



## *Chapter 2*

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# **Adults on renal replacement therapy (RRT) in the UK at the end of 2017**

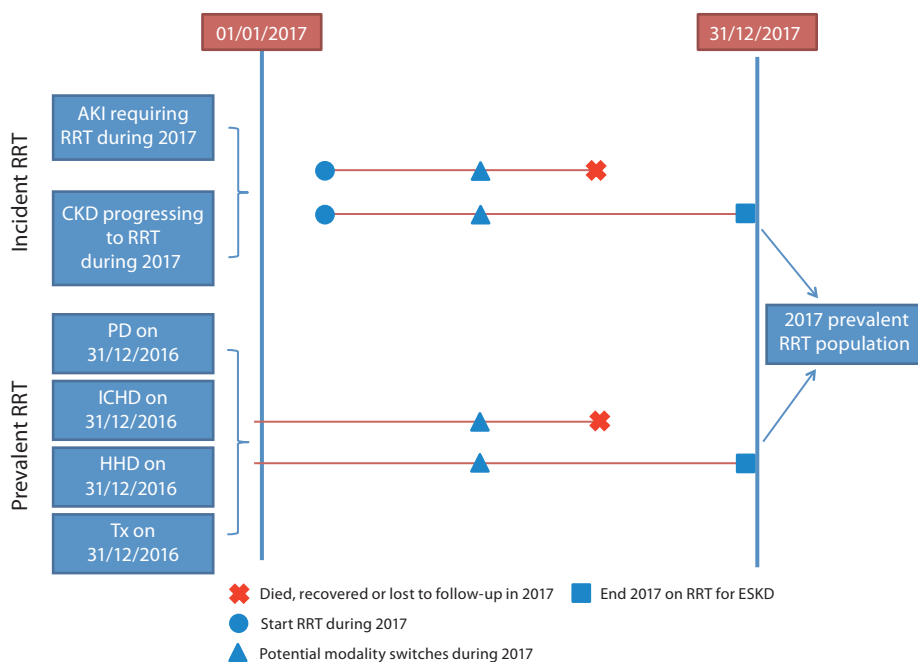
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# Introduction

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 2017 (figure 2.1). Patients may have started RRT prior to 2017 or during 2017. 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 1); 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 2.1** Pathways adult patients could follow to be included in the UK 2017 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 2017 or if they had been on RRT for  $\geq 90$  days and were on RRT at the end of 2017  
 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 2017 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 (<https://renal.org/guidelines/>) provide audit measures relevant to the care of patients on RRT and, where data permit, their attainment by UK renal centres in 2017 is reported in the relevant chapters of this report. Audit measures in guidelines that have been archived (for example, 'Haemodialysis', 'Blood borne viruses' and 'Nutrition') are not included.

Some audit measures in current guidelines – for example, the target for glycated haemoglobin in those on hypoglycaemia-inducing treatment – cannot be reported because the completeness of the required data is too low. Further detail about the completeness of data returned to the UK Renal Registry (UKRR) is available on the UKRR website. Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted.

Where revised target ranges are published, the measures in place at the time of patient care are reported. However, where new guidelines remove audit measures, those targets are no longer reported.

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

Cambridge renal centre (Addenbrooke's Hospital) was unable to submit patient level data for 2015–2017. While data extraction issues have now been resolved, the UKRR and Cambridge are working to load and validate the backlog of data for these years. Using aggregate numbers of patients starting RRT by treatment modality, it is possible to report treatment rates for Cambridge, but no other quality assurance for the service provided.

## Key findings

- 64,887 adult patients were receiving RRT for ESKD in the UK on 31/12/2017, an increase of 3.0% from 2016
- RRT prevalence was 983 pmp compared to 523 pmp in 2000
- The ICHD population increased by 1.4%, the HHD population by 3.9% and the Tx population by 5.1%; the PD population fell by 2.3% compared to 2016
- The number of patients receiving HHD increased slightly to 1,315 from 1,266 in 2016
- The median age of RRT patients was 59.2 years (HD 66.8 years, PD 64.4 years and Tx 54.8 years). In 2000 the median age was 54.8 years (HD 63.3 years, PD 58.5 years and Tx 48.6 years)
- 61.1% of RRT patients were male
- Tx continued as the most common treatment modality (55.2%) – ICHD comprised 37.3%, PD 5.4% and HHD 2.0% of the RRT population
- The most common identifiable primary renal disease (PRD) was glomerulonephritis (19.7%), followed by diabetes (17.8%) and other (17.0%)
- There was no cause of death data available for 38.3% of deaths. For those with data, the leading cause of death in younger patients (<65 years) was cardiac disease (28.9%) and in older patients (≥65 years) was treatment withdrawal (20.9%) and infection (20.9%), followed by cardiac disease (20.3%).

# Analyses

## Changes to the prevalent adult RRT population

For the 71 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).

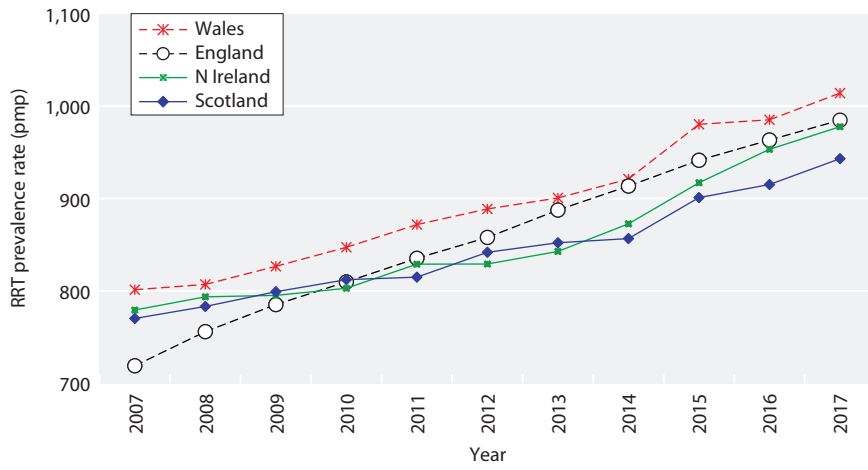
**Table 2.1** Number of prevalent adult RRT patients by year and by centre; number of RRT patients as a proportion of the catchment population

Centre	N on RRT					Estimated catchment population (millions)	2017 crude rate (pmp)
	2013	2014	2015	2016	2017		
<b>ENGLAND</b>							
B Heart	654	635	653	652	654	0.77	846
B QEH	2,045	2,133	2,248	2,389	2,524	1.78	1,419
Basldn	270	278	274	275	301	0.43	693
Bradfd	520	548	584	636	674	0.68	987
Brightn	871	914	950	992	1,013	1.36	746
Bristol	1,424	1,458	1,477	1,468	1,473	1.51	977
Camb	1,193	1,235	1,539	1,551	1,420	1.21	1,171
Carlis	227	250	281	278	281	0.34	837
Carsh	1,479	1,551	1,584	1,642	1,681	2.00	839
Chelms	241	261	285	274	283	0.53	529
Colchr	115	119	120	124	127	0.31	405
Covnt	928	959	960	976	962	0.93	1,030
Derby	464	513	539	542	556	0.74	756
Donc	259	284	302	330	333	0.43	775
Dorset	627	664	681	687	734	0.90	813
Dudley	310	305	314	345	368	0.46	796
Exeter	889	945	968	1,013	1,054	1.14	924
Glouc	409	428	443	471	504	0.61	820
Hull	813	801	855	852	871	1.07	815
Ipswi	355	367	404	414	431	0.42	1,032
Kent	958	1,013	1,039	1,073	1,091	1.28	851
L Barts	2,089	2,207	2,277	2,368	2,497	1.92	1,303
L Guys	1,828	1,913	2,012	2,097	2,159	1.13	1,905
L Kings	963	1,023	1,084	1,110	1,145	1.23	933
L Rfree	1,921	2,006	2,093	2,176	2,193	1.59	1,379
L St.G	755	790	842	851	843	0.84	1,009
L West	3,119	3,229	3,312	3,411	3,498	2.51	1,393
Leeds	1,464	1,500	1,523	1,549	1,621	1.75	927
Leic	2,067	2,143	2,179	2,302	2,374	2.55	931
Liv Ain	190	217	221	227	216	0.51	426
Liv Roy	1,264	1,266	1,236	1,212	1,255	1.05	1,199
M RI	1,853	1,793	1,881	1,973	2,059	1.60	1,284
Middlbr	827	854	901	889	898	1.05	854
Newc	962	977	1,009	1,051	1,118	1.17	952
Norwch	689	686	740	771	776	0.82	942
Nottm	1,073	1,061	1,113	1,154	1,174	1.14	1,031
Oxford	1,563	1,655	1,691	1,767	1,878	1.77	1,061
Plymth	502	502	503	512	540	0.49	1,098
Ports	1,544	1,591	1,669	1,690	1,746	2.12	824
Prestn	1,089	1,171	1,215	1,204	1,268	1.56	811
Redng	731	760	775	789	796	0.95	835
Salford	881	971	974	1,020	1,115	1.56	715
Sheff	1,328	1,360	1,383	1,423	1,441	1.44	1,003

