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# Chapter 2

## UK RRT Prevalence in 2009: national and centre-specific analyses

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### Key Words

Comorbidity · Diabetes · Dialysis · End stage renal disease · End stage renal failure · Established renal failure · Ethnicity · Haemodialysis · Peritoneal dialysis · Prevalence · Primary Care Trust · Renal replacement therapy · Transplantation · Treatment modality

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### Summary

- There were 49,080 adult patients receiving RRT in the UK on 31st December 2009, equating to a UK prevalence of 794 pmp, an increase of 3.2%.
- Growth rate from 2008 to 2009 for prevalent patients was 4.2% for haemodialysis (HD), a fall of 7.2% for peritoneal dialysis (PD) and a growth of 4.4% with a functioning transplant.
- The median age of prevalent patients was 57.7 years (HD 65.9 years, PD 61.2 years and transplant 50.8 years).
- Prevalence rates in males exceeded those in females: the peak for males was in the 75–79 year age group at 2,632 per million population (pmp) and for females in the 70–74 year age group at 1,445 pmp.
- The most common identifiable renal diagnosis was biopsy-proven glomerulonephritis (16.0%), followed by diabetes (14.7%).
- Transplantation was the most common treatment modality (48%), HD was used in 44% and PD in 8% of RRT patients.
- There were national, regional and dialysis centre level variations in prevalence rates. A significant factor in this variation was the ethnic mix of local populations, but a large amount of the variation remains unexplained.

## Introduction

This chapter presents data on all adult patients on RRT in the UK at the end of 2009. The UK Renal Registry (UKRR) received data returns for 2009 from all 5 renal centres in Wales, all 6 in Northern Ireland and all 52 in England. Data from all 9 centres in Scotland were obtained from the Scottish Renal Registry. Data on children and young adults can be found in chapter 5, Demography of the UK Paediatric Renal Replacement Therapy population in 2009.

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 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 (ESRF) and end stage renal disease (ESRD), which are in more widespread international usage. Within the UK, patient groups have disliked the term 'end stage' which formerly reflected the inevitable outcome of this disease.

## Methods

These analyses relate to the prevalent RRT cohort in the UK in 2009. The cohort was defined as all adult patients receiving RRT on the UKRR database on 31st December 2009. Population estimates were obtained from the UK Office of National Statistics (ONS) [1].

The number of prevalent RRT patients was calculated for the UK as a whole and for each UK country, using UKRR data from all renal centres. Crude prevalence rates were calculated per million population (pmp) and standardised prevalence ratios were calculated as detailed in appendix D: Methodology used for Analyses (<http://www.renalreg.com/Report-Area/Report2010/Appendix-D.pdf>) for Primary Care Trusts (PCT) in England, Health and Social Care Areas in Northern Ireland, Local Health Boards in Wales and Health Boards in Scotland. These areas will be referred to in this report as 'PCT/HBs'. Briefly, data from all areas were used to calculate overall age and gender specific prevalence rates. The age and gender breakdown of the population in each PCT/HB were obtained from the mid-2009 population estimate based on 2001 Census data from the ONS [1]. The population breakdown and the overall prevalence rates were used to calculate the expected age and gender specific

prevalence numbers for each PCT/HB. The age and gender standardised prevalence ratio was the observed prevalence numbers divided by the expected prevalence number. A ratio below 1 indicated that the observed rate was less than expected given the area's population structure. This was statistically significant at the 5% level if the upper confidence limit was less than 1. Analyses were done for each of the last 6 years and as the prevalent numbers for one year can be small for smaller areas, a combined years' analysis was also done. To enable assessment of whether a centre was an outlier in this regard, funnel plots for smaller and larger populations have been included (appendix D: figures D3, D4) which show the 95% confidence intervals around the national average prevalence. The proportion of non-Whites in each PCT/HB was obtained from the ONS [1].

Prevalent patients on RRT in 2009 were examined by time on RRT, age group, gender, ethnic origin, primary renal disease, presence of diabetes (2009 Report appendix H: Coding (<http://www.renalreg.com/Report-Area/Report2010/Appendix-H.pdf>) and treatment modality. Some centres electronically upload ethnicity coding to their renal information technology (IT) system from the hospital Patient Administration System (PAS). Ethnicity coding in these PAS systems is based on self-reported ethnicity and uses a different coding system [2]. For the remaining centres, ethnicity coding is performed by clinical staff and recorded directly into the renal IT system (using a variety of coding systems). For all these analyses, data on ethnic origin were grouped into Whites, South Asians, Blacks, Chinese and Others as described in appendix H: Coding (<http://www.renalreg.com/Report-Area/Report2010/Appendix-H.pdf>). 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 9.2.

## Results

### *Prevalent patient numbers and changes in prevalence*

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

There were 49,080 adult patients receiving RRT in the UK at the end of 2009, giving a UK population prevalence of 794 pmp (table 2.1) compared with 774 pmp in 2008 [3]. Prevalence rates increased in three of the UK countries in 2009, but in Northern Ireland the prevalence dropped from 806 pmp in 2008 to 802 pmp in 2009 [3]. Prevalence remained significantly lower in

**Table 2.1.** Prevalence of RRT in the UK on 31/12/2009

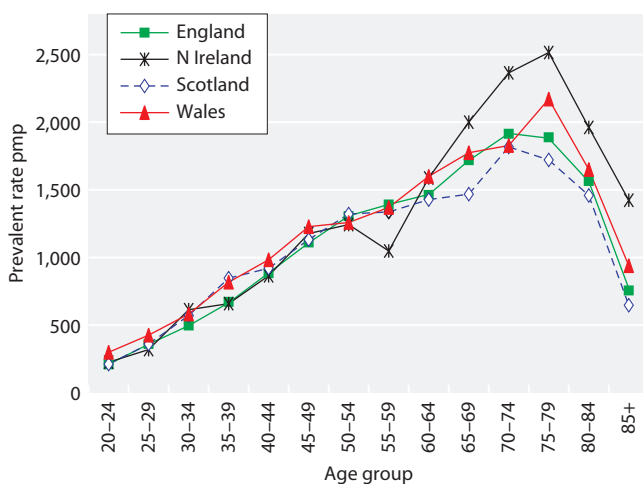
	England	N Ireland	Scotland	Wales	UK
All UK centres	40,962	1,434	4,173	2,511	49,080
Total estimated population, mid-2009 (millions)*	51.8	1.8	5.2	3.0	61.8
Prevalence rate HD (pmp)	351	406	356	362	354
Prevalence rate PD (pmp)	65	44	55	76	64
Prevalence rate dialysis (pmp)	416	449	411	438	417
Prevalence rate transplant (pmp)	375	352	392	399	377
Prevalence rate total (pmp)	791	802	803	837	794
95% confidence intervals total (pmp)	783–798	760–843	779–828	805–870	787–801

\* estimates from ONS web site  
pmp = per million population

England (791 pmp) than in Wales (837 pmp) but there were no other significant differences between the four UK countries. PD prevalence decreased again in all UK countries, with the largest decrease in Northern Ireland (57 pmp in 2008 vs. 44 pmp in 2009), whilst transplant prevalence once more increased in the UK. The prevalence rate for each of the UK countries (figure 2.1) shows that Northern Ireland had a higher prevalence rate for patients aged 65+ compared with the other UK countries.

