham	79	91.4	5.8	92.6	1.6	16.9	82.9	0.2	99.7	97.0	96.7
Bradfd	71	69.9	9.1	89.3	1.6	27.6	72.4	0.0	75.9	99.2	98.7
Brightn	74	86.8	1.0	99.0	0.0	8.4	91.6	0.0	90.9	99.8	99.5
Bristol	72	81.1	3.2	96.8	0.0	23.4	76.6	0.0	99.8	99.8	100.0
Camb			2.5	90.3	7.2	46.0	54.0	0.0	0.0	98.9	98.4
Carlis	72	70.4	4.3	95.7	0.0	16.9	83.1	0.0	99.0	90.3	89.9
Carsh	78	89.9	2.3	97.2	0.5	5.9	93.7	0.4	86.4	99.8	99.2
Chelms	71	83.2	0.0	96.7	3.3	34.1	65.9	0.0	96.7	95.8	95.7
Colchr	79	98.1	1.5	98.5	0.0	3.0	96.2	0.8	80.5	100.0	100.0
Covnt	77	90.4	8.3	89.9	1.8	29.9	70.1	0.0	95.3	99.4	97.6
Derby	76	87.2	2.9	95.2	1.9				86.9	100.0	19.7
Donc	75	83.0	1.3	98.1	0.6	28.4	71.6	0.0	97.6	95.2	95.1
Dorset	76	94.8	2.3	97.0	0.8	7.8	92.2	0.0	89.1	99.6	100.0
Dudley	78	87.9	2.7	96.2	1.1	14.2	85.2	0.6	96.8	94.3	94.1
Exeter	75	89.3	1.4	97.8	0.7	49.9	50.1	0.0	99.3	100.0	100.0
Glouc	76	93.2	5.5	94.5	0.0				100.0	99.5	0.0
Hull	78	93.5							98.8	0.0	1.2
Ipswi			13.1	86.2	0.8	17.0	83.0	0.0	0.0	99.2	93.8
Kent	71	76.6	1.5	96.4	2.1	76.5	23.5	0.0	94.7	99.2	100.0
L Barts			10.8	89.0	0.2	44.3	55.7	0.0	0.0	97.5	97.2
L Guys	75	89.4	8.0	91.7	0.3	24.1	75.9	0.0	97.9	98.1	97.9

Table 5.5 Continued

Centre	Median URR (%)	% URR >65%	% session frequency/week			% session time			% data completeness		
			<3 sessions	3 sessions	>3 sessions	<4 hours	4–5 hours	>5 hours	URR	Session frequency	Session time
L Kings	73	84.1	6.6	93.1	0.4	56.6	43.4	0.0	99.6	99.1	99.0
L Rfree			19.8	79.6	0.6	61.4	38.4	0.2	0.0	97.0	96.3
L St.G	80	95.1	0.4	99.6	0.0	6.7	93.3	0.0	83.0	98.2	94.1
L West	78	90.8	8.6	90.6	0.8	26.5	73.0	0.5	91.3	92.1	91.5
Leeds	73	84.5	9.1	89.9	1.0	22.5	77.5	0.0	99.6	98.6	99.4
Leic	75	85.9	2.6	96.9	0.5	13.8	83.3	3.0	99.5	99.2	99.4
Liv Ain			1.5	96.2	2.3	16.7	83.3	0.0	0.0	100.0	100.0
Liv Roy			0.0	90.9	9.1	7.1	92.9	0.0	0.0	99.7	99.7
M RI	75	83.5	4.6	94.4	1.0	6.7	93.3	0.0	79.0	91.2	90.7
Middlbr	73	80.7	2.8	96.0	1.2	33.8	64.3	1.9	99.4	99.7	99.7
Newc			7.0	91.7	1.3	26.0	74.0	0.0	16.3	100.0	100.0
Norwch	75	86.7	2.2	96.3	1.5	63.5	36.5	0.0	85.3	99.3	99.3
Nottm	75	87.5	0.6	94.6	4.8	7.6	91.8	0.6	94.0	100.0	100.0
Oxford	75	86.1	0.0	100.0	0.0	28.5	71.5	0.0	81.0	99.5	99.5
Plymth	76	89.3	2.6	96.5	0.9				100.0	99.1	0.0
Ports			9.6	89.8	0.6	48.1	51.9	0.0	0.0	99.2	99.2
Prestn	73	75.9							82.1	0.0	0.2
Redng	75	90.0	0.7	98.9	0.4	22.5	77.5	0.0	100.0	96.5	98.2
Salford			2.5	79.2	18.3	27.1	72.5	0.4	69.3	99.2	96.9
Sheff	74	87.0	2.8	95.1	2.2	83.1	16.9	0.0	99.2	99.0	99.0
Shrew	75	91.4	1.0	96.4	2.6	13.4	86.6	0.0	97.9	98.5	98.4
Stevng	72	74.1	15.9	80.2	4.0	68.9	31.1	0.0	97.9	78.6	74.7
Sthend	72	86.5	1.9	98.1	0.0	30.8	69.2	0.0	100.0	100.0	100.0
Stoke	74	87.1	6.8	89.6	3.6	14.8	85.2	0.0	86.6	100.0	100.0
Sund			4.4	86.8	8.8	27.0	73.0	0.0	1.0	98.3	88.6
Truro	74	87.6	2.0	98.0	0.0				97.3	99.3	0.0
Wirral	74	83.5	0.5	95.7	3.8	29.1	70.9	0.0	98.3	99.5	100.0
Wolve	76	89.1	2.9	96.7	0.4				98.2	98.2	61.8
York	77	93.7	3.2	89.8	7.0	15.9	84.1	0.0	100.0	89.7	91.2
N IRELAND											
Antrim	71	70.0	0.9	99.1	0.0	9.0	91.0	0.0	99.1	99.1	100.0
Belfast	75	89.6	0.7	97.3	2.0	15.2	84.1	0.7	99.3	99.3	100.0
Newry	72	81.5	13.9	86.1	0.0	60.3	39.7	0.0	84.4	97.3	98.4
Ulster	72	77.9	4.4	93.4	2.2	18.6	81.4	0.0	98.9	97.9	98.9
West NI	70	71.4	6.3	86.5	7.3	66.3	33.7	0.0	98.8	98.0	97.7
SCOTLAND											
Abrdn	72	82.7	0.5	93.7	5.8	7.3	90.4	2.2	100.0	99.5	99.4
Airdrie	69	71.4	0.6	96.5	2.9	15.5	81.0	3.6	100.0	97.7	100.0
D&Gall	70	75.0	11.8	84.3	3.9	22.7	70.5	6.8	100.0	98.1	100.0
Dundee	75	89.4	0.0	95.9	4.1	5.7	94.3	0.0	97.9	96.7	96.6
Edinb	72	87.9	0.0	98.0	2.0	35.5	64.5	0.0	100.0	92.6	92.5
Glasgw	71	75.1	2.6	95.5	2.0	8.8	88.6	2.5	100.0	94.6	99.4
Inverns	72	90.2	0.0	95.3	4.7	25.6	74.4	0.0	100.0	100.0	100.0
Klmarnk	71	81.7	2.3	97.7	0.0				100.0	99.3	31.3
Krkldy	71	79.4	1.7	98.3	0.0	25.4	74.6	0.0	100.0	93.0	93.7
WALES											
Bangor	74	89.1	5.0	90.0	5.0				100.0	98.4	0.0
Cardff	75	92.2							99.8	0.0	0.0
Clwyd	72	80.8	0.0	100.0	0.0				100.0	100.0	0.0
Swanse	75	85.1	5.8	91.9	2.2	34.4	65.6	0.0	99.1	99.7	99.7
Wrexm	74	82.8	4.8	94.2	1.0				100.0	99.1	0.0

Table 5.5 Continued

Centre	Median URR (%)	% URR >65%	% session frequency/week			% session time			% data completeness		
			<3 sessions	3 sessions	>3 sessions	<4 hours	4-5 hours	>5 hours	URR	Session frequency	Session time
TOTALS											
England	75	86.7	5.5	92.7	1.8	29.7	70.0	0.3	77.1	93.4	88.7
N Ireland	72	78.9	4.2	93.4	2.3	28.9	70.9	0.2	97.2	98.5	99.2
Scotland	71	80.4	1.6	95.8	2.6	15.7	82.0	2.2	99.8	95.9	92.3
Wales	75	88.3	4.9	93.1	2.0	34.4	65.6	0.0	99.6	53.0	30.5
UK	75	86.0	5.1	93.0	1.9	28.6	70.9	0.4	80.5	91.7	86.3

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

Data for Scotland refer to patients prevalent to ICHD on 31/05/2019 due to data availability.