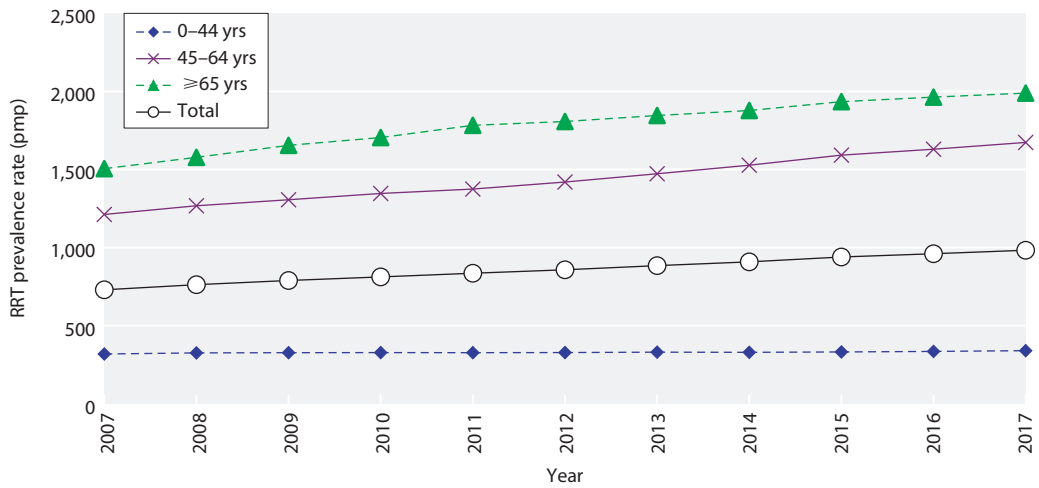
**Table 2.1** Continued

Centre	N on RRT					Estimated catchment population (millions)	2017 crude rate (pmp)
	2013	2014	2015	2016	2017		
Shrew	338	349	367	375	376	0.52	717
Stevng	755	778	816	895	901	1.26	715
Sthend	220	238	246	236	252	0.33	760
Stoke	724	775	788	826	813	0.93	873
Sund	421	450	459	507	541	0.65	835
Truro	371	379	413	426	423	0.43	978
Wirral	248	278	281	337	387	0.60	646
Wolve	567	574	582	571	581	0.70	830
York	409	461	490	534	554	0.52	1,075
<b>N IRELAND</b>							
Antrim	224	229	239	244	248	0.30	814
Belfast	726	747	771	819	843	0.66	1,281
Newry	199	207	225	237	241	0.27	893
Ulster	155	149	170	168	184	0.27	669
West NI	238	274	293	307	313	0.36	861
<b>SCOTLAND</b>							
Abrdn	517	501	531	555	563	0.61	917
Airdrie	389	395	425	440	468	0.57	828
D&Gall	119	130	130	131	135	0.15	889
Dundee	398	401	420	419	439	0.47	926
Edinb	737	747	769	778	837	0.99	848
Glasgw	1,585	1,606	1,708	1,753	1,774	1.66	1,067
Inverns	216	225	253	259	263	0.28	951
Klmarnk	296	299	310	317	338	0.37	914
Krkldy	283	277	295	294	299	0.32	922
<b>WALES</b>							
Bangor	99	102	182	179	194	0.23	840
Cardff	1,582	1,593	1,612	1,627	1,684	1.50	1,121
Clwyd	152	166	185	177	181	0.20	902
Swanse	692	705	766	774	791	0.94	844
Wrexm	251	282	293	310	319	0.25	1,255
<b>TOTALS</b>							
<b>England</b>	<b>47,806</b>	<b>49,618</b>	<b>51,575</b>	<b>53,237</b>	<b>54,773</b>	<b>55.62</b>	<b>985</b>
<b>N Ireland</b>	<b>1,542</b>	<b>1,606</b>	<b>1,698</b>	<b>1,775</b>	<b>1,829</b>	<b>1.87</b>	<b>978</b>
<b>Scotland</b>	<b>4,540</b>	<b>4,581</b>	<b>4,841</b>	<b>4,946</b>	<b>5,116</b>	<b>5.42</b>	<b>943</b>
<b>Wales</b>	<b>2,776</b>	<b>2,848</b>	<b>3,038</b>	<b>3,067</b>	<b>3,169</b>	<b>3.13</b>	<b>1,014</b>
<b>UK</b>	<b>56,664</b>	<b>58,653</b>	<b>61,152</b>	<b>63,025</b>	<b>64,887</b>	<b>66.04</b>	<b>983</b>

Country dialysis populations were calculated by summing the dialysis patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures rather than from summing the estimated catchment populations of renal centres which may cross country borders  
pmp – per million population



**Figure 2.2** Adult RRT prevalence rates by country between 2007 and 2017  
pmp – per million population



**Figure 2.3** Adult RRT prevalence rates by age group between 2007 and 2017  
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.

