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UK Renal Registry 20th Annual Report: Chapter 2 UK Renal Replacement Therapy Adult Prevalence in 2016: National and Centre-specific Analyses

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Keywords

Chronic kidney disease · Clinical Commissioning Group · Comorbidity · Diabetes · Dialysis · End stage renal disease · Established renal failure · Ethnicity · Haemodialysis · Peritoneal dialysis · Prevalence · Renal replacement therapy · Transplantation · Treatment modality

Summary

- There were 63,162 adult patients receiving renal replacement therapy (RRT) in the UK on 31 December 2016, an absolute increase of 3.1% from 2015.
- The actual number of patients increased by 0.9% for haemodialysis (HD), 5.1% for those with a functioning transplant and less than 0.1% for peritoneal dialysis (PD).
- The UK adult prevalence of RRT was 962 per million population (pmp). The reported prevalence in 2000 was 523 pmp.
- The number of patients receiving home HD increased slightly from 1,175 patients in 2015 to 1,256 patients in 2016.
- In 2016 the median age of prevalent patients was 59 years (HD 67 years, PD 64 years, transplant 54 years). In 2000 the median age was 55 years (HD 63 years, PD 58 years, transplant 48 years). The percentage of RRT patients aged greater than 75 years in 2016 was 16.0%.
- For all ages, RRT prevalence in men exceeded that in women, peaking in age group 80–84 years at 3,072 pmp in men and in the 70–74 years age group at 1,657 pmp in women.
- The most common identifiable renal diagnosis was glomerulonephritis (19%), followed by diabetes (17%), other (17%) and aetiology uncertain (15%).
- Transplantation continued as the most common treatment modality (54%), HD was used in 40% and PD in 6% of RRT patients.

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Introduction

This chapter presents data on all adult patients on RRT in the UK at the end of 2016. The UK Renal Registry (UKRR) received data returns for 2016 from all five renal centres in Wales, all five in Northern Ireland and 51 in England. Cambridge renal centre (Addenbrooke's) was unable to submit 2015 or 2016 data at patient level prior to the UKRR closing the database and only provided summary numbers of patients starting RRT by treatment modality. This centre is therefore excluded from most analyses in this chapter. Data from all nine centres in Scotland were obtained from the Scottish Renal Registry. Demographic data on children and young adults can be found in chapter 4.

These analyses of prevalent RRT patients are performed annually to aid clinicians and policy makers in planning future RRT requirements in the UK. It is important to understand national, regional and centre level variation in numbers of prevalent patients as part of the capacity planning process. In addition, knowledge about variation in case mix is also reported to improve understanding of where resources should be focussed to improve equity of provision of RRT in the UK.

The term established renal failure (ERF) used within this chapter is synonymous with the terms end stage renal failure and end stage renal disease, which are in more widespread international usage. Patients have disliked the term 'end stage' which reflects the inevitable outcome of this disease.

Methods

Crude prevalence ratios were calculated pmp and age/sex standardised prevalence ratios were calculated as detailed in appendix D: Methodology used for Analyses of Clinical Commissioning Group (CCG)/Health Board (HB) Incidence and Prevalence Rates and of Standardised Ratios (www.renalreg.org).

Throughout this chapter, HD refers to all modes of HD treatment, including haemodiafiltration (HDF). Several centres reported significant numbers of patients on HDF, but other centres did not differentiate this treatment type in their UKRR returns. Where joint care of renal transplant recipients between the referring centre and the transplant centre occurred, the patient was usually allocated to the referring centre (see appendix B2 for the allocation procedure). Thus the number of patients allocated to a transplant centre is often lower than that recorded by the centre itself and conversely, pre-emptively transplanted patients were sometimes allocated to the transplanting centre rather than the referring centre if no transfer out code had been sent through. Queries and updated information are welcomed by the UKRR at any point during the year if this has occurred.

Prevalent patients on RRT in 2016 were examined by time on RRT, age group, sex, ethnic origin, primary renal disease, presence of diabetes and treatment modality (see appendix H: Coding, www.renalreg.org). In the analysis of prevalence, only adult patients on RRT contributed to the numerator and denominator.

Time on RRT was defined as median time on treatment and was calculated from the most recent start date. Patients without an accurate start date were excluded from this calculation.

Analyses were done for the UK as a whole, by UK country, at centre level and split by treatment modality when appropriate.

Chi-squared test, Fisher's exact test, linear regression and Kruskal Wallis tests were used as appropriate to test for significant differences between groups. The data were analysed using SAS 9.3.

Results

Prevalent patient numbers and changes in prevalence

The number of patients for each country (table 2.1) was calculated by totalling the number of patients in each renal centre located in the country. These numbers differ marginally from those quoted elsewhere in this report when patients are allocated to geographical areas by their individual post codes, because some centres treat patients from across national boundaries.

Table 2.1. Prevalence of adult RRT in the UK on 31/12/2016

	England	N Ireland	Scotland	Wales	UK
Number of prevalent patients	53,361	1,780	4,955	3,066	63,162
Total estimated population, mid-2016 (millions)*	55.3	1.9	5.4	3.1	65.6
Prevalence ratios HD (pmp)	390	340	352	373	385
Prevalence ratios PD (pmp)	56	41	42	66	55
Prevalence ratios dialysis (pmp)	446	382	395	439	440
Prevalence ratios transplant (pmp)	519	574	522	545	522
Prevalence ratios total (pmp)	965	956	917	985	962
95% confidence intervals total (pmp)	957–974	912–1,000	891–942	950–1,020	955–970

*Data from the Office for National Statistics, National Records of Scotland and the Northern Ireland Statistics and Research Agency – based on the 2011 census

Pmp – per million population

There were 63,162 adult patients receiving RRT in the UK at the end of 2016, giving an adult UK population prevalence of 962 pmp (table 2.1) compared with 941 pmp in 2015. RRT prevalence increased in all UK countries in 2016. Since 2015 the prevalence of dialysis in the UK remained steady at 440 pmp and there were increases in the prevalence of transplant from 501 pmp in 2015 to 522 in 2016. There had been a slow decline in PD prevalence in previous years, but prevalence in 2016 remained at the same level as in 2015. As observed in the previous year, Northern Ireland exhibited a higher RRT prevalence for patients aged 75 years and older compared with the other UK countries (figure 2.1). In the UK, RRT prevalence in patients aged 80–84 continued to rise from 2,044 per million age related population (pmarp) in 2015 to 2,098 pmarp in 2016 and in patients aged ⩾85 years from 1,084 pmarp in 2015 to 1,129 pmarp in 2016. This trend has been remarked upon over a number of years and the observed aging of the prevalent population is likely due in part to improving patient survival.

Prevalent patients by RRT modality and centre

There was a marked variation in the number of prevalent patients across renal centres and the distribution of their treatment modalities also varied widely (table 2.2).

Changes in prevalence

The prevalent UK RRT population grew by 3.2% between 2015 and 2016 (table 2.3), an annual growth rate which has been fairly consistent over the last 10–15 years (figure 2.2).

The increase in prevalence was greatest in Northern Ireland (4.6%) and most modest in Wales (0.9%).

The number of prevalent HD patients increased by 0.1% in 2016 compared with 2015, which was a much smaller increase than that seen between 2014 and 2015 (2.7% growth in prevalence pmp). There continued to be an increase in prevalent transplant patients (4.2% pmp) and very little change in prevalent PD patients (0.6% pmp decrease).

The average annual change in prevalent patients between 2012 and 2016 was a 1.0% pmp increase in HD, 2.1% pmp fall in PD and 4.6% pmp growth in prevalent transplant patients (table 2.4). In the same period there was an average annual 15.5% pmp growth (an absolute increase of 451 from 737 to 1,188) in the use of home haemodialysis (data not shown).

The long-term (1997–2016) UK prevalence pattern by treatment modality is shown in figure 2.2. The steady growth in transplant numbers was maintained in 2016.

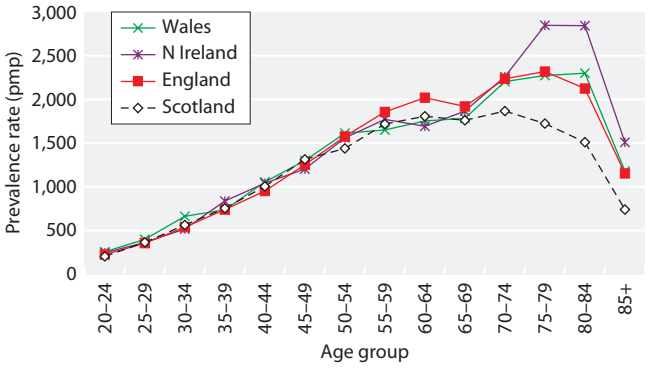

Fig. 2.1. RRT prevalence pmp by age group and UK country on 31/12/2016

The increase in home haemodialysis patient numbers over this period has been associated with more than a doubling in prevalence, from 1.9% of the dialysis population in 2006 ($N = 445$) to 4.4% in 2016 ($N = 1,256$). In contrast, PD has fallen by 4.9% between 2006 and 2016.

Prevalence of RRT in Clinical Commissioning Groups in England (CCGs), Health and Social Care Areas in Northern Ireland (HBs), Local Health Boards in Wales (HBs) and Health Boards in Scotland (HBs)

The need for RRT depends upon many factors such as primary renal diagnosis, but also on social and demographic factors such as age, sex, social deprivation and ethnicity. Hence, comparison of crude prevalence ratios by geographical area can be misleading. This section, as in previous reports, uses age and sex standardisation to compare RRT prevalence. The ethnic minority profile is also provided to help understand the differences in standardised prevalence ratios (SPRs).

There were substantial variations in the crude CCG/HB prevalence ratios pmp (table 2.5), from 639 pmp in Lincolnshire (NHS South West Lincolnshire, population 125,200) and 641 pmp in Orkney (Orkney, population 21,900) to 1,773 pmp in Brent (NHS Brent, population 328,300). However, as described in table 2.5, estimates for some CCGs (denoted with an [a,b] in table 2.5, including NHS South West Lincolnshire) may be underestimated given that 5–15% of patients from these CCGs were estimated to be treated at the Cambridge renal centre, which was unable to provide patient-level data in 2015 or 2016.

There were similar variations in the SPRs (ratio of observed: expected prevalence given the age/sex breakdown of the CCG/HB) from 0.57 (Orkney) to 2.37 (NHS Bradford City) (table 2.5). Confidence intervals are not presented for the crude ratios pmp for 2016 but

Table 2.2. Number of prevalent RRT patients by treatment modality and centre on 31/12/2016

Centre	*N*					Catchment population (millions)	2016 crude rate pmp	(95% CI)
	HD	PD	Dialysis	Transplant	RRT			
England								
B Heart	395	88	483	171	654	0.74	886	(818–954)
B QEH[a]	1,009	143	1,152	1,242	2,394	1.70	1,409	(1,352–1,465)
Basldn	162	34	196	80	276	0.42	665	(587–743)
Bradfd	250	25	275	360	635	0.65	974	(898–1,050)
Brightn	459	65	524	472	996	1.30	768	(720–816)
Bristol[a]	510	53	563	907	1,470	1.44	1,021	(969–1,074)
Camb[a,b]	429	23	452	1,099	1,551	1.16	1,339	(1,273–1,406)
Carlis	94	35	129	150	279	0.32	870	(768–972)
Carsh	848	113	961	680	1,641	1.91	858	(816–899)
Chelms	133	33	166	112	278	0.51	545	(481–609)
Colchr	124		124		124	0.30	414	(341–487)
Covnt[a]	377	66	443	534	977	0.89	1,095	(1,027–1,164)
Derby	241	77	318	225	543	0.70	773	(708–838)
Donc	194	27	221	109	330	0.41	805	(718–892)
Dorset	281	37	318	369	687	0.86	797	(738–857)
Dudley	203	50	253	93	346	0.44	783	(701–866)
Exeter	455	84	539	478	1,017	1.09	934	(876–991)
Glouc	244	42	286	184	470	0.59	800	(728–873)
Hull	329	72	401	457	858	1.02	841	(785–897)
Ipswi	146	36	182	229	411	0.40	1,030	(931–1,130)
Kent	430	56	486	584	1,070	1.22	874	(822–926)
L Barts[a]	1,030	202	1,232	1,140	2,372	1.83	1,296	(1,244–1,348)
L Guys[a]	693	39	732	1,366	2,098	1.08	1,938	(1,855–2,021)
L Kings	581	91	672	436	1,108	1.17	946	(890–1,002)
L Rfree[a]	729	160	889	1,288	2,177	1.52	1,434	(1,374–1,494)
L St.G[a]	354	45	399	464	863	0.80	1,082	(1,010–1,154)
L West[a]	1,471	101	1,572	1,845	3,417	2.40	1,424	(1,377–1,472)
Leeds[a]	525	48	573	979	1,552	1.67	929	(883–975)
Leic[a]	965	89	1,054	1,256	2,310	2.44	948	(910–987)
Liv Ain	187	26	213	14	227	0.48	469	(408–530)
Liv Roy[a]	366	72	438	882	1,320	1.00	1,320	(1,249–1,391)
M RI[a]	526	62	588	1,406	1,994	1.53	1,302	(1,245–1,359)
Middlbr	332	27	359	532	891	1.00	887	(829–946)
Newc[a]	320	53	373	680	1,053	1.12	939	(883–996)
Norwch	331	49	380	394	774	0.79	984	(915–1,053)
Nottm[a]	393	82	475	677	1,152	1.09	1,059	(998–1,120)
Oxford[a]	450	95	545	1,222	1,767	1.69	1,045	(997–1,094)
Plymth[a]	144	40	184	329	513	0.47	1,092	(998–1,187)
Ports[a]	636	75	711	982	1,693	2.02	837	(797–876)
Prestn	564	40	604	602	1,206	1.49	808	(762–853)
Redng	303	56	359	435	794	0.91	872	(812–933)
Salford	402	107	509	513	1,022	1.49	686	(644–728)
Sheff[a]	616	55	671	756	1,427	1.37	1,040	(986–1,094)
Shrew	205	39	244	131	375	0.50	749	(673–825)
Stevng	532	22	554	350	904	1.20	751	(702–800)
Sthend	114	30	144	93	237	0.32	748	(653–843)
Stoke	346	79	425	402	827	0.89	930	(866–993)
Sund	251	17	268	239	507	0.62	820	(749–891)
Truro	170	18	188	240	428	0.41	1,036	(938–1,134)
Wirral	199	22	221	116	337	0.57	589	(526–652)
Wolve	314	70	384	185	569	0.67	851	(781–921)
York	198	33	231	304	535	0.49	1,087	(995–1,179)

Table 2.2. Continued

Centre	N					Catchment population (millions)	2016 crude rate pmp	(95% CI)
	HD	PD	Dialysis	Transplant	RRT			
Northern Ireland								
Antrim	123	16	139	102	241	0.29	818	(714–921)
Belfast[a]	194	24	218	611	829	0.64	1,302	(1,213–1,390)
Newry	87	21	108	129	237	0.26	907	(792–1,023)
Ulster	102	6	108	58	166	0.27	624	(529–719)
West NI	128	10	138	169	307	0.35	873	(775–970)
Scotland								
Abrdn	231	21	252	305	557	0.60	928	(851–1,006)
Airdrie	185	24	209	231	440	0.55	797	(723–872)
D & Gall	50	10	60	71	131	0.15	883	(731–1,034)
Dundee	179	21	200	220	420	0.46	907	(820–993)
Edinb[a]	289	37	326	454	780	0.96	809	(752–866)
Glasgw[a]	593	54	647	1,107	1,754	1.62	1,080	(1,030–1,131)
Inverns	93	11	104	156	260	0.27	963	(846–1,080)
Klmarnk	141	33	174	144	318	0.36	880	(783–977)
Krkcldy	144	18	162	133	295	0.32	931	(825–1,038)
Wales								
Bangor	75	16	91	0	91	0.22	417	(331–503)
Cardff[a]	517	75	592	1,038	1,630	1.42	1,148	(1,092–1,204)
Clwyd	73	15	88	90	178	0.19	939	(801–1,076)
Swanse	373	67	440	328	768	0.89	867	(806–929)
Wrexm	124	33	157	153	310	0.24	1,290	(1,147–1,434)
England	**21,560**	**3,103**	**24,663**	**28,698**	**53,361**			
N Ireland	**634**	**77**	**711**	**1,069**	**1,780**			
Scotland	**1,905**	**229**	**2,134**	**2,821**	**4,955**			
Wales	**1,162**	**206**	**1,368**	**1,698**	**3,066**			
UK	**25,261**	**3,615**	**28,876**	**34,286**	**63,162**			

Blank cells indicate no patients on that treatment type attending that centre when data were collected
Centres prefixed 'L' are London centres
The numbers of patients calculated for each country quoted above differ marginally from those quoted elsewhere in this report when patients are allocated to areas by their individual post codes, because some centres treat patients from across national boundaries
[a]Transplant centre
[b]Cambridge was unable to submit 2016 data at patient level but provided summary numbers of patients still on RRT at the end of 2016, by treatment modality and prevalent numbers. This centre is therefore excluded from all centre level prevalent analyses. Tables 2.1, 2.2, 2.3 and 2.4 reflect these revisions: Camb (+1,551)

figures D3 and D4 in appendix D (www.renalreg.org) can be used to determine if a CCG/HB falls within the range representing the 95% confidence limit of the national average prevalence.