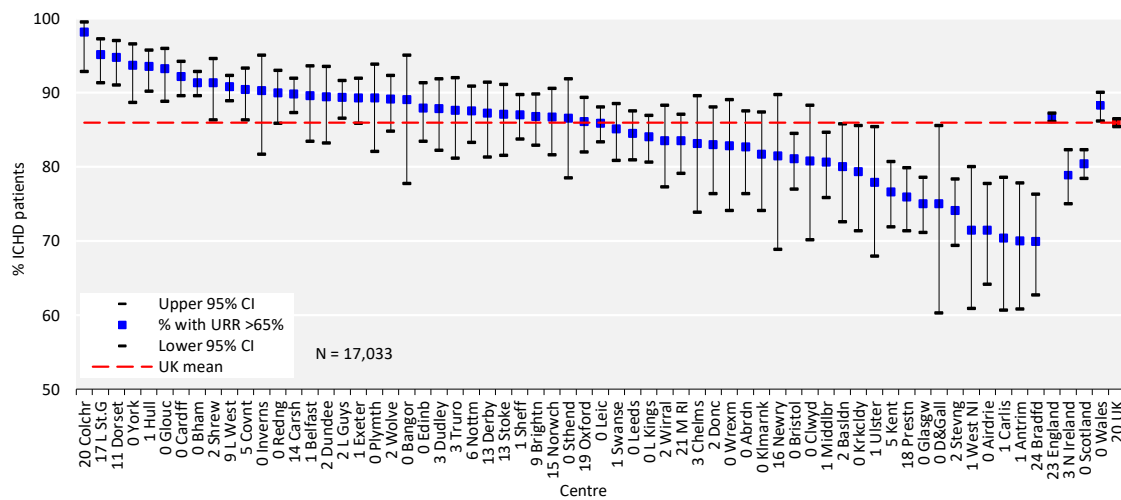


Figure 5.2 Percentage of adult patients prevalent to ICHD on 31/12/2019 with urea reduction ratio (URR) >65% by centre
CI – confidence interval

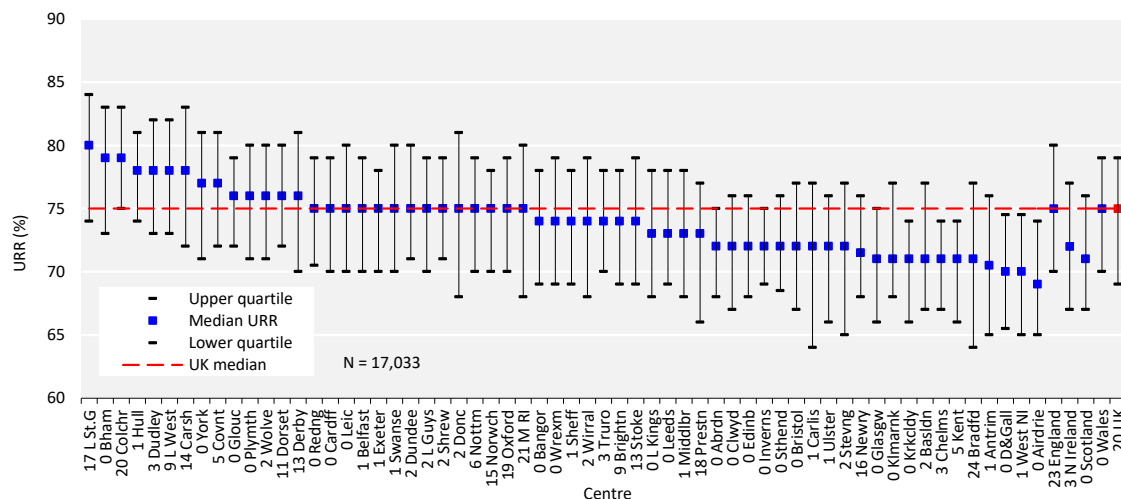


Figure 5.3 Median urea reduction ratio (URR) achieved in adult patients prevalent to ICHD on 31/12/2019 by centre

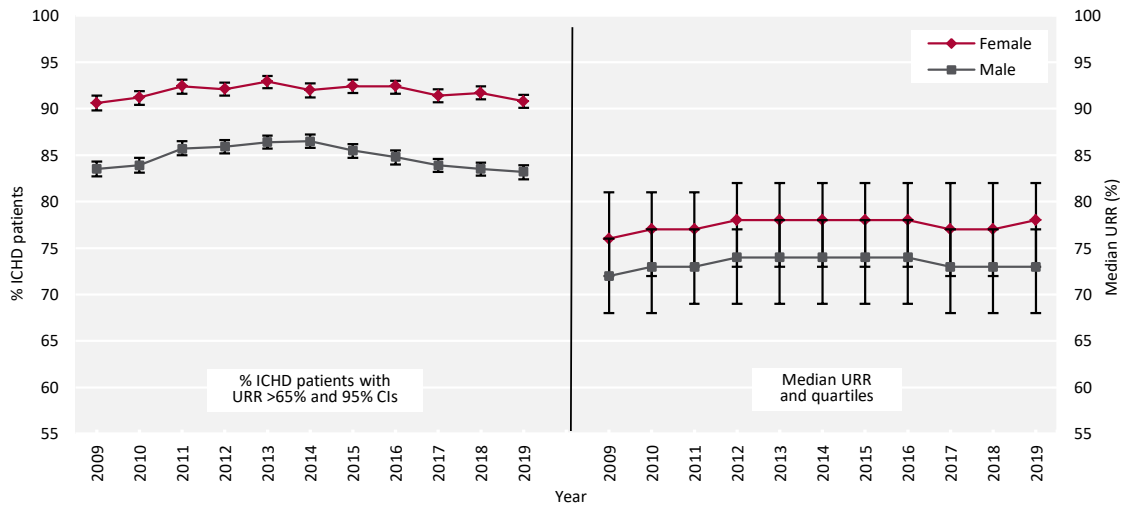


Figure 5.4 Change in the percentage of prevalent adult ICHD patients with urea reduction ratio (URR) >65% and the median URR by sex between 2009 and 2019

CI – confidence interval

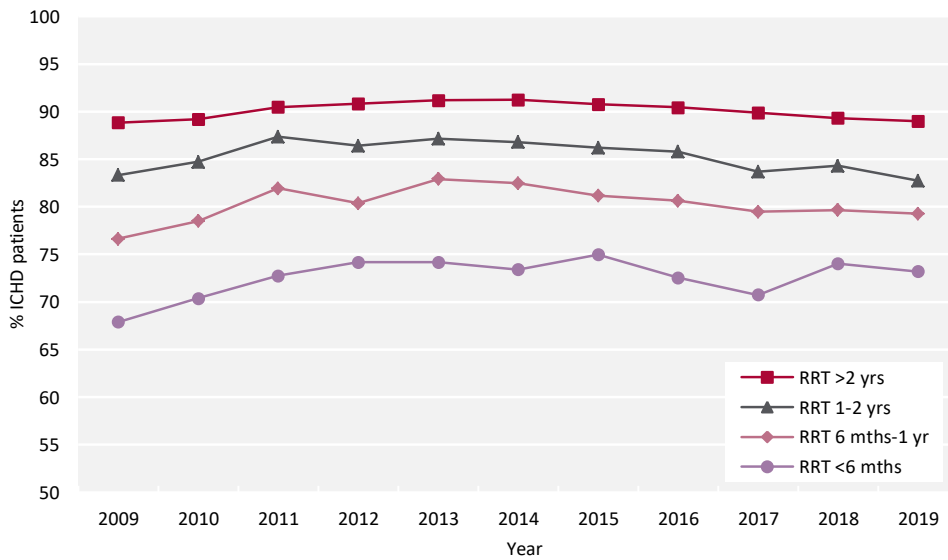


Figure 5.5 Percentage of prevalent adult ICHD patients achieving urea reduction ratio (URR) >65% by time on RRT between 2009 and 2019

Biochemistry parameters in prevalent adult ICHD patients

The Renal 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 31/12/2019 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				
Basldn	2.4	81.5	13.3	100.0
Bham	2.4	80.7	10.6	99.8
Bradfd	2.4	74.2	21.5	98.8
Brightn	2.3	79.4	7.5	99.8
Bristol	2.4	85.3	11.7	99.8
Camb	2.4	77.4	17.2	98.6
Carlisle	2.3	77.9	8.7	100.0
Carsh	2.3	77.2	7.9	99.9
Chelms	2.3	86.0	3.2	100.0
Colchr	2.3	84.7	3.8	94.2
Covnt	2.3	78.6	7.1	100.0
Derby	2.4	87.3	5.4	100.0
Donc	2.3	86.7	2.4	100.0
Dorset	2.3	85.2	7.6	100.0
Dudley	2.4	81.4	13.3	99.5
Exeter	2.3	89.4	9.2	100.0
Glouc	2.4	87.1	5.7	100.0
Hull	2.4	76.5	18.3	100.0
Ipswi	2.4	76.6	8.1	100.0
Kent	2.4	75.7	15.3	99.7
L Barts	2.3	78.5	8.3	99.6
L Guys	2.4	83.0	10.2	100.0
L Kings	2.3	79.7	6.7	99.5
L Rfree	2.3	79.4	7.9	100.0
L St.G	2.4	80.4	11.4	97.5
L West	2.3	74.3	11.5	87.0
Leeds	2.4	81.0	10.9	100.0
Leic	2.3	77.9	7.0	100.0
Liv Ain	2.4	81.2	15.9	99.3
Liv Roy	2.4	80.4	12.2	99.4
M RI	2.4	77.0	13.9	92.7
Middlbr	2.2	69.7	3.5	99.7
Newc	2.4	74.7	10.7	100.0
Norwch	2.3	84.0	10.2	93.8
Nottm	2.4	84.5	8.2	100.0
Oxford	2.3	78.3	9.1	87.9
Plymth	2.3	83.6	4.6	100.0
Ports	2.3	80.9	8.2	100.0
Prestn	2.3	80.7	4.8	92.8
Redng	2.4	81.3	11.3	100.0
Salford	2.4	78.9	11.6	100.0
Sheff	2.3	76.3	3.9	99.4
Shrew	2.4	82.8	13.4	98.9
Stevng	2.3	84.2	6.5	100.0
Sthend	2.4	75.9	17.6	100.0
Stoke	2.4	85.4	10.8	98.4
Sund	2.3	75.7	12.8	99.1
Truro	2.5	70.7	29.3	100.0
Wirral	2.3	85.3	6.3	100.0
Wolve	2.3	82.7	8.3	99.3
York	2.4	86.9	9.7	100.0