#### Prevalent patients by RRT centre

Both the number of prevalent patients in each renal centre and the distribution of their treatment modalities varied widely (table 2.2). Many factors including geography, local population density, age distribution, ethnic composition and the social deprivation index of that population have contributed to this.



**Fig. 2.1.** Prevalence rates per million population by age group and UK country on 31/12/2009

Throughout this chapter, haemodialysis refers to all modes of HD treatment, including the 657 patients reported as receiving haemodiafiltration (HDF). Stevenage, Manchester RI, Norwich, London St. George's and Ulster reported significant numbers of patients on HDF, but other centres did not differentiate this treatment type in their UKRR returns.

As part of continuing quality control, checks on the accuracy of data received were repeatedly carried out. A small degree of under-reporting has been identified in the following centres: London Guy's, London St. Bartholomew's, Manchester Hope and Oxford. Whilst this may be significant to each individual centre figures, the overall effect on the national figure is less than 0.001%. Where joint care of renal transplant recipients between the referring centre and the transplant centre occurs, the patient was allocated to the centre which saw the patient most frequently, usually the referring centre. Thus the number of patients allocated to a transplant centre is often lower than that recorded by the centre itself.

#### Changes in prevalence

Overall growth in the prevalent UK RRT population from 2008 to 2009 was 3.2% (table 2.3) which has been fairly consistent over the last 10–15 years (figure 2.2). Most of the growth in the prevalent RRT population was due to a continued increase in the prevalent RRT population in England and Wales, with a stable prevalent RRT population in Scotland and a slight decline in the RRT population growth in Northern Ireland. Over the period 2005 to 2009, Northern Ireland (2.4%), Scotland (2.3%) and Wales (3.8%) showed slower average yearly growth compared with England (4.7%).

The prevalent growth per million population (pmp) disguises the differential growth in RRT modalities

**Table 2.2.** Number of prevalent RRT patients per treatment modality by centre on 31/12/2009

Centre	HD	PD	Dialysis	Transplant	RRT
<b>England</b>					
Birmingham Heartlands	432	33	465	157	622
Birmingham QEH*	865	159	1,024	797	1,821
Basildon	143	28	171	43	214
Bradford	191	34	225	197	422
Brighton	329	86	415	322	737
Bristol*	444	75	519	704	1,223
Cambridge*	345	39	384	556	940
Carlisle	66	15	81	122	203
Carshalton	666	123	789	513	1,302
Chelmsford	118	37	155	70	225
Colchester	116		116		116
Coventry*	347	82	429	365	794
Derby	247	87	334	85	419
Doncaster	121	33	154	42	196
Dorset	228	58	286	266	552
Dudley	156	56	212	80	292
Exeter	334	70	404	327	731
Gloucester	185	43	228	138	366
Hull	332	74	406	319	725
Ipswich	110	43	153	155	308
Kent & Canterbury	337	69	406	338	744
London Barts*	712	188	900	738	1,638
London Guys*	579	50	629	882	1,511
London Kings	395	85	480	306	786
London Royal Free*	649	70	719	827	1,546
London St. George's*	264	63	327	334	661
London West*	1,277	36	1,313	1,412	2,725
Leeds*	499	106	605	743	1,348
Leicester*	751	166	917	818	1,735
Liverpool Aintree	139	7	146		146
Liverpool RI*	403	89	492	731	1,223
Manchester Hope	347	119	466	318	784
Manchester RI*	433	103	536	900	1,436
Middlesbrough	295	20	315	392	707
Newcastle*	276	54	330	567	897
Norwich	312	58	370	221	591
Nottingham*	408	111	519	437	956
Oxford*	378	104	482	838	1,320
Plymouth*	127	42	169	285	454
Portsmouth*	476	95	571	730	1,301
Preston	480	78	558	381	939
Reading	269	85	354	264	618
Sheffield*	600	72	672	544	1,216
Shrewsbury	195	29	224	113	337
Stevenage	379	29	408	172	580
Southend	127	20	147	60	207
Stoke	301	72	373	267	640
Sunderland	178	28	206	162	368
Truro	153	28	181	139	320
Wirral	187	35	222		222
Wolverhampton	300	51	351	126	477
York	190	16	206	115	321

**Table 2.2.** Continued

Centre	HD	PD	Dialysis	Transplant	RRT
<b>Northern Ireland</b>					
Antrim	126	14	140	75	215
Belfast*	246	36	282	398	680
Derry	66	3	69	46	115
Newry	103	12	115	52	167
Tyrone	90	11	101	42	143
Ulster	95	2	97	17	114
<b>Scotland</b>					
Aberdeen	197	30	227	225	452
Airdrie	167	13	180	130	310
Dumfries & Galloway	52	12	64	54	118
Dundee	182	28	210	185	395
Dunfermline	114	23	137	96	233
Edinburgh*	274	62	336	364	700
Glasgow*	624	59	683	785	1,468
Inverness	90	22	112	112	224
Kilmarnock	148	38	186	87	273
<b>Wales</b>					
Bangor	79	31	110		110
Cardiff*	508	104	612	828	1,440
Clwyd	76	7	83	61	144
Swansea	349	59	408	190	598
Wrexham	73	27	100	119	219
<b>England</b>	<b>18,191</b>	<b>3,353</b>	<b>21,544</b>	<b>19,418</b>	<b>40,962</b>
<b>Northern Ireland</b>	<b>726</b>	<b>78</b>	<b>804</b>	<b>630</b>	<b>1,434</b>
<b>Scotland</b>	<b>1,848</b>	<b>287</b>	<b>2,135</b>	<b>2,038</b>	<b>4,173</b>
<b>Wales</b>	<b>1,085</b>	<b>228</b>	<b>1,313</b>	<b>1,198</b>	<b>2,511</b>
<b>UK</b>	<b>21,850</b>	<b>3,946</b>	<b>25,796</b>	<b>23,284</b>	<b>49,080</b>

Centres prefixed 'L' are London centres

The numbers of patients calculated for each country quoted above differ marginally from those quoted elsewhere when patients are allocated to areas by their individual post codes, as some centres treat patients from across national boundaries

\* Transplant centres

(HD, PD and transplant) and is shown in table 2.4. From 2008 to 2009, there was a 3.5% growth of prevalent HD patients, a 3.7% growth in those with a functioning transplant and a decline in patients on PD of 7.8%. During the period 2005 to 2009 there was a 5.7% pmp growth in HD, 5.1% pmp fall in PD, and 5.6% pmp growth in prevalent transplant patients in the UK (table 2.4).

