

## *Chapter 3*

---

# **Adults on renal replacement therapy (RRT) in the UK at the end of 2019**

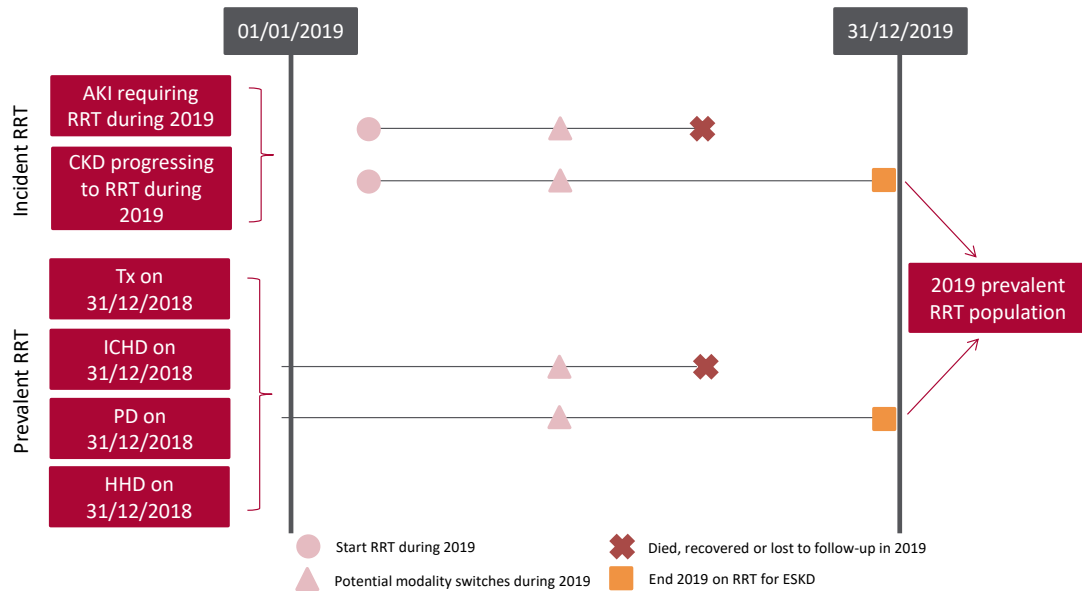
# Contents

Introduction .....	2
Rationale for analyses .....	3
Key findings .....	4
Analyses .....	5
Changes to the prevalent adult RRT population .....	5
Demographics and treatment modality of prevalent adult RRT patients .....	8
Dialysis access in prevalent adult dialysis patients .....	17
Survival in adult dialysis patients .....	17
Cause of death in adult RRT patients .....	22

# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were on renal replacement therapy (RRT) in the UK at the end of 2019 (figure 3.1). Patients may have started RRT prior to 2019 or during 2019. Three RRT modalities are available to patients with ESKD – haemodialysis (HD), peritoneal dialysis (PD) and kidney transplantation. HD may be undertaken in-centre (ICHD) or at home (HHD).

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



**Figure 3.1** Pathways adult patients could follow to be included in the UK 2019 prevalent RRT 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 RRT at the end of 2019 or if they had been on RRT for  $\geq 90$  days and were on RRT at the end of 2019.

CKD – chronic kidney disease; Tx – transplant

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

## Rationale for analyses

The analyses focus on a description of the 2019 prevalent adult RRT population, including the number on RRT per million population (pmp). These analyses are performed annually to help clinicians and policy makers plan future RRT requirements in the UK. Variation in case-mix is also reported to aid understanding of how to improve equity of RRT provision in the UK.

The Renal Association guidelines ([renal.org/health-professionals/guidelines/guidelines-commentaries](https://renal.org/health-professionals/guidelines/guidelines-commentaries)) provide audit measures relevant to the care of patients on RRT, but these are treatment-specific – for further details see the guideline tables in each chapter.

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

## Key findings

- 68,111 adult patients were receiving RRT for ESKD in the UK on 31/12/2019, an increase of 2.5% from 2018
- RRT prevalence was 1,293 pmp for adults, in trend with a 2.0% increase in recent years
- The median age of RRT patients was 59.6 years (ICHHD 67.5 years, HHD 55.2 years, PD 64.4 years and Tx 55.6 years). In 2000 the median age was 54.8 years (HD 63.3 years, PD 58.5 years and Tx 48.6 years)
- 61.2% of RRT patients were male
- Tx continued as the most common treatment modality (56.8%) – ICHD comprised 35.8%, PD 5.4% and HHD 2.0% of the RRT population
- The most common identifiable primary renal disease was glomerulonephritis (19.5%), followed by diabetes (18.3%)
- There were 3 centres above the upper 95% limit in the funnel plots showing 1 year age-, sex- and comorbidity-adjusted survival for patients prevalent to dialysis on 31/12/2018. It is expected that 3 centres would be outside the limits by chance
- There was no cause of death data available for 30.6% of deaths. For those with data, the leading cause of death in younger patients (<65 years) was cardiac disease (22.2%) and in older patients (≥65 years) was treatment withdrawal (20.9%).

# Analyses

## Changes to the prevalent adult RRT population

For the 70 adult renal centres, the number of prevalent patients on RRT was calculated as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

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

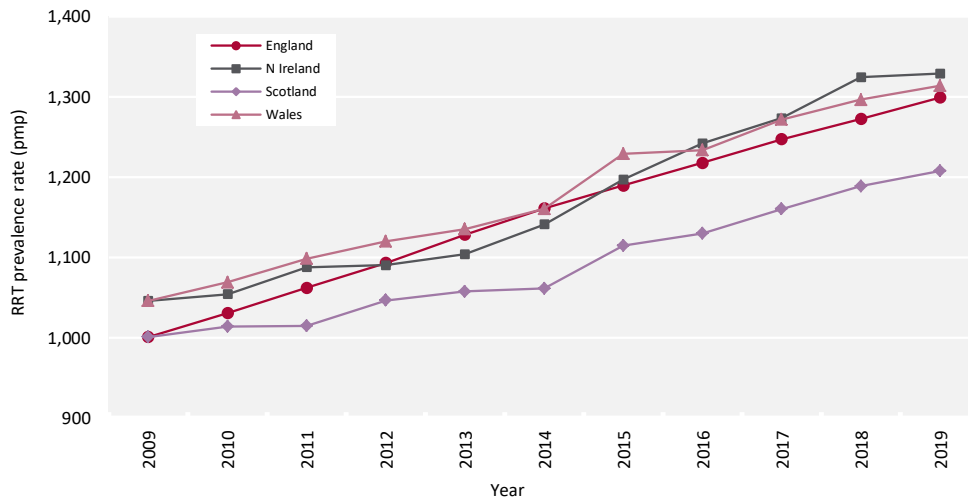
Centre	N on RRT					Estimated catchment population (millions)	2019 crude rate (pmp)
	2015	2016	2017	2018	2019		
ENGLAND							
Basldn	275	273	301	317	322	0.34	944
Bham	2,896	3,038	3,154	3,234	3,308	2.03	1,627
Bradfd	583	636	673	688	733	0.49	1,507
Brightn	950	992	1,010	1,056	1,059	1.07	992
Bristol	1,477	1,468	1,472	1,469	1,486	1.21	1,228
Camb	1,303	1,322	1,329	1,385	1,469	0.93	1,584
Carlis	281	279	281	293	303	0.25	1,199
Carsh <sup>1</sup>	1,587	1,654	1,692	1,763	1,771	1.61	1,098
Chelms	282	271	276	262	261	0.37	702
Colchr	120	123	129	124	145	0.29	502
Covnt	959	973	964	957	1,076	0.79	1,366
Derby	538	542	555	587	652	0.56	1,173
Donc	302	331	333	332	342	0.37	920
Dorset	681	686	734	764	772	0.72	1,069
Dudley	315	346	369	365	366	0.34	1,075
Exeter	968	1,013	1,058	1,090	1,091	0.94	1,156
Glouc	444	472	508	520	525	0.51	1,039
Hull	856	854	872	881	904	0.79	1,141
Ipswi	401	416	435	428	424	0.31	1,370
Kent	1,041	1,073	1,091	1,113	1,140	1.06	1,077
L Barts	2,279	2,368	2,492	2,599	2,660	1.57	1,689
L Guys	2,012	2,098	2,160	2,228	2,310	1.00	2,319
L Kings	1,084	1,110	1,149	1,185	1,244	0.92	1,345
L Rfree	2,093	2,175	2,192	2,237	2,344	1.32	1,782
L St.G	837	836	829	827	852	0.66	1,294
L West	3,294	3,391	3,472	3,554	3,613	1.95	1,857
Leeds	1,525	1,550	1,618	1,681	1,723	1.36	1,268
Leic	2,172	2,292	2,355	2,452	2,587	2.07	1,252
Liv Ain	222	227	209	216	210	0.43	491
Liv Roy	1,241	1,213	1,249	1,264	1,227	0.80	1,526
M RI	1,880	1,971	2,042	2,065	2,060	1.32	1,559
Middlbr	901	890	905	929	949	0.80	1,188
Newc	1,009	1,050	1,114	1,153	1,175	0.94	1,245
Norwch	720	770	777	785	809	0.68	1,185
Nottm	1,113	1,153	1,177	1,193	1,218	0.92	1,324
Oxford	1,690	1,766	1,874	1,935	1,969	1.43	1,375
Plymth	503	513	540	538	531	0.40	1,336
Ports	1,669	1,691	1,749	1,763	1,883	1.73	1,087
Prestn	1,215	1,204	1,270	1,319	1,341	1.22	1,097
Redng	775	789	795	814	860	0.69	1,245
Salford	974	1,019	1,113	1,174	1,237	1.14	1,084