ICHHD

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
N IRELAND				
Antrim	2.3	89.3	4.9	99.0
Belfast	2.3	80.3	7.5	100.0
Newry	2.4	87.7	5.5	100.0
Ulster	2.5	67.1	31.8	100.0
West NI	2.3	78.4	7.2	98.0
SCOTLAND				
Abrdn	2.4	83.2	11.2	100.0
Airdrie	2.4	86.5	10.3	100.0
D&Gall	2.3	79.2	6.3	98.0
Dundee	2.4	77.8	16.3	99.4
Edinb	2.4	76.0	12.2	100.0
Glasgw	2.4	78.5	14.9	100.0
Inverns	2.3	80.9	7.9	100.0
Klmarnk	2.3	87.5	6.3	100.0
Krkldy	2.4	74.2	21.1	100.0
WALES				
Bangor	2.3	82.3	1.6	100.0
Cardff	2.3	80.2	8.3	99.8
Clwyd	2.5	75.7	23.0	100.0
Swanse	2.4	83.9	8.9	100.0
Wrexm	2.3	88.7	7.2	99.0
TOTALS				
England	2.3	79.9	9.7	98.1
N Ireland	2.4	80.5	10.8	99.4
Scotland	2.4	79.9	12.9	99.9
Wales	2.3	82.0	9.0	99.8
UK	2.3	80.0	10.0	98.4

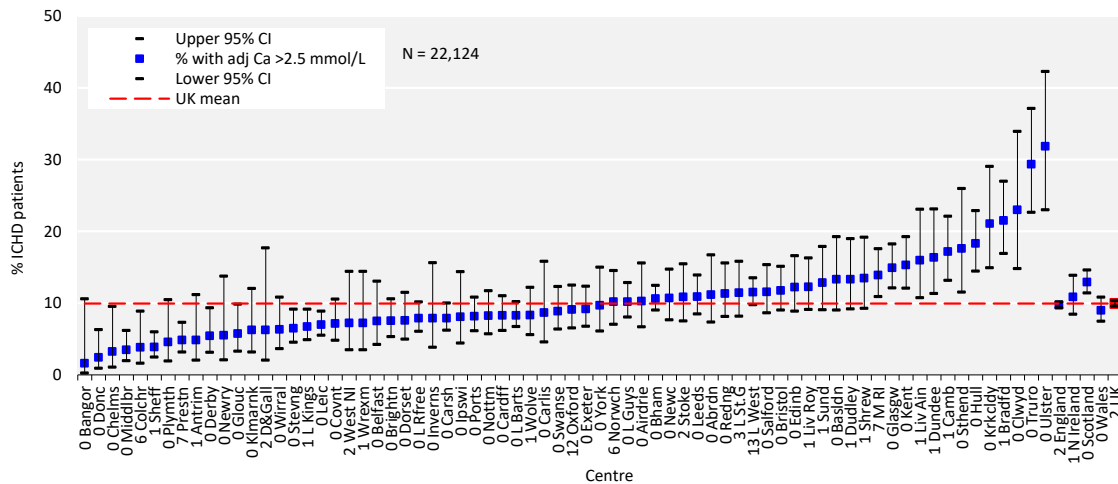


Figure 5.6 Percentage of adult patients prevalent to ICHD on 31/12/2019 with adjusted calcium (Ca) above the target range (>2.5 mmol/L) by centre
 CI – confidence interval

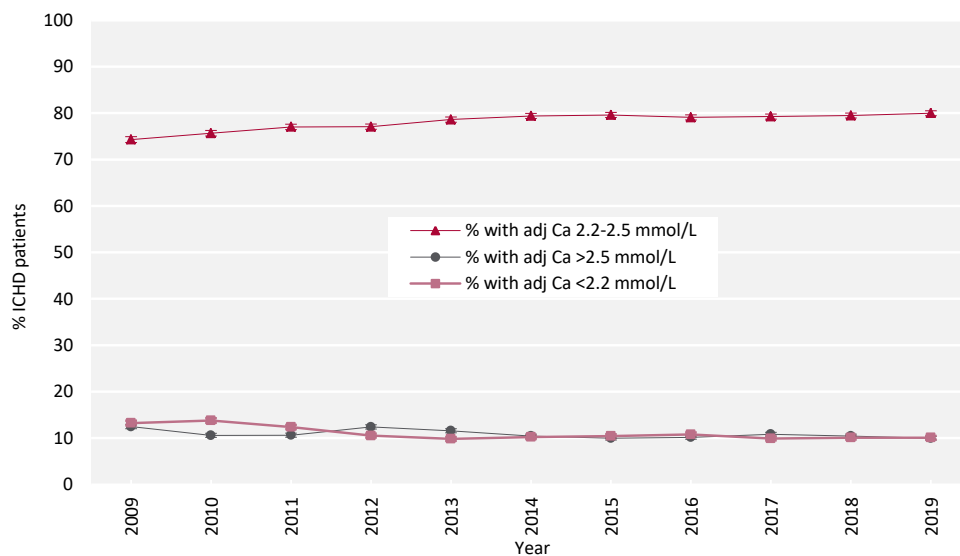


Figure 5.7 Change in percentage of prevalent adult ICHD patients within, above and below the target range for adjusted calcium (Ca 2.2–2.5 mmol/L) between 2009 and 2019

Table 5.7 Median pre-dialysis potassium and bicarbonate and percentage attaining target ranges in adult patients prevalent to ICHD on 31/12/2019 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										
Basldn	4.7	11.0	85.6	7.1	100.0	22	2.3	95.4	2.3	100.0
Bham	4.8	10.9	81.9	9.3	99.8	23	2.1	88.0	9.9	99.7
Bradfd	4.5	21.8	75.5	17.2	99.2	24	1.6	88.3	10.2	98.8
Brightn					0.0	24	1.5	77.1	21.4	99.8
Bristol	4.6	17.9	77.8	14.6	100.0	23	2.3	92.4	5.3	99.8
Camb	4.9	5.1	91.6	3.1	98.6					19.8
Carlisle					0.0	21	14.4	83.7	1.9	100.0
Carsh					0.0	25	0.2	67.9	31.9	71.7
Chelms	5.0	9.7	83.9	5.1	100.0	23	1.1	90.3	8.6	100.0
Colchr	4.9	10.7	87.8	6.4	94.2	21	3.1	96.2	0.8	94.2
Covnt					0.0	23	4.0	80.4	15.5	100.0
Derby					0.0	22	0.9	95.0	4.1	100.0
Donc	4.8	10.9	86.1	7.0	100.0	24	1.8	84.2	13.9	100.0
Dorset	4.8	6.8	88.6	4.3	100.0	21	9.1	87.8	3.0	99.6
Dudley	4.7	12.2	83.1	8.2	100.0					57.1
Exeter	4.6	20.2	77.8	16.7	100.0	21	5.1	94.7	0.2	100.0
Glouc					0.0	23	1.4	91.9	6.7	100.0
Hull	4.8	10.8	84.5	7.9	100.0	24	1.9	79.9	18.3	100.0
Ipswi					0.0	24	1.6	83.1	15.3	100.0
Kent	4.2	40.9	54.9	36.1	99.7	22	2.1	90.4	7.5	99.7
L Barts	4.8	15.1	80.3	13.0	99.6	21	14.5	79.0	6.5	99.6
L Guys	4.7	25.4	69.9	22.1	100.0	24	1.1	87.2	11.7	99.8
L Kings	5.3	6.9	79.9	5.1	99.5	22	5.3	92.0	2.7	99.5
L Rfree	4.9	12.2	80.6	9.9	100.0	23	3.6	87.1	9.3	95.7
L St.G					0.0	24	2.3	72.8	24.9	92.5