There were large variations between centres as well as countries. In 2008–2009 growth increased by more than 20% in only 2 centres (table 2.3); 26.5% in Airdrie and 27.3% in Doncaster largely due to relocation of transplant patients from Glasgow to Airdrie and both relocation of transplant patients and new haemodialysis stations in Doncaster (data shown in chapter 3 Outcomes in Renal Transplant Recipients in 2009, table 5.5). Smaller centres will show relatively large

percentage changes in prevalence in either direction due to only small fluctuations in incidence numbers or numbers of deaths, particularly when growth in one year only is examined. There was a large decrease in prevalent patient numbers in 3 centres from 2005 to 2009 (Belfast, Glasgow and Liverpool RI). This was due to reallocation of transplant patients from Glasgow to other Scottish centres, the reallocation of some patients from Belfast to other centres in Northern Ireland and from Liverpool RI to Liverpool Aintree. The decline in prevalent patients on PD was evident at 45 of the 72 renal centres (data not shown) in the UK and PD numbers declined across all the 4 UK countries. The long-term (1982–2009) UK prevalence pattern by treatment modality is shown in figure 2.2. The steady growth in transplant numbers was maintained but the increase in haemodialysis patient numbers was

**Table 2.3.** Number of prevalent patients on RRT by centre 2005–2009

Centre	Date					% change 2008–2009	% average change 2005–2009
	31/12/2005	31/12/2006	31/12/2007	31/12/2008	31/12/2009		
Abrdn	417	434	452	456	452	−0.9	2.0
Airdrie	171	233	230	245	310	26.5	16.0
Antrim	189	200	200	220	215	−2.3	3.3
B Heart	541	578	578	597	622	4.2	3.5
B QEH	1,518	1,557	1,626	1,714	1,821	6.2	4.7
Bangor	101	103	98	112	110	−1.8	2.2
Basldn	169	187	208	217	214	−1.4	6.1
Belfast	749	751	748	726	680	−6.3	−2.4
Bradfd	367	365	395	414	422	1.9	3.6
Brightn	618	659	686	722	737	2.1	4.5
Bristol	1,165	1,203	1,234	1,247	1,223	−1.9	1.2
Camb	819	906	935	927	940	1.4	3.5
Cardff	1,272	1,333	1,438	1,371	1,440	5.0	3.1
Carlis	185	188	202	205	203	−1.0	2.3
Carsh	1,002	1,102	1,165	1,249	1,302	4.2	6.8
Chelms	136	158	194	207	225	8.7	13.4
Clwyd	92	88	155	146	144	−1.4	11.9
Colchr		84	100	118	116	−1.7	11.4
Covnt	638	675	717	745	794	6.6	5.6
D & Gall	69	77	77	113	118	4.4	14.4
Derby	277	301	301	389	419	7.7	10.9
Derry		40	67	100	115	15.0	42.2
Donc <sup>a</sup>			109	154	196	27.3	34.1
Dorset	383	406	452	513	552	7.6	9.6
Dudley	258	263	259	275	292	6.2	3.1
Dundee	359	365	376	370	395	6.8	2.4
Dunfn	150	156	220	220	233	5.9	11.6
Edinb	670	701	720	695	700	0.7	1.1
Exeter	583	630	664	708	731	3.2	5.8
Glasgw	1,593	1,553	1,605	1,568	1,468	−6.4	−2.0
Glouc	284	319	326	325	366	12.6	6.5
Hull	588	610	672	696	725	4.2	5.4
Inverns	200	200	207	212	224	5.7	2.9
Ipswi	291	284	285	294	308	4.8	1.4
Kent		546	627	714	744	4.2	10.9
Klmarnk	181	215	214	263	273	3.8	10.8
L Barts	1,337	1,416	1,473	1,526	1,638	7.3	5.2
L Guys	1,225	1,324	1,395	1,447	1,511	4.4	5.4
L Kings	636	669	712	784	786	0.3	5.4
L Rfree	1,346	1,383	1,437	1,510	1,546	2.4	3.5
L St.G	544	595	575	624	661	5.9	5.0
L West <sup>b</sup>	2,286	2,156	2,162	2,570	2,725	6.0	4.5
Leeds	1,341	1,380	1,379	1,342	1,348	0.4	0.1
Leic c	1,430	1,500	1,594	1,660	1,735	4.5	5.0
Liv Ain	81	99	115	130	146	12.3	15.9
Liv RI	1,280	1,338	1,274	1,200	1,223	1.9	−1.1
M Hope	631	718	759	758	784	3.4	5.6
M RI	1,420	1,504	1,402	1,424	1,436	0.8	0.3
Middlbr	573	640	687	682	707	3.7	5.4
Newc	867	905	902	901	897	−0.4	0.9
Newry	155	148	148	163	167	2.5	1.9
Norwch	409	437	495	567	591	4.2	9.6
Nottm	894	923	971	954	956	0.2	1.7
Oxford <sup>c</sup>	1,196	1,266	1,328	1,318	1,320	0.2	2.5
Plymth	369	412	421	443	454	2.5	5.3

**Table 2.3.** Continued

Centre	Date					% change 2008–2009	% average change 2005–2009
	31/12/2005	31/12/2006	31/12/2007	31/12/2008	31/12/2009		
Ports	1,085	1,143	1,182	1,268	1,301	2.6	4.6
Prestn	772	832	857	874	939	7.4	5.0
Redng	409	530	552	578	618	6.9	10.9
Sheff <sup>a</sup>	1,166	1,232	1,175	1,216	1,216	0.0	1.1
Shrew	236	259	285	325	337	3.7	9.3
Stevng	567	606	548	580	580	0.0	0.6
Sthend	181	187	195	204	207	1.5	3.4
Stoke	560	588	590	603	640	6.1	3.4
Sund	278	271	344	343	368	7.3	7.3
Swanse	475	503	545	602	598	−0.7	5.9
Truro	269	291	288	297	320	7.7	4.4
Tyrone	169	160	149	136	143	5.1	−4.1
Ulster	44	61	89	96	114	18.8	26.9
Wirral	192	206	219	216	222	2.8	3.7
Wolve	440	451	449	490	477	−2.7	2.0
Wrex <sup>m</sup> <sup>d</sup>	225	209	213	223	219	−1.8	−0.7
York	189	223	231	276	321	16.3	14.2
<b>England</b>	<b>34,031</b>	<b>36,505</b>	<b>37,731</b>	<b>39,540</b>	<b>40,962</b>	<b>3.6</b>	<b>4.7</b>
<b>N Ireland</b>	<b>1,306</b>	<b>1,360</b>	<b>1,401</b>	<b>1,441</b>	<b>1,434</b>	<b>−0.5</b>	<b>2.4</b>
<b>Scotland</b>	<b>3,810</b>	<b>3,934</b>	<b>4,101</b>	<b>4,142</b>	<b>4,173</b>	<b>0.7</b>	<b>2.3</b>
<b>Wales</b>	<b>2,165</b>	<b>2,236</b>	<b>2,449</b>	<b>2,454</b>	<b>2,511</b>	<b>2.3</b>	<b>3.8</b>
<b>UK</b>	<b>41,312</b>	<b>44,035</b>	<b>45,682</b>	<b>47,577</b>	<b>49,080</b>	<b>3.2</b>	<b>4.4</b>