Table 3.1 Continued

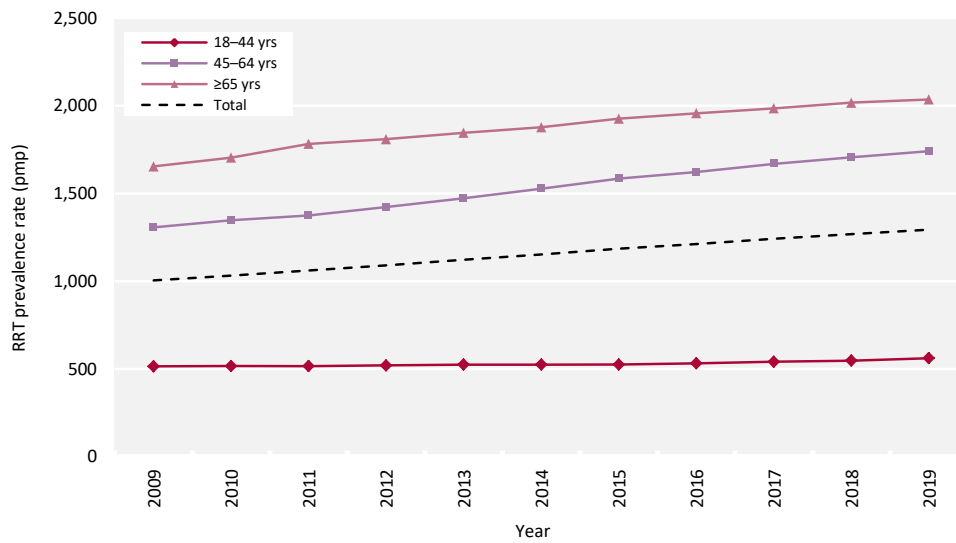
Centre	N on RRT					Estimated catchment population (millions)	2019 crude rate (pmp)
	2015	2016	2017	2018	2019		
Sheff	1,383	1,421	1,439	1,480	1,491	1.12	1,328
Shrew	369	377	384	428	428	0.41	1,053
Stevng	813	885	883	937	966	1.10	878
Sthend	246	236	254	263	264	0.27	974
Stoke	788	826	810	805	803	0.72	1,108
Sund	459	507	542	557	568	0.54	1,048
Truro	414	426	424	437	449	0.35	1,266
Wirral	281	337	386	395	411	0.47	884
Wolve	582	570	583	608	598	0.54	1,100
York	490	535	555	567	581	0.48	1,208
<b>N IRELAND</b>							
Antrim	241	252	255	274	280	0.24	1,152
Belfast	769	811	836	871	890	0.53	1,686
Newry	225	236	241	250	251	0.23	1,079
Ulster	169	166	182	191	182	0.20	906
West NI	293	307	313	326	328	0.25	1,321
<b>SCOTLAND</b>							
Abrdn	531	555	563	573	558	0.50	1,120
Airdrie	425	439	467	487	524	0.46	1,147
D&Gall	130	131	135	145	149	0.12	1,221
Dundee	419	418	435	445	449	0.37	1,225
Edinb	769	777	824	861	885	0.84	1,057
Glasgw	1,709	1,753	1,773	1,815	1,854	1.37	1,356
Inverns	252	258	262	279	282	0.22	1,267
Klmarnk	310	317	337	339	359	0.29	1,234
Krkldy	295	294	304	298	295	0.27	1,083
<b>WALES</b>							
Bangor	182	179	195	202	201	0.16	1,238
Cardff	1,613	1,626	1,684	1,720	1,730	1.15	1,511
Clwyd	185	177	180	190	205	0.18	1,143
Swanse	765	774	795	828	868	0.75	1,156
Wrexm	293	310	322	313	311	0.21	1,511
<b>TOTALS</b>							
<b>England</b>	<b>51,292</b>	<b>52,958</b>	<b>54,577</b>	<b>56,016</b>	<b>57,510</b>	<b>44.33</b>	<b>1,297</b>
<b>N Ireland</b>	<b>1,697</b>	<b>1,772</b>	<b>1,827</b>	<b>1,912</b>	<b>1,931</b>	<b>1.45</b>	<b>1,329</b>
<b>Scotland</b>	<b>4,840</b>	<b>4,942</b>	<b>5,100</b>	<b>5,242</b>	<b>5,355</b>	<b>4.43</b>	<b>1,209</b>
<b>Wales</b>	<b>3,038</b>	<b>3,066</b>	<b>3,176</b>	<b>3,253</b>	<b>3,315</b>	<b>2.45</b>	<b>1,354</b>
<b>UK</b>	<b>60,867</b>	<b>62,738</b>	<b>64,680</b>	<b>66,423</b>	<b>68,111</b>	<b>52.67</b>	<b>1,293</b>

Country RRT populations were calculated by summing the RRT 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. <sup>1</sup>Carshalton discovered a problem related to the submission of PD patients after the closing date. As a consequence, 26 PD patients are not included in this report. No adjustment has been made this year, but the problem has been resolved and numbers will be correct next year.

pmp – per million population



**Figure 3.2** Adult RRT prevalence rates by country between 2009 and 2019  
pmp – per million population



**Figure 3.3** Adult RRT prevalence rates by age group between 2009 and 2019  
pmp – per million population



## Demographics and treatment modality of prevalent adult RRT patients

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

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

**Table 3.2** Demographics and treatment modality of adult patients prevalent to RRT on 31/12/2019 by centre

Centre	N on RRT	% on ICHD	% on PD	% on HHD	% with Tx	Median age (yrs)	% male	Ethnicity				
								% White	% Asian	% Black	% Other	% missing
<b>ENGLAND</b>												
Basldn	322	58.4	6.2	3.1	32.3	61.3	65.5	85.6	6.6	5.0	2.8	0.9
Bham	3,308	40.5	7.8	2.3	49.5	58.7	58.4	57.2	29.3	10.7	2.8	1.5
Bradfd	733	38.2	4.6	0.8	56.3	57.6	60.6	50.9	45.4	2.6	1.1	0.8
Brightn	1,059	40.6	5.2	3.0	51.2	61.5	62.3	89.8	6.4	2.1	1.8	3.4
Bristol	1,486	31.5	4.3	1.1	63.1	59.0	61.7	88.6	4.1	5.6	1.8	0.9
Camb	1,469	19.6	1.9	2.0	76.4	57.7	62.7	90.9	5.9	2.0	1.2	2.0
Carlis	303	36.6	11.9	0.0	51.5	61.5	62.4	99.0	1.0	0.0	0.0	0.0
Carsh <sup>1</sup>	1,771	47.3	3.9	2.0	46.9	62.1	62.9	67.0	17.0	11.3	4.7	2.9
Chelms	261	43.7	11.9	0.0	44.4	65.4	69.3	90.8	3.2	2.8	3.2	3.8
Colchr	145	100.0	0.0	0.0	0.0	72.5	61.4	95.1	1.4	0.7	2.8	0.7
Covnt	1,076	32.9	7.6	1.9	57.6	59.2	61.7	78.6	16.4	5.0	0.0	0.1
Derby	652	36.5	9.5	8.9	45.1	60.8	61.5	83.1	10.9	3.4	2.6	0.3
Donc	342	52.9	7.3	1.5	38.3	65.3	63.5	93.9	2.9	1.2	2.0	0.0
Dorset	772	37.4	4.3	1.9	56.3	65.0	60.5	96.7	1.3	0.1	1.8	1.0
Dudley	366	56.6	9.8	3.3	30.3	64.1	63.1	81.4	12.3	5.5	0.8	0.0
Exeter	1,091	40.6	7.7	1.9	49.8	63.7	62.1	97.0	0.6	0.9	1.5	0.3
Glouc	525	43.0	5.5	0.6	50.9	64.7	63.2	92.6	3.0	2.3	2.1	0.0
Hull	904	38.7	5.4	0.8	55.1	59.1	64.0	96.4	1.9	0.7	1.0	0.4
Ipswi	424	33.3	9.9	0.9	55.9	62.8	64.2	82.9	2.0	3.7	11.5	3.5
Kent	1,140	36.8	4.5	1.7	57.0	61.3	59.8	93.9	3.5	1.1	1.6	1.5
L Barts	2,660	39.0	8.6	0.7	51.7	57.8	60.0	32.6	33.3	22.7	11.5	1.1
L Guys	2,310	28.8	2.3	1.9	67.0	55.5	58.9	58.7	9.9	27.0	4.4	1.9
L Kings	1,244	48.8	7.6	1.4	42.1	59.3	62.0	44.1	13.6	37.6	4.7	1.5
L Rfree	2,344	31.7	7.2	0.5	60.7	58.5	59.8	44.3	22.6	22.7	10.3	4.8
L St.G	852	35.2	5.2	0.7	58.9	60.5	58.7	38.4	25.5	25.1	10.9	3.5
L West	3,613	38.2	4.3	0.8	56.7	60.9	60.9	39.3	35.1	18.8	6.8	0.0
Leeds	1,723	32.0	3.9	1.5	62.6	57.4	61.8	77.1	16.7	4.9	1.3	0.1
Leic	2,587	37.3	4.9	2.1	55.7	60.2	60.6	73.3	20.1	4.8	1.8	3.9
Liv Ain	210	71.9	8.6	6.2	13.3	64.6	62.4	97.6	0.5	1.0	1.0	1.0
Liv Roy	1,227	28.9	2.6	2.9	65.5	57.6	61.7	91.2	2.9	3.3	2.6	1.2
M RI	2,060	24.2	3.7	3.7	68.3	57.0	60.0	68.4	14.9	14.7	2.0	1.5
Middlbr	949	36.2	3.4	2.0	58.4	59.5	64.0	94.0	5.2	0.6	0.2	0.0
Newc	1,175	27.8	5.1	1.6	65.4	59.0	60.3	93.4	4.3	1.0	1.3	0.0
Norwch	809	36.7	5.8	1.7	55.7	62.7	61.6	96.8	1.5	0.9	0.9	0.4
Nottm	1,218	29.6	6.2	2.5	61.7	58.1	60.5	80.9	9.4	6.7	3.0	0.0
Oxford	1,969	23.1	2.9	1.3	72.7	57.8	62.3	80.3	11.6	4.3	3.8	10.8
Plymth	531	23.7	7.9	1.3	67.0	62.0	67.8	96.6	0.8	0.4	2.3	0.0
Ports	1,883	31.4	4.7	3.7	60.2	60.4	61.7	92.2	3.9	1.3	2.5	5.7
Prestn	1,341	37.8	3.1	3.7	55.4	60.5	60.9	83.8	14.9	0.8	0.4	0.0
Redng	860	36.3	6.5	0.9	56.3	62.0	63.1	66.6	24.7	6.5	2.2	8.8
Salford	1,237	31.7	9.7	3.3	55.3	58.7	61.4	79.8	15.8	2.7	1.7	0.0