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	% data completeness	Median (mmol/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% data completeness
L West					0.0					53.6
Leeds	5.0	3.5	89.3	2.2	100.0	23	1.6	89.9	8.5	100.0
Leic	4.9	9.5	83.9	7.7	100.0	24	1.1	77.0	21.9	99.9
Liv Ain					0.0	23	2.2	87.7	10.1	99.3
Liv Roy					0.0	27	0.6	43.6	55.8	99.7
M RI					0.0	22	2.4	84.6	13.0	92.0
Middlbr	4.8	8.5	86.1	5.9	99.7	26	0.6	59.0	40.4	99.7
Newc					0.0	22	4.0	88.0	8.0	100.0
Norwch	5.2	6.2	84.6	3.9	100.0	23	3.1	88.4	8.5	94.9
Nottm	4.8	11.9	82.7	8.8	100.0	24	0.6	76.0	23.4	100.0
Oxford	4.9	7.7	85.6	5.4	87.4	24	3.3	87.5	9.2	86.7
Plymth	4.6	12.7	81.8	7.7	100.0	28	0.0	36.4	63.6	100.0
Ports	4.7	9.3	88.1	7.1	100.0	24	1.9	80.5	17.6	100.0
Prestn					0.0	23	4.1	86.3	9.6	99.8
Redng					0.0	23	1.4	88.3	10.3	100.0
Salford	4.6	20.3	78.0	16.4	100.0					0.0
Sheff	5.0	6.3	85.2	4.5	99.4	23	1.8	88.2	9.9	99.4
Shrew					0.0	25	3.2	64.9	31.9	98.4
Stevng	4.9	9.4	86.9	7.0	100.0	24	1.1	82.4	16.5	100.0
Sthend	4.7	10.2	84.3	5.7	100.0	25	0.9	63.9	35.2	100.0
Stoke					0.0	26	0.0	62.0	38.0	99.2
Sund					0.0	27	0.4	41.0	58.6	99.6
Truro	4.8	5.3	90.7	2.7	100.0	26	0.0	62.7	37.3	100.0
Wirral					0.0	25	1.1	76.2	22.8	99.5
Wolve	4.9	6.9	85.6	4.4	99.3	23	2.9	92.8	4.3	99.3
York	5.3	5.1	82.4	2.7	100.0	23	2.3	90.3	7.4	100.0
N IRELAND										
Antrim	4.7	11.5	86.5	6.7	100.0	26	1.0	58.7	40.4	100.0
Belfast	5.2	3.4	86.4	1.4	100.0	21	4.1	91.2	4.8	100.0
Newry	4.8	13.7	79.5	7.5	100.0					19.2
Ulster	4.9	11.4	84.1	6.2	100.0	24	0.0	89.8	10.2	100.0
West NI	4.9	8.1	85.9	4.1	100.0	22	1.0	97.0	2.0	100.0
SCOTLAND										
Abrdn	4.9	12.9	81.6	8.7	100.0					5.6
Airdrie	4.3	26.5	70.8	20.6	100.0	20	9.8	88.5	1.6	98.9
D&Gall	4.9	8.3	87.5	3.2	98.0	23.5	2.1	89.6	8.3	98.0
Dundee	5.0	7.8	85.6	4.5	99.4	25	0.7	80.7	18.7	97.4
Edinb	4.9	13.4	79.8	9.8	99.3					47.3
Glasgw	4.9	9.2	85.9	7.0	99.0	21	7.7	89.0	3.3	93.0
Inverns	5.1	2.6	80.8	0.6	87.6	25	1.3	67.5	31.2	86.5
Klmarnk	4.8	12.6	80.3	7.9	99.2	22	5.4	90.1	4.5	86.7
Krkldy	4.8	7.9	86.6	4.3	99.2	24	1.6	89.8	8.7	99.2
WALES										
Bangor					0.0	25.5	1.6	66.1	32.3	100.0
Cardff					0.0	23	3.0	90.0	7.1	99.8
Clwyd					0.0	22	2.7	93.2	4.1	100.0
Swanse					0.0	24	1.7	84.5	13.9	100.0
Wrexm					0.0	27	2.1	36.1	61.9	99.0

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	% data completeness	Median (mmol/L)	% <18 mmol/L	% 18–26 mmol/L	% >26 mmol/L	% data completeness
TOTALS										
England	4.8	12.4	81.8	11.9	65.4	23	3.3	81.9	14.8	91.2
N Ireland	4.9	8.8	84.9	6.6	100.0	23	1.8	84.5	13.7	88.5
Scotland	4.8	11.9	82.2	10.4	98.7	22	5.4	85.9	8.7	77.2
Wales					0.0	23	2.4	82.3	15.3	99.8
UK	4.8	12.3	82.0	11.7	65.5	23	3.4	82.2	14.4	90.5

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

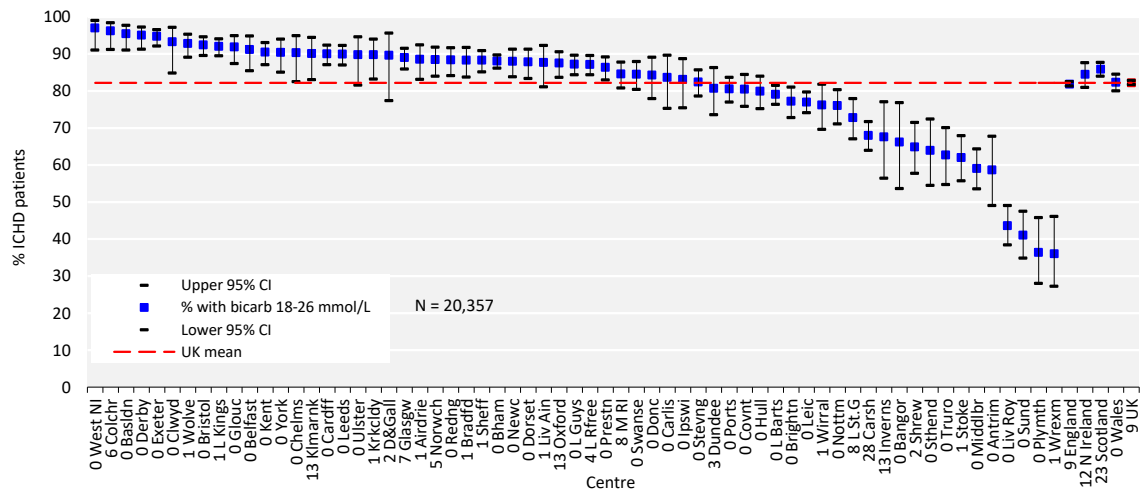


Figure 5.8 Percentage of adult patients prevalent to ICHD on 31/12/2019 with pre-dialysis bicarbonate (bicarb) within the target range (18–26 mmol/L) by centre
 CI – confidence interval

ICHD

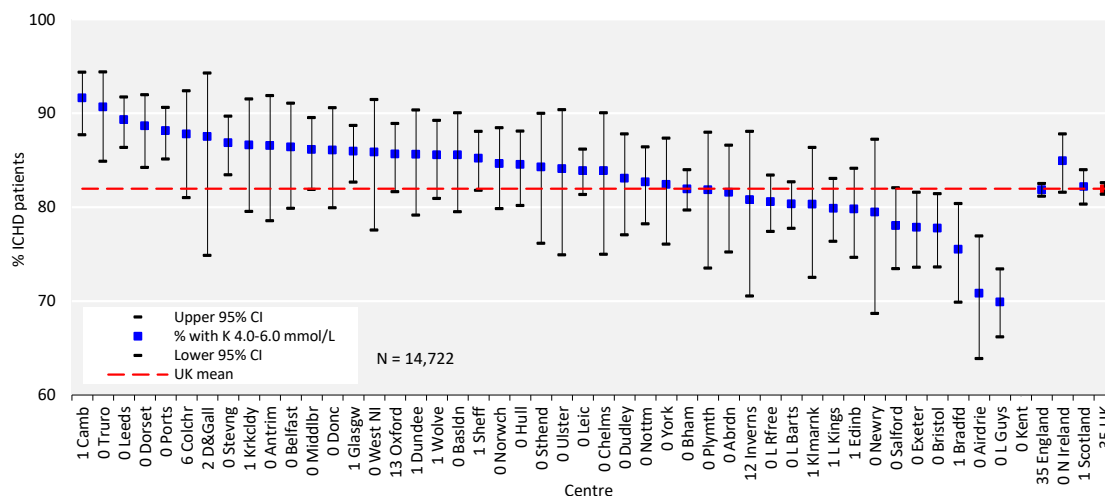


Figure 5.9 Percentage of adult patients prevalent to ICHD on 31/12/2019 with pre-dialysis potassium (K) within the target range (4.0–6.0 mmol/L) by centre

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.

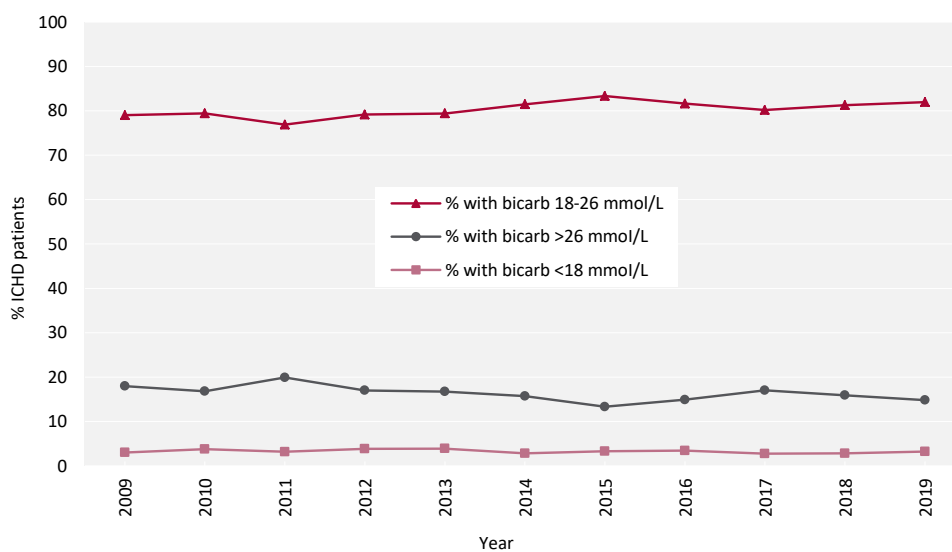


Figure 5.10 Change in percentage of prevalent adult ICHD patients within, above and below the target range for pre-dialysis bicarbonate (bicarb 18–26 mmol/L) between 2009 and 2019

Anaemia in prevalent adult ICHD patients

Inadequate data completeness in relation to ESAs makes auditing against national guidelines difficult to interpret. An important assumption is that patients for whom no ESA data have been submitted to the UKRR are not on ESA treatment, provided the centre has submitted ESA data for other patients on ICHD. The weekly ESA dose is reported, but there are some uncertainties surrounding the accuracy of this measure (see appendix A).