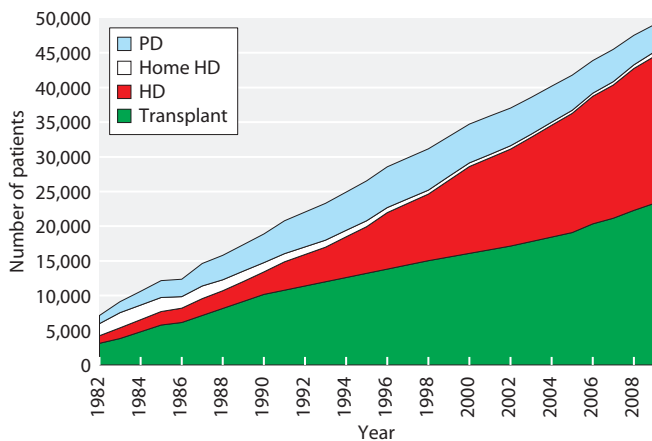
<sup>a</sup> Doncaster previously part of Sheffield centre

<sup>b</sup> Hammersmith and Charing Cross amalgamated with St. Mary's

<sup>c</sup> Oxford transferred Northamptonshire LA to Leicester

<sup>d</sup> Wrexham data suspect from previous renal IT system in 2005 and 2006

associated with a slow contraction in home-based therapies, particularly PD in more recent years. There has been a gradual increase in the number on home haemodialysis since 2007.



**Fig. 2.2.** Growth in prevalent patients by treatment modality at the end of each year 1982–2009

*Prevalence of RRT in Primary Care Trusts (PCT) in England, Health and Social Care Areas in Northern Ireland (HB), Local Health Boards in Wales (HB) and Health Boards in Scotland (HB)*

The need for RRT depends on many factors including social and demographic factors such as age, gender, social deprivation and ethnicity. Hence comparison of crude prevalence rates by geographical area can be misleading. This section, as in previous reports, uses age and gender standardisation to compare RRT prevalence rates. The ethnic minority profile is also provided to help understand the differences in standardised prevalence ratios (SPR). The impact of social deprivation was analysed in the 2003 UKRR Report [4].

Prevalence rates have been reported in relation to the catchment area populations of PCTs in England. Data by local health areas for the other UK countries have also been reported (called Health and Social Care Areas in Northern Ireland, Local Health Boards in Wales and Health Boards in Scotland) and are described as HBs. There were substantial variations in the crude PCT/HB

**Table 2.4.** Change in RRT prevalence rates pmp 2005–2009 by modality

Year	HD prevalence pmp	PD prevalence pmp	Dialysis prevalence pmp	Transplant prevalence pmp	RRT prevalence pmp	% growth in prevalence pmp				
						HD	PD	Dialysis	Tx	RRT
2005	293	84	377	317	694	9.2	1.1	7.2	10.1	8.5
2006	311	78	389	336	724	6.0	-7.4	3.1	6.0	4.4
2007	323	76	399	346	746	3.9	-2.1	2.7	3.2	2.9
2008	342	69	411	363	774	5.8	-9.0	2.9	4.9	3.8
2009	354	64	417	377	794	3.5	-7.8	1.6	3.7	2.6
<b>Average annual growth 2005–2009</b>						5.7	-5.1	3.5	5.6	4.5

\* Differences in the figures for dialysis and RRT prevalence and the sum of the separate modalities are due to rounding

prevalence rate per million population (pmp), from 478 pmp (Isle of Wight, population 22,000) to 1,708 pmp (Brent, population 255,200). There were similar variations in standardised prevalence ratios from 0.52 (Isle of Wight) to 2.44 (Heart of Birmingham, population 280,500) (table 2.5). Confidence intervals are not presented for the rates per million population for 2009 but figures D3 and D4 in appendix D ([http://www.renalreg.com/Report-Area/Report 2010/Appendix-D.pdf](http://www.renalreg.com/Report-Area/Report%202010/Appendix-D.pdf)) can be used to determine if a PCT/HB falls within the range representing the 95% confidence limit of the national average prevalence rate. The annual standardised prevalence ratios were inherently more stable than the annual standardised incidence ratios (see chapter 1 UK RRT Incidence in 2009).

*Factors associated with variation in standardised prevalence ratios in Primary Care Trusts (PCT) in England, Health and Social Care Areas (HB) in Northern Ireland, Local Health Boards in Wales (HB) and Health Boards in Scotland (HB)*

Geographical considerations and ethnicity were the major factors underlying the variation in SPRs (table 2.5). In 2009, there were 54 PCT/HBs with a significantly low SPR, 77 with a 'normal' SPR and 47 with a significantly high SPR. This is not strictly comparable to last year's report [3], because local health areas reported on have been changed in Northern Ireland, Scotland and Wales. However in broad terms the areas with high and low SPRs have been consistent over the last few years. They tend to reflect the demographics of the regions in question such that urban, ethnically diverse populations especially when coupled with areas of deprivation have the highest prevalence rates of renal replacement therapy. The geographical distribution is summarised in table 2.6. The East of England had a significantly higher proportion of areas with a low SPR compared with the UK as

a whole. In London there was a significantly higher proportion of areas with a high SPR. The West Midlands (41%) and Northern Ireland (40%) had a relatively higher percentage of PCT/HBs with high SPRs but this did not reach significance.

PCT/HBs with high SPRs had significantly higher ethnic minority populations than those with low or normal SPRs ( $p < 0.0001$ ). Mean SPRs were significantly higher in the 59 PCT/HBs with an ethnic minority population greater than 10% than in those with lower ethnic minority populations ( $p < 0.0001$ ). The SPR (correlation coefficient  $r = 0.86$ ) was positively correlated with ethnicity. For each 10% increase in ethnic minority population, the age standardised prevalence ratio increased by 0.21 and this would result in increased prevalent patient numbers. In figure 2.3, the relationship between the ethnic composition of a PCT/HB and its SPR is demonstrated.

Only 6 of the 119 PCT/HBs with ethnic minority populations of less than 10% had high SPRs: Abertawe Bro Morgannwg University, Belfast, Cwm Taf, Greater Glasgow & Clyde, Liverpool and Western Northern Ireland. Forty-one of the 59 PCT/HBs with ethnic minority populations greater than 10% had high SPRs, whereas only 3 had low SPRs (Richmond & Twickenham, Trafford, Leeds). Richmond & Twickenham and Trafford have lower deprivation than many areas with higher than average ethnic minority populations but Leeds has significant deprivation issues (<http://www.apho.org.uk>). Also some PCT/HBs with high ethnic minority populations did not have a proportionate increase in SPR; Westminster, also affluent, has 27.8% non-White population but with a modest increase in SPR of 1.04 (2004–2009). The factors contributing to these disparities remain unclear, but social deprivation may be an important factor and consideration should also be given to a possible lack of supply of services in some areas.