**Table 2.2** Demographics and treatment modality of adult patients prevalent to RRT on 31/12/2017 by centre

Centre	N on RRT	% on ICHD	% on PD	% on HHD	% with Tx	Median age (yrs)	% male	Ethnicity				
								% White	% South Asian	% Black	% Other	% missing
<b>ENGLAND</b>												
B Heart	654	57.3	13.5	3.2	26.0	62.8	61.9	58.6	29.4	10.6	1.5	0.0
B QEH	2,524	37.8	6.4	2.1	53.7	57.8	59.0	59.6	26.5	10.0	4.0	2.0
Basldn	301	55.8	9.3	2.3	32.6	61.8	68.1	86.4	3.7	4.7	5.1	2.0
Bradfd	674	39.9	3.0	1.3	55.8	56.5	59.6	53.1	42.9	2.5	1.5	0.4
Brightn	1,013	42.0	5.8	3.9	48.3	60.5	64.0	91.3	5.1	1.9	1.7	2.7
Bristol	1,473	33.4	3.9	1.2	61.5	59.1	62.1	88.6	4.0	5.5	1.9	0.1
Camb	1,420	24.4	2.2	*	73.5							
Carlis	281	34.9	10.0	0.0	55.2	60.3	64.8	98.6	1.4	0.0	0.0	1.1
Carsh	1,681	50.1	5.7	1.6	42.6	61.9	62.5	69.1	14.6	10.1	6.2	2.5
Chelms	283	45.2	12.4	1.1	41.3	64.5	68.9	89.0	2.8	2.5	5.7	0.7
Colchr	127	100.0	0.0	0.0	0.0	73.5	64.6	100.0	0.0	0.0	0.0	0.8
Covnt	962	34.2	5.4	1.5	58.9	58.1	62.9	79.4	14.9	4.9	0.8	0.1
Derby	556	34.4	14.2	9.4	42.1	60.6	61.9	83.0	11.2	2.7	3.1	0.7
Donc	333	53.5	8.7	2.7	35.1	64.5	62.8	93.7	2.4	1.2	2.7	0.0
Dorset	734	40.1	4.8	1.4	53.8	64.6	60.6	96.7	1.4	0.4	1.5	0.1
Dudley	368	55.4	14.9	3.5	26.1	65.5	64.1	83.2	11.7	3.8	1.4	0.0
Exeter	1,054	43.1	7.1	1.2	48.6	63.7	62.4	96.7	0.4	0.9	2.0	0.1
Glouc	504	48.2	8.9	1.0	41.9	64.0	61.1	92.4	3.4	2.2	2.0	0.2
Hull	871	40.0	6.4	0.7	52.9	58.9	64.5	97.0	1.7	0.3	0.9	1.4
Ipswi	431	33.9	10.4	1.9	53.8	63.0	65.2	82.3	1.2	3.2	13.3	4.4
Kent	1,091	38.8	4.8	1.9	54.5	60.8	60.4	93.5	3.4	1.0	2.1	0.1
L Barts	2,497	41.2	9.5	1.2	48.1	56.5	60.2	34.2	31.5	22.7	11.7	0.0
L Guys	2,159	30.8	1.8	1.9	65.4	55.1	59.1	61.4	7.6	25.2	5.8	1.9
L Kings	1,145	49.9	8.5	1.7	39.9	59.8	61.4	47.7	11.5	35.9	4.8	0.1
L Rfree	2,193	31.2	6.6	0.8	61.4	58.0	59.8	46.4	21.1	23.0	9.5	2.7
L St.G	843	37.5	4.4	0.6	57.5	60.0	58.1	44.8	23.6	23.5	8.2	5.9
L West	3,498	41.4	3.5	0.3	54.8	60.3	60.7	40.1	32.2	18.5	9.2	0.0
Leeds	1,621	33.2	3.6	1.4	61.8	56.3	60.1	78.5	15.0	4.6	1.9	0.2
Leic	2,374	37.9	4.1	3.0	55.0	60.0	60.2	73.6	19.8	4.4	2.2	3.5
Liv Ain	216	76.9	10.2	6.5	6.5	68.5	62.5	97.2	0.5	1.4	0.9	2.3
Liv Roy	1,255	28.4	5.6	3.1	62.9	56.5	60.6	91.5	1.8	2.8	3.9	1.1
M RI	2,059	24.3	3.4	3.7	68.6	56.5	59.4	72.2	14.2	10.6	3.0	1.4
Middlbr	898	36.3	2.3	1.3	60.0	59.8	62.6	93.9	4.9	0.4	0.8	0.0
Newc	1,118	29.2	5.3	1.9	63.6	58.3	62.3	93.4	3.5	1.1	2.1	0.0
Norwch	776	38.9	5.5	1.8	53.7	62.3	61.9	97.2	1.2	0.5	1.2	0.0
Nottm	1,174	30.0	6.0	2.9	61.2	58.0	59.0	82.2	8.7	6.4	2.7	0.1
Oxford	1,878	24.0	3.6	0.9	71.5	57.0	62.0	81.3	10.1	4.2	4.3	7.1
Plymth	540	26.3	9.1	1.9	62.8	61.2	64.6	96.7	0.4	0.4	2.6	0.2
Ports	1,746	31.2	4.8	3.7	60.3	59.6	61.6	93.2	3.4	1.1	2.2	3.6
Prestn	1,268	40.8	2.7	3.9	52.7	60.4	61.4	84.6	14.0	0.9	0.5	0.0
Redng	796	37.9	4.9	0.8	56.4	61.5	61.8	69.4	22.8	5.5	2.3	5.9
Salford	1,115	34.7	10.5	3.7	51.1	58.5	60.0	81.2	14.5	2.4	1.9	0.0
Sheff	1,441	38.1	3.8	3.5	54.6	59.5	62.0	88.9	5.7	2.3	3.2	1.4
Shrew	376	48.9	11.2	5.9	34.0	63.2	64.6	93.9	3.2	1.1	1.9	0.5
Stevng	901	51.7	2.6	3.3	42.4	60.5	61.2	70.9	17.0	8.5	3.6	3.8
Sthend	252	47.6	13.5	0.8	38.1	62.8	57.9	84.5	6.0	4.4	5.2	0.0
Stoke	813	37.4	9.0	3.4	50.2	61.5	60.9	92.7	4.5	1.1	1.7	0.7
Sund	541	44.9	3.0	3.9	48.2	60.9	61.7	96.1	2.8	0.6	0.6	0.0

**Table 2.2** Continued

Centre	N on RRT	% on ICHD	% on PD	% on HHD	% with Tx	Median age (yrs)	% male	Ethnicity				
								% White	% South Asian	% Black	% Other	% missing
Truro	423	37.8	3.5	2.1	56.5	62.8	58.2	98.6	0.2	0.2	0.9	0.0
Wirral	387	52.5	4.9	2.3	40.3	61.4	58.4	96.1	2.1	0.5	1.3	0.0
Wolve	581	52.0	9.3	5.5	33.2	60.3	64.0	66.3	21.2	10.7	1.7	0.3
York	554	33.0	6.3	2.3	58.3	60.7	62.3	96.8	1.7	0.6	0.9	3.8
<b>N IRELAND</b>												
Antrim	248	47.2	5.6	1.6	45.6	63.7	63.7	99.6	0.0	0.4	0.0	0.0
Belfast	843	21.4	2.0	0.9	75.7	56.1	61.3	97.6	1.0	0.8	0.6	5.3
Newry	241	32.4	9.5	0.8	57.3	60.5	54.4	98.8	0.4	0.4	0.4	0.0
Ulster	184	59.2	3.3	0.5	37.0	67.8	58.2	95.1	1.1	2.2	1.6	0.0
West NI	313	36.1	2.9	1.0	60.1	59.6	58.8	98.4	1.0	0.3	0.3	0.0
<b>SCOTLAND</b>												
Abrdn	563	39.6	3.9	0.7	55.8	57.8	58.3					62.9
Airdrie	468	41.0	3.4	0.4	55.1	57.4	58.3	95.9	2.7	0.6	0.9	27.8
D&Gall	135	37.8	4.4	1.5	56.3	59.4	63.0					76.3
Dundee	439	42.6	4.1	0.5	52.8	60.0	59.9					64.0
Edinb	837	37.4	4.1	0.5	58.1	57.6	61.9					74.3
Glasgw	1,774	32.4	2.7	0.8	64.1	57.6	59.2					78.2
Inverns	263	31.6	3.8	1.9	62.7	57.6	55.5					41.8
Klmarnk	338	42.6	7.1	3.0	47.3	59.0	57.4					60.1
Krkldy	299	46.8	3.3	0.0	49.8	60.9	53.5					77.3
<b>WALES</b>												
Bangor	194	37.6	8.8	5.7	47.9	63.0	65.5	97.9	0.0	1.0	1.0	0.0
Cardff	1,684	31.4	4.3	2.3	62.1	58.0	63.5	92.1	5.0	0.7	2.2	1.0
Clwyd	181	39.8	6.6	1.1	52.5	64.0	65.7	97.8	1.7	0.0	0.6	0.0
Swanse	791	44.0	9.4	4.3	42.4	63.7	64.1	97.6	1.5	0.4	0.5	1.0
Wrexm	319	37.0	8.5	1.3	53.3	60.3	63.0	98.1	0.6	0.6	0.6	0.0
<b>TOTALS</b>												
<b>England</b>	<b>54,773</b>	<b>37.6</b>	<b>5.6</b>	<b>2.1</b>	<b>54.7</b>	<b>59.3</b>	<b>61.1</b>	74.0	13.5	8.5	4.0	<b>1.5</b>
<b>N Ireland</b>	<b>1,829</b>	<b>32.6</b>	<b>3.8</b>	<b>1.0</b>	<b>62.6</b>	<b>58.8</b>	<b>60.0</b>	97.9	0.8	0.7	0.6	<b>2.5</b>
<b>Scotland</b>	<b>5,116</b>	<b>37.3</b>	<b>3.7</b>	<b>0.9</b>	<b>58.2</b>	<b>58.1</b>	<b>59.0</b>					<b>66.9</b>
<b>Wales</b>	<b>3,169</b>	<b>36.0</b>	<b>6.4</b>	<b>2.8</b>	<b>54.8</b>	<b>60.3</b>	<b>63.8</b>	94.8	3.2	0.6	1.4	<b>0.8</b>
<b>UK</b>	<b>64,887</b>	<b>37.3</b>	<b>5.4</b>	<b>2.0</b>	<b>55.2</b>	<b>59.2</b>	<b>61.1</b>	76.1	12.4	7.8	3.7	<b>6.7</b>