Table 5.8 Median haemoglobin and ferritin and percentage attaining target ranges in adult patients prevalent to ICHD on 31/12/2019 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							
Basldn	111	17.9	22.5	100.0	678	5.8	99.4
Bham	111	20.4	18.1	99.8	335	9.1	99.1
Bradfd	114	18.1	35.1	100.0	452	7.0	99.2
Brightn	111	20.1	22.6	99.8	513	3.0	99.5
Bristol	111	10.6	20.0	100.0	622	1.4	99.8
Camb	114	15.2	27.9	96.8			52.9
Carlis	114	14.4	24.0	100.0	609	5.8	100.0
Carsh	111	18.9	21.1	100.0	419	5.7	98.2
Chelms	116	8.6	35.5	100.0	318	18.3	100.0
Colchr	110	17.4	16.7	95.0	546	3.0	96.4
Covnt	108	27.3	11.5	100.0	433	3.8	99.4
Derby	113	14.9	33.9	100.0	536	1.4	98.6
Donc	110	23.0	18.2	100.0	430	1.2	100.0
Dorset	114	14.2	27.1	90.9	596	1.1	100.0
Dudley	116	10.2	28.9	98.9	224	11.4	74.1
Exeter	112	9.4	21.0	100.0	311	6.0	100.0
Glouc	111	17.7	20.1	100.0	464	7.4	97.6
Hull	113	18.9	25.1	100.0	429	2.8	100.0
Ipswi	109	29.0	12.1	100.0	420	12.1	100.0
Kent	112	19.9	24.6	99.7	457	7.5	99.7
L Barts	109	24.3	18.2	99.6	617	3.5	99.7
L Guys	109	25.1	16.2	100.0	486	3.7	99.7
L Kings	110	19.4	16.5	99.5	547	1.8	99.3
L Rfree	109	25.1	15.9	100.0	454	6.0	99.1
L St.G	109	28.1	23.4	98.6	359	10.0	93.2
L West	113	14.1	17.8	94.8	352	4.8	93.6
Leeds	108	24.7	10.1	100.0	363	6.4	100.0
Leic	113	18.7	27.1	100.0	392	6.9	99.9
Liv Ain	111	15.3	16.8	98.6	636	2.2	100.0
Liv Roy	113	18.0	28.1	99.4	449	4.0	99.1
M RI	110	25.2	22.3	92.5	390	3.1	79.4
Middlbr	111	20.5	19.6	99.7	871	4.8	98.4
Newc	110	24.0	23.3	100.0	563	4.3	99.7
Norwch	110	25.8	22.3	95.2	417	8.7	93.0
Nottm	114	14.3	27.1	99.7	385	5.8	100.0
Oxford	108	27.1	21.9	88.2	387	3.7	99.0
Plymth	110	20.9	21.8	100.0	370	5.5	100.0
Ports	112	19.5	25.4	100.0	394	4.7	99.1
Prestn	111	20.1	26.3	99.8	698	2.4	96.0
Redng	112	17.7	25.1	100.0	627	2.8	99.7

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
Salford	110	27.3	21.4	100.0	362	12.4	100.0
Sheff	109	28.4	18.5	99.4	442	1.6	99.6
Shrew	115	14.0	33.9	98.9	598	1.1	98.9
Stevng	108	29.6	14.0	100.0	467	4.3	98.9
Sthend	109	18.5	11.1	100.0	348	1.9	100.0
Stoke	113	12.0	28.5	99.2	483	2.5	98.4
Sund	114	16.3	25.1	99.6	384	4.0	99.6
Truro	108	20.7	17.3	100.0	397	0.7	100.0
Wirral	114	13.2	26.8	100.0	629	6.3	100.0
Wolve	114	17.0	26.0	99.3	535	5.4	99.3
York	110	21.6	18.8	100.0	395	4.5	100.0
N IRELAND							
Antrim	106	32.7	13.5	100.0	350	4.8	100.0
Belfast	112	15.0	27.9	100.0	470	2.7	100.0
Newry	109	17.8	16.4	100.0	495	4.1	100.0
Ulster	109	19.3	19.3	100.0	704	0.0	100.0
West NI	114	17.3	24.5	99.0	742	1.0	100.0
SCOTLAND							
Abrdn	110	25.1	16.2	100.0	557	5.9	95.0
Airdrie	112	16.8	14.6	100.0	629	1.6	100.0
D&Gall	115	25.0	31.3	98.0	852	2.1	98.0
Dundee	110	17.6	22.2	99.4	421	9.8	99.4
Edinb	115	13.3	34.4	100.0	475	7.2	99.6
Glasgw	110	20.9	22.6	100.0	525	2.9	98.5
Inverns	112	7.9	23.6	100.0	535	3.8	87.6
Klmarnk	111	25.8	17.2	100.0	292	5.5	100.0
Krkldy	115	13.3	34.4	100.0	428	8.7	99.2
WALES							
Bangor	116	12.9	30.6	100.0	387	1.6	100.0
Cardff	110	21.0	22.8	99.8	393	3.5	99.8
Clwyd	122	4.1	52.7	100.0	427	2.7	100.0
Swanse	111	23.0	16.9	100.0	394	9.7	99.7
Wrexm	109	24.7	11.3	99.0	526	1.0	99.0
TOTALS							
England	111	20.1	21.2	98.8	441	5.1	97.3
N Ireland	111	20.2	21.2	99.8	547	2.5	100.0
Scotland	112	18.6	23.7	99.9	510	5.1	98.1
Wales	111	20.4	22.3	99.8	405	5.2	99.7
UK	111	20.0	21.5	98.9	445	5.0	97.6

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

Table 5.9 Distribution of haemoglobin and erythropoiesis stimulating agent (ESA) dose values in adult patients prevalent to ICHD on 31/12/2019 by centre

Centre	ESA		Haemoglobin and ESA	
	% on ESA	Median dose (IU/week)	% <100 g/L and not on ESA	% >120 g/L and on ESA
ENGLAND				
Basldn	91.3	5,000	0.0	18.5
Bham	23.3			
Bradfd	92.7	8,000	0.0	30.9
Brightn	95.2	6,600	0.5	20.6
Bristol	94.5	8,000	0.2	17.4
Camb	43.5			
Carlis	83.7	4,000	0.0	17.3
Carsh	1.0			
Chelms	96.8	12,000	0.0	33.3
Colchr	0.0			
Covnt	88.2	8,000	1.6	8.4
Derby	0.0			
Donc	97.0	6,000	0.0	17.0
Dorset	92.0	6,000	0.4	21.7
Dudley	87.8	10,000	0.5	25.1
Exeter	92.3	6,000	0.0	18.1
Glouc	89.5		0.0	17.2
Hull	40.6			
Ipswi	33.9			
Kent	95.9	9,000	0.3	23.1
L Barts	92.8	8,000	1.4	15.1
L Guys	0.2			
L Kings	89.7	6,000	0.7	11.4
L Rfree	0.0			
L St.G	0.0			
L West	0.1			
Leeds	96.9	8,000	0.4	9.1
Leic	88.5	6,000	0.8	20.7
Liv Ain	0.0			
Liv Roy	0.3			
M RI	0.2			
Middlbr	61.6			
Newc	92.3	6,000	1.0	21.3
Norwch	90.8	9,000	1.2	18.8
Nottm	97.0	6,000	0.0	25.6
Oxford	83.1	9,000	4.4	17.0
Plymth	0.0			
Ports	63.8			
Prestn	93.2		0.4	22.4
Redng	94.0	13,500	3.2	23.0
Salford	20.8			
Sheff	86.9	6,000	4.3	15.8
Shrew	0.5			
Stevng	96.2	10,000	0.9	12.7
Sthend	94.4	12,000	0.0	9.3
Stoke	0.0			
Sund	92.1	6,900	0.9	22.5
Truro	0.0			
Wirral	91.1	9,000	0.5	22.1
Wolve	86.4	8,000	1.4	21.7
York	90.3	5,000	1.7	12.5

Table 5.9 Continued

Centre	ESA		Haemoglobin and ESA	
	% on ESA	Median dose (IU/week)	% <100 g/L and not on ESA	% >120 g/L and on ESA
N IRELAND				
Antrim	93.3	4,000	1.0	10.6
Belfast	97.3	6,000	0.7	25.9
Newry	97.3	6,000	0.0	15.1
Ulster	93.2	6,000	0.0	17.0
West NI	98.0	6,000	0.0	23.5
SCOTLAND				
Abrdn	93.2		0.5	13.6
Airdrie	97.1		1.1	12.6
D&Gall	82.7		0.0	19.2
Dundee	72.8		4.0	14.0
Edinb	76.7		4.4	26.3
Glasgw	90.1		1.7	17.2
Inverns	82.6		1.3	10.7
Klmarnk	95.5		1.5	14.9
Krkldy	86.7		3.1	25.0
WALES				
Bangor	83.9		4.8	9.7
Cardff	41.4			
Clwyd	27.0			
Swanse	66.5			
Wrexm	57.1			
TOTAL¹				
UK	91.2	8,000	1.2	18.1

Blank cells – no data returned by the centre or data completeness <70% (or <70% patients were on an ESA).

Data for Scotland refer to patients prevalent to ICHD on 31/05/2019 due to ESA data availability.

¹This is the total of only those centres with at least 70% of ICHD patients on an ESA.