Factors associated with variation in SPRs in CCGs in England, Health and Social Care Trust Areas in Northern Ireland (HBs), Local Health Boards in Wales (HBs) and Health Boards in Scotland (HBs)

In 2016, there were 77 CCGs/HBs with a significantly low SPR, 103 with a 'normal' SPR and 45 with a significantly high SPR (table 2.5). Prevalence ratios were not estimated for eight CCGs where more than 15% of patients were estimated to be treated at the Cambridge renal centre which was unable to provide patient-level data.

As seen in previous years, SPRs tended to reflect the demographics of the regions in question such that urban, ethnically diverse populations in areas of high social deprivation had the highest prevalence of RRT. For example, the association with the level of ethnic diversity is illustrated by the fact that mean SPRs were significantly higher in the 84 CCGs/HBs with an ethnic minority population greater than 10% than in those with lower ethnic minority populations ($p < 0.001$). There was a strong, positive correlation between the

Table 2.3. Number of prevalent patients on RRT by centre at year end 2012–2016

Centre	Date					% change 2015–2016	% annual change 2012–2016
	31/12/2012	31/12/2013	31/12/2014	31/12/2015	31/12/2016		
England							
B Heart	668	654	635	654	654	0.0	−0.5
B QEH	1,970	2,045	2,134	2,247	2,394	6.5	5.0
Basldn	258	270	278	274	276	0.7	1.7
Bradfd	504	520	548	584	635	8.7	5.9
Brightn	829	870	914	950	996	4.8	4.7
Bristol	1,338	1,424	1,458	1,477	1,470	−0.5	2.4
Camb	1,111	1,191	1,241	1,539	1,551	0.8	8.7
Carlis	216	227	250	281	279	−0.7	6.6
Carsh	1,455	1,479	1,551	1,582	1,641	3.7	3.1
Chelms	225	241	261	288	278	−3.5	5.4
Colchr	117	115	119	120	124	3.3	1.5
Covnt	899	929	960	961	977	1.7	2.1
Derby	474	464	513	538	543	0.9	3.5
Donc	261	259	284	302	330	9.3	6.0
Dorset	609	627	664	681	687	0.9	3.1
Dudley	315	310	305	314	346	10.2	2.4
Exeter	842	888	945	968	1,017	5.1	4.8
Glouc	415	410	428	443	470	6.1	3.2
Hull	782	813	801	857	858	0.1	2.3
Ipswi	339	355	367	403	411	2.0	4.9
Kent	918	958	1,013	1,039	1,070	3.0	3.9
L Barts	1,947	2,090	2,208	2,278	2,372	4.1	5.1
L Guys	1,738	1,828	1,913	2,012	2,098	4.3	4.8
L Kings	917	963	1,023	1,084	1,108	2.2	4.8
L Rfree	1,841	1,921	2,006	2,093	2,177	4.0	4.3
L St.G	705	755	793	846	863	2.0	5.2
L West	3,078	3,121	3,231	3,315	3,417	3.1	2.6
Leeds	1,413	1,464	1,500	1,523	1,552	1.9	2.4
Leic	1,974	2,067	2,145	2,184	2,310	5.8	4.0
Liv Ain	194	190	217	221	227	2.7	4.0
Liv Roy	1,228	1,263	1,268	1,237	1,225	−1.0	−0.1
M RI	1,710	1,854	1,795	1,890	1,994	5.5	3.9
Middlbr	788	827	854	902	891	−1.2	3.1
Newc	946	962	977	1,009	1,053	4.4	2.7
Norwch	622	690	687	740	774	4.6	5.6
Nottm	1,012	1,073	1,061	1,113	1,152	3.5	3.3
Oxford	1,532	1,563	1,655	1,691	1,767	4.5	3.6
Plymth	458	502	502	503	513	2.0	2.9
Ports	1,439	1,544	1,591	1,669	1,693	1.4	4.1
Prestn	1,079	1,089	1,171	1,215	1,206	−0.7	2.8
Redng	672	731	760	775	794	2.5	4.3
Salford	880	881	971	974	1,022	4.9	3.8
Sheff	1,299	1,328	1,361	1,384	1,427	3.1	2.4
Shrew	354	338	349	368	375	1.9	1.5
Stevng	664	755	778	817	904	10.6	8.0
Sthend	213	220	238	246	237	−3.7	2.7
Stoke	699	724	775	788	827	4.9	4.3
Sund	422	421	450	459	507	10.5	4.7
Truro	375	371	379	415	428	3.1	3.4
Wirral	226	248	277	280	337	20.4	10.5
Wolve	524	567	574	582	569	−2.2	2.1
York	396	409	461	490	535	9.2	7.8

Table 2.3. Continued

Centre	Date					% change 2015–2016	% annual change 2012–2016
	31/12/2012	31/12/2013	31/12/2014	31/12/2015	31/12/2016		
N Ireland							
Antrim	223	224	229	239	241	0.8	2.0
Belfast	702	726	747	772	829	7.4	4.2
Newry	188	199	208	226	237	4.9	6.0
Ulster	145	155	149	171	166	−2.9	3.4
West NI	254	238	274	293	307	4.8	4.9
Scotland							
Abrdn	507	517	502	532	557	4.7	2.4
Airdrie	389	389	395	425	440	3.5	3.1
D & Gall	128	119	130	130	131	0.8	0.6
Dundee	395	398	401	420	420	0.0	1.5
Edinb	720	737	747	770	780	1.3	2.0
Glasgw	1,536	1,586	1,607	1,710	1,754	2.6	3.4
Inverns	220	216	225	253	260	2.8	4.3
Klmarnk	301	296	299	310	318	2.6	1.4
Krkcldy	278	283	277	295	295	0.0	1.5
Wales							
Bangor	105	99	102	182	177	−2.7	13.9
Cardff	1,544	1,583	1,591	1,612	1,630	1.1	1.4
Clwyd	173	152	166	185	178	−3.8	0.7
Swanse	663	692	707	766	768	0.3	3.7
Wrexm	248	251	282	293	310	5.8	5.7
England	**45,890**	**47,808**	**49,639**	**51,605**	**53,361**	**3.4**	**3.8**
N Ireland	**1,512**	**1,542**	**1,607**	**1,701**	**1,780**	**4.6**	**4.2**
Scotland	**4,474**	**4,541**	**4,583**	**4,845**	**4,955**	**2.3**	**2.6**
Wales	**2,733**	**2,777**	**2,848**	**3,038**	**3,066**	**0.9**	**2.9**
UK	**54,609**	**56,668**	**58,677**	**61,189**	**63,162**	**3.2**	**3.7**

SPR and percentage of the population that were non-White ($r = 0.9$, $p < 0.001$). In 2016, for each 10% increase in ethnic minority population, the SPR increased by 0.17 (equates to ~17%). These trends are identical to those identified previously. The relationship between the ethnic composition of a CCG/HB and its SPR is demonstrated in figure 2.3.

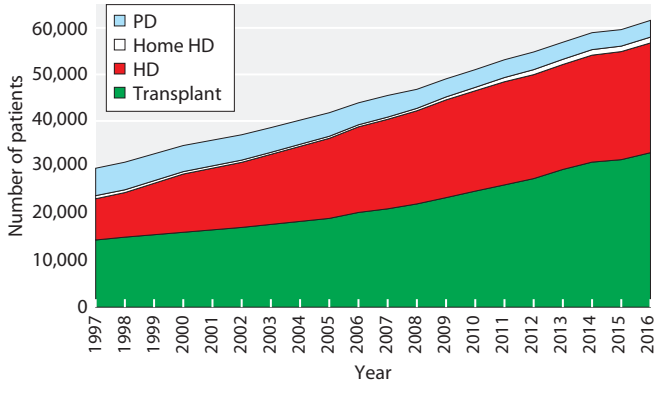

Fig. 2.2. Growth in prevalent patients by treatment modality at the end of each year 1997–2016

Excluding the eight CCGs where ⩾15% of their population was covered by Cambridge, only three of the 139 CCGs/HBs with ethnic minority populations of less than 10% had high SPRs: Belfast in Northern Ireland, Cwm Taf and Abertawe Bro Morgannwg University in Wales. Of the 86 CCGs/HBs with ethnic minority populations greater than or equal to 10%, 42 (48.8%) had high SPRs, whereas eleven (12.8%) (NHS Chiltern, NHS Leeds North, NHS Leeds West, NHS Richmond, NHS Havering, NHS Solihull, NHS Calderdale, NHS Newcastle and Gateshead, NHS East and North Hertfordshire, NHS Medway, NHS Trafford) had low SPRs. Some of the CCGs/HBs with a high (>15%) ethnic minority population had a normal expected RRT prevalence (e.g. NHS Central London (Westminster), NHS Wolverhampton, NHS Sheffield, NHS Crawley). Therefore, although differences in proportions of ethnic minority populations

Table 2.4. Change in RRT prevalence ratio pmp 2012–2016 by modality*

	Prevalence					% growth in prevalence pmp				
Year	HD pmp	PD pmp	Dialysis pmp	Transplant pmp	RRT pmp	HD	PD	Dialysis	Transplant	RRT
2012	370	60	430	436	866					
2013	369	57	427	462	888	−0.1	−4.6	−0.8	5.8	2.5
2014	374	56	430	482	913	1.3	−1.5	0.9	4.5	2.8
2015	384	55	440	501	941	2.7	−1.6	2.2	3.9	3.1
2016	385	55	440	522	962	0.1	−0.6	0.0	4.2	2.3
Average annual growth 2012–2016						1.0	−2.1	0.6	4.6	2.7

*Differences in the figures for dialysis and RRT prevalence and the sum of the separate modalities are due to rounding
pmp – per million population

are clearly important in explaining differences in SPR they are not the only explanation.

The age and sex SPRs (which do not take into account variation in ethnicity) in each region of England and in Wales, Northern Ireland and Scotland are presented in table 2.6. Wales and Northern Ireland previously had higher than expected RRT prevalence but in more recent years were similar to expected. Scotland had lower than expected RRT prevalence as did the North and South of England. RRT prevalence in London remained higher than expected.

Case mix in prevalent RRT patients

Time on RRT (vintage)

Table 2.7 shows the median time, in years, since starting RRT of prevalent RRT patients on 31 December 2016. Median time on RRT for all prevalent patients has remained fairly static at 6.2 years (6.2 years in 2015, 6.1 years in 2014). Patients with functioning transplants had survived a median of 10.3 years on RRT whilst the median time on RRT of HD and PD patients was significantly less (3.2 and 1.5 years respectively). The median time on HD was more than double that on PD and this could reflect early transplantation in the latter as well as higher technique failure rates for PD.

Age

The median age of prevalent UK patients on RRT at 31 December 2016 (59.1 years, table 2.8) has remained stable over recent years although it is significantly higher than in 2005 when it was 55.0 years. As observed previously, there were marked differences between modalities; the median age of HD patients (67.2 years) was greater than that of those on PD (63.7 years) and substantially higher than that of transplanted patients (54.3 years). Of the UK prevalent RRT population, 49.9% were in the 40–64 years age group (table 2.9). The proportion of patients aged 75 years and older varied greatly between countries and was highest in Wales (17.8%) and Northern Ireland (18.4%) and lowest in Scotland (12.5%) (table 2.9). Within countries there were large differences in the proportion of patients aged over 75 (within England these ranged between 8.8% in Liverpool Royal Infirmary and 41.4% in Colchester). In most centres the prevalent PD population was younger than the HD population (table 2.8).

Inter-centre differences in the median age of prevalent patients by treatment modality can reflect differing demographics of the catchment populations as well as differing approaches to treatment modalities. For example, Colchester had the highest median age (72.0 years), whilst London Guy's the lowest (55.3 years) (table 2.8). This could reflect either variation in the catchment populations or follow-up of younger transplant patients (Colchester had no transplant patients whereas 65% of prevalent patients at London Guy's were transplant patients). The median age of the non-White dialysis population was lower than the overall dialysis population (62.0 vs 66.8 years, data not shown). The differing age distributions of the transplant and dialysis populations are illustrated in figure 2.4, demonstrating that the age peak for prevalent dialysis patients was 24 years later than for prevalent transplant patients.

In the UK on 31 December 2016, 66.3% of patients on RRT aged less than 65 years had a functioning transplant (table 2.15), compared with only 32.6% of those aged 65 years and over. There was a similar pattern in all four UK countries, although the proportion of patients aged less than 65 years with a functioning transplant in Northern Ireland (77.4%) was much higher than elsewhere.