**Table 2.5.** Prevalence of RRT and standardised prevalence ratios in PCT/HB areas

PCT/HB = PCT in England, Health and Social Care Areas in Northern Ireland, Local Health Boards in Wales and Health Boards in Scotland

O/E = standardised prevalence ratio

LCL = lower 95% confidence limit

UCL = upper 95% confidence limit

pmp = per million population

Blank cells = no data returned to the UKRR for that year

Areas with significantly low prevalence ratios in 2009 are italicised in greyed areas, those with significantly high prevalence ratios in 2009 are bold in greyed areas

% non-White = percentage of the PCT/HB population that is non-White, from 2001 census (revised by ONS to 2007 for England)

UK area	PCT/HB	Total population	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2008 O/E	2009				2004–2009 O/E	% non-White
								O/E	95% LCL	95% UCL	Crude rate pmp		
North East	<i>County Durham</i>	506,600	0.93	0.95	0.91	0.89	0.87	0.86	0.78	0.96	720	0.90	2.5
	Darlington	100,600	0.89	0.90	0.76	0.82	0.85	0.87	0.69	1.10	716	0.85	3.3
	Gateshead	190,500	1.06	1.00	0.94	0.90	0.84	0.89	0.75	1.05	735	0.93	3.8
	Hartlepool	90,800	1.03	0.97	0.99	0.90	0.93	0.91	0.71	1.16	727	0.95	2.6
	Middlesbrough	140,300	1.07	1.01	1.06	1.04	1.05	1.06	0.88	1.27	791	1.05	8.6
	Newcastle	284,300	0.92	0.94	0.92	0.96	0.98	0.95	0.82	1.09	679	0.95	9.7
	North Tyneside	197,000	1.06	1.07	1.05	0.99	0.93	0.96	0.82	1.12	792	1.00	3.6
	<i>Northumberland</i>	311,200	0.93	0.89	0.82	0.81	0.79	0.76	0.67	0.87	681	0.83	2.2
	Redcar and Cleveland	137,600	0.99	0.97	1.00	0.99	0.97	0.96	0.80	1.16	814	0.98	3.0
	South Tyneside	152,600	0.97	1.00	1.02	0.99	0.93	1.00	0.84	1.19	826	0.99	4.8
	<i>Stockton-on-Tees Teaching</i>	191,100	0.78	0.78	0.88	0.82	0.82	0.80	0.67	0.95	628	0.81	4.7
Sunderland Teaching	281,700	1.07	1.00	0.93	0.90	0.93	0.93	0.81	1.06	749	0.96	3.3	
North West	<i>Ashton, Leigh and Wigan</i>	306,400	0.57	0.62	0.67	0.88	0.80	0.82	0.72	0.94	666	0.74	2.9
	<b>Blackburn with Darwen Teaching</b>	<b>139,900</b>	<b>1.10</b>	<b>1.15</b>	<b>1.21</b>	<b>1.40</b>	<b>1.31</b>	<b>1.29</b>	<b>1.08</b>	<b>1.53</b>	<b>908</b>	<b>1.25</b>	<b>22.7</b>
	Blackpool	140,000	0.77	0.73	0.64	0.78	0.81	0.86	0.71	1.05	729	0.77	3.7
	Bolton	265,600	0.69	0.79	0.81	1.07	1.04	0.96	0.83	1.10	742	0.90	12.3
	Bury	182,800	0.37	0.43	0.46	0.88	0.83	0.91	0.77	1.08	717	0.67	8.5
	<i>Central and Eastern Cheshire</i>	456,000				0.81	0.76	0.77	0.68	0.86	651	0.78	3.4
	<i>Central Lancashire</i>	457,800	0.71	0.76	0.71	0.78	0.81	0.84	0.75	0.93	675	0.77	6.7
	<i>Cumbria Teaching</i>	494,900	0.80	0.77	0.76	0.75	0.74	0.71	0.64	0.79	630	0.75	2.0
	East Lancashire Teaching	380,900	0.90	0.90	0.92	1.07	1.01	0.95	0.85	1.07	761	0.96	9.4
	Halton and St. Helens	295,900	0.86	0.88	0.95	0.97	0.91	0.93	0.81	1.06	747	0.92	2.1
	Heywood, Middleton and Rochdale	204,900				1.01	1.01	1.04	0.89	1.22	796	1.02	12.6
	Knowsley	149,300	1.33	1.24	1.18	1.13	1.07	1.03	0.86	1.23	790	1.15	2.8
	<b>Liverpool</b>	<b>442,400</b>	<b>1.21</b>	<b>1.16</b>	<b>1.14</b>	<b>1.10</b>	<b>1.10</b>	<b>1.11</b>	<b>1.00</b>	<b>1.23</b>	<b>818</b>	<b>1.13</b>	<b>8.3</b>
	<b>Manchester Teaching</b>	<b>483,500</b>				<b>1.07</b>	<b>1.14</b>	<b>1.17</b>	<b>1.05</b>	<b>1.30</b>	<b>730</b>	<b>1.13</b>	<b>23.4</b>
	<i>North Lancashire Teaching</i>	327,000	0.80	0.72	0.69	0.77	0.73	0.74	0.65	0.85	642	0.74	4.2
	Oldham	219,200	0.52	0.50	0.61	0.93	0.94	0.92	0.79	1.08	693	0.76	12.2
	<i>Salford</i>	225,300	0.63	0.60	0.64	0.82	0.86	0.81	0.68	0.96	604	0.74	7.7
	<i>Sefton</i>	273,400	0.92	0.93	0.91	0.88	0.85	0.83	0.72	0.96	717	0.88	2.6
	<i>Stockport</i>	283,600				0.87	0.87	0.82	0.71	0.94	673	0.85	6.4
	Tameside and Glossop	249,100				1.01	0.95	0.94	0.82	1.09	743	0.97	5.9
<i>Trafford</i>	215,400				0.78	0.75	0.79	0.67	0.93	627	0.77	11.2	
Warrington	197,900	0.87	0.79	0.81	0.89	0.87	0.93	0.79	1.09	753	0.86	3.5	
Western Cheshire	232,900	1.02	0.96	0.93	0.94	0.93	0.97	0.84	1.11	820	0.96	3.1	
<i>Wirral</i>	308,600	1.12	1.08	1.03	0.96	0.89	0.84	0.73	0.96	693	0.97	2.8	
Yorkshire and the Humber	Barnsley	226,500	1.24	1.14	1.11	1.05	1.05	1.10	0.96	1.26	896	1.11	2.7
	<b>Bradford and Airedale Teaching</b>	<b>506,900</b>	<b>1.21</b>	<b>1.20</b>	<b>1.11</b>	<b>1.15</b>	<b>1.17</b>	<b>1.15</b>	<b>1.04</b>	<b>1.26</b>	<b>811</b>	<b>1.16</b>	<b>25.0</b>
	Calderdale	201,500	1.07	1.06	1.07	1.08	1.07	1.08	0.93	1.26	864	1.07	9.8
	Doncaster	290,200	1.11	1.03	1.04	0.95	0.95	0.98	0.86	1.11	796	1.00	4.3
	<i>East Riding of Yorkshire</i>	337,100	0.80	0.80	0.80	0.79	0.81	0.84	0.74	0.95	751	0.81	3.0
	Hull Teaching	262,700	0.97	0.98	0.98	1.02	0.94	0.99	0.86	1.14	727	0.98	5.8
	Kirklees	406,800	1.20	1.16	1.18	1.11	1.04	1.07	0.96	1.19	811	1.12	16.0