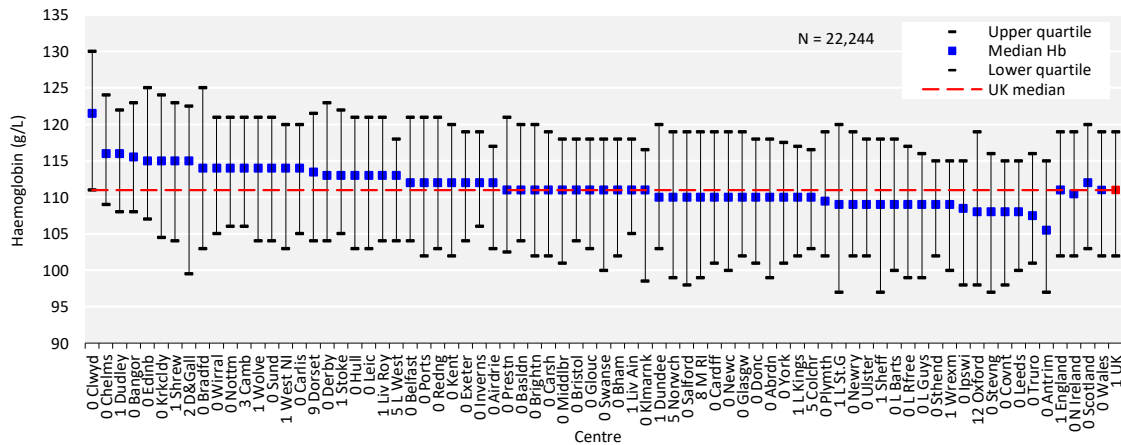


Figure 5.11 Median haemoglobin (Hb) in adult patients prevalent to ICHD on 31/12/2019 by centre

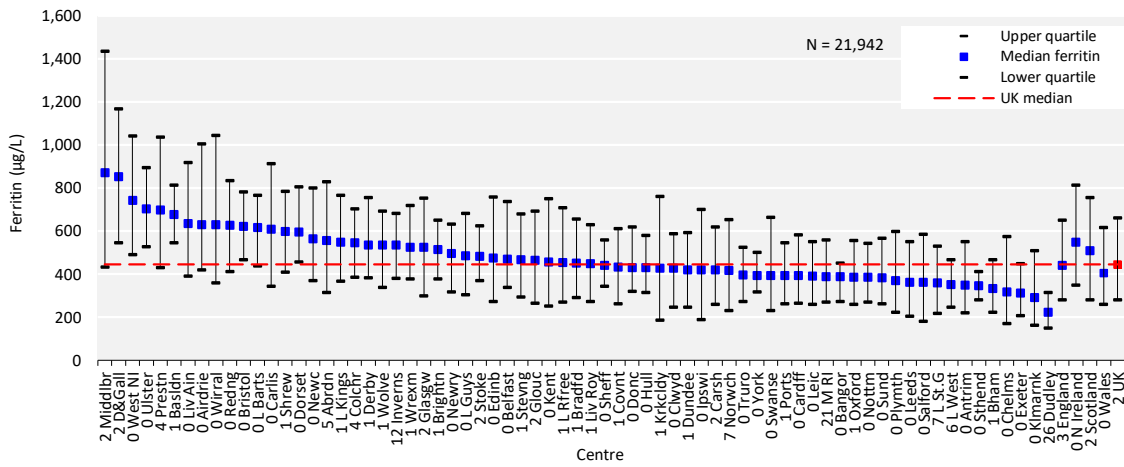


Figure 5.12 Median ferritin in adult patients prevalent to ICHD on 31/12/2019 by centre

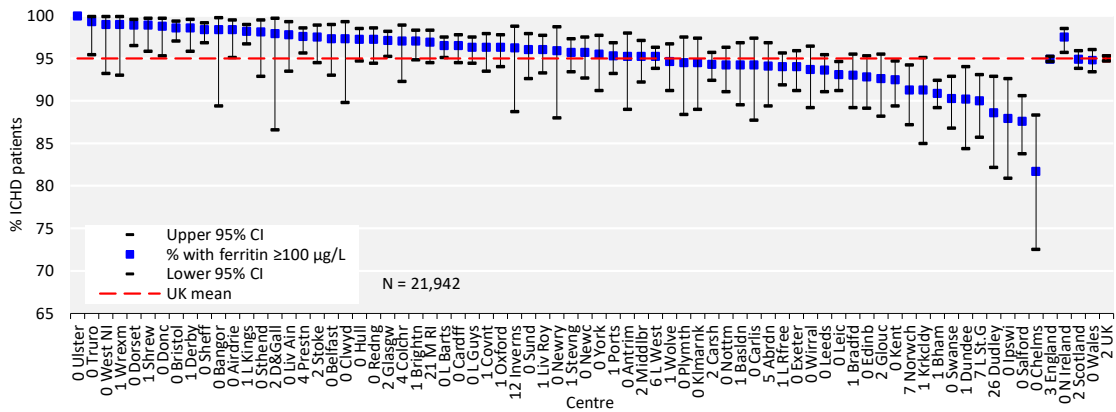


Figure 5.13 Percentage of adult patients prevalent to ICHD on 31/12/2019 with ferritin $\geq 100 \mu\text{g/L}$ by centre

CI – confidence interval

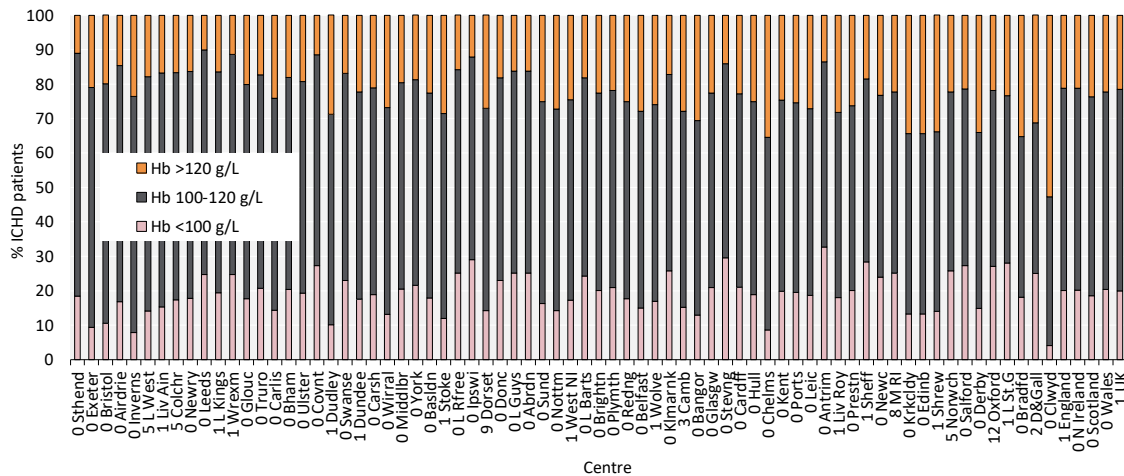


Figure 5.14 Distribution of haemoglobin (Hb) in adult patients prevalent to ICHD on 31/12/2019 by centre

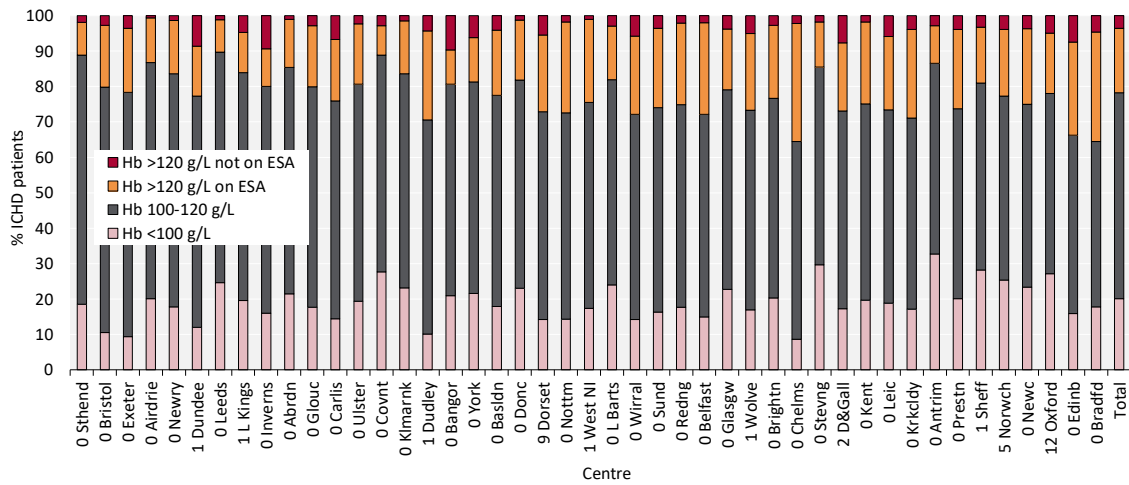


Figure 5.15 Distribution of haemoglobin (Hb) in adult patients prevalent to ICHD on 31/12/2019 and the proportion with haemoglobin >120 g/L receiving erythropoiesis stimulating agent (ESA) by centre

Figure (including total) does not include centres with <70% data completeness (or <70% ESA use).
Data for Scotland refer to patients prevalent to ICHD on 31/5/2019 due to ESA data availability.

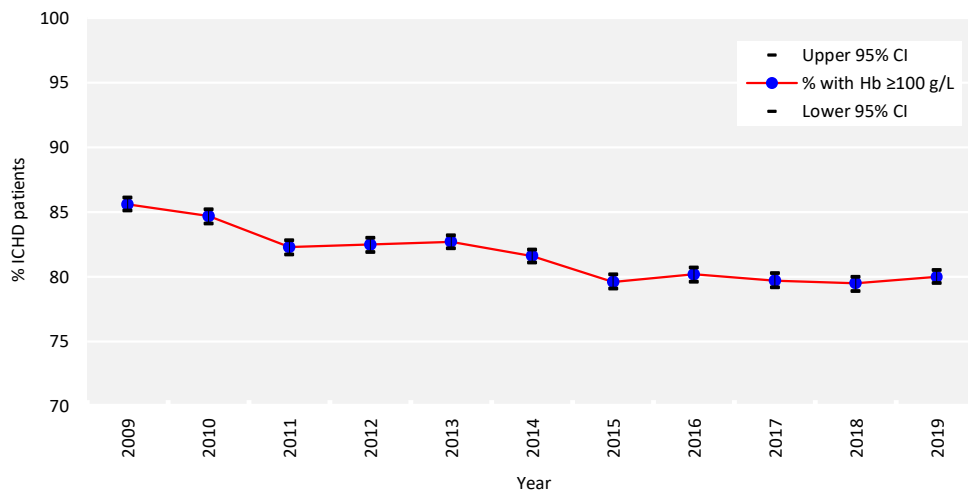


Figure 5.16 Percentage of prevalent adult ICHD patients with haemoglobin (Hb) ≥ 100 g/L between 2009 and 2019
CI – confidence interval

Dialysis access in prevalent adult dialysis patients

Prevalent dialysis access data were collected separately to the main UKRR quarterly data returns via the 2019 Multisite Dialysis Access Audit (see appendix A). Although Scotland do not contribute data via the audit they submit access data for incident patients separately (see chapter 2). The type of prevalent dialysis access is presented in figure 5.17 for the 43 of 61 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. The number of patients on dialysis at West NI is therefore lower than presented elsewhere in the report.