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

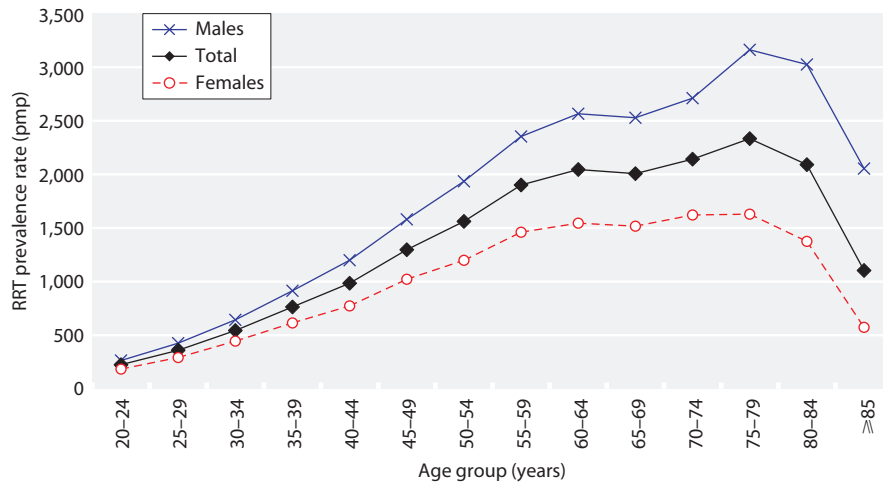
Breakdown by ethnicity not shown for <70% data completeness, but centres with <70% data completeness are included in national averages

\*Breakdown of HD patients into ICHD and HHD is not available for Cambridge – the ICHD figure is the total HD percentage  
The England and UK totals include the Cambridge patient modality split but the age, sex and ethnicity totals do not include Cambridge

PRDs were grouped into categories as shown in [table 2.3](#), 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.

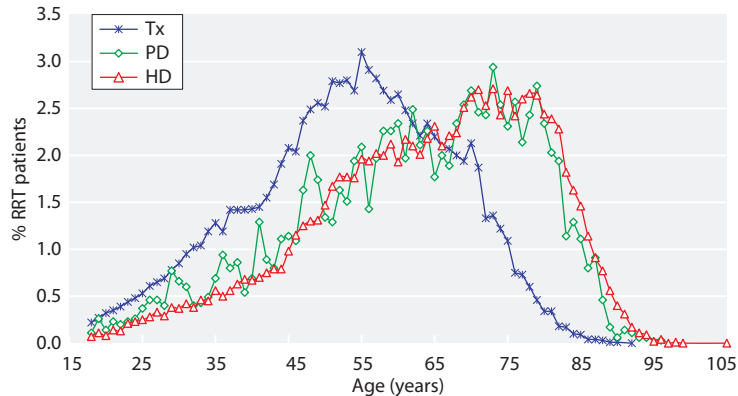
**Table 2.3** Demographics, primary renal diseases (PRDs) and prevalent treatment modality of adult patients prevalent to RRT on 31/12/2017 by age group

	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	5,126	7,101	12,911	14,982	13,295	8,326	1,726	63,467	59.2
% on RRT	8.1	11.2	20.3	23.6	20.9	13.1	2.7	100.0	
<b>Sex (%)</b>									
Male	7.9	11.0	20.2	23.7	20.9	13.4	3.0	61.1	59.5
Female	8.4	11.5	20.6	23.5	21.1	12.6	2.3	38.9	58.8
<b>Ethnicity (%)</b>									
White	8.0	10.5	20.2	22.8	21.7	13.8	3.1	76.1	59.7
South Asian	9.8	13.6	17.6	25.6	21.3	10.7	1.5	12.4	59.0
Black	6.4	12.8	26.8	26.4	13.7	11.7	2.1	7.8	56.2
Other	10.5	14.9	21.4	22.9	18.6	9.8	2.0	3.7	56.0
Missing	6.9	10.3	19.6	26.3	21.7	13.0	2.3	6.7	60.0
<b>PRD (%)</b>									
Diabetes	2.4	9.0	19.8	27.5	24.8	14.1	2.3	17.8	61.8
Glomerulonephritis	9.4	14.0	23.1	24.8	18.8	8.7	1.2	19.7	56.2
Hypertension	3.0	8.5	20.5	22.7	21.1	19.3	4.9	6.3	62.8
Polycystic kidney	1.7	5.9	22.2	33.5	26.2	9.6	0.8	10.3	60.9
Pyelonephritis	11.7	14.8	24.5	20.8	15.6	10.1	2.4	10.4	54.5
Renal vascular disease	1.9	2.0	5.3	13.5	28.3	38.5	10.6	3.0	74.8
Other	16.4	14.1	19.1	19.6	18.6	10.4	1.8	17.0	55.2
Uncertain aetiology	7.9	11.0	18.4	20.2	20.7	16.8	5.1	15.5	61.3
Missing	4.7	2.7	2.4	2.5	2.7	3.6	3.7	2.9	59.7
<b>Modality (%)</b>									
ICHD	4.3	6.3	13.8	20.1	24.7	24.5	6.3	37.3	67.5
HHD	9.4	12.9	26.5	26.5	18.3	6.2	0.2	2.0	55.3
PD	6.5	8.6	15.3	21.2	23.6	20.9	3.9	5.4	64.4
Tx	10.8	14.7	25.1	26.2	18.2	4.8	0.2	55.2	54.8