Table 2.5. Continued

UK area	PCT/HB	Total population	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2008 O/E	2009			Crude rate pmp	2004–2009 O/E	% non-White
								O/E	95% LCL	95% UCL			
Yorkshire and the Humber	<i>Leeds</i>	787,600	0.99	0.99	1.00	0.95	0.91	0.90	0.82	0.98	645	0.95	11.8
	North East Lincolnshire	158,600	0.98	0.97	1.01	0.99	1.00	0.99	0.83	1.17	801	0.99	3.1
	<i>North Lincolnshire</i>	157,100	0.98	0.92	0.97	0.93	0.89	0.77	0.64	0.94	656	0.90	3.2
	<i>North Yorkshire and York</i>	796,300	0.80	0.80	0.78	0.78	0.78	0.80	0.73	0.87	676	0.79	3.7
	Rotherham	253,900	1.30	1.22	1.12	1.11	1.15	1.12	0.99	1.28	910	1.16	5.2
	Sheffield	547,100	1.11	1.06	1.08	1.08	1.07	1.08	0.98	1.18	808	1.08	12.2
	<i>Wakefield District</i>	323,800	0.87	0.86	0.90	0.85	0.83	0.83	0.72	0.94	673	0.85	4.3
East Midlands	<i>Bassetlaw</i>	111,900	0.78	0.82	0.79	0.94	0.87	0.79	0.63	0.99	679	0.83	3.1
	<b>Derby City</b>	<b>244,300</b>	<b>1.16</b>	<b>1.09</b>	<b>1.08</b>	<b>1.01</b>	<b>1.09</b>	<b>1.16</b>	<b>1.01</b>	<b>1.33</b>	<b>872</b>	<b>1.10</b>	<b>15.0</b>
	<i>Derbyshire County</i>	726,400	0.86	0.84	0.84	0.87	0.88	0.86	0.79	0.93	735	0.86	3.2
	<b>Leicester City</b>	<b>304,800</b>	<b>1.82</b>	<b>1.79</b>	<b>1.74</b>	<b>1.74</b>	<b>1.75</b>	<b>1.79</b>	<b>1.62</b>	<b>1.98</b>	<b>1201</b>	<b>1.77</b>	<b>38.2</b>
	<i>Leicestershire County and Rutland</i>	683,200	0.97	0.92	0.92	0.91	0.90	0.87	0.80	0.95	726	0.91	7.7
	<i>Lincolnshire Teaching</i>	700,200	0.83	0.83	0.79	0.79	0.78	0.78	0.71	0.85	686	0.80	3.3
	<i>Northamptonshire Teaching</i>	684,000	0.74	0.91	0.89	0.89	0.90	0.89	0.82	0.98	706	0.87	7.4
	<b>Nottingham City</b>	<b>300,800</b>	<b>1.30</b>	<b>1.24</b>	<b>1.22</b>	<b>1.17</b>	<b>1.18</b>	<b>1.17</b>	<b>1.03</b>	<b>1.33</b>	<b>758</b>	<b>1.21</b>	<b>18.7</b>
	<i>Nottinghamshire County Teaching</i>	665,000	1.06	1.05	1.02	1.00	0.98	0.94	0.86	1.02	786	1.01	5.1
West Midlands	<b>Birmingham East and North</b>	<b>407,400</b>	<b>1.58</b>	<b>1.61</b>	<b>1.63</b>	<b>1.51</b>	<b>1.55</b>	<b>1.53</b>	<b>1.40</b>	<b>1.68</b>	<b>1085</b>	<b>1.57</b>	<b>23.8</b>
	<b>Coventry Teaching</b>	<b>312,600</b>	<b>1.33</b>	<b>1.25</b>	<b>1.21</b>	<b>1.19</b>	<b>1.21</b>	<b>1.25</b>	<b>1.12</b>	<b>1.41</b>	<b>905</b>	<b>1.24</b>	<b>19.6</b>
	Dudley	306,500	0.98	0.94	0.89	0.91	0.88	0.94	0.83	1.07	786	0.92	8.5
	<b>Heart of Birmingham Teaching</b>	<b>280,500</b>	<b>2.39</b>	<b>2.39</b>	<b>2.39</b>	<b>2.37</b>	<b>2.39</b>	<b>2.44</b>	<b>2.21</b>	<b>2.69</b>	<b>1415</b>	<b>2.40</b>	<b>61.8</b>
	<i>Herefordshire</i>	179,000	0.91	0.90	0.87	0.83	0.75	0.80	0.67	0.95	721	0.84	2.4
	North Staffordshire	211,500				0.85	0.86	0.87	0.75	1.02	747	0.86	3.5
	<b>Sandwell</b>	<b>291,100</b>	<b>1.53</b>	<b>1.49</b>	<b>1.51</b>	<b>1.48</b>	<b>1.56</b>	<b>1.60</b>	<b>1.44</b>	<b>1.78</b>	<b>1213</b>	<b>1.53</b>	<b>21.8</b>
	Shropshire County	291,900	0.88	0.90	0.88	0.87	0.93	0.88	0.77	1.00	781	0.89	3.0
	Solihull	205,200	1.06	1.03	1.08	0.97	0.93	0.99	0.85	1.15	824	1.01	9.0
	<b>South Birmingham</b>	<b>341,200</b>	<b>1.49</b>	<b>1.47</b>	<b>1.38</b>	<b>1.31</b>	<b>1.32</b>	<b>1.34</b>	<b>1.20</b>	<b>1.49</b>	<b>970</b>	<b>1.38</b>	<b>17.9</b>
	<i>South Staffordshire</i>	609,300				0.92	0.92	0.89	0.81	0.97	748	0.91	4.7
	Stoke on Trent	246,900				1.13	1.08	1.12	0.98	1.28	879	1.11	7.1
	Telford and Wrekin	162,300	0.89	0.80	0.88	1.03	1.02	1.04	0.88	1.23	807	0.95	6.6
	<b>Walsall Teaching</b>	<b>255,800</b>	<b>1.36</b>	<b>1.36</b>	<b>1.32</b>	<b>1.27</b>	<b>1.32</b>	<b>1.29</b>	<b>1.14</b>	<b>1.46</b>	<b>1016</b>	<b>1.32</b>	<b>14.7</b>
	Warwickshire	535,100	1.10	1.08	1.03	1.02	0.98	1.00	0.91	1.09	833	1.03	6.7
	<b>Wolverhampton City</b>	<b>238,500</b>	<b>1.34</b>	<b>1.31</b>	<b>1.26</b>	<b>1.18</b>	<b>1.21</b>	<b>1.21</b>	<b>1.06</b>	<b>1.38</b>	<b>943</b>	<b>1.25</b>	<b>23.8</b>
<i>Worcestershire</i>	556,600	0.86	0.86	0.82	0.82	0.82	0.83	0.76	0.92	715	0.83	4.4	
East of England	<i>Bedfordshire</i>	411,100	0.85	0.82	0.84	0.80	0.81	0.80	0.71	0.90	637	0.82	9.3
	<i>Cambridgeshire</i>	607,200	0.89	0.92	0.91	0.88	0.83	0.85	0.77	0.94	674	0.88	7.4
	<i>East and North Hertfordshire</i>	545,600	0.76	0.88	0.83	0.80	0.81	0.80	0.72	0.89	627	0.81	8.8
	<i>Great Yarmouth and Waveney</i>	214,000	0.43	0.41	0.43	0.51	0.77	0.85	0.73	0.99	752	0.58	3.5
	<b>Luton</b>	<b>194,600</b>	<b>1.10</b>	<b>1.23</b>	<b>1.22</b>	<b>1.26</b>	<b>1.31</b>	<b>1.29</b>	<b>1.12</b>	<b>1.50</b>	<b>894</b>	<b>1.24</b>	<b>31.5</b>
	<i>Mid Essex</i>	371,300	0.82	0.81	0.85	0.89	0.85	0.85	0.75	0.96	692	0.85	5.1
	<i>Norfolk</i>	757,200	0.92	0.93	0.93	0.92	0.90	0.87	0.80	0.95	766	0.91	3.9
	<i>North East Essex</i>	324,800					0.78	0.81	0.71	0.92	680	0.79	6.4
	Peterborough	171,000	1.00	1.00	1.05	1.05	0.99	1.07	0.91	1.27	795	1.03	13.0
	South East Essex	336,500	0.95	0.92	0.95	0.94	0.95	0.93	0.82	1.05	782	0.94	5.7
	South West Essex	405,000	0.88	0.92	0.93	0.95	0.96	0.97	0.87	1.09	746	0.94	7.6
	<i>Suffolk</i>	596,200	0.84	0.83	0.83	0.83	0.81	0.82	0.74	0.90	693	0.83	5.7
	<i>West Essex</i>	282,400	0.80	0.83	0.79	0.74	0.68	0.69	0.59	0.81	559	0.75	7.9
West Hertfordshire	549,900	0.40	0.59	0.78	0.83	1.00	0.99	0.90	1.08	771	0.79	11.1	
London	<b>Barking and Dagenham</b>	<b>176,000</b>	<b>1.09</b>	<b>1.12</b>	<b>1.14</b>	<b>1.16</b>	<b>1.16</b>	<b>1.24</b>	<b>1.05</b>	<b>1.46</b>	<b>807</b>	<b>1.16</b>	<b>23.7</b>
	<b>Barnet</b>	<b>343,200</b>		<b>1.12</b>	<b>1.24</b>	<b>1.43</b>	<b>1.46</b>	<b>1.43</b>	<b>1.29</b>	<b>1.58</b>	<b>1049</b>	<b>1.34</b>	<b>29.4</b>