**Table 3.2.** Continued

Centre	N on RRT	% on ICHD	% on PD	% on HHD	% with Tx	Median age (yrs)	% male	Ethnicity				
								% White	% Asian	% Black	% Other	% missing
Sheff	1,491	36.2	4.0	3.8	56.1	59.4	62.4	88.0	6.7	2.6	2.7	1.5
Shrew	428	47.7	12.9	6.3	33.2	63.3	65.0	93.0	3.5	1.4	2.1	0.5
Stevng	966	52.5	3.8	3.8	39.9	61.1	63.3	71.1	15.1	8.9	4.9	8.4
Sthend	264	44.7	12.9	2.3	40.2	63.6	60.6	87.1	6.8	3.8	2.3	0.0
Stoke	803	33.3	8.8	3.5	54.4	59.8	63.3	90.6	5.9	1.3	2.3	2.2
Sund	568	44.4	4.6	2.1	48.9	60.8	59.7	95.9	3.2	0.7	0.2	0.2
Truro	449	37.0	4.5	0.9	57.7	62.7	58.6	98.7	0.4	0.0	0.9	0.0
Wirral	411	50.4	4.1	1.9	43.6	62.0	60.8	95.6	2.4	1.0	1.0	0.0
Wolve	598	50.5	8.2	5.4	36.0	60.9	60.4	64.4	24.8	9.4	1.3	0.8
York	581	31.7	5.7	2.8	59.9	61.9	62.5	97.2	1.2	0.3	1.2	1.4
<b>N IRELAND</b>												
Antrim	280	42.1	6.8	1.4	49.6	64.2	64.6	100.0	0.0	0.0	0.0	0.0
Belfast	890	17.6	2.1	1.5	78.8	57.1	59.4	97.4	1.7	0.6	0.4	6.0
Newry	251	31.1	4.4	0.8	63.7	61.1	57.0	98.4	0.8	0.4	0.4	1.2
Ulster	182	53.3	4.4	0.0	42.3	68.6	55.5	95.1	2.7	1.6	0.5	0.0
West NI	328	32.3	4.3	0.3	63.1	57.7	60.7	98.5	1.2	0.3	0.0	0.0
<b>SCOTLAND</b>												
Abrdn	558	34.1	3.9	0.5	61.5	57.6	57.9					66.5
Airdrie	524	39.5	4.0	0.0	56.5	58.5	58.8	96.7	2.2	0.2	0.8	6.7
D&Gall	149	34.9	5.4	1.3	58.4	59.8	61.7					36.9
Dundee	449	36.1	4.7	1.6	57.7	59.0	60.6					66.8
Edinb	885	33.4	4.6	0.2	61.7	58.9	62.4					75.5
Glasgw	1,854	31.0	2.4	1.0	65.6	58.5	59.2					48.8
Inverns	282	32.6	4.3	2.5	60.6	58.8	56.7					47.9
Klmarnk	359	38.7	6.7	3.9	50.7	60.4	59.1					56.5
Krkldy	295	46.8	4.1	0.7	48.5	61.6	60.3					80.3
<b>WALES</b>												
Bangor	201	32.8	7.0	7.5	52.7	62.5	64.2	98.5	0.0	0.5	1.0	3.5
Cardff	1,730	31.9	3.7	1.9	62.5	58.8	62.2	91.4	6.0	0.8	1.8	0.8
Clwyd	205	42.0	6.3	1.0	50.7	64.7	64.4	97.4	2.1	0.0	0.5	6.3
Swanse	868	44.8	9.0	5.2	41.0	63.8	63.6	97.3	1.6	0.3	0.7	0.8
Wrexm	311	34.1	7.4	2.3	56.3	59.6	64.6	96.4	1.3	1.0	1.3	1.0
<b>TOTALS</b>												
<b>England</b>	<b>57,510</b>	<b>36.1</b>	<b>5.5</b>	<b>2.1</b>	<b>56.3</b>	<b>59.6</b>	<b>61.3</b>	<b>73.2</b>	<b>14.5</b>	<b>8.9</b>	<b>3.4</b>	<b>2.0</b>
<b>N Ireland</b>	<b>1,931</b>	<b>28.8</b>	<b>3.7</b>	<b>1.0</b>	<b>66.5</b>	<b>59.2</b>	<b>59.7</b>	<b>97.9</b>	<b>1.3</b>	<b>0.5</b>	<b>0.3</b>	<b>2.9</b>
<b>Scotland</b>	<b>5,355</b>	<b>34.6</b>	<b>3.8</b>	<b>1.0</b>	<b>60.6</b>	<b>58.8</b>	<b>59.7</b>					<b>54.3</b>
<b>Wales</b>	<b>3,315</b>	<b>36.2</b>	<b>5.8</b>	<b>3.1</b>	<b>55.0</b>	<b>60.7</b>	<b>63.0</b>	<b>94.2</b>	<b>3.8</b>	<b>0.6</b>	<b>1.3</b>	<b>1.3</b>
<b>UK</b>	<b>68,111</b>	<b>35.8</b>	<b>5.4</b>	<b>2.0</b>	<b>56.8</b>	<b>59.6</b>	<b>61.2</b>	<b>75.6</b>	<b>13.3</b>	<b>8.0</b>	<b>3.1</b>	<b>6.1</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.

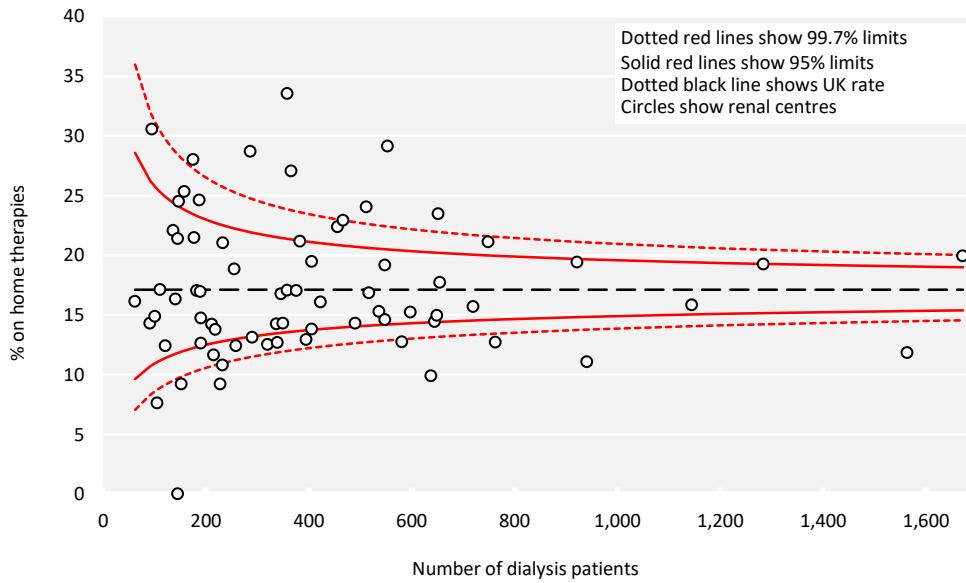
<sup>1</sup>Carshalton discovered a problem related to the submission of PD patients after the closing date. As a consequence, 26 PD patients are not included in this report. No adjustment has been made this year, but the problem has been resolved and numbers will be correct next year.

PRDs were grouped into categories as shown in table 3.3, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of RRT patients in each ethnic group and with each PRD is shown for patients with ethnicity and PRD data, respectively, and these total 100% of patients with data. The proportions of patients with no ethnicity and no PRD data are shown on separate lines.