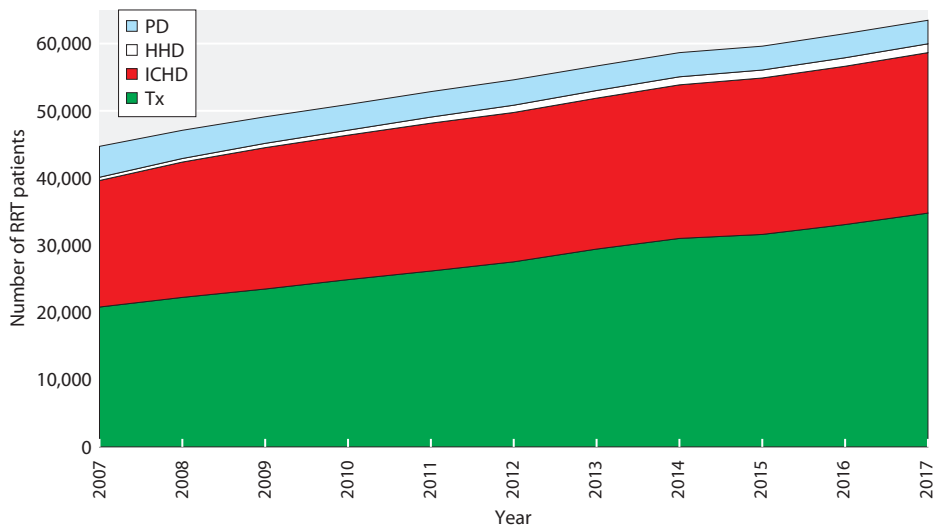


**Figure 2.4** Prevalence rates for adult patients on RRT on 31/12/2017 by age group and sex

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



**Figure 2.5** Age profile of adult patients prevalent to RRT on 31/12/2017 by RRT modality



**Figure 2.6** Growth in numbers of prevalent adult RRT patients by treatment modality between 2007 and 2017

**Table 2.4** Change in adult RRT prevalence rates by modality between 2013 and 2017

Year	Prevalence (pmp)					% growth in prevalence				
	HD	PD	Dialysis	Tx	RRT	HD	PD	Dialysis	Tx	RRT
2013	368	57	425	459	884					
2014	372	56	428	480	908	1.1	-2.1	0.7	4.6	2.7
2015	385	55	440	499	939	3.3	-0.9	2.8	4.0	3.4
2016	385	55	439	521	960	0.0	-0.5	-0.1	4.2	2.2
2017	387	53	440	542	983	0.5	-2.6	0.1	4.2	2.3
<b>Average annual growth 2013–2017</b>						<b>1.3</b>	<b>-1.5</b>	<b>0.9</b>	<b>4.3</b>	<b>2.7</b>

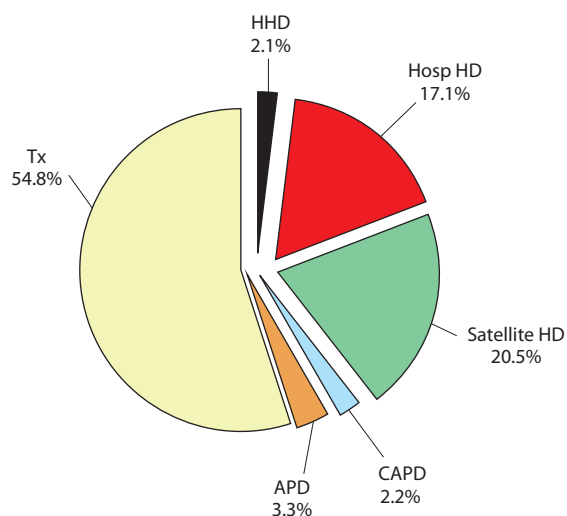
pmp – per million population

In [table 2.5](#), 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.

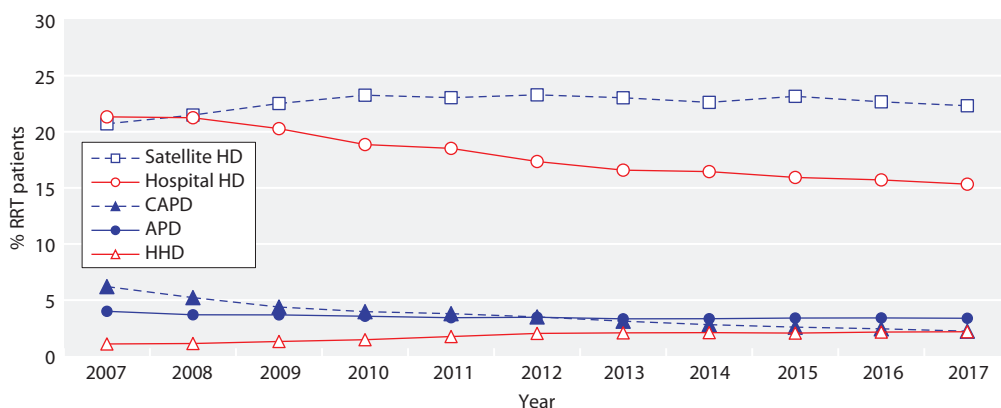
**Table 2.5** Treatment modality of adult patients prevalent to RRT on 31/12/2017 by primary renal disease (PRD)

PRD	N on RRT	% RRT population	Modality (%)		
			HD	PD	Tx
Diabetes	10,969	17.8	57.9	6.9	35.2
Glomerulonephritis	12,120	19.7	28.9	4.9	66.1
Hypertension	3,909	6.3	46.7	6.7	46.7
Polycystic kidney	6,372	10.3	21.8	3.7	74.5
Pyelonephritis	6,391	10.4	31.1	3.4	65.5
Renal vascular disease	1,844	3.0	68.8	9.8	21.5
Other	10,463	17.0	36.7	4.8	58.5
Uncertain aetiology	9,548	15.5	41.1	6.0	52.9
<b>Total (with data)</b>	<b>61,616</b>	<b>100.0</b>			
Missing	1,851	2.9	58.8	9.7	31.5

The treatment modality distribution for prevalent adult RRT patients is 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 2.7** Detailed treatment modality of adult patients prevalent to RRT on 31/12/2017  
APD – automated PD; CAPD – continuous ambulatory PD



**Figure 2.8** Detailed dialysis modality changes in prevalent adult RRT patients between 2007 and 2017  
APD – automated PD; CAPD – continuous ambulatory PD

**Table 2.6** Adult patients prevalent to dialysis on 31/12/2017 by detailed dialysis modality and centre

Centre	N on dialysis	% on HD				% on PD		
		All HD	HHD	Hospital	Satellite	All PD	CAPD	APD
<b>ENGLAND</b>								
B Heart	484	81.8	4.3	72.5	5.0	18.2	3.5	14.7
B QEH	1,169	86.1	4.6	11.3	70.2	13.9	3.6	10.3
Basldn	203	86.2	3.5	64.0	18.7	13.8	6.4	7.4
Bradfd	298	93.3	3.0	76.2	14.1	6.7	1.7	5.0
Brightn	524	88.7	7.6	36.3	44.9	11.3	5.5	5.7
Bristol	567	89.8	3.0	16.4	70.4	10.2	5.1	5.1
Camb	377							
Carlis	126	77.8	0.0	57.1	20.6	22.2	1.6	20.6
Carsh	965	90.1	2.8	18.6	68.7	10.0	2.1	7.9
Chelms	166	78.9	1.8	77.1	0.0	21.1	6.6	14.5
Colchr	127	100.0	0.0	100.0	0.0	0.0	0.0	0.0
Covnt	395	86.8	3.5	83.3	0.0	13.2	13.2	0.0
Derby	322	75.5	16.2	59.3	0.0	24.5	16.2	8.4
Donc	216	86.6	4.2	43.1	39.4	13.4	2.3	11.1
Dorset	339	89.7	3.0	22.7	64.0	10.3	2.1	7.7
Dudley	272	79.8	4.8	31.3	43.8	20.2	12.1	8.1
Exeter	542	86.2	2.4	10.2	73.6	13.8	5.2	8.7
Glouc	293	84.6	1.7	66.6	16.4	15.4	2.1	13.3
Hull	410	86.3	1.5	44.2	40.7	13.7	6.8	6.8
Ipswi	199	77.4	4.0	63.8	9.6	22.6	11.1	11.1
Kent	496	89.5	4.2	30.7	54.6	10.5	8.5	2.0
L Barts	1,297	81.8	2.4	35.2	44.3	18.2	2.2	16.0
L Guys	746	94.8	5.5	13.4	75.9	5.2	1.1	4.2
L Kings	688	85.9	2.9	15.7	67.3	14.1	6.7	7.4
L Rfree	847	82.9	2.0	3.4	77.5	17.1	6.1	11.0
L St.G	358	89.7	1.4	17.3	71.0	10.3	4.2	5.6
L West	1,582	92.3	0.8	19.5	72.1	7.7	3.8	3.9
Leeds	620	90.5	3.7	21.1	65.7	9.5	3.4	6.1
Leic	1,068	90.9	6.7	17.8	66.4	9.1	1.4	7.7
Liv Ain	202	89.1	6.9	8.9	73.3	10.9	0.0	10.9
Liv Roy	466	85.0	8.4	38.0	38.6	15.0	7.7	7.3
M RI	647	89.2	11.9	26.7	50.5	10.8	3.6	7.3
Middlbr	359	94.2	3.3	26.5	64.4	5.9	5.9	0.0
Newc	407	85.5	5.2	66.3	14.0	14.5	1.0	13.5
Norwch	359	88.0	3.9	52.4	31.8	12.0	11.4	0.6
Nottm	456	84.7	7.5	33.3	43.9	15.4	5.0	10.3
Oxford	535	87.3	3.0	34.2	50.1	12.7	4.3	8.2
Plymth	201	75.6	5.0	60.7	10.0	24.4	8.0	16.4
Ports	694	87.9	9.4	17.2	61.4	12.1	12.1	0.0
Prestn	600	94.3	8.2	21.0	65.2	5.7	1.7	4.0
Redng	347	88.8	1.7	41.8	45.2	11.2	7.5	3.8
Salford	545	78.5	7.5	21.5	49.5	21.5	7.2	14.3
Sheff	654	91.6	7.7	36.5	47.4	8.4	8.4	0.0
Shrew	248	83.1	8.9	43.6	30.7	16.9	2.8	14.1
Stevng	519	95.6	5.8	42.4	47.4	4.4	4.4	0.0
Sthend	156	78.2	1.3	76.9	0.0	21.8	21.8	0.0
Stoke	405	82.0	6.9	48.4	26.7	18.0	2.0	11.4
Sund	280	94.3	7.5	55.7	31.1	5.7	2.9	2.9
Truro	184	91.9	4.9	37.0	50.0	8.2	3.3	4.9
Wirral	231	91.8	3.9	42.4	45.5	8.2	2.2	6.1
Wolve	388	86.1	8.3	59.8	18.0	13.9	3.6	8.5
York	231	84.9	5.6	29.0	50.2	15.2	11.7	3.5