Sex

The age distributions of males and females were very similar (data not shown). Standardising the age of the

Table 2.5. Prevalence of RRT and SPRs in CCG/HB area

O/E – ratio of observed:expected rate of RRT given the age and sex breakdown of the area
LCL – lower 95% confidence limit
UCL – upper 95% confidence limit
Areas with significantly low SPRs in 2016 are italicised in lighter greyed areas, those with significantly high SPRs in 2016 are bold in darker greyed areas
Population numbers are the 2016 mid-year estimates by age group and sex (data obtained from the Office of National Statistics, National Records of Scotland and the Northern Ireland Statistics and Research Agency – based on the 2011 census)
% non-White – percentage of the CCG/HB population that is non-White, from 2011 census
Office of National Statistics specifies that the populations should be rounded to the nearest 100 when presented

UK area	Name	Total population	2011 O/E	2012 O/E	2013 O/E	2014 O/E	2015 O/E	2016 O/E	2016 95% LCL	2016 95% UCL	2016 Crude rate pmp	% non-White
Cheshire, Warrington and Wirral	*NHS Eastern Cheshire*	*196,900*	*0.76*	*0.81*	*0.78*	*0.78*	*0.77*	*0.72*	*0.62*	*0.84*	*792*	*3.7*
	NHS South Cheshire	179,800	0.90	0.88	0.90	0.94	0.95	0.93	0.80	1.08	968	2.9
	NHS Vale Royal	*103,700*	*0.78*	*0.73*	*0.79*	*0.74*	*0.74*	*0.69*	*0.55*	*0.86*	*704*	*2.1*
	NHS Warrington	*208,800*	*0.80*	*0.82*	*0.84*	*0.91*	*0.87*	*0.83*	*0.71*	*0.96*	*819*	*4.1*
	NHS West Cheshire	*232,000*	*0.99*	*0.96*	*0.97*	*0.95*	*0.83*	*0.86*	*0.75*	*0.98*	*892*	*2.8*
	NHS Wirral	*321,200*	*0.84*	*0.82*	*0.83*	*0.75*	*0.73*	*0.76*	*0.67*	*0.86*	*784*	*3.0*
Durham, Darlington and Tees	NHS Darlington	105,600	0.80	0.85	0.85	0.84	0.87	0.85	0.69	1.04	852	3.8
	NHS Durham Dales, Easington and Sedgefield	274,600	0.99	0.95	0.98	0.98	0.98	0.95	0.85	1.07	998	1.2
	NHS Hartlepool and Stockton-on-Tees	*288,500*	*0.89*	*0.91*	*0.89*	*0.92*	*0.88*	*0.84*	*0.74*	*0.96*	*818*	*4.4*
	NHS North Durham	*247,500*	*0.76*	*0.84*	*0.80*	*0.79*	*0.78*	*0.77*	*0.67*	*0.89*	*776*	*2.5*
	NHS South Tees	275,800	1.12	1.11	1.11	1.07	1.13	1.08	0.97	1.22	1,051	6.7
Greater Manchester	NHS Bolton	283,100	1.11	1.10	1.06	1.02	1.03	1.06	0.94	1.19	982	18.1
	NHS Bury	188,700	0.92	0.92	0.91	0.95	0.98	0.97	0.84	1.12	933	10.8
	NHS Heywood, Middleton & Rochdale	216,200	1.00	1.00	1.04	1.05	1.05	1.10	0.97	1.26	1,013	18.3
	NHS Manchester	**541,300**	**1.11**	**1.16**	**1.19**	**1.22**	**1.24**	**1.26**	**1.15**	**1.37**	**896**	**33.5**
	NHS Oldham	232,700	0.94	0.93	0.96	0.95	0.99	1.02	0.90	1.17	915	22.5
	NHS Salford	248,700	0.85	0.88	0.90	0.87	0.83	0.89	0.77	1.02	772	9.9
	NHS Stockport	*290,600*	*0.88*	*0.87*	*0.80*	*0.81*	*0.82*	*0.83*	*0.73*	*0.94*	*833*	*7.9*
	NHS Tameside and Glossop	256,400	0.94	0.94	0.93	0.91	0.89	0.94	0.83	1.07	913	8.2
	NHS Trafford	*234,700*	*0.84*	*0.85*	*0.87*	*0.88*	*0.84*	*0.83*	*0.72*	*0.96*	*793*	*14.5*
	NHS Wigan Borough	323,100	0.90	0.94	0.96	0.97	0.92	0.93	0.83	1.04	932	2.7
Lancashire	**NHS Blackburn with Darwen**	**147,000**	**1.30**	**1.27**	**1.26**	**1.22**	**1.24**	**1.20**	**1.03**	**1.41**	**1,047**	**30.8**
	NHS Blackpool	139,200	0.78	0.88	0.96	1.04	1.01	0.98	0.83	1.15	999	3.3
	NHS Chorley and South Ribble	174,300	0.81	0.87	0.94	0.92	0.89	0.87	0.74	1.02	878	2.9
	NHS East Lancashire	375,800	1.03	0.99	1.01	1.01	0.98	0.97	0.88	1.08	955	11.9
	NHS Fylde & Wyre	*169,000*	*0.83*	*0.85*	*0.85*	*0.84*	*0.86*	*0.83*	*0.71*	*0.97*	*953*	*2.1*
	NHS Greater Preston	203,500	0.83	0.90	0.87	0.88	0.88	0.88	0.75	1.02	821	14.7
	NHS Morecombe Bay	*348,500*	*0.73*	*0.75*	*0.74*	*0.72*	*0.73*	*0.70*	*0.62*	*0.79*	*743*	*4.0*
	NHS West Lancashire	*113,400*	*0.86*	*0.82*	*0.77*	*0.75*	*0.80*	*0.75*	*0.61*	*0.93*	*776*	*1.9*
Merseyside	NHS Halton	126,900	1.06	1.02	1.01	1.01	1.02	1.01	0.85	1.21	985	2.2
	NHS Knowsley	147,900	0.97	1.02	0.97	0.99	0.98	0.94	0.80	1.12	899	2.8
	NHS Liverpool	484,600	1.07	1.05	1.03	1.04	1.01	0.98	0.89	1.08	861	11.1
	NHS South Sefton	158,900	0.94	0.95	0.95	0.98	0.97	0.99	0.84	1.15	1,013	2.2
	NHS Southport and Formby	*115,400*	*0.83*	*0.76*	*0.80*	*0.81*	*0.76*	*0.75*	*0.62*	*0.92*	*841*	*3.1*
	NHS St Helens	*178,500*	*0.90*	*0.92*	*0.86*	*0.86*	*0.85*	*0.85*	*0.72*	*0.99*	*863*	*2.0*
Cumbria, Northumberland, Tyne and Wear	*NHS Cumbria North*	*318,200*	*0.73*	*0.70*	*0.73*	*0.76*	*0.81*	*0.80*	*0.71*	*0.90*	*870*	*1.5*
	NHS Newcastle Gateshead	*498,100*	*0.89*	*0.88*	*0.84*	*0.84*	*0.84*	*0.85*	*0.77*	*0.94*	*769*	*10.1*
	NHS North Tyneside	203,300	0.93	0.94	0.97	0.90	0.88	0.91	0.79	1.05	930	3.4
	NHS Northumberland	*316,000*	*0.74*	*0.74*	*0.72*	*0.77*	*0.76*	*0.73*	*0.65*	*0.83*	*816*	*1.6*
	NHS South Tyneside	149,400	1.04	0.98	0.94	0.86	0.84	0.95	0.81	1.12	970	4.1
	NHS Sunderland	278,000	0.98	1.00	0.95	0.96	0.94	1.01	0.90	1.14	1,011	4.1

Table 2.5. Continued

UK area	Name	Total population	2011 O/E	2012 O/E	2013 O/E	2014 O/E	2015 O/E	2016 O/E	2016 95% LCL	2016 95% UCL	2016 Crude rate pmp	% non-White
North Yorkshire and Humber	*NHS East Riding of Yorkshire*	*315,900*	*0.85*	*0.83*	*0.81*	*0.80*	*0.80*	*0.79*	*0.71*	*0.89*	*896*	*1.9*
	NHS Hambleton, Richmondshire and Whitby	*153,200*	*0.65*	*0.67*	*0.73*	*0.75*	*0.74*	*0.70*	*0.58*	*0.83*	*770*	*2.7*
	NHS Harrogate and Rural District	156,300	0.82	0.86	0.84	0.88	0.93	0.91	0.78	1.06	985	3.7
	NHS Hull	260,200	1.00	0.95	0.97	1.02	1.08	1.10	0.97	1.24	972	5.9
	NHS North East Lincolnshire	159,100	1.08	1.04	1.00	0.96	0.97	0.93	0.79	1.09	930	2.6
	NHS North Lincolnshire	170,800	0.84	0.88	0.94	0.89	0.89	0.88	0.75	1.03	908	4.0
	NHS Scarborough and Ryedale	111,400	0.90	0.94	0.91	0.89	0.87	0.88	0.73	1.06	979	2.5
	NHS Vale of York	357,900	0.88	0.93	0.92	0.90	0.88	0.90	0.81	1.01	900	4.0
South Yorkshire and Bassetlaw	NHS Barnsley	241,200	1.11	1.05	1.02	1.03	0.99	1.02	0.90	1.16	1,028	2.1
	NHS Bassetlaw	114,800	0.83	0.89	0.83	0.83	0.84	0.83	0.68	1.00	879	2.6
	NHS Doncaster	306,400	0.98	0.96	0.93	0.96	0.95	0.97	0.87	1.09	960	4.7
	NHS Rotherham	261,900	1.07	1.06	1.04	1.04	1.05	1.05	0.94	1.19	1,054	6.4
	NHS Sheffield	575,400	1.11	1.13	1.12	1.10	1.08	1.05	0.97	1.15	928	16.3
West Yorkshire	NHS Airedale, Wharfedale and Craven	160,000	0.80	0.80	0.81	0.86	0.89	0.86	0.73	1.01	894	11.1
	NHS Bradford City	**84,900**	**1.80**	**1.88**	**1.94**	**2.15**	**2.14**	**2.31**	**1.93**	**2.75**	**1,449**	**72.2**
	NHS Bradford Districts	**339,700**	**1.17**	**1.24**	**1.22**	**1.19**	**1.22**	**1.28**	**1.16**	**1.41**	**1,110**	**28.7**
	NHS Calderdale	*209,800*	*1.02*	*0.95*	*0.90*	*0.85*	*0.86*	*0.85*	*0.73*	*0.98*	*834*	*10.3*
	NHS Greater Huddersfield	245,000	0.92	0.98	0.95	0.97	0.96	0.94	0.82	1.07	898	17.4
	NHS Leeds North	*201,200*	*1.00*	*0.95*	*0.90*	*0.87*	*0.88*	*0.86*	*0.74*	*1.00*	*840*	*17.4*
	NHS Leeds South and East	253,700	0.96	0.95	0.95	0.98	0.97	0.97	0.85	1.11	812	18.3
	NHS Leeds West	*326,900*	*0.82*	*0.80*	*0.86*	*0.89*	*0.90*	*0.88*	*0.78*	*1.00*	*731*	*10.8*
	NHS North Kirklees	**192,000**	**1.17**	**1.14**	**1.24**	**1.23**	**1.17**	**1.20**	**1.04**	**1.37**	**1,083**	**25.3**
	NHS Wakefield	*336,800*	*0.86*	*0.88*	*0.87*	*0.86*	*0.82*	*0.83*	*0.74*	*0.93*	*828*	*4.6*
Arden, Herefordshire and Worcestershire	**NHS Coventry and Rugby**	**456,700**	**1.24**	**1.29**	**1.27**	**1.22**	**1.15**	**1.16**	**1.06**	**1.27**	**994**	**22.2**
	NHS Herefordshire	*189,300*	*0.79*	*0.79*	*0.77*	*0.77*	*0.85*	*0.85*	*0.73*	*0.98*	*930*	*1.8*
	NHS Redditch and Bromsgrove	181,700	0.91	0.94	0.89	0.89	0.89	0.89	0.77	1.04	908	6.0
	NHS South Warwickshire	262,700	0.95	0.92	0.91	0.92	0.94	0.91	0.80	1.03	944	7.0
	NHS South Worcestershire	*301,400*	*0.81*	*0.83*	*0.80*	*0.80*	*0.79*	*0.79*	*0.70*	*0.89*	*839*	*3.7*
	NHS Warwickshire North	190,200	1.15	1.06	1.07	1.10	1.07	1.04	0.90	1.19	1,057	6.5
	NHS Wyre Forest	99,900	0.92	0.90	0.89	0.99	0.90	0.91	0.75	1.11	991	2.8
Birmingham and the Black Country	**NHS Birmingham CrossCity**	**748,300**	**1.45**	**1.45**	**1.43**	**1.42**	**1.43**	**1.47**	**1.38**	**1.57**	**1,205**	**35.2**
	NHS Birmingham South and Central	**204,000**	**1.69**	**1.74**	**1.73**	**1.71**	**1.66**	**1.69**	**1.50**	**1.90**	**1,324**	**40.4**
	NHS Dudley	317,600	0.90	0.96	0.97	0.95	0.94	0.95	0.85	1.06	948	10.0
	NHS Sandwell and West Birmingham	**495,100**	**1.76**	**1.72**	**1.70**	**1.67**	**1.69**	**1.77**	**1.65**	**1.91**	**1,450**	**45.3**
	NHS Solihull	*211,800*	*0.92*	*0.89*	*0.86*	*0.83*	*0.85*	*0.84*	*0.72*	*0.97*	*850*	*10.9*
	NHS Walsall	**278,700**	**1.34**	**1.31**	**1.32**	**1.33**	**1.30**	**1.25**	**1.12**	**1.39**	**1,162**	**21.1**
	NHS Wolverhampton	256,600	1.13	1.14	1.15	1.16	1.13	1.12	1.00	1.27	1,025	32.0
Derbyshire and Nottinghamshire	NHS Erewash	96,700	1.01	0.99	0.92	0.89	0.97	0.95	0.78	1.17	951	3.2
	NHS Hardwick	*111,400*	*0.77*	*0.74*	*0.72*	*0.73*	*0.74*	*0.74*	*0.60*	*0.91*	*772*	*1.8*
	NHS Mansfield & Ashfield	197,900	0.96	0.92	0.93	0.94	0.93	0.92	0.80	1.07	925	2.5
	NHS Newark & Sherwood	119,700	1.12	1.07	1.02	0.98	0.90	0.84	0.70	1.02	894	2.4
	NHS North Derbyshire	*273,200*	*0.83*	*0.81*	*0.80*	*0.78*	*0.77*	*0.78*	*0.68*	*0.88*	*849*	*2.5*
	NHS Nottingham City	**325,300**	**1.16**	**1.13**	**1.14**	**1.13**	**1.19**	**1.21**	**1.08**	**1.36**	**919**	**28.5**
	NHS Nottingham North & East	*150,300*	*0.90*	*0.91*	*0.88*	*0.85*	*0.82*	*0.84*	*0.70*	*1.00*	*851*	*6.2*
	NHS Nottingham West	112,700	0.99	1.04	1.07	1.07	1.06	1.04	0.87	1.24	1,065	7.3
	NHS Rushcliffe	*115,200*	*0.87*	*0.77*	*0.83*	*0.78*	*0.74*	*0.73*	*0.59*	*0.90*	*755*	*6.9*
	NHS Southern Derbyshire	527,400	1.02	0.98	0.98	0.99	0.99	0.99	0.91	1.08	961	11.0