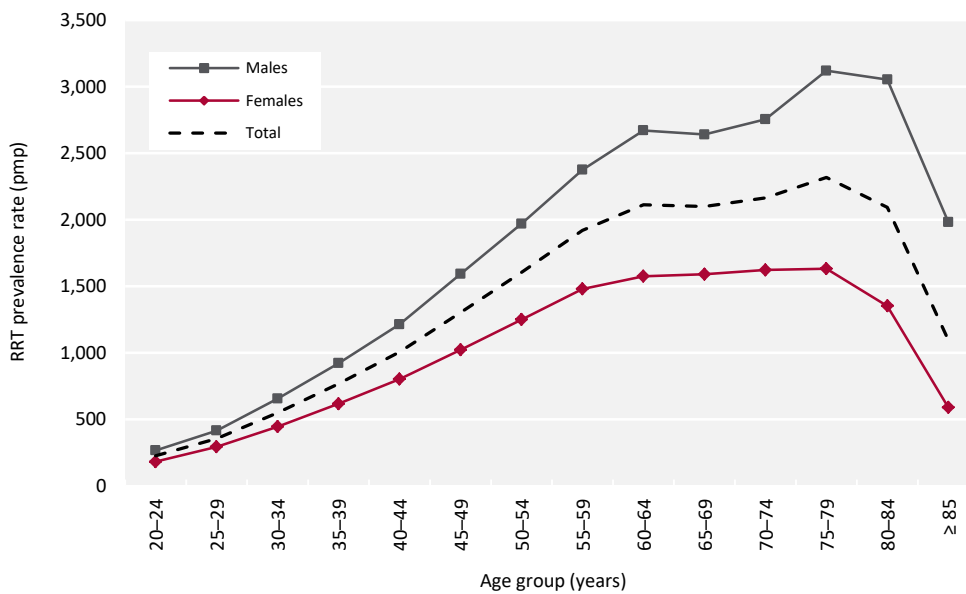
**Table 3.3** Demographics, primary renal diseases (PRDs) and prevalent treatment modality of adult patients prevalent to RRT on 31/12/2019 by age group

Characteristic	Age group (yrs)							Total	Median age (yrs)
	18–34	35–44	45–54	55–64	65–74	75–84	≥85		
<b>Total</b>									
N on RRT	5,389	7,552	13,284	16,696	14,496	8,905	1,789	68,111	59.6
% on RRT	7.9	11.1	19.5	24.5	21.3	13.1	2.6		
<b>Sex (%)</b>									
Male	7.7	10.9	19.1	24.7	21.2	13.5	2.8	61.2	59.9
Female	8.3	11.3	20.1	24.2	21.5	12.4	2.3	38.8	59.2
<b>Ethnicity (%)</b>									
White	7.8	10.5	19.3	23.9	21.9	13.7	2.9	75.6	60.0
Asian	9.0	13.5	18.3	24.7	22.3	10.4	1.7	13.3	59.3
Black	6.0	12.3	25.3	29.4	13.7	11.1	2.3	8.0	57.0
Other	11.2	15.7	20.8	23.4	17.7	9.9	1.3	3.1	56.0
Missing	7.3	9.2	16.6	25.9	23.5	14.8	2.7	6.1	61.7
<b>PRD (%)</b>									
Diabetes	2.7	8.8	19.4	28.3	24.8	13.8	2.2	18.3	61.8
Glomerulonephritis	9.3	13.8	22.3	25.9	18.8	8.7	1.2	19.5	56.8
Hypertension	3.2	8.6	19.1	24.6	21.3	18.9	4.4	6.3	62.4
Polycystic kidney disease	1.7	5.7	20.9	34.2	26.6	10.2	0.8	10.4	61.3
Pyelonephritis	10.4	14.5	24.1	22.1	16.3	10.3	2.3	9.6	55.4
Renal vascular disease	1.6	3.1	5.1	13.2	29.6	36.9	10.5	2.8	74.3
Other	15.8	13.8	18.1	20.3	19.0	10.9	2.1	18.2	56.1
Uncertain aetiology	7.7	11.4	17.5	20.8	21.0	16.9	4.6	14.9	61.5
Missing	15.0	9.6	14.5	20.2	20.6	16.0	4.0	2.5	60.7
<b>Modality (%)</b>									
ICHD	4.4	6.3	13.0	20.9	24.7	24.5	6.3	35.8	67.5
HHD	9.2	13.5	26.8	26.6	16.0	7.5	0.4	2.0	55.2
PD	7.8	8.4	14.1	21.0	24.0	20.7	3.8	5.4	64.4
Tx	10.1	14.3	23.9	27.0	19.1	5.4	0.3	56.8	55.6

Variation between centres in the proportion of patients prevalent to dialysis on 31/12/2019 and on home therapies is shown in figure 3.4 . Please visit the UKRR data portal ([renal.org/audit-research/data-portal](http://renal.org/audit-research/data-portal)) to identify individual renal centres.



**Figure 3.4** Percentage of adult patients prevalent to dialysis on 31/12/2019 on home therapies (PD and HHD) by centre

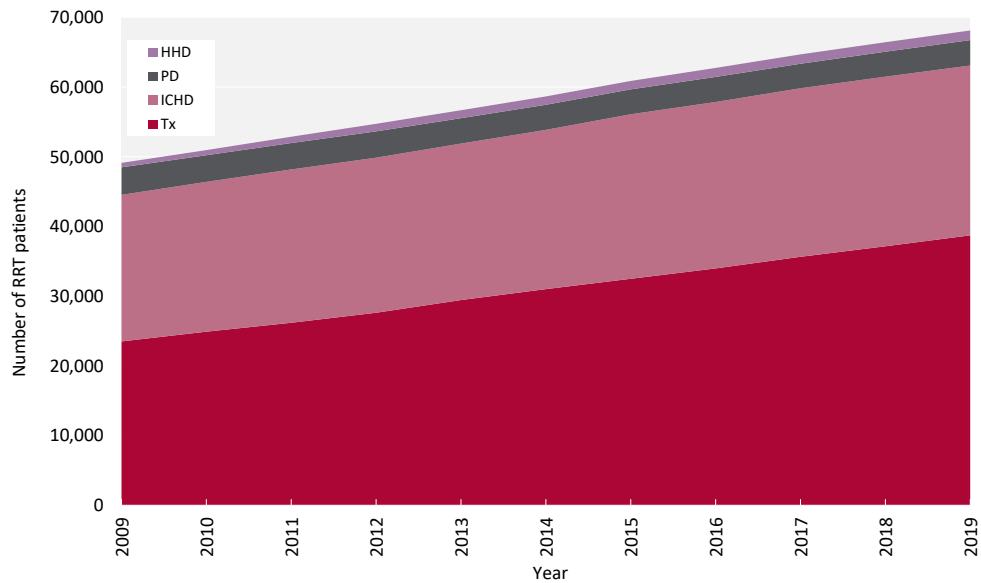


**Figure 3.5** Prevalence rates for adult patients on RRT on 31/12/2019 by age group and sex

For each modality, the percentage of patients of each year of age is shown in figure 3.6, with the totals of each modality adding to 100%.



**Figure 3.6** Age profile of adult patients prevalent to RRT on 31/12/2019 by RRT modality



**Figure 3.7** Growth in numbers of prevalent adult RRT patients by treatment modality between 2009 and 2019

**Table 3.4** Change in adult RRT prevalence rates by modality between 2015 and 2019

Year	Prevalence (pmp)					% growth in prevalence				
	HD	PD	Dialysis	Tx	RRT	HD	PD	Dialysis	Tx	RRT
2015	483	70	553	633	1,186					
2016	486	70	556	656	1,212	0.6	-0.1	0.5	3.7	2.2
2017	490	68	558	684	1,242	0.8	-2.9	0.4	4.3	2.5
2018	491	68	559	709	1,268	0.1	1.3	0.2	3.6	2.1
2019	489	69	558	735	1,293	-0.3	1.1	-0.2	3.7	2.0
<b>Average annual growth 2015-2019</b>						<b>0.3</b>	<b>-0.1</b>	<b>0.2</b>	<b>3.8</b>	<b>2.2</b>

pmp – per million population

In table 3.5, for each PRD category, the proportion of patients on each treatment modality is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line. Table 3.6 shows changes in PRDs between 2010 and 2019, in particular the increase in diabetes.