**Table 2.6** Continued

Centre	N on dialysis	% on HD				% on PD		
		All HD	HHD	Hospital	Satellite	All PD	CAPD	APD
<b>N IRELAND</b>								
Antrim	135	89.6	3.0	86.7	0.0	10.4	0.0	10.4
Belfast	205	91.7	3.9	87.8	0.0	8.3	0.0	8.3
Newry	103	77.7	1.9	75.7	0.0	22.3	1.0	21.4
Ulster	116	94.8	0.9	94.0	0.0	5.2	0.0	5.2
West NI	125	92.8	2.4	90.4	0.0	7.2	0.0	6.4
<b>SCOTLAND</b>								
Abrdn	249	91.2	1.6	89.6	0.0	8.8	6.8	2.0
Airdrie	210	92.4	1.0	91.4	0.0	7.6	4.3	3.3
D&Gall	59	89.8	3.4	86.4	0.0	10.2	3.4	6.8
Dundee	207	91.3	1.0	90.3	0.0	8.7	8.7	0.0
Edinb	351	90.3	1.1	89.2	0.0	9.7	1.4	8.3
Glasgw	637	92.5	2.4	90.1	0.0	7.5	1.6	6.0
Inverns	98	89.8	5.1	84.7	0.0	10.2	10.2	0.0
Klmarnk	178	86.5	5.6	80.9	0.0	13.5	1.1	12.4
Krkldy	150	93.3	0.0	93.3	0.0	6.7	0.7	6.0
<b>WALES</b>								
Bangor	101	83.2	10.9	49.5	22.8	16.8	4.0	12.9
Cardff	639	88.7	6.0	6.1	76.7	11.3	6.1	5.2
Clwyd	86	86.1	2.3	83.7	0.0	14.0	8.1	5.8
Swanse	456	83.8	7.5	43.0	33.3	16.2	7.0	9.2
Wrexm	149	81.9	2.7	68.5	10.7	18.1	0.0	18.1
<b>TOTALS</b>								
<b>England</b>	24,810	87.6	4.8	32.3	50.5	12.5	5.0	7.3
<b>N Ireland*</b>	684	89.9	2.6	87.3	0.0	10.1	0.2	9.8
<b>Scotland*</b>	2,139	91.2	2.1	89.2	0.0	8.8	3.5	5.3
<b>Wales</b>	1,431	85.9	6.2	32.1	47.6	14.1	5.7	8.4
<b>UK</b>	29,064	87.8	4.6	37.8	45.4	12.2	4.8	7.3

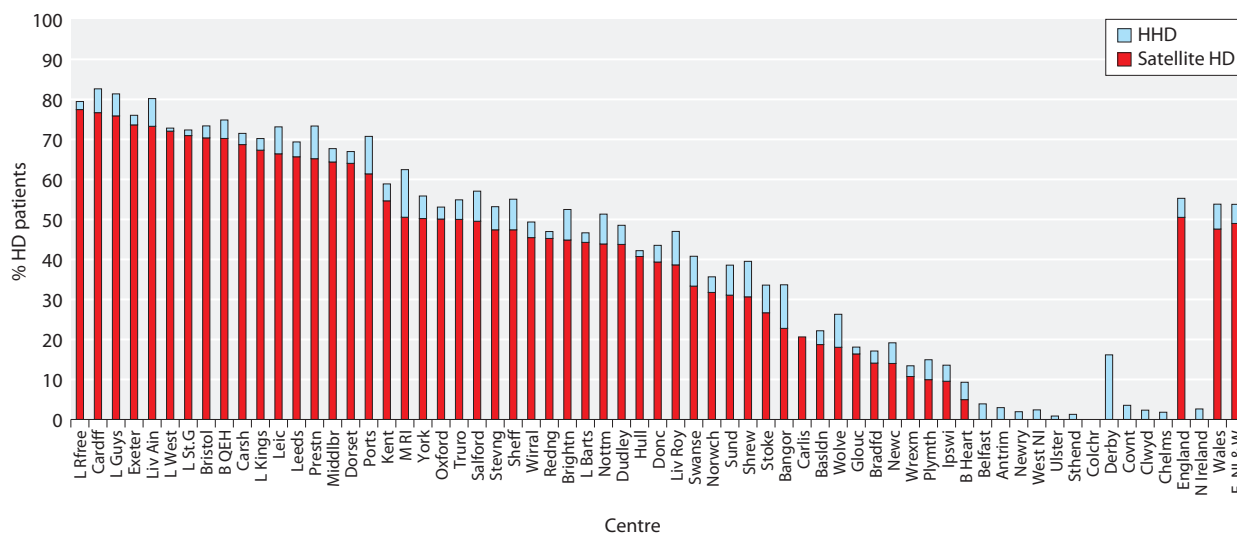
Blank cells – no data returned by the centre

\*There were no satellite units in Northern Ireland; all HD patients in Scotland were shown as receiving treatment at home or in hospital as no data were available regarding satellite dialysis

APD – automated PD; CAPD – continuous ambulatory PD



The proportion of HD patients in a centre on HHD versus satellite HD is shown in [figure 2.9](#), with the remaining patients on hospital HD. Patients on HHD will be reported in a separate chapter in next year’s annual report.



**Figure 2.9** Adult patients prevalent to HD on 31/12/2017 treated with satellite HD or HHD by centre

## Dialysis access in prevalent adult dialysis patients

The type of dialysis access used by the prevalent dialysis population is described in chapter 3.

## Survival in adult dialysis patients

Survival was analysed in prevalent patients receiving dialysis on 31/12/2016 and followed-up for one year in 2017. Survival in patients with a Tx is presented in chapter 5.

Survival analyses, where stated, are adjusted to age 60 years to allow comparisons between centres with different age distributions. Analyses are of dialysis cohorts as defined in the titles of each table and figure.

The age adjusted one year survival of dialysis patients by centre is presented in a funnel plot ([figure 2.10](#)), with centres identifiable from the x-axis using the number of prevalent dialysis patients by centre in [table 2.7](#).