Table 2.5. Continued

UK area	Name	Total population	2011 O/E	2012 O/E	2013 O/E	2014 O/E	2015 O/E	2016 O/E	2016 95% LCL	2016 95% UCL	2016 Crude rate pmp	% non-White
East Anglia	NHS Cambridgeshire and Peterborough[a]	884,600	0.94	0.91	0.94	0.92						9.5
	NHS Great Yarmouth & Waveney[b]	215,700	1.00	0.98	0.98	0.96	0.92[b]	0.98[b]	0.86[b]	1.11[b]	1,062[b]	2.7
	NHS Ipswich and East Suffolk[b]	*401,000*	*0.85*	*0.84*	*0.87*	*0.86*	*0.83*[b]	*0.81*[b]	*0.73*[b]	*0.90*[b]	*858*[b]	*5.6*
	NHS North Norfolk	171,900	0.92	0.89	0.98	0.95	0.90	0.87	0.76	1.01	1,041	1.5
	NHS Norwich	216,800	0.84	0.84	0.92	0.92	0.91	0.90	0.77	1.04	826	7.3
	NHS South Norfolk[a]	229,900	0.81	0.82	0.86	0.81						2.6
	NHS West Norfolk [a]	175,100	0.79	0.76	0.74	0.73						2.6
	NHS West Suffolk [a]	227,800	0.83	0.81	0.81	0.78						4.6
Essex	NHS Basildon and Brentwood	259,800	0.98	0.96	1.04	1.01	0.95	0.95	0.84	1.08	912	7.1
	NHS Castle Point, Rayleigh and Rochford	*175,400*	*0.80*	*0.78*	*0.82*	*0.87*	*0.81*	*0.79*	*0.67*	*0.92*	*855*	*3.0*
	NHS Mid Essex [a]	388,400	0.85	0.81	0.85	0.86						4.4
	NHS North East Essex[a]	329,200	0.93	0.90	0.88	0.91						5.5
	NHS Southend	179,800	0.93	0.94	0.99	0.96	0.94	0.94	0.80	1.09	918	8.4
	NHS Thurrock	167,000	0.98	0.97	0.97	0.96	0.95	0.92	0.78	1.09	802	14.1
	NHS West Essex[a]	302,500	0.74	0.83	0.88	0.92						8.2
Hertfordshire and the South Midlands	NHS Bedfordshire[a]	447,700	0.86	0.88	0.90	0.91						11.2
	NHS Corby	68,200	0.84	0.89	0.82	0.84	0.88	0.93	0.72	1.21	836	4.5
	NHS East and North Hertfordshire[b]	*565,700*	*0.90*	*0.89*	*0.91*	*0.93*	*0.82*[b]	*0.82*[b]	*0.74*[b]	*0.90*[b]	*769*[b]	*10.4*
	NHS Herts Valleys	591,800	0.94	0.92	0.92	0.94	0.93	0.96	0.88	1.05	899	14.6
	NHS Luton[b]	**216,800**	**1.29**	**1.32**	**1.39**	**1.41**	**1.30**[b]	**1.41**[b]	**1.25**[b]	**1.60**[b]	**1,130**[b]	**45.3**
	NHS Milton Keynes	270,500	0.90	0.89	0.91	1.01	0.99	1.06	0.93	1.20	924	19.6
	NHS Nene	*648,600*	*0.91*	*0.90*	*0.90*	*0.90*	*0.86*	*0.89*	*0.82*	*0.96*	*860*	*9.1*
Leicestershire and Lincolnshire	*NHS East Leicestershire and Rutland*	*328,600*	*0.81*	*0.81*	*0.80*	*0.80*	*0.79*	*0.78*	*0.69*	*0.88*	*819*	*9.8*
	NHS Leicester City	**348,300**	**1.68**	**1.69**	**1.71**	**1.71**	**1.70**	**1.76**	**1.61**	**1.93**	**1,372**	**49.5**
	NHS Lincolnshire East	*233,400*	*0.85*	*0.88*	*0.90*	*0.86*	*0.84*	*0.84*	*0.74*	*0.96*	*960*	*2.0*
	NHS Lincolnshire West	*236,900*	*0.87*	*0.82*	*0.86*	*0.87*	*0.85*	*0.80*	*0.70*	*0.93*	*798*	*3.0*
	NHS South Lincolnshire[b]	*147,800*	*0.73*	*0.75*	*0.70*	*0.72*	*0.62*[b]	*0.63*[b]	*0.52*[b]	*0.77*[b]	*676*[b]	*2.3*
	NHS South West Lincolnshire[b]	*125,200*	*0.75*	*0.72*	*0.69*	*0.67*	*0.64*[b]	*0.60*[b]	*0.48*[b]	*0.74*[b]	*639*[b]	*2.3*
	NHS West Leicestershire	*393,000*	*0.90*	*0.89*	*0.89*	*0.89*	*0.87*	*0.87*	*0.78*	*0.97*	*865*	*6.9*
Shropshire and Staffordshire	NHS Cannock Chase	135,100	0.93	0.84	0.93	0.91	0.91	0.92	0.77	1.09	933	2.4
	NHS East Staffordshire	*126,400*	*0.76*	*0.78*	*0.78*	*0.79*	*0.77*	*0.75*	*0.61*	*0.92*	*752*	*9.0*
	NHS North Staffordshire	218,300	0.96	0.93	0.95	0.91	0.90	0.90	0.78	1.03	944	3.5
	NHS Shropshire	*313,400*	*0.86*	*0.85*	*0.79*	*0.80*	*0.81*	*0.78*	*0.69*	*0.88*	*858*	*2.0*
	NHS South East Staffs and Seisdon and Peninsular	*225,200*	*0.96*	*0.87*	*0.86*	*0.84*	*0.84*	*0.83*	*0.72*	*0.95*	*875*	*3.6*
	NHS Stafford and Surrounds	154,000	0.92	0.92	0.88	0.93	0.96	0.98	0.84	1.15	1,059	4.7
	NHS Stoke on Trent	261,400	1.14	1.09	1.08	1.14	1.03	1.07	0.94	1.20	998	11.0
	NHS Telford & Wrekin	173,000	1.02	1.01	1.02	1.00	1.06	1.02	0.88	1.19	965	7.3
London	**NHS Barking & Dagenham**	**206,500**	**1.36**	**1.41**	**1.44**	**1.49**	**1.49**	**1.49**	**1.31**	**1.70**	**1,085**	**41.7**
	NHS Barnet	**386,100**	**1.40**	**1.43**	**1.43**	**1.43**	**1.44**	**1.41**	**1.29**	**1.55**	**1,217**	**35.9**
	NHS Camden	246,200	1.14	1.14	1.14	1.14	1.15	1.13	1.00	1.29	922	33.7
	NHS City and Hackney	**282,900**	**1.28**	**1.33**	**1.34**	**1.35**	**1.31**	**1.40**	**1.24**	**1.57**	**1,014**	**44.6**
	NHS Enfield	**331,400**	**1.42**	**1.45**	**1.45**	**1.47**	**1.46**	**1.52**	**1.38**	**1.67**	**1,270**	**39.0**
	NHS Haringey	**278,500**	**1.42**	**1.51**	**1.55**	**1.60**	**1.60**	**1.64**	**1.48**	**1.82**	**1,296**	**39.5**
	NHS Havering	*252,800*	*0.87*	*0.90*	*0.86*	*0.84*	*0.86*	*0.86*	*0.75*	*0.98*	*811*	*12.3*
	NHS Islington	**232,900**	**1.21**	**1.32**	**1.36**	**1.36**	**1.37**	**1.31**	**1.15**	**1.49**	**983**	**31.8**
	NHS Newham	**341,000**	**1.58**	**1.61**	**1.70**	**1.79**	**1.86**	**1.88**	**1.72**	**2.06**	**1,320**	**71.0**
	NHS Redbridge	**299,200**	**1.32**	**1.36**	**1.41**	**1.43**	**1.44**	**1.47**	**1.32**	**1.63**	**1,203**	**57.5**

Table 2.5. Continued

UK area	Name	Total population	2011 O/E	2012 O/E	2013 O/E	2014 O/E	2015 O/E	2016 O/E	2016 95% LCL	2016 95% UCL	2016 Crude rate pmp	% non-White
London (*cont.*)	**NHS Tower Hamlets**	**304,900**	**1.19**	**1.28**	**1.35**	**1.41**	**1.48**	**1.49**	**1.33**	**1.67**	**991**	**54.8**
	NHS Waltham Forest	**275,800**	**1.46**	**1.41**	**1.46**	**1.58**	**1.59**	**1.64**	**1.48**	**1.82**	**1,305**	**47.8**
	NHS Brent	**328,300**	**2.02**	**2.06**	**2.05**	**2.09**	**2.12**	**2.14**	**1.98**	**2.32**	**1,773**	**63.7**
	NHS Central London (Westminster)	178,400	1.01	1.01	1.06	1.08	1.07	1.09	0.94	1.26	959	36.2
	NHS Ealing	**343,200**	**1.80**	**1.86**	**1.83**	**1.84**	**1.90**	**1.88**	**1.72**	**2.04**	**1,588**	**51.0**
	NHS Hammersmith and Fulham	**179,700**	**1.30**	**1.31**	**1.26**	**1.30**	**1.29**	**1.37**	**1.20**	**1.58**	**1,113**	**31.9**
	NHS Harrow	**248,800**	**1.83**	**1.82**	**1.72**	**1.71**	**1.69**	**1.73**	**1.57**	**1.91**	**1,560**	**57.8**
	NHS Hillingdon	**302,500**	**1.44**	**1.47**	**1.48**	**1.47**	**1.42**	**1.41**	**1.27**	**1.56**	**1,187**	**39.4**
	NHS Hounslow	**271,100**	**1.42**	**1.45**	**1.52**	**1.53**	**1.55**	**1.57**	**1.42**	**1.75**	**1,306**	**48.6**
	NHS West London (Kensington and Chelsea, Queen's Park and Paddington)	**226,000**	**1.19**	**1.14**	**1.14**	**1.19**	**1.15**	**1.15**	**1.01**	**1.30**	**1,022**	**33.4**
	NHS Bexley	**244,800**	**1.28**	**1.28**	**1.27**	**1.30**	**1.32**	**1.39**	**1.24**	**1.55**	**1,271**	**18.1**
	NHS Bromley	326,900	0.99	0.96	0.97	0.97	1.05	1.04	0.93	1.16	988	15.7
	NHS Croydon	**382,300**	**1.33**	**1.39**	**1.44**	**1.45**	**1.45**	**1.48**	**1.35**	**1.61**	**1,279**	**44.9**
	NHS Greenwich	**279,800**	**1.22**	**1.21**	**1.37**	**1.39**	**1.40**	**1.45**	**1.30**	**1.62**	**1,147**	**37.5**
	NHS Kingston	176,100	1.11	1.09	1.02	1.03	0.99	1.05	0.90	1.23	903	25.5
	NHS Lambeth	**327,900**	**1.56**	**1.61**	**1.64**	**1.71**	**1.75**	**1.71**	**1.56**	**1.88**	**1,293**	**42.9**
	NHS Lewisham	**301,900**	**1.46**	**1.49**	**1.52**	**1.50**	**1.50**	**1.49**	**1.35**	**1.66**	**1,176**	**46.5**
	NHS Merton	**205,000**	**1.25**	**1.31**	**1.28**	**1.36**	**1.40**	**1.45**	**1.28**	**1.64**	**1,229**	**35.1**
	NHS Richmond	*195,800*	*0.74*	*0.75*	*0.77*	*0.75*	*0.73*	*0.72*	*0.60*	*0.85*	*664*	*14.0*
	NHS Southwark	**313,200**	**1.69**	**1.75**	**1.78**	**1.83**	**1.86**	**1.85**	**1.69**	**2.03**	**1,411**	**45.8**
	NHS Sutton	**202,200**	**1.18**	**1.20**	**1.15**	**1.15**	**1.18**	**1.21**	**1.06**	**1.38**	**1,103**	**21.4**
	NHS Wandsworth	**316,100**	**1.23**	**1.18**	**1.15**	**1.23**	**1.28**	**1.29**	**1.15**	**1.44**	**990**	**28.6**
Bath, Gloucestershire, Swindon and Wiltshire	*NHS Bath and North East Somerset*	*187,800*	*0.81*	*0.82*	*0.83*	*0.82*	*0.85*	*0.82*	*0.70*	*0.97*	*772*	*5.4*
	NHS Gloucestershire	*623,100*	*0.88*	*0.89*	*0.88*	*0.87*	*0.86*	*0.88*	*0.81*	*0.95*	*907*	*4.6*
	NHS Swindon	223,600	0.91	0.94	0.95	0.98	1.00	0.99	0.86	1.13	930	10.0
	NHS Wiltshire	*488,400*	*0.75*	*0.72*	*0.73*	*0.72*	*0.73*	*0.74*	*0.67*	*0.82*	*766*	*3.4*
Bristol, North Somerset, Somerset and South Gloucestershire	**NHS Bristol**	**454,200**	**1.22**	**1.25**	**1.29**	**1.28**	**1.24**	**1.20**	**1.10**	**1.32**	**975**	**16.0**
	NHS North Somerset	211,700	0.91	0.95	0.94	0.95	0.92	0.87	0.76	1.00	931	2.7
	NHS Somerset	*549,400*	*0.87*	*0.85*	*0.82*	*0.83*	*0.80*	*0.82*	*0.75*	*0.90*	*888*	*2.0*
	NHS South Gloucestershire	*277,600*	*0.93*	*0.91*	*0.96*	*0.95*	*0.90*	*0.87*	*0.76*	*0.99*	*850*	*5.0*
Devon, Cornwall and Isles of Scilly	NHS Kernow	556,000	0.99	0.98	0.98	0.97	0.96	0.94	0.86	1.02	1,023	1.8
	NHS North, East, West Devon	*898,000*	*0.93*	*0.94*	*0.93*	*0.92*	*0.91*	*0.90*	*0.84*	*0.96*	*933*	*3.0*
	NHS South Devon and Torbay	279,900	1.07	1.05	1.09	1.07	1.05	1.05	0.95	1.17	1,193	2.1
Kent and Medway	NHS Ashford	126,200	1.01	1.02	0.97	0.98	0.94	0.97	0.81	1.16	951	6.3
	NHS Canterbury and Coastal	210,500	0.98	0.97	1.00	1.07	1.05	0.99	0.87	1.14	969	5.9
	NHS Dartford, Gravesham and Swanley	260,600	1.06	1.08	1.11	1.13	1.09	1.09	0.97	1.23	1,032	13.0
	NHS Medway	*278,500*	*0.84*	*0.87*	*0.91*	*0.91*	*0.91*	*0.87*	*0.76*	*0.99*	*793*	*10.4*
	NHS South Kent Coast	*207,600*	*0.83*	*0.83*	*0.78*	*0.82*	*0.81*	*0.83*	*0.72*	*0.96*	*896*	*4.5*
	NHS Swale	114,800	1.09	1.17	1.18	1.13	1.10	1.10	0.92	1.32	1,063	3.8
	NHS Thanet	140,700	1.00	1.05	1.11	1.06	1.00	0.99	0.84	1.16	1,024	4.5
	NHS West Kent	*481,600*	*0.79*	*0.81*	*0.79*	*0.82*	*0.79*	*0.81*	*0.73*	*0.89*	*797*	*4.9*