**Table 3.5** Treatment modality of adult patients prevalent to RRT on 31/12/2019 by primary renal disease (PRD)

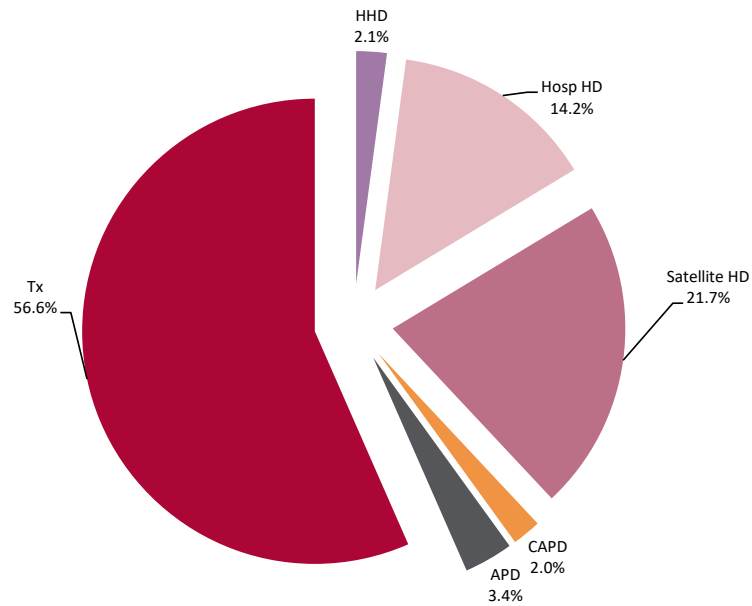
PRD	N on RRT	% RRT population	Modality (%)		
			HD	PD	Tx
Diabetes	12,140	18.3	55.5	7.1	37.4
Glomerulonephritis	12,968	19.5	27.4	4.3	68.3
Hypertension	4,200	6.3	44.7	6.5	48.8
Polycystic kidney disease	6,927	10.4	20.5	3.5	76.0
Pyelonephritis	6,355	9.6	29.1	3.4	67.5
Renal vascular disease	1,860	2.8	65.8	10.7	23.5
Other	12,079	18.2	36.0	4.5	59.5
Uncertain aetiology	9,910	14.9	38.6	5.9	55.5
<b>Total (with data)</b>	<b>66,439</b>	<b>100.0</b>	<b>37.4</b>	<b>5.2</b>	<b>57.4</b>
Missing	1,672	2.5	54.8	9.5	35.6

**Table 3.6** Change in primary renal disease (PRD) of adult patients prevalent to RRT between 2010 and 2019

PRD	Year									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Diabetes	15.4	15.8	16.2	16.5	16.7	17.1	17.4	17.7	18.0	18.3
Glomerulonephritis	19.4	19.3	19.4	19.5	19.5	19.4	19.4	19.5	19.4	19.5
Hypertension	6.1	6.1	6.3	6.3	6.3	6.3	6.2	6.2	6.2	6.3
Polycystic kidney disease	9.9	10.0	10.0	10.2	10.2	10.3	10.2	10.3	10.4	10.4
Pyelonephritis	11.8	11.6	11.4	11.2	10.9	10.6	10.4	10.1	9.8	9.6
Renal vascular disease	3.6	3.5	3.3	3.1	3.1	3.0	3.0	3.0	2.9	2.8
Other	16.3	16.4	16.6	16.8	17.2	17.4	17.7	18.0	18.2	18.2
Uncertain aetiology	17.5	17.4	16.8	16.3	16.2	15.9	15.6	15.3	15.0	14.9
Missing	0.4	0.6	0.6	0.9	0.8	0.9	1.0	1.4	1.7	2.5

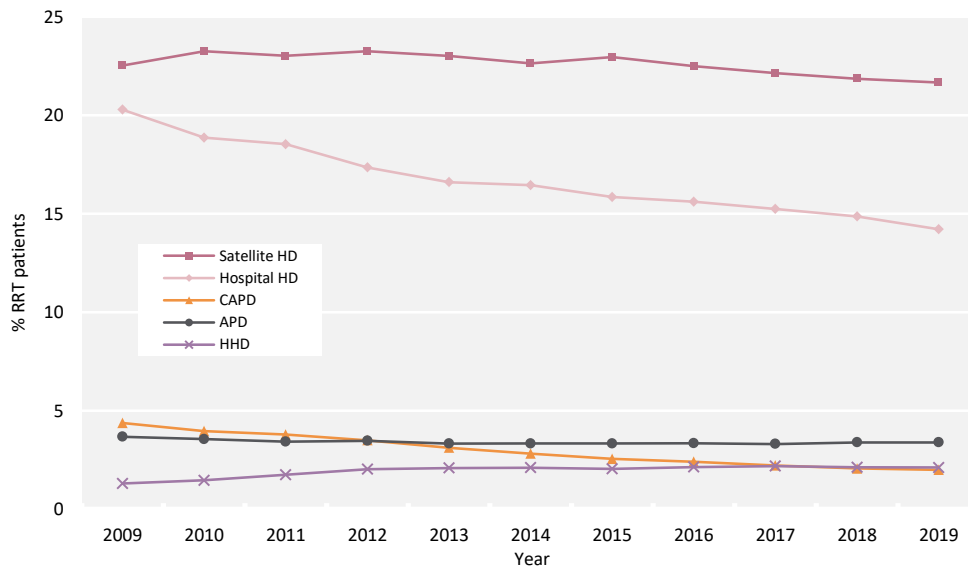
The percentages in each PRD category add up to 100% in each year; the percentages with missing PRD data are shown separately.

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



**Figure 3.8** Detailed treatment modality of adult patients prevalent to RRT on 31/12/2019

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



**Figure 3.9** Detailed dialysis modality changes in prevalent adult RRT patients between 2009 and 2019

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

**Table 3.7** Adult patients prevalent to dialysis on 31/12/2019 by detailed dialysis modality and centre

Centre	N on dialysis	% Tx wait-listed <65 yrs	% Tx wait-listed ≥65 yrs	% on HD				% on PD		
				All HD	HHD	Hospital	Satellite	All PD	CAPD	APD
ENGLAND										
Basldn	218	39.0	6.8	90.8	4.6	70.6	15.6	9.2	2.8	6.4
Bham	1,672	30.4	3.0	84.6	4.6	28.3	51.8	15.4	2.3	13.1
Bradfd	320	30.9	4.2	89.4	1.9	74.7	12.8	10.6	6.9	3.8
Brightn	517	28.0	4.4	89.4	6.2	36.8	46.4	10.6	6.6	4.1
Bristol	548	30.1	5.0	88.3	2.9	15.5	69.9	11.7	6.9	4.7
Camb	346	31.7	4.9	91.9	8.7	35.0	48.3	8.1	5.5	2.6
Carlis	147	25.8	5.9	75.5	0.0	47.6	27.9	24.5	3.4	21.1
Carsh	941	32.6	3.9	92.7	3.7	20.2	68.8	7.3	2.1	4.5
Chelms	145	25.5	2.1	78.6	0.0	78.6	0.0	21.4	5.5	15.9
Colchr	145	26.1	2.0	100.0	0.0	78.6	21.4	0.0	0.0	0.0
Covnt	456	36.6	3.6	82.0	4.4	77.6	0.0	18.0	18.0	0.0
Derby	358	28.0	4.1	82.7	16.2	58.9	7.5	17.3	9.2	8.1
Donc	211	35.5	6.7	88.2	2.4	45.5	40.3	11.9	4.3	7.6
Dorset	337	37.2	8.5	90.2	4.5	18.7	67.1	9.8	1.2	8.6
Dudley	255	31.2	4.1	85.9	4.7	32.2	49.0	14.1	7.5	6.7
Exeter	548	30.9	3.8	84.7	3.8	9.9	71.0	15.3	6.6	8.8
Glouc	258	31.3	6.2	88.8	1.2	63.6	24.0	11.2	1.6	9.7
Hull	406	31.4	7.1	87.9	1.7	42.1	44.1	12.1	6.7	5.4
Ipswi	187	24.6	3.4	77.5	2.1	66.8	8.6	22.5	12.8	8.6
Kent	490	23.7	4.9	89.6	3.9	28.6	57.1	10.4	9.6	0.8
L Barts	1,284	37.1	5.7	82.2	1.4	33.8	47.0	17.8	2.4	15.4
L Guys	763	32.6	8.5	93.1	5.8	15.1	72.2	7.0	0.3	6.7
L Kings	720	22.9	6.2	86.8	2.5	19.3	65.0	13.2	4.3	8.9
L Rfree	922	38.8	8.7	81.8	1.2	2.7	77.9	18.2	5.6	12.6
L St.G	350	32.5	9.6	87.4	1.7	25.7	60.0	12.6	2.3	8.6
L West	1,564	51.0	13.3	90.0	1.9	16.1	72.1	10.0	5.8	4.2
Leeds	645	39.5	13.9	89.6	4.0	17.4	68.2	10.4	2.8	7.6
Leic	1,145	35.2	6.9	88.9	4.7	16.9	67.3	11.1	2.4	8.7
Liv Ain	182	31.3	5.1	90.1	7.1	9.3	73.6	9.9	1.7	8.2
Liv Roy	423	24.6	14.7	92.4	8.5	35.0	48.9	7.6	2.4	5.2
M RI	652	40.0	13.9	88.2	11.7	12.7	63.8	11.8	2.5	9.4
Middlbr	395	40.9	8.4	91.9	4.8	23.3	63.8	8.1	8.1	0.0
Newc	406	35.3	11.9	85.2	4.7	60.1	20.4	14.8	1.2	13.6
Norwch	358	22.0	2.6	86.9	3.9	51.7	31.3	13.1	9.8	3.4
Nottm	467	28.6	2.9	83.7	6.6	34.3	42.8	16.3	5.1	11.1
Oxford	537	41.5	6.0	89.4	4.7	30.9	53.8	10.6	3.7	6.7
Plymth	175	31.7	14.8	76.0	4.0	68.0	4.0	24.0	6.3	17.7
Ports	749	32.1	10.3	88.3	9.4	16.4	62.5	11.8	4.4	7.3
Prestn	598	36.4	10.2	93.0	8.2	19.7	65.1	7.0	2.3	4.7
Redng	376	30.4	4.6	85.1	2.1	35.9	47.1	14.9	8.8	6.1
Salford	553	44.6	21.4	78.3	7.4	20.1	50.8	21.7	7.6	14.1
Sheff	655	32.2	7.0	90.8	8.6	46.4	35.9	9.2	2.8	6.3
Shrew	286	26.8	4.0	80.8	9.4	40.6	30.8	19.2	3.5	15.7
Stevng	581	37.7	9.4	93.6	6.4	41.1	46.1	6.4	6.4	0.0
Sthend	158	26.2	2.2	78.5	3.8	74.7	0.0	21.5	21.5	0.0
Stoke	366	34.4	1.9	80.6	7.7	47.5	25.4	19.4	2.5	11.8
Sund	290	31.4	11.1	91.0	4.1	46.9	40.0	9.0	2.8	6.2
Truro	190	30.2	3.9	89.5	2.1	54.7	32.6	10.5	4.2	6.3
Wirral	232	30.4	9.2	92.7	3.5	42.7	46.6	7.3	0.4	6.9
Wolve	383	21.3	5.4	87.2	8.4	66.6	12.3	12.8	2.4	7.3
York	233	34.9	8.7	85.8	6.9	30.0	48.9	14.2	11.6	2.6