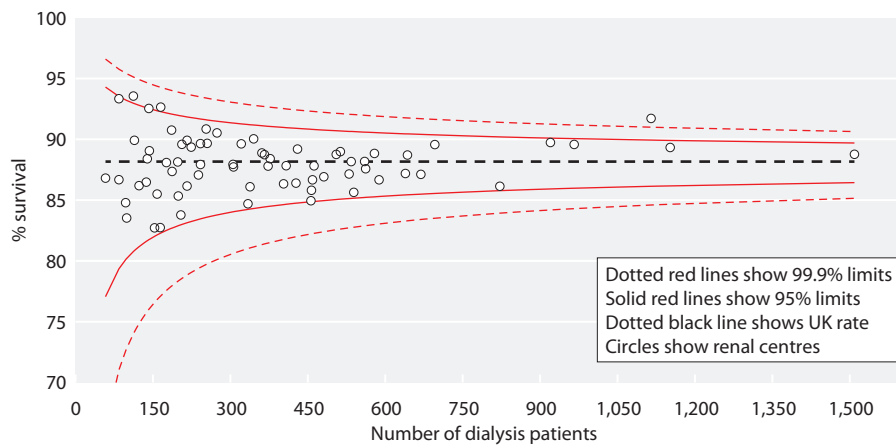
**Table 2.7** 1 year survival (adjusted to age 60 years) of adult patients prevalent to dialysis on 31/12/2016 by centre

Centre	N on dialysis	Adj 1 yr survival (%)	Limits for funnel plot	
			Lower 95% limit	Upper 95% limit
D&Gall	58	86.8	77.1	94.3
Clwyd	84	86.7	79.4	93.5
Bangor	84	93.3	79.4	93.5
Inverns	97	84.8	80.1	93.2
Newry	99	83.5	80.2	93.2
Ulster	112	93.6	80.8	93.0
Colchr	114	89.9	80.9	92.9
Carlisle	123	86.2	81.2	92.8
Antrim	137	86.5	81.6	92.6
Sthend	139	88.4	81.7	92.6
Wrexm	142	92.5	81.8	92.5
West NI	143	89.1	81.8	92.5
Krkldy	153	82.7	82.0	92.4
Klmarnk	158	85.5	82.1	92.4
Plymth	164	82.7	82.3	92.3
Chelms	165	92.7	82.3	92.3
Truro	176	88.1	82.5	92.2
Ipswi	186	90.8	82.7	92.1
Dundee	187	87.4	82.7	92.1
Basldn	198	88.1	82.9	92.0
Airdrie	199	85.3	82.9	92.0
Liv Ain	204	83.8	83.0	91.9
Wirral	206	89.6	83.0	91.9
York	216	89.9	83.1	91.8
Donc	216	86.2	83.1	91.8
Shrew	224	89.4	83.2	91.8
Abrdn	238	87.1	83.4	91.7
Belfast	242	89.7	83.5	91.7
Sund	242	87.9	83.5	91.7
Dudley	253	90.9	83.6	91.6
Bradfd	255	89.7	83.6	91.6
Glouc	274	90.5	83.8	91.5
Edinb	305	87.9	84.0	91.3
Derby	306	87.7	84.1	91.3
Dorset	321	89.6	84.2	91.3
Middlbr	334	84.7	84.2	91.2
Redng	338	86.1	84.3	91.2
Newc	345	90.0	84.3	91.2
L St.G	361	88.9	84.4	91.1
Wolve	366	88.7	84.4	91.1
Hull	373	87.8	84.5	91.1
Norwch	377	88.4	84.5	91.1
Stoke	403	86.3	84.6	91.0
Swanse	408	87.8	84.7	91.0
Covnt	427	86.4	84.8	90.9
Liv Roy	430	89.2	84.8	90.9
B Heart	456	85.0	84.9	90.8
Nottm	457	85.8	84.9	90.8
Kent	459	86.7	84.9	90.8
Salford	462	87.8	84.9	90.8
Brightn	481	86.9	85.0	90.8
Oxford	505	88.8	85.1	90.7
Exeter	513	89.0	85.1	90.7
Bristol	530	87.2	85.1	90.7

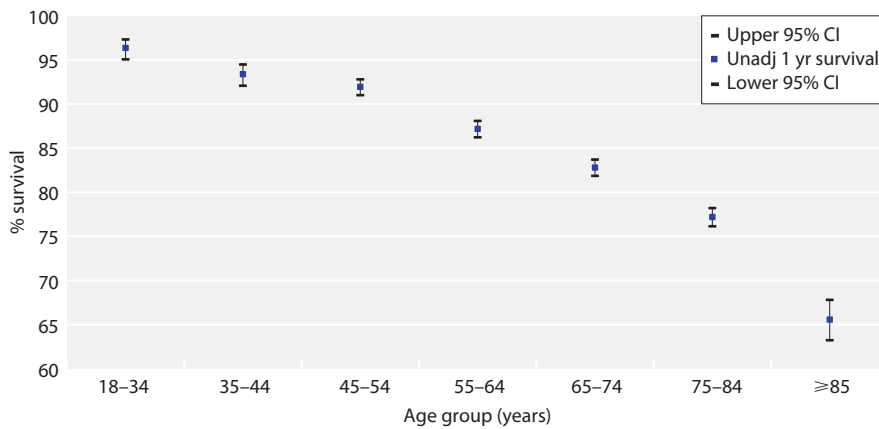
**Table 2.7** Continued

Centre	N on dialysis	Adj 1 yr survival (%)	Limits for funnel plot	
			Lower 95% limit	Upper 95% limit
Leeds	534	88.2	85.1	90.7
Stevng	539	85.6	85.2	90.6
M RI	560	88.2	85.2	90.6
Cardff	562	87.6	85.2	90.6
Prestn	579	88.8	85.3	90.6
Glasgw	588	86.7	85.3	90.5
Sheff	639	87.2	85.4	90.5
L Kings	643	88.7	85.4	90.5
Ports	669	87.1	85.5	90.4
L Guys	696	89.6	85.6	90.4
L Rfree	822	86.1	85.8	90.2
Carsh	920	89.7	85.9	90.1
Leic	966	89.6	86.0	90.1
B QEH	1,115	91.7	86.1	89.9
L Barts	1,152	89.3	86.2	89.9
L West	1,509	88.8	86.4	89.7

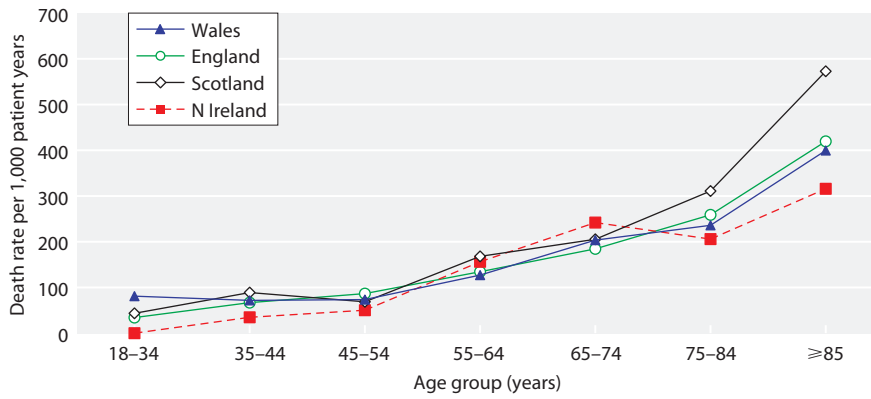
Centres are ordered by increasing number of patients



**Figure 2.10** 1 year survival (adjusted to age 60 years) of adult patients prevalent to dialysis on 31/12/2016 by centre