Table 2.5. Continued

UK area	PCT/HB	Total population	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2008 O/E	2009			Crude rate pmp	2004–2009 % non-White	
								O/E	95% LCL	95% UCL		O/E	
London	Bexley	225,800	1.17	1.13	1.18	1.19	1.19	1.21	1.06	1.39	948	1.18	13.0
	Brent Teaching	255,200			1.37	2.03	2.27	2.38	2.16	2.61	1708	2.03	53.5
	Bromley	310,200	0.99	1.00	0.99	0.95	0.99	0.94	0.82	1.07	745	0.97	11.9
	Camden	231,600		0.99	1.08	1.15	1.20	1.25	1.09	1.45	825	1.14	24.9
	City and Hackney Teaching	227,100			1.38	1.41	1.34	1.46	1.28	1.67	925	1.40	35.7
	Croydon	342,800	1.14	1.18	1.16	1.32	1.32	1.37	1.23	1.52	1009	1.26	34.5
	Ealing	316,300	1.44	1.40	1.46	1.60	1.90	1.91	1.73	2.10	1344	1.64	40.7
	Enfield	291,400		1.51	1.50	1.44	1.44	1.42	1.27	1.59	1036	1.46	28.0
	Greenwich Teaching	226,200	0.97	1.13	1.13	1.15	1.23	1.23	1.07	1.42	836	1.15	26.1
	Hammersmith and Fulham	169,800	1.49	1.33	1.36	1.30	1.38	1.42	1.22	1.66	966	1.38	21.0
	Haringey Teaching	225,400		1.52	1.54	1.54	1.62	1.62	1.43	1.83	1087	1.57	33.1
	Harrow	228,600				1.56	1.73	1.82	1.63	2.03	1365	1.71	44.7
	Havering	234,500				0.79	0.78	0.80	0.68	0.94	644	0.79	8.8
	Hillingdon	262,500	0.87	0.96	1.01	0.98	1.30	1.31	1.16	1.49	945	1.09	25.9
	Hounslow	234,200	1.50	1.40	1.33	1.32	1.59	1.62	1.44	1.83	1123	1.46	37.8
	Islington	192,100		1.38	1.49	1.41	1.37	1.36	1.17	1.58	885	1.40	22.9
	Kensington and Chelsea	169,900				0.79	0.95	0.95	0.79	1.13	724	0.90	22.6
	Kingston	166,900				1.03	1.12	1.11	0.93	1.31	791	1.09	19.9
	Lambeth	283,400	1.30	1.29	1.29	1.61	1.60	1.66	1.48	1.85	1076	1.47	32.0
	Lewisham	264,300	1.62	1.64	1.67	1.70	1.67	1.72	1.53	1.92	1158	1.67	34.4
	Newham	241,200	1.53	1.71	1.79	1.82	1.83	1.92	1.70	2.15	1157	1.78	57.0
	Redbridge	267,700	1.15	1.24	1.24	1.22	1.36	1.39	1.23	1.56	982	1.27	40.9
	Richmond and Twickenham	189,400				0.62	0.71	0.76	0.63	0.91	576	0.70	11.7
Southwark	285,600	1.51	1.54	1.54	1.64	1.68	1.70	1.52	1.90	1113	1.61	34.1	
Sutton and Merton	398,900				1.14	1.17	1.22	1.10	1.36	895	1.18	20.8	
Tower Hamlets	234,800	1.04	1.09	1.13	1.22	1.28	1.39	1.21	1.61	809	1.20	22.8	
Waltham Forest	224,500			1.39	1.58	1.57	1.51	1.33	1.72	1020	1.52	36.6	
Wandsworth	286,900				1.40	1.40	1.46	1.30	1.64	952	1.42	19.7	
Westminster	249,200				0.97	1.04	1.12	0.97	1.28	787	1.04	27.8	
South East Coast	Brighton and Hove City	256,200	0.87	0.86	0.87	0.86	0.86	0.88	0.76	1.03	648	0.87	8.7
	East Sussex Downs and Weald	333,700	0.86	0.82	0.78	0.80	0.76	0.78	0.68	0.88	698	0.80	4.9
	Eastern and Coastal Kent	732,100				0.86	0.91	0.93	0.85	1.01	768	0.90	5.3
	Hastings and Rother	178,400	0.90	0.83	0.83	0.77	0.79	0.82	0.69	0.97	734	0.82	5.2
	Medway	254,900				0.86	0.89	0.88	0.76	1.02	671	0.87	7.5
	Surrey	1,100,500	0.77	0.76	0.77	0.86	0.88	0.88	0.82	0.94	710	0.82	8.3
	West Kent	678,600				0.87	0.90	0.89	0.82	0.97	725	0.89	6.8
	West Sussex	792,900	0.78	0.77	0.77	0.81	0.83	0.84	0.77	0.91	718	0.80	5.8
South Central	Berkshire East	399,600	1.04	1.00	1.08	1.19	1.19	1.18	1.06	1.31	866	1.12	18.9
	Berkshire West	466,600	1.03	0.96	1.03	1.12	1.12	1.10	1.00	1.22	825	1.06	10.1
	Buckinghamshire	508,700	0.99	0.98	0.97	0.96	0.93	0.91	0.83	1.01	737	0.95	10.4
	Hampshire	1,289,100	0.79	0.76	0.78	0.77	0.78	0.79	0.74	0.84	659	0.78	4.2
	Isle of Wight National Health Service	140,200	0.75	0.63	0.61	0.57	0.55	0.52	0.41	0.66	478	0.60	3.6
	Milton Keynes	242,300	0.94	0.92	0.86	0.92	0.92	0.90	0.77	1.05	660	0.91	12.7
	Oxfordshire	615,900	1.11	1.05	1.04	0.95	0.91	0.89	0.81	0.98	687	0.98	8.1
	Portsmouth City Teaching	203,400	1.12	1.05	0.99	0.98	0.98	0.94	0.79	1.11	659	1.00	8.0
Southampton City	237,000	0.95	0.93	0.91	0.92	0.95	0.96	0.82	1.12	658	0.94	11.4	
South West	Bath and North East Somerset	177,500	0.87	0.92	0.89	0.89	0.82	0.82	0.68	0.98	648	0.86	5.8
	Bournemouth and Poole Teaching	306,000	0.91	0.87	0.87	0.88	0.86	0.84	0.73	0.96	690	0.87	5.0
	Bristol	433,000	1.37	1.31	1.32	1.23	1.27	1.25	1.13	1.39	871	1.29	11.6