**Table 3.7** Continued

Centre	N on dialysis	% Tx wait-listed <65 yrs	% Tx wait-listed ≥65 yrs	% on HD				% on PD		
				All HD	HHD	Hospital	Satellite	All PD	CAPD	APD
<b>N IRELAND<sup>1</sup></b>										
Antrim	141	29.7	4.8	86.5	2.8	83.7	0.0	13.5	2.8	9.9
Belfast	189	35.6	14.1	90.0	6.9	83.1	0.0	10.1	0.0	9.0
Newry	91	19.4	8.3	87.9	2.2	85.7	0.0	12.1	0.0	12.1
Ulster	105	16.0	3.8	92.4	0.0	92.4	0.0	7.6	1.0	3.8
West NI	121	30.2	7.4	88.4	0.8	87.6	0.0	11.6	1.7	9.9
<b>SCOTLAND<sup>2</sup></b>										
Abrdn	215	37.4	10.3	89.8	1.4	88.4	0.0	10.2	10.2	0.0
Airdrie	228	40.0	16.3	90.8	0.0	90.8	0.0	9.2	4.0	5.3
D&Gall	62	51.9	14.3	87.1	3.2	83.9	0.0	12.9	1.6	11.3
Dundee	190	36.7	1.0	89.0	3.7	85.3	0.0	11.1	0.0	11.1
Edinb	339	33.5	11.3	87.9	0.6	87.3	0.0	12.1	4.1	8.0
Glasgw	638	51.3	12.7	93.0	2.8	90.1	0.0	7.1	1.6	5.5
Inverns	111	46.9	3.2	89.2	6.3	82.9	0.0	10.8	10.8	0.0
Klmarnk	177	36.0	15.4	86.4	7.9	78.5	0.0	13.6	0.0	13.6
Krkldy	152	27.1	11.0	92.1	1.3	90.8	0.0	7.9	0.7	7.2
<b>WALES</b>										
Bangor	95	32.5	7.3	85.3	15.8	52.6	16.8	14.7	3.2	11.6
Cardff	649	30.6	7.8	90.1	5.1	3.9	81.2	9.9	5.1	4.8
Clwyd	101	27.3	2.9	87.1	2.0	85.2	0.0	12.9	6.9	5.9
Swanse	512	29.1	5.5	84.8	8.8	44.5	31.5	15.2	6.5	8.8
Wrexm	136	23.4	5.6	83.1	5.2	64.0	14.0	16.9	0.7	16.2
<b>TOTALS</b>										
<b>England</b>	<b>25,143</b>	<b>34.1</b>	<b>7.3</b>	<b>87.4</b>	<b>4.8</b>	<b>31.4</b>	<b>51.2</b>	<b>12.6</b>	<b>4.7</b>	<b>7.8</b>
<b>N Ireland</b>	<b>647</b>	<b>29.2</b>	<b>7.8</b>	<b>89.0</b>	<b>3.1</b>	<b>85.9</b>	<b>0.0</b>	<b>11.0</b>	<b>1.1</b>	<b>9.0</b>
<b>Scotland</b>	<b>2,112</b>	<b>41.1</b>	<b>11.1</b>	<b>90.3</b>	<b>2.6</b>	<b>87.6</b>	<b>0.0</b>	<b>9.8</b>	<b>3.3</b>	<b>6.5</b>
<b>Wales</b>	<b>1,493</b>	<b>29.4</b>	<b>6.3</b>	<b>87.1</b>	<b>6.8</b>	<b>31.9</b>	<b>48.4</b>	<b>12.9</b>	<b>5.2</b>	<b>7.7</b>
<b>UK</b>	<b>29,395</b>	<b>34.3</b>	<b>7.5</b>	<b>87.6</b>	<b>4.7</b>	<b>36.6</b>	<b>46.3</b>	<b>12.4</b>	<b>4.5</b>	<b>7.7</b>

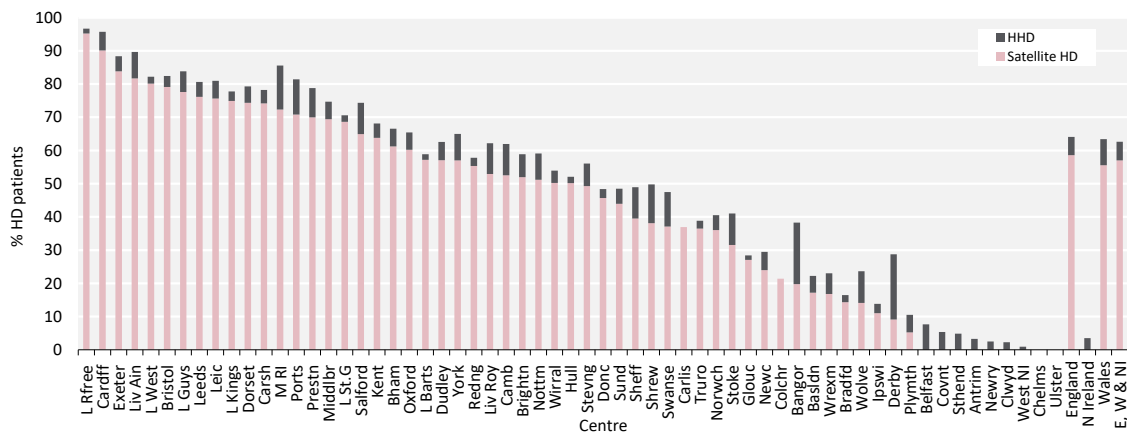
Blank cells – no data returned by the centre.

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

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

APD – automated PD; CAPD – continuous ambulatory PD

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



**Figure 3.10** Adult patients prevalent to HD on 31/12/2019 treated with satellite HD or HHD by centre  
There were no satellite units in Northern Ireland and Scottish centres were excluded because data on satellite HD were not available.

## Dialysis access in prevalent adult dialysis patients

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

## Survival in adult dialysis patients

Survival was analysed in prevalent patients receiving dialysis on 31/12/2018 and followed-up for one year in 2019. Survival in patients with a Tx is presented in chapter 4.

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

**Table 3.8** 1 year adjusted survival (age and case-mix) of adult patients prevalent to dialysis on 31/12/2018 by centre