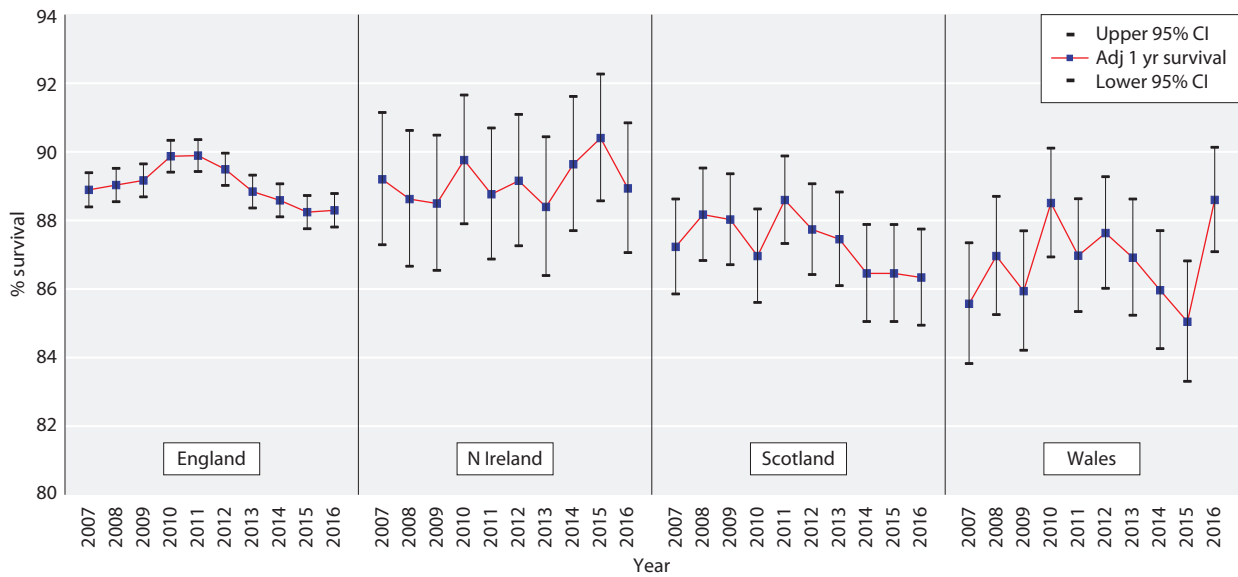


**Figure 2.11** 1 year survival (unadjusted) of adult patients prevalent to dialysis on 31/12/2016 by age group  
CI – confidence interval



**Figure 2.12** 1 year death rate per 1,000 patient years for adult patients prevalent to dialysis on 31/12/2016 by country and age group

The serial one year death rate in prevalent adult dialysis patients by country is shown in figure 2.13, adjusted to age 60 years.



**Figure 2.13** 1 year survival (adjusted to age 60 years) for prevalent adult dialysis patients by country between 2007 and 2016  
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 2.8](#).

**Table 2.8** Death rate by age group for adult patients prevalent to RRT on 31/12/2016 followed-up for 1 year compared with the general population and with previous analyses in the 1998–2001 cohort

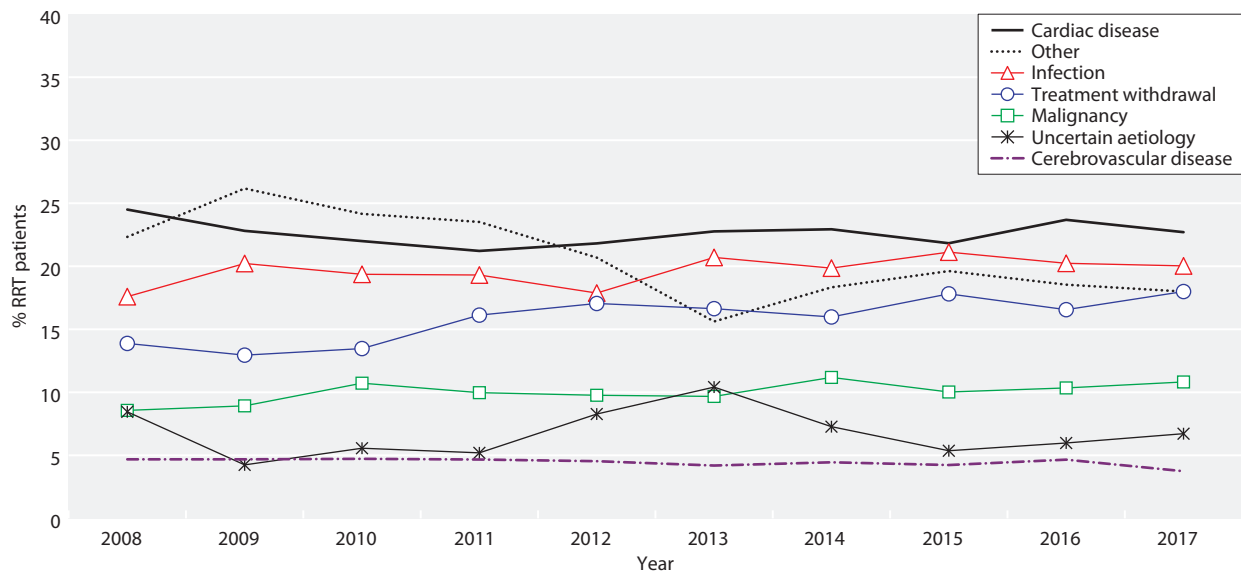
Age group (yrs)	UK population mid-2016 (thousands)	UK deaths in 2017	Death rate per 1,000 population	Expected number of deaths in UKRR population	UKRR deaths in 2017	UKRR death rate per 1,000 prevalent RRT patients	Relative risk of death in 2017	Relative risk of death 1998–2001 cohort
20–24	4,254	1,426	0.3	0	3	3	9.6	41.1
25–29	4,511	2,002	0.4	1	23	15	33.0	41.8
30–34	4,408	2,807	0.6	2	31	13	20.8	31.2
35–39	4,180	4,154	1.0	3	48	16	16.1	26.0
40–44	4,174	5,891	1.4	5	105	27	19.4	22.6
45–49	4,619	9,897	2.1	12	158	28	13.2	19.0
50–54	4,632	14,889	3.2	22	275	40	12.4	12.8
55–59	4,067	20,134	5.0	35	399	57	11.4	10.1
60–64	3,534	27,913	7.9	52	507	77	9.8	10.4
65–69	3,637	42,198	11.6	74	660	103	8.9	7.9
70–74	2,852	59,532	20.9	119	846	149	7.1	7.2
75–79	2,155	74,296	34.5	149	885	205	5.9	5.3
80–84	1,607	97,678	60.8	175	797	277	4.5	4.0
≥85	1,564	239,437	153.1	217	589	415	2.7	3.0
<b>Total</b>	<b>50,194</b>	<b>602,254</b>	<b>12.0</b>	<b>702</b>	<b>5,326</b>	<b>91</b>	<b>7.6</b>	<b>7.7</b>

## Cause of death in adult RRT patients

Cause of death was analysed in prevalent patients receiving RRT on 31/12/2016 and followed-up for one year in 2017. 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 2.9** Cause of death in adult patients prevalent to RRT on 31/12/2016 followed-up in 2017 by age group

Cause of death	RRT all ages		RRT <65 yrs		RRT ≥65 yrs	
	N	%	N	%	N	%
Cardiac disease	747	22.7	270	28.9	477	20.3
Cerebrovascular disease	123	3.7	46	4.9	77	3.3
Infection	659	20.0	167	17.8	492	20.9
Malignancy	356	10.8	106	11.3	250	10.6
Treatment withdrawal	592	18.0	99	10.6	493	20.9
Other	592	18.0	190	20.3	402	17.1
Uncertain aetiology	221	6.7	58	6.2	163	6.9
<b>Total (with data)</b>	<b>3,290</b>	<b>100.0</b>	<b>936</b>	<b>100.0</b>	<b>2,354</b>	<b>100.0</b>
Missing	2,038	38.3	615	39.7	1,423	37.7



**Figure 2.14** Cause of death for prevalent adult RRT patients between 2008 and 2017