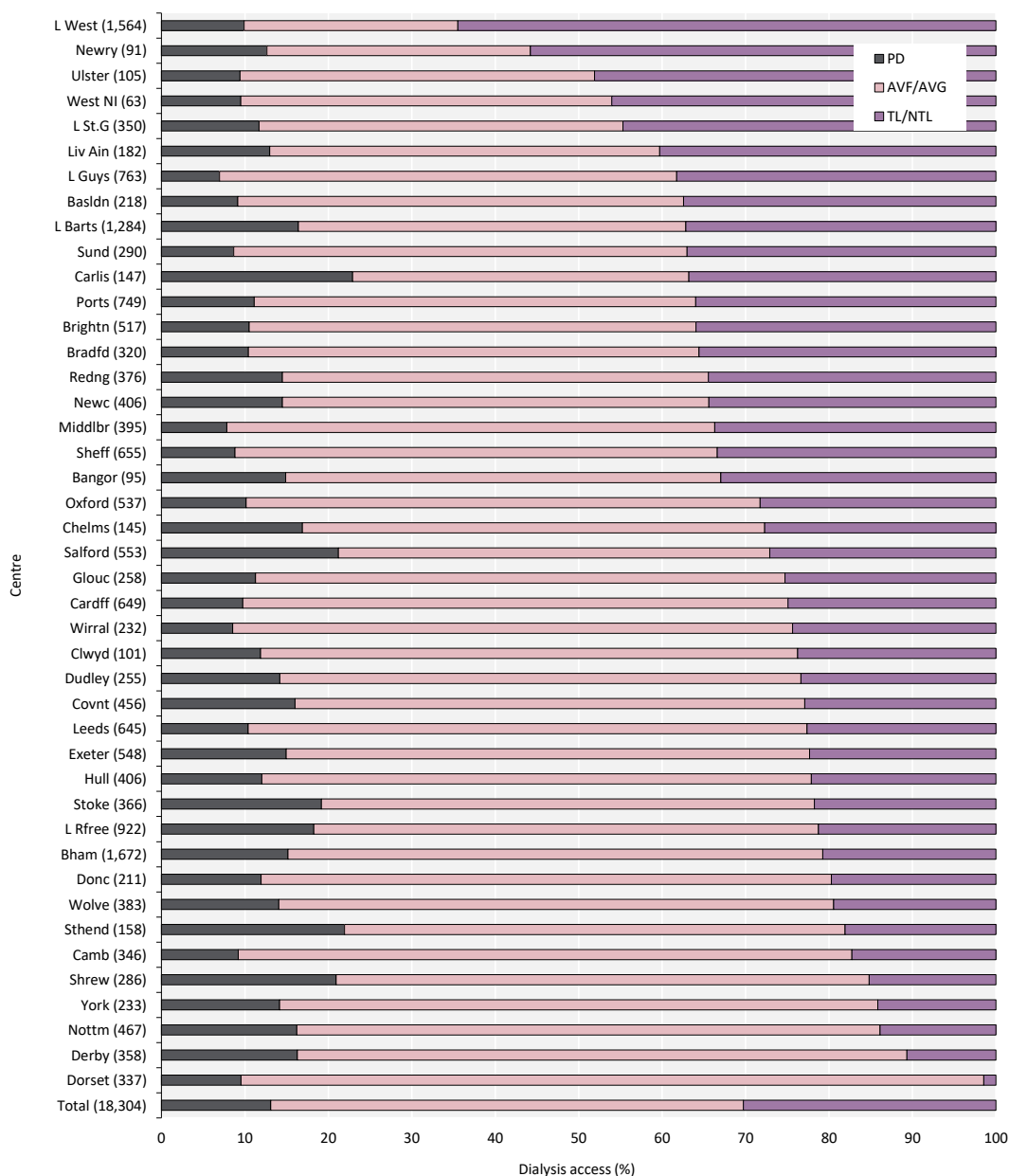


Figure 5.17 Dialysis access in adult patients prevalent to dialysis on 31/12/2019 by centre (2019 Multisite Dialysis Access Audit)

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

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 renal 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 Renal Association guidelines. These analyses included all patients on HD, whether on HHD or ICHD.

Table 5.10 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 5.10 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					
England	44,207	0.15	2.59	1.08	1.95
Wales	2,571	0.51	4.98	0.86	2.33
E & W	46,778	0.17	2.72	1.06	1.98

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.

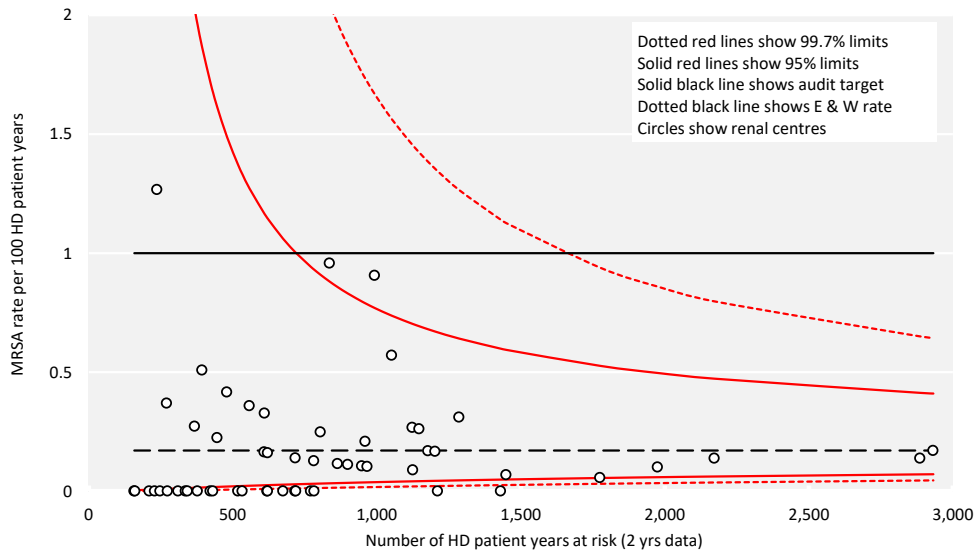


Figure 5.18 Methicillin-resistant *Staphylococcus aureus* (MRSA) rates by centre per 100 HD adult patient-years (2018–2019 data) compared to the England and Wales average, with the audit target also shown.

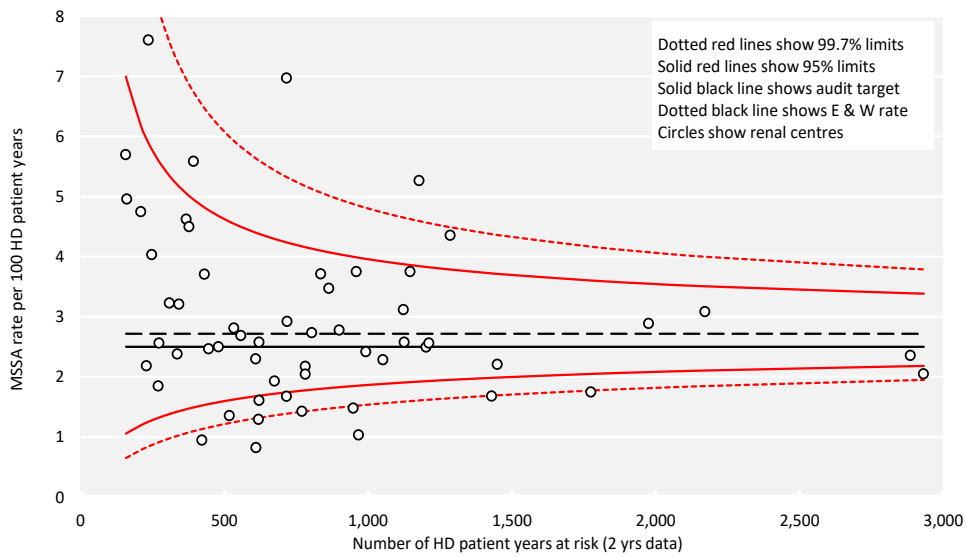


Figure 5.19 Methicillin-sensitive *Staphylococcus aureus* (MSSA) rates by centre per 100 HD adult patient-years (2018–2019 data) compared to the England and Wales average, with the audit target also shown.

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).