Table 2.5. Continued

UK area	Name	Total population	2011 O/E	2012 O/E	2013 O/E	2014 O/E	2015 O/E	2016 O/E	2016 95% LCL	2016 95% UCL	2016 Crude rate pmp	% non-White
Surrey and Sussex	NHS Brighton & Hove	289,200	0.83	0.88	0.84	0.87	0.87	0.93	0.82	1.06	802	10.9
	NHS Coastal West Sussex	*498,900*	*0.81*	*0.82*	*0.82*	*0.83*	*0.85*	*0.86*	*0.78*	*0.94*	*948*	*3.8*
	NHS Crawley	111,400	1.07	1.01	0.93	0.94	0.89	1.00	0.82	1.22	862	20.1
	NHS East Surrey	183,700	0.82	0.89	0.94	0.87	0.87	0.86	0.74	1.01	838	8.3
	NHS Eastbourne, Hailsham and Seaford	*189,500*	*0.76*	*0.82*	*0.84*	*0.83*	*0.81*	*0.77*	*0.66*	*0.90*	*850*	*4.4*
	NHS Guildford and Waverley	*207,800*	*0.63*	*0.69*	*0.65*	*0.67*	*0.68*	*0.70*	*0.60*	*0.83*	*669*	*7.2*
	NHS Hastings & Rother	*185,800*	*0.78*	*0.77*	*0.83*	*0.82*	*0.82*	*0.80*	*0.68*	*0.93*	*877*	*4.6*
	NHS High Weald Lewes Havens	*172,600*	*0.64*	*0.70*	*0.68*	*0.72*	*0.75*	*0.76*	*0.65*	*0.90*	*829*	*3.1*
	NHS Horsham and Mid Sussex	*233,500*	*0.74*	*0.69*	*0.69*	*0.68*	*0.67*	*0.66*	*0.56*	*0.77*	*664*	*4.9*
	NHS North West Surrey	344,600	0.97	0.97	0.97	0.99	0.98	1.01	0.90	1.12	978	12.5
	NHS Surrey Downs	*288,200*	*0.91*	*0.89*	*0.90*	*0.86*	*0.82*	*0.80*	*0.70*	*0.91*	*815*	*9.1*
	NHS Surrey Heath	*96,700*	*0.97*	*0.98*	*0.87*	*0.83*	*0.81*	*0.75*	*0.60*	*0.95*	*755*	*9.3*
Thames Valley	NHS Aylesbury Vale	211,400	0.95	0.95	0.94	0.93	0.89	0.97	0.84	1.11	936	9.7
	NHS Bracknell and Ascot	137,700	0.82	0.80	0.91	0.93	0.91	0.92	0.77	1.10	850	9.5
	NHS Chiltern	*325,900*	*0.84*	*0.84*	*0.89*	*0.87*	*0.84*	*0.84*	*0.74*	*0.94*	*828*	*15.8*
	NHS Newbury and District	107,100	1.00	0.95	0.98	0.98	0.97	1.02	0.85	1.23	1,008	4.4
	NHS North & West Reading	100,300	0.82	0.82	0.82	0.79	0.79	0.83	0.67	1.03	817	10.4
	NHS Oxfordshire	*668,700*	*0.90*	*0.91*	*0.91*	*0.91*	*0.87*	*0.86*	*0.79*	*0.93*	*809*	*9.3*
	NHS Slough	**147,200**	**1.88**	**1.88**	**1.89**	**1.90**	**1.93**	**1.81**	**1.58**	**2.07**	**1,393**	**54.3**
	NHS South Reading	**112,000**	**1.34**	**1.25**	**1.38**	**1.44**	**1.38**	**1.43**	**1.19**	**1.71**	**1,071**	**30.5**
	NHS Windsor, Ascot and Maidenhead	142,900	0.96	0.98	1.00	1.06	1.06	1.08	0.92	1.27	1,022	14.7
	NHS Wokingham	161,900	0.95	0.92	0.93	0.89	0.87	0.85	0.72	1.01	828	11.6
Wessex	*NHS Dorset*	*771,900*	*0.80*	*0.81*	*0.80*	*0.81*	*0.79*	*0.77*	*0.71*	*0.83*	*828*	*4.0*
	NHS Fareham and Gosport	200,800	0.87	0.86	0.92	0.93	0.96	0.92	0.80	1.06	961	3.4
	NHS Isle of Wight	*139,800*	*0.61*	*0.64*	*0.75*	*0.76*	*0.72*	*0.65*	*0.54*	*0.79*	*751*	*2.7*
	NHS North East Hampshire and Farnham	210,500	0.83	0.85	0.89	0.90	0.93	0.88	0.76	1.02	845	9.7
	NHS North Hampshire	*221,900*	*0.67*	*0.67*	*0.69*	*0.73*	*0.73*	*0.71*	*0.61*	*0.83*	*699*	*6.4*
	NHS Portsmouth	214,800	0.91	0.93	0.96	0.90	0.93	0.92	0.79	1.07	773	11.6
	NHS South Eastern Hampshire	212,300	0.96	0.90	0.93	0.95	0.93	0.90	0.79	1.03	961	3.1
	NHS Southampton	254,300	0.98	1.02	0.98	0.97	1.01	1.03	0.90	1.18	826	14.1
	NHS West Hampshire	*558,300*	*0.77*	*0.76*	*0.77*	*0.76*	*0.74*	*0.70*	*0.64*	*0.77*	*747*	*3.9*
Wales	*Betsi Cadwaladr University*	*695,800*	*0.89*	*0.91*	*0.83*	*0.86*	*0.91*	*0.90*	*0.83*	*0.97*	*943*	*2.5*
	Powys Teaching	*132,200*	*0.89*	*0.88*	*0.85*	*0.80*	*0.81*	*0.78*	*0.65*	*0.93*	*893*	*1.6*
	Hywel Dda	383,700	0.98	0.92	0.95	0.95	0.96	0.91	0.83	1.01	985	2.2
	Abertawe Bro Morgannwg University	**529,300**	**1.27**	**1.25**	**1.19**	**1.13**	**1.14**	**1.11**	**1.02**	**1.20**	**1,102**	**3.9**
	Cwm Taf	**298,100**	**1.36**	**1.28**	**1.27**	**1.23**	**1.18**	**1.16**	**1.04**	**1.29**	**1,127**	**2.6**
	Aneurin Bevan	584,100	1.11	1.11	1.09	1.10	1.07	1.06	0.98	1.15	1,067	3.9
	Cardiff and Vale University	489,900	1.05	1.03	1.04	0.99	0.99	1.01	0.92	1.11	888	12.2
Scotland	Ayrshire and Arran	370,600	1.08	1.06	1.02	0.99	0.98	0.99	0.89	1.09	1,052	1.2
	Borders	*114,500*	*0.97*	*0.92*	*0.89*	*0.84*	*0.83*	*0.81*	*0.67*	*0.98*	*908*	*1.3*
	Dumfries and Galloway	*149,500*	*0.92*	*0.90*	*0.84*	*0.83*	*0.83*	*0.80*	*0.67*	*0.94*	*903*	*1.2*
	Fife	*370,300*	*1.02*	*1.00*	*1.00*	*0.93*	*0.94*	*0.88*	*0.79*	*0.98*	*902*	*2.4*
	Forth Valley	*304,500*	*0.91*	*0.88*	*0.87*	*0.87*	*0.87*	*0.84*	*0.74*	*0.95*	*844*	*2.2*
	Grampian	588,100	0.94	0.98	0.96	0.90	0.92	0.93	0.86	1.01	911	4.0
	Greater Glasgow and Clyde	1,161,400	1.06	1.08	1.06	1.04	1.06	1.06	1.00	1.12	1,001	7.3
	Highland	*321,900*	*0.92*	*0.88*	*0.84*	*0.82*	*0.87*	*0.86*	*0.77*	*0.96*	*938*	*1.3*
	Lanarkshire	656,500	0.95	0.99	0.97	0.96	0.97	0.96	0.88	1.03	952	2.0
	Lothian	*880,000*	*0.81*	*0.81*	*0.80*	*0.79*	*0.79*	*0.79*	*0.73*	*0.86*	*741*	*5.6*
	Orkney	*21,900*	*0.79*	*0.76*	*0.83*	*0.62*	*0.68*	*0.57*	*0.34*	*0.97*	*641*	*0.7*

Table 2.5. Continued

UK area	Name	Total population	2011 O/E	2012 O/E	2013 O/E	2014 O/E	2015 O/E	2016 O/E	2016 95% LCL	2016 95% UCL	2016 Crude rate pmp	% non-White
Scotland (*cont.*)	Shetland	23,200	0.50	0.49	0.51	0.50	0.65	0.67	0.41	1.09	690	1.5
	Tayside	415,500	1.04	0.99	0.95	0.93	0.95	0.92	0.84	1.02	948	3.2
	Western Isles	26,900	0.67	0.57	0.55	0.70	0.81	0.82	0.55	1.21	929	0.9
Northern Ireland	**Belfast**	**354,700**	**1.15**	**1.17**	**1.16**	**1.15**	**1.13**	**1.16**	**1.05**	**1.29**	**1,023**	**3.2**
	Northern	473,100	1.04	1.03	1.02	1.02	1.00	0.97	0.89	1.07	920	1.2
	Southern	377,200	1.01	0.96	0.97	0.98	1.01	1.04	0.94	1.16	912	1.2
	South Eastern	356,700	0.90	0.88	0.86	0.83	0.89	0.92	0.82	1.03	889	1.3
	Western	300,400	1.08	0.99	0.97	1.04	1.08	1.11	1.00	1.25	1,012	1.0

Note that there was a merger between South Manchester CCG, North Manchester CCG and Central Manchester CCG into a single Manchester CCG. Due to boundary changes, a new Morecambe Bay CCG was created covering Lancashire North CCG and North Cumbria CCG was reconfigured; here the new CCGs are used

[a]Excluded from the rate analysis for the 2015–2016 period because 15–100% of their population was covered by Cambridge (based on estimates using 2014 prevalent data)

[b]Five further CCGs are flagged because between 5–15% of their population was estimated to be covered by Cambridge and therefore prevalence ratios for 2015 and 2016 are likely underestimated

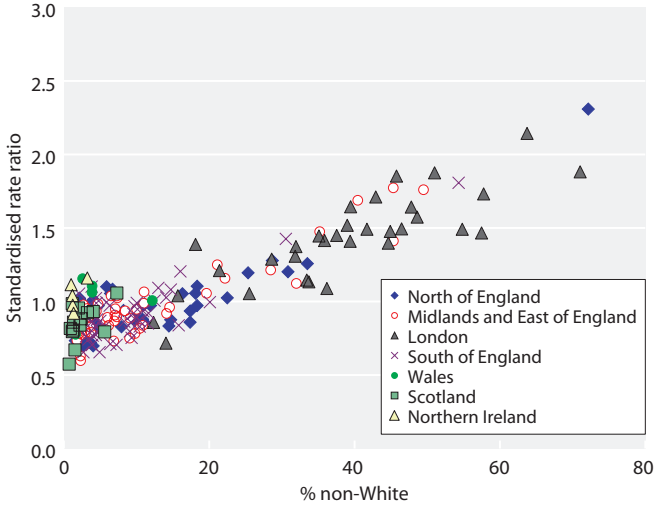

Fig. 2.3. SPRs for CCG/HB areas by percentage non-White on 31/12/2016 (excluding areas with <5% ethnic minorities)

Table 2.7. Median time on RRT of prevalent patients on 31/12/2016

Modality	*N*	Median time treated (years)
Haemodialysis	24,443	3.2
Peritoneal dialysis	3,563	1.5
Transplant	31,836	10.3
All RRT	**59,842**	**6.2**

For patients who recovered for >90 days and then subsequently restarted RRT the median time from the start of RRT was calculated from the most recent start date

Patients with an initial treatment modality of transferred in or transferred out were excluded from the calculation of median time on RRT since their treatment start date was not accurately known

Table 2.6. SPRs of RRT for each region in England and for Wales, Scotland and Northern Ireland in 2016

UK area	Total population	O/E	95% LCL	95% UCL	Crude rate pmp
North England	15,430,294	0.93	0.91	0.94	899.2
Midlands and East of England*	13,792,915	0.99	0.98	1.01	960.9
London	**8,787,892**	**1.45**	**1.42**	**1.48**	**1,191.2**
South England	14,271,741	0.88	0.87	0.90	882.6
Wales	3,113,150	1.00	0.96	1.03	1,005.1
Scotland	5,404,700	0.92	0.89	0.94	915.1
Northern Ireland	1,862,137	1.03	0.99	1.08	946.8

O/E – observed/expected SPR given the age/sex breakdown of each region

Bold – higher than expected SPR

*Eight CCGs covered by Cambridge (NHS Cambridgeshire and Peterborough, NHS South Norfolk, NHS West Norkfolk, NHS West Suffolk, NHS Mid Essex, NHS North East Essex, NHS West Essex, NHS Bedfordshire) were excluded from the rate analysis for the 2015–2016 period because 15–100% of their population was covered by Cambridge, based on estimates using 2014 prevalent data

Table 2.8. Median age of prevalent RRT patients by treatment modality in renal centres on 31/12/2016

Centre	Median age			
	HD	PD	Transplant	RRT
England				
B Heart	69.5	66.5	54.6	65.1
B QEH	64.4	60.0	52.7	57.6
Basldn	67.7	63.3	54.3	63.4
Bradfd	64.0	58.0	51.7	56.0
Brightn	68.6	71.6	54.8	60.8
Bristol	70.4	63.3	54.9	59.0
Carlis	67.8	65.6	54.9	60.4
Carsh	69.7	66.6	55.6	62.3
Chelms	68.0	74.0	58.4	63.6
Colchr	72.0			72.0
Covnt	67.9	63.2	52.9	58.2
Derby	67.8	63.0	54.5	60.6
Donc	69.2	66.6	56.6	64.3
Dorset	72.5	69.3	57.8	64.6
Dudley	67.2	64.3	57.2	65.7
Exeter	72.6	67.7	55.8	63.8
Glouc	71.5	67.3	54.6	64.3
Hull	68.4	64.3	53.6	58.8
Ipswi	71.5	75.0	56.4	62.2
Kent	69.2	66.1	55.3	60.8
L Barts	62.1	60.2	52.3	56.4
L Guys	61.4	59.7	52.1	55.3
L Kings	63.0	58.1	55.8	59.3
L Rfree	68.5	62.1	53.4	58.3
L St.G	66.9	70.7	55.3	61.1
L West	66.6	65.1	55.8	60.0
Leeds	62.6	55.7	54.0	56.4
Leic	68.1	64.9	54.4	59.6
Liv Ain	69.7	59.1	42.5	68.3
Liv Roy	60.8	62.1	54.1	56.0
M RI	63.6	58.6	53.3	55.8
Middlbr	68.0	61.9	55.2	59.3
Newc	63.9	61.1	55.0	58.0
Norwch	71.7	62.4	55.3	61.9
Nottm	69.4	61.9	53.6	58.2
Oxford	68.4	63.9	53.8	56.9
Plymth	71.5	68.0	57.2	60.6
Ports	67.4	62.8	54.9	59.0
Prestn	66.7	66.9	54.8	60.7
Redng	69.6	62.7	57.1	62.4
Salford	62.6	62.4	53.8	57.6
Sheff	67.2	65.0	54.1	59.6
Shrew	70.4	61.6	56.5	64.2
Stevng	66.9	61.8	53.4	60.1
Sthend	65.9	68.6	55.3	62.1
Stoke	69.4	69.2	53.1	61.0
Sund	64.9	59.2	56.0	60.0
Truro	70.3	67.1	55.9	61.8
Wirral	68.2	63.3	56.1	62.1
Wolve	65.7	64.3	52.8	60.6
York	68.7	66.4	54.5	60.2
N Ireland				
Antrim	72.9	59.0	54.2	64.0
Belfast	69.8	67.2	53.5	56.0
Newry	67.3	76.0	53.6	61.1
Ulster	74.8	75.3	52.8	67.6
West NI	70.8	70.2	51.1	59.1
Scotland				
Abrdn	66.8	50.9	50.7	57.5
Airdrie	64.4	60.5	53.1	56.7
D & Gall	68.4	64.1	53.8	59.6
Dundee	68.8	63.6	54.4	61.2
Edinb	60.4	61.8	54.4	56.9
Glasgw	65.6	58.7	54.0	57.7
Inverns	69.0	65.6	51.6	57.6
Klmarnk	64.0	56.2	54.3	58.7
Krkcldy	68.1	73.3	55.3	61.4
Wales				
Bangor	70.1	69.4	55.6	64.0
Cardff	67.0	64.8	54.2	58.0
Clwyd	65.2	67.1	55.3	62.8
Swanse	70.6	62.1	57.3	64.0
Wrexm	70.5	62.2	51.8	60.9
England	**67.1**	**63.8**	**54.4**	**59.2**
N Ireland	**71.0**	**72.3**	**53.1**	**58.4**
Scotland	**65.7**	**60.7**	**53.7**	**58.0**
Wales	**68.9**	**64.8**	**54.7**	**60.2**
UK	**67.2**	**63.7**	**54.3**	**59.1**

Blank cells indicate no patients on that treatment modality attending that centre when data were collected

UK RRT prevalent patients by using the age and sex distribution of the UK population by CCG/HB (from mid-2016 population estimates), allowed estimation of crude prevalence by age and sex (figure 2.5). This shows a progressive increase in prevalence with age, peaking at 2,276 pmp (similar to the 2,270 pmp estimate in 2015) in the age group 75–79 years then a rapid decline thereafter. Crude RRT prevalence in males exceeded that of females for all age groups. The difference was smallest in younger patients and was greatest from the age of 70 years onwards. RRT prevalence in males was highest in the 80–84 years group (3,072 pmp) and for females it was in the 70–74 years group (1,657 pmp). Survival on RRT by sex is described in chapter 5.