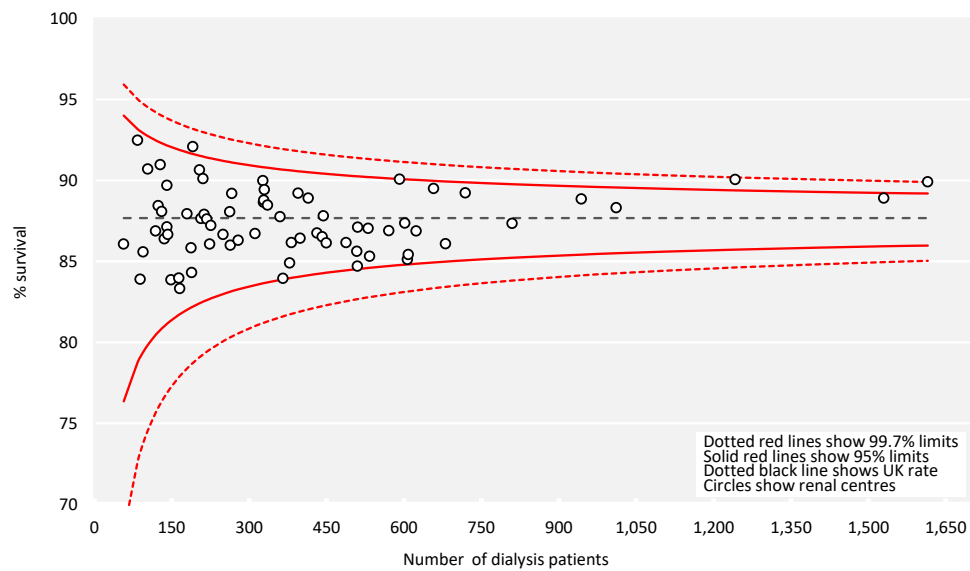
Centre	Age-adjusted survival				Case-mix adjusted survival <sup>1</sup>			
	N on dialysis	1 yr (%)	Lower 95% limit	Upper 95% limit	N on dialysis	1 yr (%)	Lower 95% limit	Upper 95% limit
D&Gall	57	86.1	76.4	94.0				
Clwyd	84	92.5	78.8	93.2	84	94.1	81.6	94.9
Newry	89	83.9	79.1	93.0	88	82.4	81.9	94.8
Bangor	95	85.6	79.4	92.9	95	89.0	82.3	94.7
Inverns	104	90.7	79.9	92.7				
Colchr	119	86.9	80.5	92.5	119	89.9	83.3	94.3
Ulster	124	88.4	80.6	92.4	122	86.4	83.4	94.3
Carlisle	128	91.0	80.8	92.3	124	92.0	83.5	94.2
West NI	131	88.1	80.9	92.3	121	83.6	83.4	94.3
Wrexm	136	86.4	81.0	92.2	136	87.9	83.8	94.1
Sthend	141	89.7	81.2	92.2	141	90.5	84.0	94.0
Krkldy	141	87.1	81.2	92.2				
Antrim	143	86.7	81.2	92.1	134	85.3	83.8	94.1
Chelms	149	83.8	81.4	92.1	148	87.1	84.1	94.0
Klmarnk	164	84.0	81.7	91.9				
Plymth	166	83.3	81.7	91.9	164	87.4	84.5	93.8
Truro	180	87.9	82.0	91.7	180	91.0	84.8	93.7
Ipswi	188	85.8	82.2	91.7	181	88.8	84.8	93.7
Liv Ain	189	84.3	82.2	91.7	189	88.8	84.9	93.6
Dundee	191	92.1	82.2	91.6				
Basldn	204	90.6	82.4	91.5	203	92.9	85.2	93.5
Airdrie	207	87.6	82.5	91.5				
York	211	90.1	82.5	91.5	211	92.2	85.3	93.5
Donc	213	87.9	82.5	91.5	210	89.9	85.3	93.5
Belfast	218	87.6	82.6	91.4				
Wirral	224	86.1	82.7	91.4	223	89.9	85.4	93.4
Abrdn	226	87.2	82.7	91.4				
Dudley	250	86.6	83.0	91.2	250	89.8	85.7	93.2
Sund	263	88.0	83.1	91.1	261	90.6	85.8	93.2
Glouc	264	86.0	83.1	91.1	260	88.4	85.8	93.2
Shrew	267	89.2	83.2	91.1	267	90.8	85.9	93.1
Bradfd	279	86.3	83.3	91.0	278	89.7	86.0	93.1
Derby	312	86.7	83.5	90.9	312	89.1	86.2	92.9
L St.G	327	90.0	83.6	90.8	316	91.9	86.3	92.9
Redng	328	88.6	83.7	90.8	328	91.5	86.4	92.9
Dorset	329	88.8	83.7	90.8	329	90.3	86.4	92.9
Edinb	330	89.4	83.7	90.8				
Norwch	336	88.5	83.7	90.8	336	90.0	86.4	92.9
Middlbr	360	87.8	83.9	90.7	360	91.3	86.5	92.8
Stoke	366	83.9	83.9	90.7	364	87.2	86.6	92.8
Hull	379	84.9	84.0	90.6	378	87.8	86.6	92.7
Wolve	382	86.1	84.0	90.6	382	89.0	86.7	92.7
Camb	395	89.2	84.0	90.6	379	90.0	86.7	92.7
Newc	399	86.4	84.1	90.6	399	90.4	86.7	92.7
Covnt	415	88.9	84.1	90.5	408	90.4	86.8	92.6
Nottm	432	86.7	84.2	90.5	431	89.6	86.9	92.6
Swanse	442	86.5	84.3	90.4	442	89.6	86.9	92.5
Liv Roy	444	87.8	84.3	90.4	439	91.7	86.9	92.6
Kent	450	86.1	84.3	90.4	450	88.2	87.0	92.5
Oxford	488	86.2	84.4	90.3	477	89.0	87.1	92.5
Brightn	509	85.6	84.5	90.3	497	88.5	87.1	92.4
Salford	510	84.7	84.5	90.3	510	88.7	87.2	92.4
Bristol	511	87.1	84.5	90.3	510	90.4	87.2	92.4
Exeter	531	87.0	84.6	90.2	528	89.4	87.2	92.4
Stevng	534	85.3	84.6	90.2	532	87.7	87.2	92.4

**Table 3.8** Continued

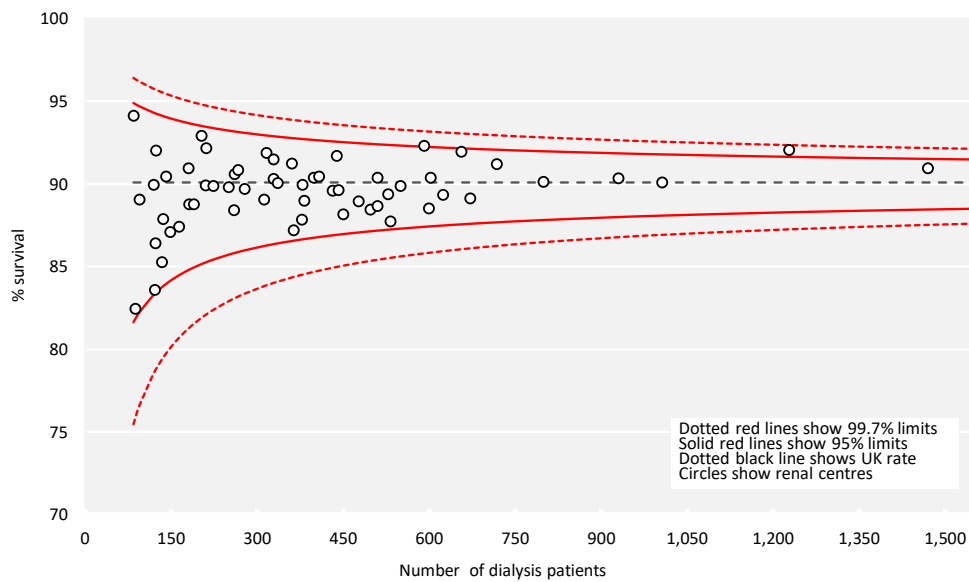
Centre	Age-adjusted survival				Case-mix adjusted survival <sup>1</sup>			
	N on dialysis	1 yr (%)	Lower 95% limit	Upper 95% limit	N on dialysis	1 yr (%)	Lower 95% limit	Upper 95% limit
Prestn	571	86.9	84.7	90.1	550	89.9	87.3	92.3
Leeds	592	90.1	84.8	90.1	591	92.3	87.4	92.3
Cardff	602	87.4	84.8	90.1	602	90.4	87.4	92.2
M RI	607	85.1	84.8	90.1	599	88.5	87.4	92.2
Glasgw	609	85.4	84.8	90.1				
Sheff	624	86.9	84.9	90.0	624	89.3	87.5	92.2
L Kings	658	89.5	84.9	90.0	656	91.9	87.6	92.2
Ports	681	86.1	85.0	89.9	672	89.1	87.6	92.1
L Guys	719	89.2	85.1	89.9	718	91.2	87.7	92.1
L Rfree	810	87.3	85.2	89.8	799	90.1	87.8	92.0
Carsh	944	88.8	85.4	89.6	930	90.3	88.0	91.9
Leic	1,012	88.3	85.5	89.6	1,006	90.1	88.1	91.8
L Barts	1,242	90.0	85.7	89.4	1,228	92.1	88.3	91.6
L West	1,530	88.9	85.9	89.2	1,470	90.9	88.5	91.5
Bham	1,615	89.9	86.0	89.2	1,610	91.8	88.5	91.5
<b>Total</b>	<b>27,870</b>	<b>87.7</b>			<b>25,351</b>	<b>90.1</b>		

Centres are ordered by increasing number of patients.

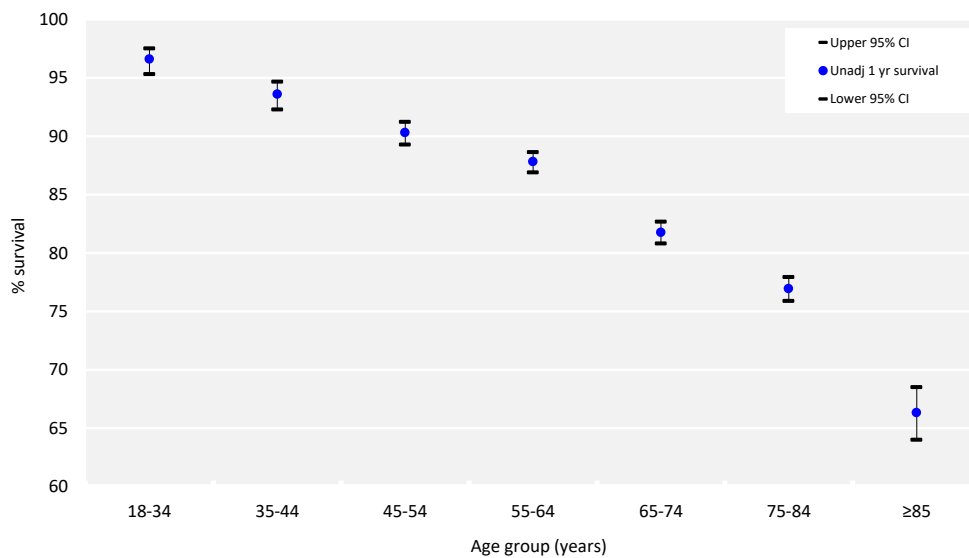
<sup>1</sup>Centres excluded if <85% comorbidity data were available – this included Belfast and all Scottish renal centres.