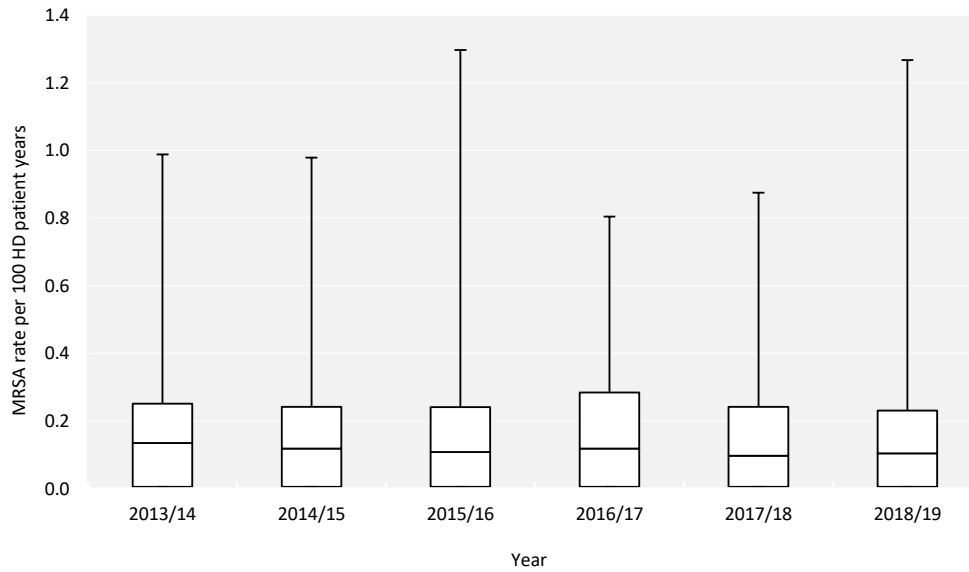


Figure 5.20 Distribution of methicillin-resistant *Staphylococcus aureus* (MRSA) centre rates per 100 HD adult patient-years by rolling 2 calendar year cohort (Wales included from 2016 onwards)

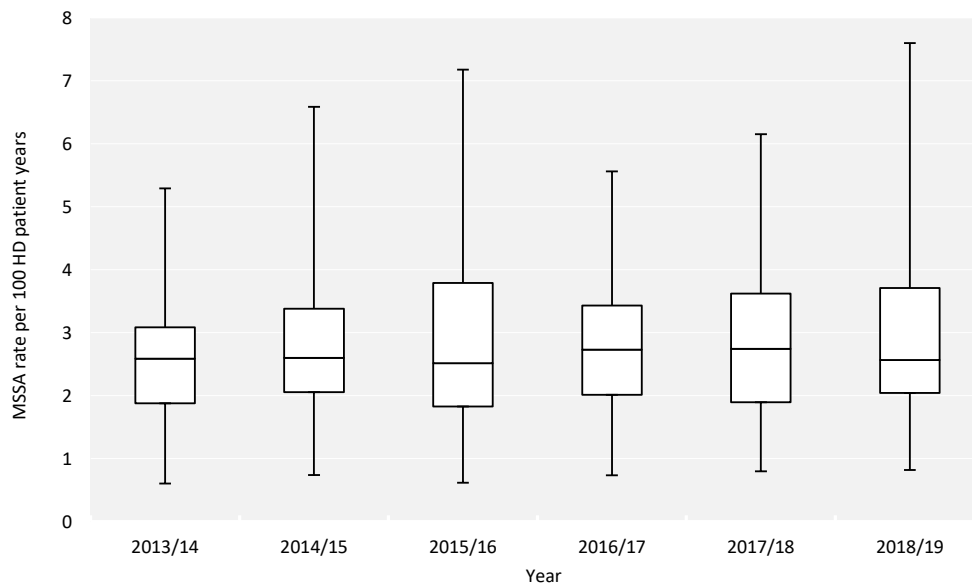


Figure 5.21 Distribution of methicillin-sensitive *Staphylococcus aureus* (MSSA) centre rates per 100 HD adult patient-years by rolling 2 calendar year cohort (Wales included from 2016 onwards)

Cause of death in adult ICHD patients

Cause of death was analysed in prevalent patients receiving ICHD on 31/12/2018 and followed-up for one year in 2019. 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 RRT patients is in chapter 3.

Table 5.11 Cause of death in adult patients prevalent to ICHD on 31/12/2018 followed-up in 2019 by age group

Cause of death	ICHD all ages		ICHD <65 years		ICHD ≥65 years	
	N	%	N	%	N	%
Cardiac disease	566	20.1	172	24.2	394	18.7
Cerebrovascular disease	64	2.3	20	2.8	44	2.1
Infection	516	18.4	129	18.2	387	18.4
Malignancy	165	5.9	37	5.2	128	6.1
Treatment withdrawal	597	21.2	89	12.5	508	24.2
Other	700	24.9	202	28.5	498	23.7
Uncertain aetiology	204	7.3	61	8.6	143	6.8
Total (with data)	2,812	100.0	710	100.0	2,102	100.0
Missing	1,177	29.5	315	30.7	862	29.1

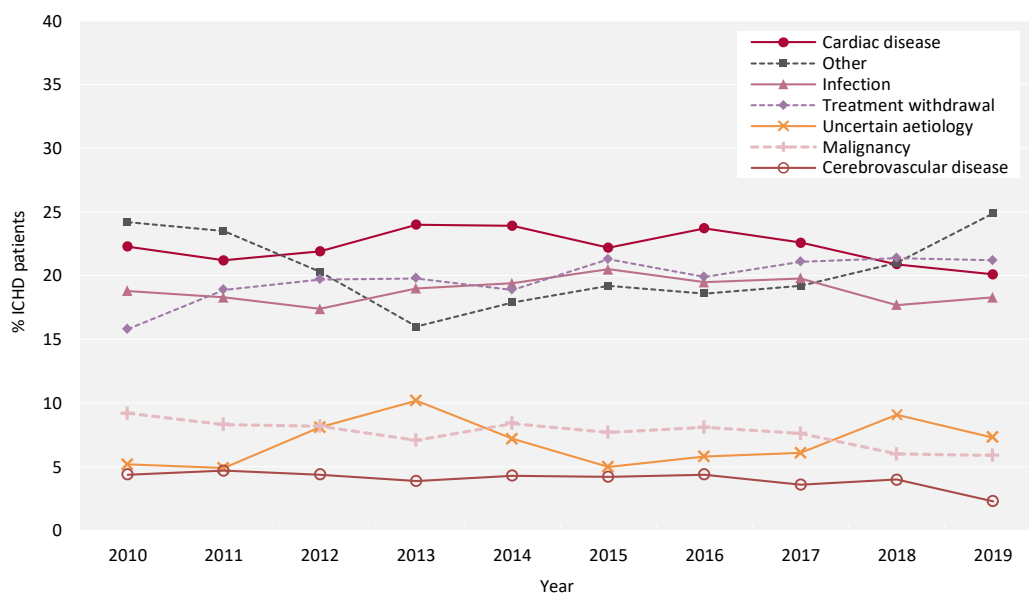


Figure 5.22 Cause of death between 2010 and 2019 for adult patients prevalent to ICHD at the beginning of the year

Hospitalisation of ICHD patients

Hospital Episodes Statistics (HES) and Patient Episode Database for Wales (PEDW) data for prevalent RRT patients on 31/12/2018 were used to compare emergency admission hospitalisation amongst ICHD patients (figure 5.23). The y-axis displays the total number of hospitalised days following an emergency admission for ICHD patients divided by the total number of ICHD patient-years at that centre for 2019. The average rate in England and Wales was 14.3 days per patient-year, compared to 4.2 days for Tx patients and 13.2 days for PD patients. Please visit the UKRR data portal (renal.org/audit-research/data-portal) to identify individual renal centres.

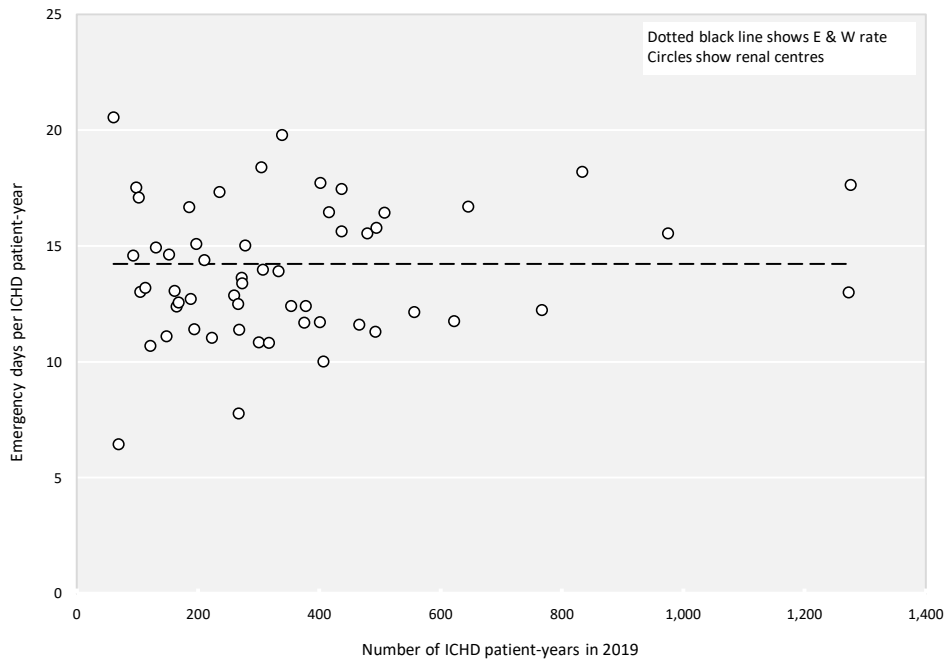


Figure 5.23 Emergency inpatient days per ICHD patient-year in 2019 for patients prevalent to RRT in England and Wales on 31/12/2018 by centre