Ethnicity

Key to understanding differences in RRT prevalence between regions is understanding the ethnic diversity of

Table 2.9. Percentage of prevalent RRT patients in each age group by centre on 31/12/2016

Centre	*N*	Percentage of patients			
		18–39 years	40–64 years	65–74 years	75+ years
England					
B Heart	654	9.3	40.5	21.9	28.3
B QEH	2,394	15.7	51.6	19.0	13.7
Basldn	276	12.0	40.9	24.6	22.5
Bradfd	635	21.4	48.5	16.1	14.0
Brightn	996	11.9	45.5	22.6	20.0
Bristol	1,470	14.6	48.4	20.7	16.3
Carlis	279	13.3	48.4	19.4	19.0
Carsh	1,641	8.3	46.6	22.9	22.2
Chelms	278	11.2	41.4	25.9	21.6
Colchr	124	6.5	25.0	27.4	41.1
Covnt	977	13.5	51.0	18.1	17.4
Derby	543	10.1	49.7	22.7	17.5
Donc	330	11.8	40.3	24.8	23.0
Dorset	687	9.9	42.1	25.6	22.4
Dudley	346	8.4	40.8	26.9	24.0
Exeter	1,017	10.2	42.3	24.8	22.7
Glouc	470	8.5	42.6	23.4	25.5
Hull	858	14.2	49.2	21.3	15.3
Ipswi	411	8.8	47.0	23.1	21.2
Kent	1,070	11.9	46.7	24.3	17.1
L Barts	2,372	15.1	56.7	17.6	10.6
L Guys	2,098	18.7	54.8	16.9	9.6
L Kings	1,108	8.6	55.3	18.9	17.2
L Rfree	2,177	15.6	49.5	18.4	16.4
L St.G	863	11.7	47.9	24.0	16.5
L West	3,417	11.5	51.5	22.5	14.5
Leeds	1,552	16.6	53.2	18.1	12.0
Leic	2,310	12.7	48.8	22.4	16.1
Liv Ain	227	7.5	34.8	25.6	32.2
Liv Roy	1,225	14.5	59.4	17.2	8.8
M RI	1,994	18.2	53.4	17.8	10.7
Middlbr	891	13.1	49.5	22.4	14.9
Newc	1,053	15.2	52.4	20.7	11.7
Norwch	774	11.2	45.0	24.5	19.3
Nottm	1,152	15.9	49.7	17.9	16.6
Oxford	1,767	14.2	53.3	19.7	12.8
Plymth	513	12.1	48.5	23.6	15.8
Ports	1,693	12.8	50.5	21.0	15.7
Prestn	1,206	10.8	49.8	25.1	14.3
Redng	794	8.6	48.9	23.2	19.4
Salford	1,022	13.1	53.4	20.5	13.0
Sheff	1,427	14.4	48.6	20.5	16.5
Shrew	375	9.6	41.9	24.8	23.7
Stevng	904	11.8	48.8	18.9	20.5
Sthend	237	10.5	45.6	20.7	23.2
Stoke	827	12.9	45.2	22.0	19.8
Sund	507	10.8	50.7	25.2	13.2
Truro	428	10.7	46.3	23.4	19.6
Wirral	337	11.3	43.6	23.7	21.4
Wolve	569	11.6	48.3	20.4	19.7
York	535	13.6	46.7	21.3	18.3

Table 2.9. Continued

Centre	*N*	Percentage of patients			
		18–39 years	40–64 years	65–74 years	75+ years
N Ireland					
Antrim	241	9.1	45.2	22.0	23.7
Belfast	829	16.5	53.9	16.9	12.7
Newry	237	13.1	47.7	19.4	19.8
Ulster	166	8.4	35.5	21.7	34.3
West NI	307	12.7	44.6	22.8	19.9
Scotland					
Abrdn	557	17.8	50.1	21.4	10.8
Airdrie	440	16.4	51.1	18.2	14.3
D & Gall	131	9.2	47.3	26.7	16.8
Dundee	420	7.6	51.2	22.6	18.6
Edinb	780	14.2	57.7	18.8	9.2
Glasgw	1,754	14.1	55.1	19.3	11.5
Inverns	260	10.8	54.6	21.5	13.1
Klmarnk	318	10.4	57.5	19.5	12.6
Krkcldy	295	11.2	48.1	24.1	16.6
Wales					
Bangor	180	11.1	41.1	27.8	20.0
Cardff	1,630	13.5	52.0	21.2	13.3
Clwyd	178	12.4	43.8	24.7	19.1
Swanse	768	10.4	41.7	23.2	24.7
Wrexm	310	13.2	44.8	19.4	22.6
England	**51,810**	**13.2**	**49.8**	**20.9**	**16.1**
N Ireland	**1,780**	**13.7**	**48.6**	**19.4**	**18.4**
Scotland	**4,955**	**13.5**	**53.8**	**20.2**	**12.5**
Wales	**3,066**	**12.5**	**47.6**	**22.1**	**17.8**
UK	**61,611**	**13.2**	**49.9**	**20.9**	**16.0**
Range (Min : Max)		**(6.5, 21.4)**	**(25, 59.4)**	**(16.1, 27.8)**	**(8.8, 41.1)**

the patient groups. As such, the completeness of ethnicity data provided by renal centres is important. As in 2015, 61 of the 70 centres (87.1%) providing patient-level data provided ethnicity data that were at least 90% complete (table 2.10), an improvement on only 36 centres in 2006. Overall ethnicity completeness for prevalent RRT patients has reached a stable 93.6% for the UK in 2016 compared to 93.3% in 2015. Data completeness was very high in England, Wales and Northern Ireland (98.7%, 99.5% and 98.3%, respectively), but much lower in Scotland (35.1%). Completeness in Scotland is

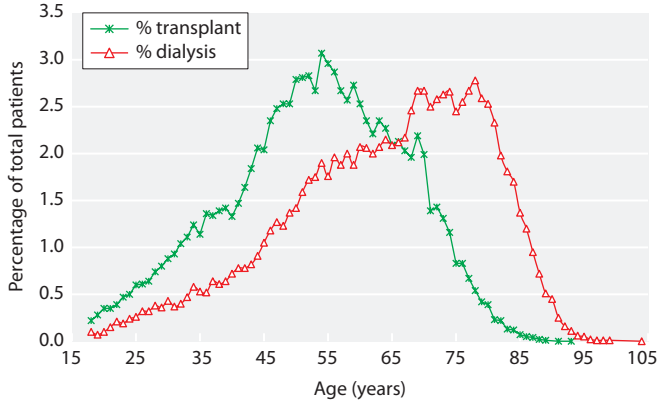

Fig. 2.4. Age profile of prevalent RRT patients by modality on 31/12/2016

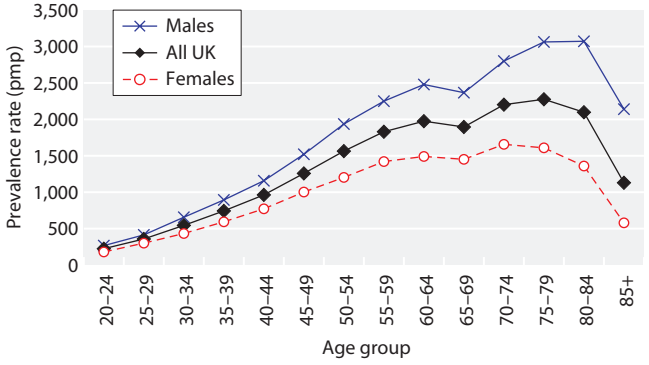

Fig. 2.5. Prevalence of RRT patients pmp by age and sex on 31/12/2016

Table 2.10. Ethnicity of prevalent RRT patients by centre on 31/12/2016

Centre	Percentage data not available	*N* with data	Percentage in each ethnic group[a]				
			White	Black	S Asian	Chinese	Other
England							
B Heart	0.0	654	60.9	9.8	27.8	0.8	0.8
B QEH	0.6	2,379	59.9	9.9	26.9	0.7	2.7
Basldn	0.0	276	86.6	5.1	4.3	*	*
Bradfd	0.5	632	53.8	2.2	42.9	*	*
Brightn	2.9	967	91.4	1.9	4.7	*	*
Bristol	2.2	1,437	89.0	5.2	4.0	0.3	1.5
Carlis	0.4	278	98.6	0.0	*	*	0.0
Carsh	1.9	1,610	69.2	10.1	14.0	1.7	5.0
Chelms	1.1	275	90.9	3.6	2.2	*	*
Colchr	0.0	124	97.6	0.0	*	0.0	*
Covnt	0.3	974	79.1	4.4	15.8	0.7	0.0
Derby	0.6	540	82.4	2.8	12.4	*	*
Donc	0.0	330	93.9	1.8	2.1	*	*
Dorset	0.1	686	96.2	*	1.3	*	1.3
Dudley	0.0	346	84.1	3.2	11.3	*	*
Exeter	0.4	1,013	98.1	1.0	0.5	*	*
Glouc	0.2	469	93.4	2.6	2.6	*	*
Hull	1.6	844	96.8	*	2.0	*	0.6
Ipswi	2.2	402	83.1	2.7	*	*	12.4
Kent	0.5	1,065	94.0	*	3.4	*	1.5
L Barts	0.0	2,371	35.3	23.0	31.4	1.2	9.0
L Guys	1.4	2,068	61.7	24.9	7.4	1.1	5.0
L Kings	0.0	1,108	47.2	35.6	12.5	1.7	2.9
L Rfree	1.7	2,140	47.3	22.9	21.3	1.4	7.1
L St.G	4.3	826	45.8	23.7	21.9	2.1	6.5
L West	0.0	3,416	40.0	18.4	31.2	0.9	9.5
Leeds	0.2	1,549	78.9	4.9	14.5	0.6	1.2
Leic	3.5	2,230	74.3	4.2	18.9	0.6	1.9
Liv Ain	0.4	226	96.5	*	*	*	*
Liv Roy	1.2	1,210	92.2	2.4	1.8	1.2	2.3
M RI	1.1	1,972	74.2	9.9	12.9	0.9	2.1
Middlbr	0.2	889	94.0	*	4.9	0.6	*
Newc	0.1	1,052	92.7	1.1	4.2	1.0	1.0
Norwch	0.3	772	96.9	*	1.0	1.0	*
Nottm	0.3	1,148	83.8	5.6	7.2	*	*
Oxford	5.8	1,664	82.2	4.0	9.8	0.6	3.4
Plymth	0.2	512	97.1	*	*	*	1.8
Ports	4.2	1,622	93.3	1.2	3.5	0.0	2.0
Prestn	0.1	1,205	85.0	0.9	13.6	0.0	0.5
Redng	5.0	754	70.2	5.7	21.9	*	*
Salford	0.0	1,022	80.7	2.5	15.0	0.5	1.3
Sheff	0.9	1,414	89.5	2.4	5.1	0.8	2.1
Shrew	0.5	373	93.0	*	3.8	*	1.9
Stevng	4.0	868	70.7	8.8	17.5	*	*
Sthend	0.0	237	84.0	4.2	6.3	*	*
Stoke	1.6	814	92.8	*	4.3	*	1.4
Sund	0.0	507	96.3	*	3.2	*	0.0
Truro	0.0	428	98.4	*	*	*	*
Wirral	0.6	335	95.8	*	2.4	*	*
Wolve	0.5	566	67.7	10.1	21.0	*	*
York	2.6	521	97.1	*	1.5	*	*

Table 2.10. Continued

Centre	Percentage data not available	*N* with data	Percentage in each ethnic group[a]				
			White	Black	S Asian	Chinese	Other
N Ireland							
Antrim	0.0	241	99.6	*	0.0	*	0.0
Belfast	3.7	798	97.5	0.8	1.3	*	*
Newry	0.0	237	98.3	*	*	*	0.0
Ulster	0.0	166	96.4	*	*	*	0.0
West NI	0.0	307	98.7	*	*	*	0.0
Scotland							
Abrdn	60.7	219					
Airdrie	28.4	315	95.2	*	3.5	*	*
D & Gall	75.6	32					
Dundee	60.5	166					
Edinb	71.0	226					
Glasgw	76.7	408					
Inverns	38.5	160	95.6	*	*	0.0	*
Klmarnk	56.6	138					
Krkcldy	74.6	75					
Wales							
Bangor	1.7	177	98.3	*	0.0	0.0	*
Cardff	0.3	1,625	92.6	0.4	5.0	0.4	1.6
Clwyd	1.7	175	97.7	0.0	*	0.0	*
Swanse	0.0	768	97.7	*	1.7	0.0	*
Wrexm	1.0	307	97.7	*	*	*	*
England	**1.3**	**51,120**	**74.4**	**8.5**	**13.3**	**0.7**	**3.1**
N Ireland	**1.7**	**1,749**	**98.0**	**0.7**	**0.9**	*	*
Scotland	**64.9**	**1,739**	**82.0**	**6.8**	**8.4**	**2.0**	**0.7**
Wales	**0.5**	**3,052**	**95.0**	**0.4**	**3.2**	**0.3**	**1.2**
UK	**6.4**	**57,660**	**76.4**	**7.8**	**12.2**	**0.7**	**2.9**

[a]See appendix H for ethnicity coding
*Values suppressed due to small numbers (primary or secondary suppression)
Blank cells – percentage breakdown not shown for centres with less than 50% data completeness, but these centres are included in national averages

improving however and only three years ago was 23%. In 2016, completeness of ethnicity data was highest in prevalent transplant patients (42.6%) which likely reflects improved data recording during the intensive work-up for transplantation.

In 2016, 23.6% of the prevalent UK RRT population (with ethnicity assigned) were from ethnic minorities (25.6% in England). The proportion of the prevalent UK RRT population (with ethnicity assigned) from ethnic minorities in Wales, Scotland and Northern Ireland was very small, although it should be noted that there was a high level of missing ethnicity data in Scotland as described above. The Office of National Statistics estimates that approximately 13% of the UK general population is designated as belonging to an ethnic minority [1]. The relative proportion of patients reported to the UKRR as receiving RRT and belonging to an ethnic minority has increased from 14.9% in 2007 to 23.6% in 2016, which may reflect improvements in coding and reporting of ethnicity data as well as an increasing incidence of ERF and increased referral rates in these populations.

Amongst the centres with more than 50% returns there was wide variation in the proportion of patients from ethnic minorities, ranging from 0.4% in Antrim to 64.7% in London St Bartholomew's.

Primary renal diagnosis

Primary renal diagnosis (PRD) is associated with patient outcomes and as it could be used for case-mix adjustment, high levels of data completeness are important. Data for PRD were not complete for 3.2% of patients (table 2.11), but there existed a marked inter-centre

Table 2.11. PRD in prevalent RRT patients by age and sex on 31/12/2016

Primary diagnosis*	N	% all patients	Intercentre range %	Age <65		Age ⩾65		M : F ratio
				N	%	N	%	
Aetiology uncertain	9,274	15.1	4.3–32.9	5,311	13.7	3,963	17.5	1.6
Glomerulonephritis	11,716	19.1	9.9–26.3	8,367	21.5	3,349	14.8	2.1
Pyelonephritis	6,344	10.3	4.9–13.6	4,569	11.7	1,775	7.9	1.1
Diabetes	10,375	16.9	8.7–27.5	6,099	15.7	4,276	18.9	1.7
Polycystic kidney	6,146	10.0	3.1–16.1	3,935	10.1	2,211	9.8	1.1
Hypertension	3,774	6.1	1.7–18.1	2,076	5.3	1,698	7.5	2.5
Renal vascular disease	1,809	2.9	0.5–10.3	396	1.0	1,413	6.3	2.0
Other	10,114	16.5	11.0–29.4	7,036	18.1	3,078	13.6	1.3
Not sent	1,935	3.2	0.0–29.5	1,099	2.8	836	3.7	1.6

*See appendix H: ERA-EDTA coding
Excluded centre: ⩾40% primary renal diagnosis aetiology uncertain (Colchr)

difference in completeness of data returns. One centre had ⩾40% PRD data coded as uncertain and has been excluded from the inter-centre analysis and other analyses where PRD is included in the case-mix adjustment (Colchester, 46% uncertain PRD); the UK and national totals have been appropriately adjusted. The percentage of patients with uncertain aetiology for the remaining 69 centres providing individual-level data ranged between 4.3% and 32.9%, which is comparable to recent years. No centre had >30% missing data in 2016.