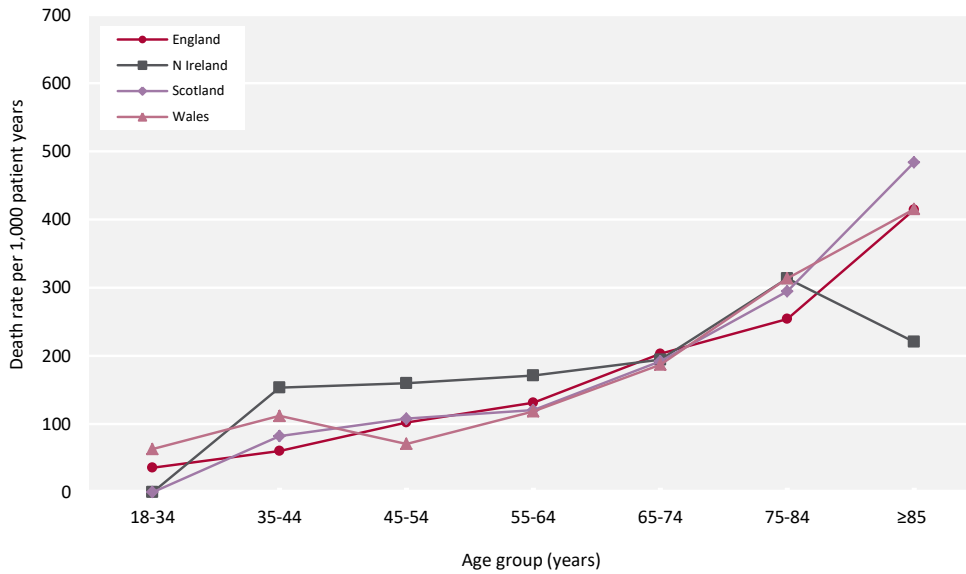
**Figure 3.11** 1 year survival (adjusted to age 60 years) of adult patients prevalent to dialysis on 31/12/2018 by centre



**Figure 3.12** 1 year survival (adjusted to 60 years, male and median comorbidity score) of adult patients prevalent to dialysis on 31/12/2018 by centre

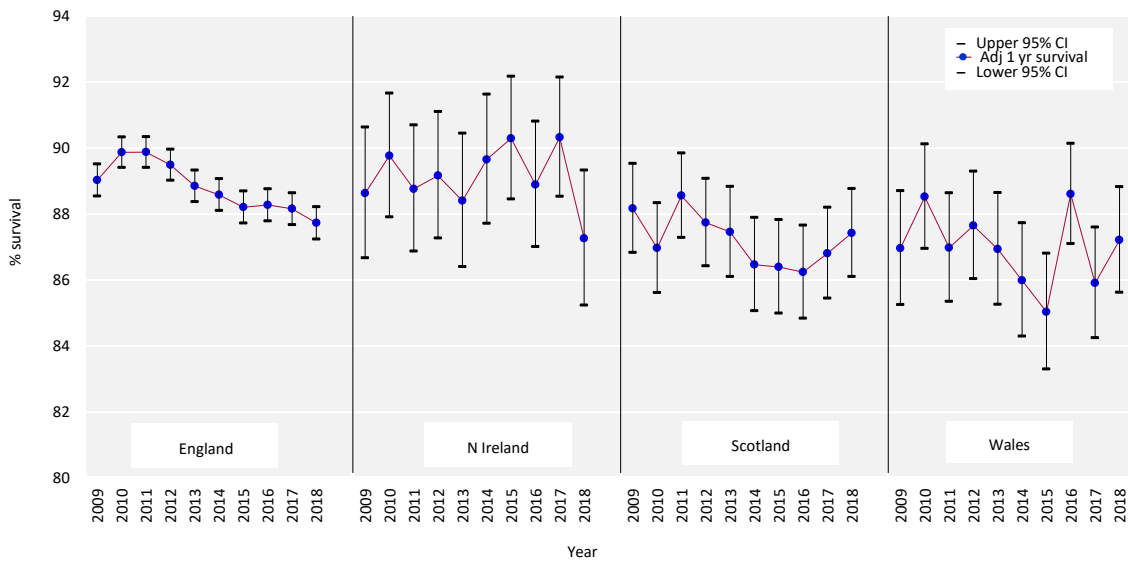


**Figure 3.13** 1 year survival (unadjusted) of adult patients prevalent to dialysis on 31/12/2018 by age group  
CI – confidence interval



**Figure 3.14** 1 year death rate per 1,000 patient years for adult patients prevalent to dialysis on 31/12/2018 by country and age group

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



**Figure 3.15** 1 year survival (adjusted to age 60 years) for prevalent adult dialysis patients by country between 2009 and 2018

CI – confidence interval

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

**Table 3.9** Death rate by age group for adult patients prevalent to RRT on 31/12/2018 followed-up for 1 year compared with the general population and with previous analyses in the 1998–2001 cohort

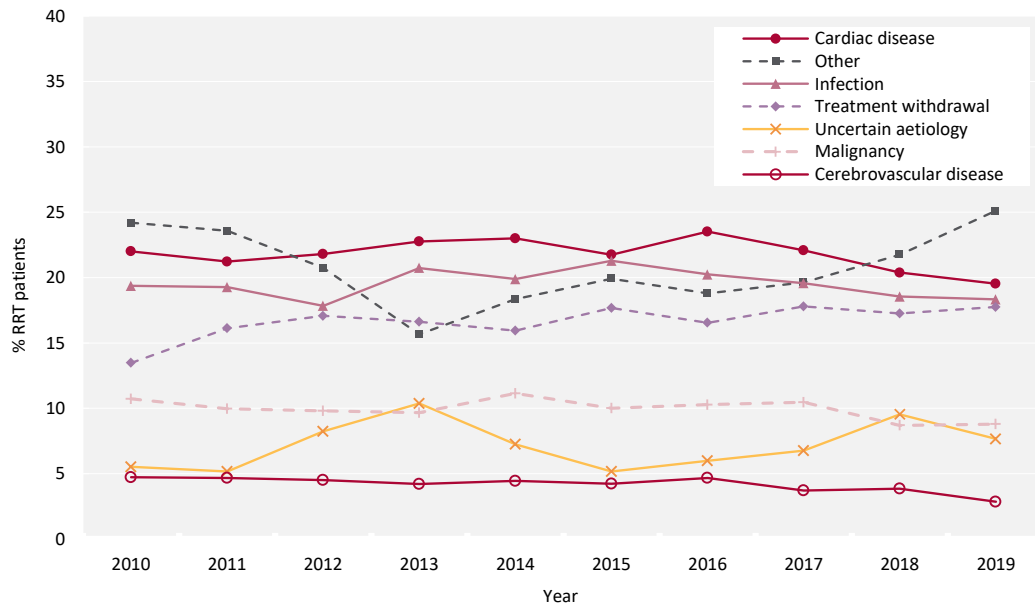
Age group (yrs)	UK population mid-2019 (thousands)	UK deaths in 2019	Death rate per 1,000 population	Expected number of deaths in UKRR population	UKRR deaths in 2019	UKRR death rate per 1,000 prevalent RRT patients	Relative risk of death in 2019	Relative risk of death 1998-2001 cohort
20-24	4,153	1,623	0.4	0	6	6	16.3	41.1
25-29	4,514	2,186	0.5	1	9	6	11.6	41.8
30-34	4,497	3,010	0.7	2	40	16	24.5	31.2
35-39	4,396	4,278	1.0	3	65	20	20.1	26.0
40-44	4,020	5,758	1.4	6	85	22	15.0	22.6
45-49	4,402	9,669	2.2	13	200	35	15.8	19.0
50-54	4,661	14,985	3.2	24	321	44	13.7	12.8
55-59	4,406	21,071	4.8	38	437	55	11.4	10.1
60-64	3,755	28,273	7.5	56	551	74	9.9	10.4
65-69	3,368	39,706	11.8	80	688	102	8.6	7.9
70-74	3,319	61,516	18.5	120	962	148	8.0	7.2
75-79	2,325	74,392	32.0	149	960	206	6.4	5.3
80-84	1,715	98,126	57.2	176	834	271	4.7	4.0
≥85	1,647	235,357	142.9	207	597	412	2.9	3.0
<b>Total</b>	<b>51,178</b>	<b>599,950</b>	<b>11.7</b>	<b>874</b>	<b>5,755</b>	<b>91</b>	<b>6.6</b>	<b>7.7</b>

## Cause of death in adult RRT patients

Cause of death was analysed in prevalent patients receiving RRT on 31/12/2018 and followed-up for one year in 2019. The proportion of RRT patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line.

**Table 3.10** Cause of death in adult patients prevalent to RRT on 31/12/2018 followed-up in 2019 by age group

Cause of death	RRT all ages		RRT <65 yrs		RRT ≥65 yrs	
	N	%	N	%	N	%
Cardiac disease	780	19.5	260	22.2	520	18.4
Cerebrovascular disease	114	2.9	44	3.8	70	2.5
Infection	732	18.3	212	18.1	520	18.4
Malignancy	351	8.8	126	10.8	225	8.0
Treatment withdrawal	709	17.8	118	10.1	591	20.9
Other	1,003	25.1	315	27.0	688	24.4
Uncertain aetiology	306	7.7	94	8.0	212	7.5
<b>Total (with data)</b>	<b>3,995</b>	<b>100.0</b>	<b>1,169</b>	<b>100.0</b>	<b>2,826</b>	<b>100.0</b>
Missing	1,760	30.6	545	31.8	1,215	30.1



**Figure 3.16** Cause of death between 2010 and 2019 for adult patients prevalent to RRT at the beginning of the year