As observed in previous years, glomerulonephritis (GN) is the most common PRD in the 2016 prevalent cohort at 19.1% (table 2.11). Diabetic nephropathy is the next most common PRD and accounted for 16.9% of renal disease in prevalent patients on RRT, although it was more common in the ⩾65 year age group compared to the younger group (18.9% vs 15.7%). The distribution of individual PRDs varied with age; patients aged 65 years and younger were more likely to have GN (21.5%) or diabetes (15.7%) and less likely to have renal vascular disease (1.0%) as the cause of their renal failure. This contrasts with older patients (⩾65 years) among whom 6.3% had renal vascular disease as the cause of their renal failure. Uncertain aetiology was a more common cause in this age group than amongst younger patients (18.1% compared with 13.6% amongst patients <65 years).

As described in previous years, the male : female ratio was greater than 1 : 1 for all PRDs (table 2.11). The biggest differences between males and females were for GN (male : female ratio of 2.1), hypertension (2.5) and renal vascular disease (2.0).

Older and younger patients had markedly different trends in the transplant : dialysis ratio by PRD. In individuals aged less than 65 years, the renal transplantation to dialysis ratio was greater than 1 in all PRD groups except diabetic nephropathy and renal vascular disease. In those aged ⩾65 years, dialysis was more prevalent than renal transplantation in all PRD groups except GN and polycystic kidney disease (PKD) (table 2.12).

Diabetes

Throughout this section the term 'diabetic nephropathy' is used to denote patients in whom diabetes mellitus is considered to be the primary cause of the kidney disease rather than merely an associated comorbidity. It includes all prevalent patients with type 1 or type 2 diabetes as the PRD (ERA-EDTA coding). This analysis did not differentiate between type 1 and type 2 diabetes

Table 2.12. Transplant : dialysis ratios by age and PRD in the prevalent RRT population on 31/12/2016

Primary diagnosis*	Transplant : dialysis ratio	
	<65 years	⩾65 years
Aetiology uncertain	2.2	0.4
Glomerulonephritis	2.5	1.0
Pyelonephritis	3.0	0.6
Diabetes	0.9	0.2
Polycystic kidney	3.4	2.0
Hypertension	1.5	0.4
Renal vascular disease	0.9	0.1
Other	2.2	0.5
Not sent	0.8	0.1

*Appendix H ERA-EDTA coding
Excluded centre: ⩾40% primary renal diagnosis aetiology uncertain (Colchr)

Table 2.13. Age relationships in patients with diabetes and patients without diabetes and modality in prevalent RRT patients on 31/12/2016

	Patients with diabetes[a]	Patients without diabetes[b]
N	10,375	49,177
M : F ratio	1.66	1.54
Median age on 31/12/16	62	58
Median age at start of RRT[cd]	56	47
Median years on RRT[d]	3.6	7.5
% HD	58	36
% PD	8	5
% transplant	34	59

Excluded centre: ⩾40% PRD aetiology uncertain (Colchr)
[a]Patients with diabetes: patients with a PRD code of diabetes
[b]Patients without diabetes: all patients excluding patients with diabetes as a PRD and patients with a missing PRD code
[c]Median age at start of RRT was calculated from the most recent RRT start date
[d]Patients with an initial treatment modality of transferred in or transferred out were excluded from the calculation of median age at start of RRT and median years on RRT, since their treatment start date was not accurately known

as this distinction was not made in the data submitted by most centres.

The number of prevalent patients with diabetic nephropathy has increased steadily over the last number of years and grew by 4.7% to 10,375 in 2016, from 9,913 in 2015, representing 17.4% of all prevalent patients (compared with 13.5% in 2006) (table 2.13). Men were 1.66 times more likely to have diabetic nephropathy than women. The median age at start of RRT for patients with diabetic nephropathy (56 years) was nine years higher than those with other PRDs (47 years), although the median age at the end of 2016 for prevalent patients with diabetic nephropathy was only four years higher than for individuals without diabetic nephropathy. This reflects reduced survival for patients with diabetes compared with patients without diabetes on RRT. This is also supported by the lower median time on RRT for patients with diabetic nephropathy (3.6 years vs 7.5 years for those without diabetic nephropathy) and this difference in survival has not changed over the last five years (3.4 years in 2016 vs 6.5 years in 2011). The age at starting RRT in those with diabetic nephropathy was four years younger in Scotland compared with the UK average (data not shown).

Patients with diabetic nephropathy had a different distribution of RRT modalities than those without diabetes. Fifty eight percent of patients with diabetic nephropathy were undergoing HD compared with just 36% of patients with any other PRD (table 2.13). The percentage of patients with a functioning transplant was much lower in prevalent patients with diabetic nephropathy than in prevalent patients without (34% vs 59%). The proportion of patients with diabetic nephropathy with a functioning transplant has increased however since 2006 when only 27% of patients with diabetic nephropathy had a functioning transplant. For older patients with diabetic nephropathy (age ⩾65 years), only 15.1% had a functioning transplant compared with 47.8% of their peers with a transplant aged under 65 years (table 2.14). Amongst those patients receiving dialysis, a higher proportion of prevalent patients without diabetic nephropathy (18.1%) were on home dialysis therapies (home HD and PD) compared with prevalent patients with diabetic nephropathy (14.1%). Both of these trends (those with diabetic nephropathy being more likely to be doing home dialysis than those with other PRDs and less likely to be transplanted) were consistent across all age groups (18–39 years, 40–64 years, 65–74 years, 75 + years), although as expected the greatest proportion transplanted in both groups are those aged 18–39 years (data not shown).

Table 2.14. Treatment modalities by age and diabetes status on 31/12/2016

	<65		⩾65	
	Diabetes[a]	All other causes[b]	Diabetes[a]	All other causes[b]
N	6,099	31,690	4,276	17,487
% HD	44.8	25.1	76.8	54.7
% PD	7.4	4.2	8.2	7.2
% transplant	47.8	70.7	15.1	38.1

Excluded centre with ⩾40% PRD aetiology uncertain (Colchr)
[a]Patients with diabetes are patients with a PRD code of diabetes
[b]Patients without diabetes are calculated as all patients excluding patients with diabetes as a PRD and patients with a missing PRD code

Modalities of treatment

Transplantation was the most common treatment modality (53.9%) for prevalent RRT patients in 2016, followed by centre-based HD (38.3%) in either hospital centre (17.5%) or satellite unit (20.8%) (figure 2.6). Satellite HD was again more prevalent than in-centre HD, a trend first noted in 2012. Home therapies made up the remaining 7.9% of treatment therapies, largely PD in its different formats (5.9%) which has followed a similar pattern since 2012. The proportion on continuous ambulatory PD (CAPD) and automated PD (APD) was 2.4% and 3.5% respectively, although the proportion on APD

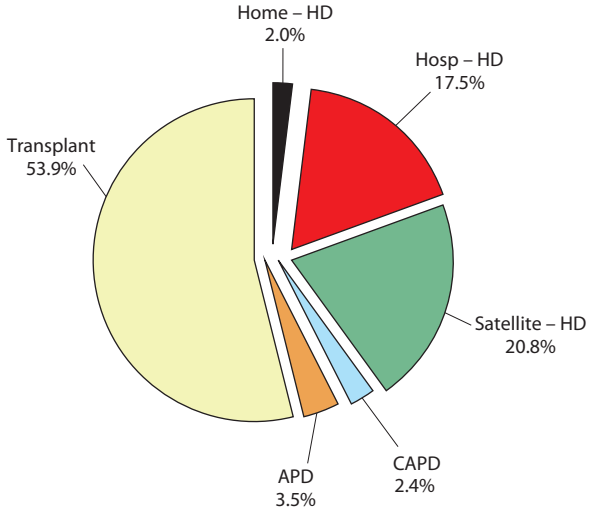

Fig. 2.6. Treatment modality in prevalent RRT patients on 31/12/2016

may be an underestimate due to centre level coding issues which mean the UKRR cannot always distinguish between these therapies.

As described earlier, treatment modality was related to patient age. Younger patients (age <65 years), were more likely to have a functioning transplant (66.3%) when compared with patients aged 65 years and over (32.6%) (table 2.15). HD was the principal modality in older patients (59.9%).

Figure 2.7 shows the distribution of RRT modalities by age group. From the age of 45 years onwards, transplant prevalence declined as HD prevalence increased. The proportion of each age group treated by PD remained relatively stable.

The proportion of prevalent dialysis patients receiving HD varied between centres, ranging from 72.9% in Carlisle to 100% in Colchester (table 2.16).

Of the dialysis population, 45.1% received their treatment at a satellite HD unit in 2016. This figure remained comparable to recent years, but represented an increase from 39.9% in 2010. In 2016, the number of centres that had more than 50% of their HD activity taking place in satellite units was 27 (figure 2.8). Although there were satellite units in Scotland, the data provided for 2016 did not distinguish between main centre and satellite unit HD. As such, it is difficult to accurately assess access to satellite HD across the UK as a whole so statistics pool only England, Wales and Northern Ireland.

Table 2.15. Percentage of prevalent RRT patients by age group and modality by UK country on 31/12/2016

	<65 years				≥65 years			
UK country	*N*	% HD	% PD	% transplant	*N*	% HD	% PD	% transplant
England	32,644	29.5	4.9	65.6	19,166	60.0	7.7	32.3
N Ireland	1,108	20.1	2.4	77.4	672	61.2	7.4	31.4
Scotland	3,333	27.5	4.2	68.4	1,622	61.0	5.5	33.4
Wales	1,842	26.2	5.6	68.1	1,224	55.5	8.3	36.2
UK	**38,927**	**28.9**	**4.8**	**66.3**	**22,684**	**59.9**	**7.5**	**32.6**

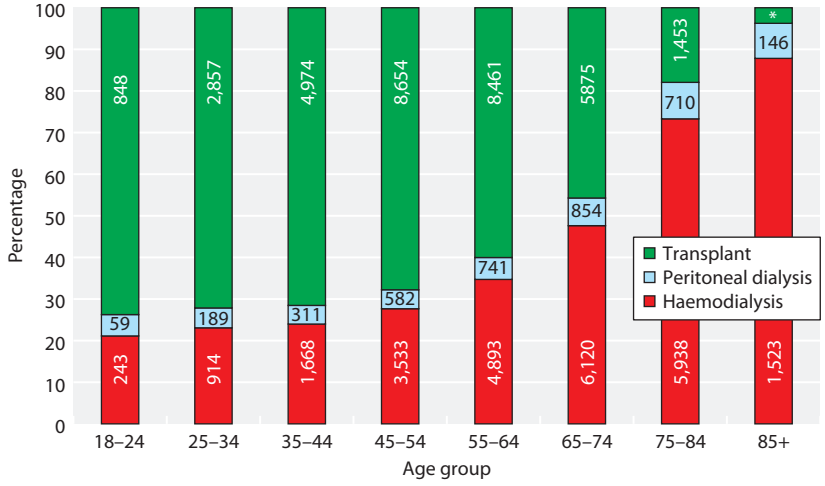

Fig. 2.7. Treatment modality distribution by age in prevalent RRT patients on 31/12/2016
*$N = 65$

Table 2.16 Percentage of prevalent dialysis patients by dialysis modality and centre on 31/12/2016

		% HD				% PD	
Centre	*N*	Total	Home	Hospital	Satellite	CAPD	APD
England							
B Heart	483	81.8	3.9	72.9	5.0	5.6	12.6
B QEH	1,152	87.6	4.9	10.8	72.0	3.9	8.5
Basldn	196	82.7	*	64.3	17.9	*	10.7
Bradfd	275	90.9	*	74.6	13.8	*	7.6
Brightn	524	87.6	7.1	37.8	42.8	7.6	4.8
Bristol	563	90.6	3.4	16.3	70.9	3.9	5.5
Carlis	129	72.9	*	51.9	20.9	*	24.0
Carsh	961	88.3	3.0	18.6	66.6	2.8	9.0
Chelms	166	80.1	*	78.9	*	8.4	10.8
Colchr	124	100.0	*	100.0	*	0.0	0.0
Covnt	443	85.1	2.7	82.4	0.0	14.7	0.0
Derby	318	75.8	13.2	62.6	0.0	16.7	7.6
Donc	221	87.8	4.1	44.8	38.9	2.7	9.5
Dorset	318	88.4	2.8	18.9	66.7	3.5	7.9
Dudley	253	80.2	5.5	30.0	44.7	13.8	5.5
Exeter	539	84.4	1.7	8.5	74.2	6.3	9.3
Glouc	286	85.3	3.2	59.1	23.1	3.5	11.2
Hull	401	82.0	*	42.6	38.4	11.7	*
Ipswi	182	80.2	0.0	68.7	11.5	8.2	11.5
Kent	486	88.5	4.5	33.3	50.6	8.4	3.1
L Barts	1,232	83.6	1.9	36.3	45.5	1.5	14.9
L Guys	732	94.7	6.6	18.3	69.8	1.9	3.4
L Kings	672	86.5	2.7	17.4	66.4	5.2	8.3
L Rfree	889	82.0	2.3	3.6	76.2	5.5	12.5
L St.G	399	88.7	*	17.0	70.7	*	7.3
L West	1,572	93.6	1.0	20.4	72.2	3.3	3.1
Leeds	573	91.6	3.0	18.0	70.7	2.6	5.8
Leic	1,054	91.6	6.9	18.3	66.3	2.5	6.0
Liv Ain	213	87.8	6.1	7.5	74.2	0.0	12.2
Liv Roy	438	83.6	8.9	37.4	37.2	8.9	7.5
M RI	588	89.5	10.2	26.7	52.6	2.4	8.2
Middlbr	359	92.5	3.1	25.6	63.8	7.5	0.0
Newc	373	85.8	*	70.8	8.6	*	13.7
Norwch	380	87.1	4.2	50.5	32.4	12.9	0.0
Nottm	475	82.7	6.1	35.4	41.3	7.2	10.1
Oxford	545	82.6	3.5	31.2	47.9	6.2	11.0
Plymth	184	78.3	4.4	65.2	8.7	7.6	14.1
Ports	711	89.5	10.6	17.2	61.7	10.6	0.0
Prestn	604	93.4	6.8	19.9	66.7	1.3	5.3
Redng	359	84.4	2.2	39.0	43.2	10.0	5.6
Salford	509	79.0	5.5	20.2	53.2	8.8	12.2
Sheff	671	91.8	7.9	37.6	46.4	8.2	0.0
Shrew	244	84.0	7.8	42.6	33.6	3.3	12.7
Stevng	554	96.0	4.7	42.1	49.3	*	*
Sthend	144	79.2	*	77.1	*	20.8	0.0
Stoke	425	81.4	8.0	47.3	26.1	2.1	9.2
Sund	268	93.7	2.2	61.6	29.9	3.7	2.6
Truro	188	90.4	4.8	49.5	36.2	5.3	4.3
Wirral	221	90.0	4.5	41.2	44.3	2.3	7.7
Wolve	384	81.8	7.8	50.3	23.7	3.9	12.0
York	231	85.7	6.1	29.0	50.7	10.0	4.3

Table 2.16 Continued

Centre	*N*	% HD				% PD	
		Total	Home	Hospital	Satellite	CAPD	APD
N Ireland							
Antrim	139	88.5	*	87.8	0.0	*	11.5
Belfast	218	89.0	4.1	84.9	0.0	0.0	11.0
Newry	108	80.6	*	77.8	0.0	*	18.5
Ulster	108	94.5	*	93.5	0.0	*	5.6
West NI	138	92.8	*	90.6	0.0	*	5.8
Scotland							
Abrdn	252	91.7	*	90.1	*	4.0	4.4
Airdrie	209	88.5	0.0	88.5	0.0	3.8	7.7
D & Gall	60	83.3	*	78.3	*	8.3	8.3
Dundee	200	89.5	*	88.5	0.0	9.0	*
Edinb	326	88.7	*	86.8	0.0	*	10.1
Glasgw	647	91.7	3.6	88.1	0.0	2.0	6.3
Inverns	104	89.4	6.7	82.7	*	7.7	*
Klmarnk	174	81.0	*	76.4	0.0	*	17.2
Krkcldy	162	88.9	*	88.9	0.0	*	10.5
Wales							
Bangor	91	82.4	11.0	50.6	20.9	5.5	12.1
Cardff	592	87.3	5.2	9.5	72.6	6.9	5.7
Clwyd	88	83.0	*	78.4	*	8.0	9.1
Swanse	440	84.8	9.1	45.7	30.0	6.1	9.1
Wrexm	157	79.0	*	60.5	13.4	*	20.4
England	**24,211**	**87.3**	**4.5**	**32.3**	**50.5**	**5.4**	**7.2**
N Ireland[a]	**711**	**89.2**	*	**86.8**	**0.0**	*	**10.4**
Scotland[b]	**2,134**	**89.3**	**2.5**	**86.8**	**0.0**	**3.3**	**7.5**
Wales	**1,368**	**85.0**	**6.8**	**34.1**	**44.0**	**5.9**	**9.1**
UK	**28,424**	**87.4**	**4.4**	**37.9**	**45.1**	**5.1**	**7.4**

* Values suppressed due to small numbers (primary or secondary suppression)
[a] There were no satellite units in Northern Ireland
[b] All HD patients in Scotland were shown as receiving treatment at home or in centre as no data was available regarding satellite dialysis

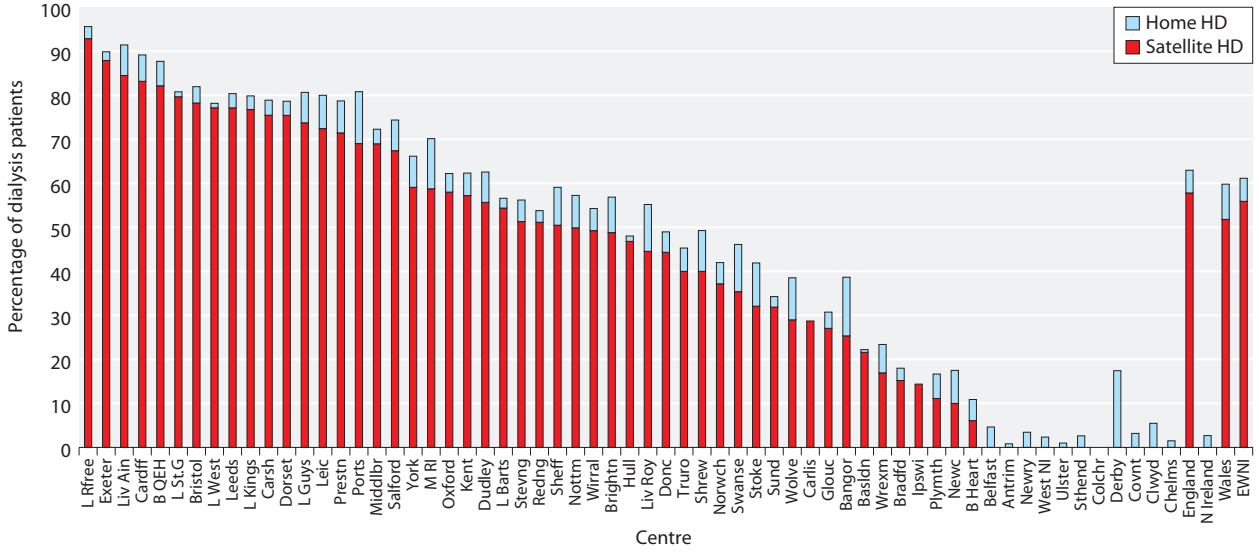

Fig. 2.8. Percentage of prevalent HD patients treated with satellite or home HD by centre on 31/12/2016
*Scottish centres excluded as information on satellite HD was not available. No centres in Northern Ireland had satellite dialysis units

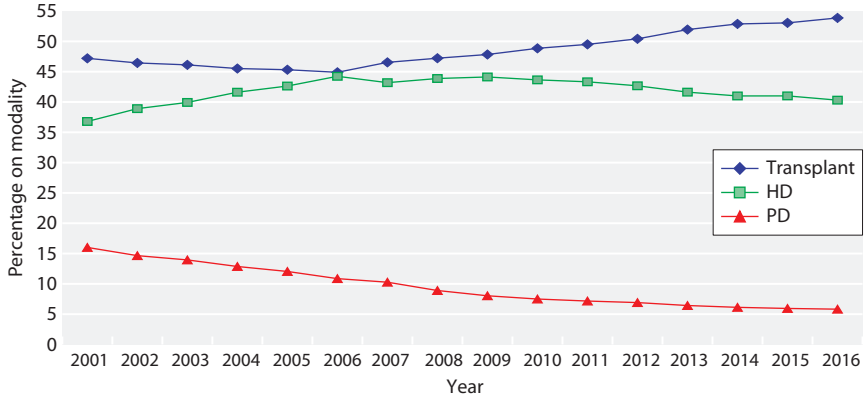

Fig. 2.9. Modality changes in prevalent RRT patients from 2001–2016

Some centres also showed differences in satellite HD provision in 2016 compared to 2015. For example, at London St George's, 70.7% of patients received dialysis at satellite units in 2016 compared to 49.7% in 2015. Stevenage had a decrease in the proportion of patients receiving HD at satellite units from 66.3% in 2015 to 49.3% in 2016.

There was also wide variation between centres in the proportion of dialysis patients being managed with APD, ranging from 0.0% to 24.0% (table 2.16). While in Northern Ireland nearly all PD patients were on APD, across the UK six of the 69 centres with a PD programme did not report having any patients on APD.

Home haemodialysis

In 2016, the percentage of dialysis patients receiving home HD varied from 0% in five centres, to 5% or greater in 24 centres (table 2.16). In the UK, the overall percentage of dialysis patients receiving home HD has increased from 3.4% in 2011 to 4.4% in 2016.

The proportion of dialysis patients receiving home HD was greatest in Wales at 6.8%, compared with 2.4% in Northern Ireland, 4.5% in England and 2.5% in Scotland (figure 2.8, table 2.16). By comparison, in 2007, the proportion of patients receiving home HD was 2% in each of the four UK countries. More recently, 30 renal centres across the UK had an increase in the proportion of individuals on home HD compared with 2015.

Change in modality

The relative proportion of RRT modalities in prevalent patients has changed dramatically over the past 16 years. The main features are depicted in figure 2.9, which describes a year on year decline in the proportion of patients treated using PD since 2001 and a drop of 5.0% over the last ten years. The absolute number of patients on PD decreased from 4,293 patients in 2006 to 3,589 patients in 2016. Time on PD has decreased over the last nine years, from a median of 2.0 years in 2007 to 1.5 years in 2016 probably reflecting increased transplantation rates in this largely younger patient group and reducing PD technique survival rates. The percentage of patients undergoing PD for more than seven years was only 8.7%.

The proportion of all RRT patients being treated with HD has fallen slightly since 2009 from 44.1% to 40.3% although this still represents an increase in absolute numbers on HD (from 21,671 to 24,832) as well as an increase in HD prevalence (from 354 to 385 pmp).

The proportion of patients with a functioning transplant has been increasing since 2007 (46.5%) to 53.9% in 2016. This probably reflects both an increasing number of incident transplants (2,218 adults and children in 2007 [2] to 3,174 in 2016) as well as increasing survival of prevalent transplant patients.

Figure 2.10 depicts in more detail the modality changes in the prevalent dialysis population during this time. The data show a clear reduction in patients treated by CAPD over time and an increase in satellite HD coupled with a reduction in hospital HD.

International comparisons

There were marked differences in RRT prevalence between countries (figure 2.11). RRT prevalence in Northern European countries (including the UK), Australia and New Zealand was lower than in Southern Europe which was lower than the USA, Canada and Japan. Identifying the source of these differences is complicated by differences in healthcare systems, patient registry coverage, approaches to conservative care and incidence rates in these countries.

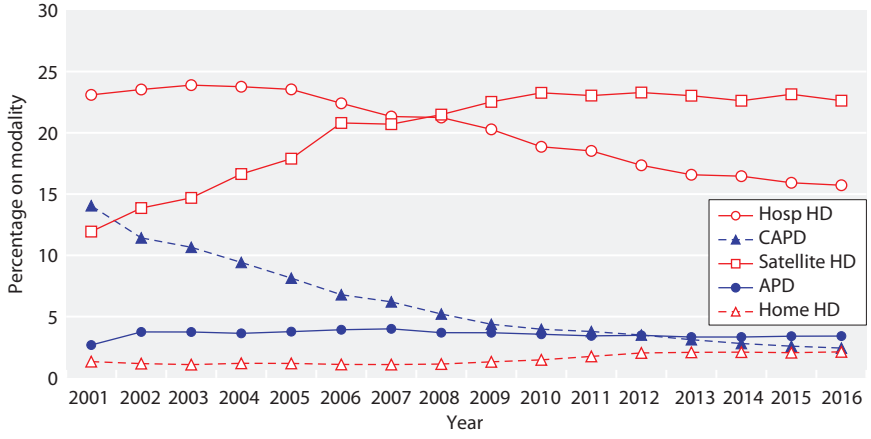

Fig. 2.10. Detailed dialysis modality changes in prevalent RRT patients from 2001–2016
*Scottish centres excluded as information on satellite HD was not available

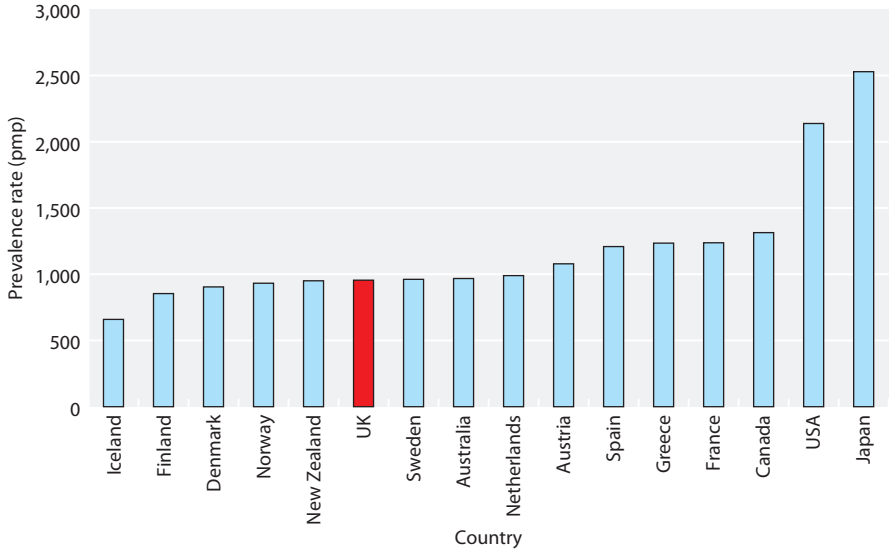

Fig. 2.11. RRT prevalence (pmp) by country in 2015
Non-UK data from the USRDS available at https://www.usrds.org/2017/ref/ESRD_Ref_N_International_2017.xlsx
The UK data include paediatric patients to correspond with the data from the other countries
All rates unadjusted
Data for France include 26 regions (excluding Martinique); data for Canada excludes Quebec

Discussion

Prevalence of RRT continued to increase in the UK, with an absolute increase in the number of adults receiving RRT of 3% between 2015 and 2016. The majority of this increase was in people with a functioning renal transplant (5% increase); with a 1% increase in the number of people receiving HD. There was significant variation between centres in the change in the number of prevalent RRT patients between 2015 and 2016; one centre experienced a 4% fall whereas another had a 20% increase. Whether this variation reflects local differences or recent changes in RRT choices, a one-off movement of patients, historical differences in dialysis planning, or differences in genuine need for RRT would require local interpretation.

The change in prevalence of RRT represents a balance between new patients to RRT (discussed in chapter 1 on incidence), movements between treatment types (discussed particularly in chapter 9 on access to transplantation) and mortality (discussed in chapter 5 on survival). Occasionally it can be artefactual due to a change in reporting practice by centres. The growth in the prevalence of adults with a functioning transplant for example, in part represents the success of recent increases in transplant numbers and a lower mortality rate (compared with those receiving dialysis).

There have been constraints such as historic in-centre HD capacity because of high capital costs, people requiring a renal transplant being limited by the availability of donor organs and people preferring home therapies being limited by access to equipment or training resources. Therefore, it is not possible to conclude from this report whether the prevalence of RRT (in its entirety or by modality) reflects the genuine need for RRT in a particular locality or whether there was (currently unmeasured) unmet need. The UKRR has started collecting

information about patients with CKD stage 4 and 5 from renal centres which it is hoped will enable a better description of the prevalence of people with CKD5 not on dialysis. This will include those having dialysis preparation, those waiting to start RRT and those having conservative kidney care which will help assess this further in future years.

PD as a treatment type continued to grow very slowly in absolute numbers and has decreased as a proportion of all those on RRT. The numbers of people treated by home HD continued to increase (an average annual increase of 15% pmp since 2012) but this was from a low base so represents an increase from 737 patients in 2012 to 1,188 in 2016. Increasing the number of people able to dialyse at home is one of the three priorities identified by the Kidney Quality Improvement Partnership (KQuIP) along with vascular access and transplant first. At regional KQuIP meetings, several local renal teams have identified access to home therapies and renal transplantation as topics that they will work to improve in the coming year. Evaluation of their efforts on these priorities will be collected and published through the UKRR annual report, allowing teams to focus their efforts on the improvement programmes themselves and is a good example of how a national registry can help facilitate local improvement.

The population of the UK continues to age which was also reflected in the population receiving RRT with a median age of 59 years compared with 55 years in the year 2005. Age appears to be one of a group of factors (including diabetes as PRD) which influences the proportions on each RRT modality. Patients with a functioning renal transplant are younger on average (54 years) than those on PD (64 years) and (predominantly in-centre) HD (67 years). Whilst age confounds the treatment modality for those with diabetes as the cause of their ERF, at any age the proportion of those with diabetes who have a functioning renal transplant was lower than those who had an alternate cause of ERF.

Chronic kidney disease (CKD) is associated with several conditions which increase in prevalence with age (diabetes, hypertension and cardiovascular disease for example). It is unsuprising therefore that the peak prevalence of RRT pmp was in the 80–84 age group for men and the 70–74 age group for women. The prevalence of CKD stages 3–5 was higher amongst women in the UK either in GP practice populations [3], or health surveys [4] and women in the UK general population have a longer life expectancy than men [5]. Whilst it is thought that women progress to ERF more slowly [6] and once on dialysis lose their general population survival advantage over men [7], the full explanation for why in contrast a greater proportion of people receiving RRT were men is not known. Information obtained from patients in renal centres with CKD 4–5 may help unravel this paradox better in the future.

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