Table 2.5. Continued

UK area	PCT/HB	Total population	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2008 O/E	2009			2004–2009 % non-White		
								O/E	95% LCL	95% UCL	Crude rate pmp	O/E	% non-White
South West	Cornwall and Isles of Scilly	532,900	1.12	1.02	1.04	0.98	0.96	0.97	0.88	1.06	863	1.01	2.8
	<i>Devon</i>	747,500	0.85	0.81	0.83	0.85	0.87	0.87	0.80	0.95	779	0.85	3.3
	<i>Dorset</i>	404,200	0.83	0.83	0.79	0.80	0.82	0.82	0.74	0.92	772	0.81	3.5
	<i>Gloucestershire</i>	588,700	0.92	0.92	0.93	0.89	0.83	0.85	0.77	0.93	710	0.88	4.7
	North Somerset	209,400	1.13	1.04	0.98	0.91	0.92	0.87	0.74	1.02	755	0.97	3.6
	Plymouth Teaching	256,700	1.11	1.05	1.16	1.14	1.10	1.11	0.97	1.27	834	1.11	4.4
	<i>Somerset</i>	523,600	0.92	0.88	0.87	0.83	0.81	0.81	0.73	0.90	712	0.85	3.2
	South Gloucestershire	262,300	1.08	1.05	1.04	0.98	0.96	0.90	0.78	1.04	721	1.00	5.0
	Swindon	203,700	0.98	0.92	0.94	0.88	0.85	0.87	0.74	1.03	668	0.90	7.1
	Torbay	133,900	0.98	0.91	0.87	0.81	0.94	0.90	0.75	1.09	814	0.90	3.1
<i>Wiltshire</i>	456,000	0.66	0.69	0.70	0.72	0.74	0.71	0.63	0.81	596	0.70	3.4	
Wales	<i>Betsi Cadwaladr University</i>	679,000	1.08	1.04	0.99	0.96	0.95	0.91	0.84	0.99	779	0.98	1.0
	Powys Teaching	131,700	0.95	0.98	0.92	0.90	0.90	0.92	0.77	1.11	850	0.93	0.9
	Hywel Dda	374,800	1.05	1.04	1.02	0.97	1.01	0.94	0.84	1.06	824	1.00	1.0
	<b>Abertawe Bro Morgannwg University</b>	<b>502,300</b>	<b>1.28</b>	<b>1.24</b>	<b>1.25</b>	<b>1.26</b>	<b>1.20</b>	<b>1.22</b>	<b>1.11</b>	<b>1.33</b>	<b>999</b>	<b>1.24</b>	<b>1.6</b>
	<b>Cwm Taf</b>	<b>290,500</b>	<b>1.46</b>	<b>1.41</b>	<b>1.45</b>	<b>1.50</b>	<b>1.42</b>	<b>1.40</b>	<b>1.26</b>	<b>1.57</b>	<b>1119</b>	<b>1.44</b>	<b>1.1</b>
	Aneurin Bevan	560,600	1.24	1.21	1.16	1.17	1.10	1.08	0.99	1.18	883	1.15	1.9
	Cardiff and Vale University	461,000	1.25	1.16	1.16	1.15	1.05	1.07	0.96	1.19	779	1.13	6.7
Scotland	Ayrshire & Arran	367,000	1.09	1.13	1.18	1.12	1.14	1.08	0.97	1.20	926	1.13	0.7
	Borders	113,100	0.85	0.83	0.83	0.94	0.97	1.01	0.83	1.23	902	0.91	0.6
	Dumfries and Galloway	148,200	1.02	1.04	0.97	0.87	0.94	0.93	0.78	1.10	850	0.96	0.7
	Fife	363,400	0.97	0.99	0.95	0.93	0.94	0.93	0.83	1.05	765	0.95	1.3
	Forth Valley	291,400	0.94	0.96	0.91	0.96	0.93	0.91	0.79	1.04	734	0.94	1.1
	Grampian	545,400	1.00	0.99	0.96	0.95	0.94	0.96	0.87	1.05	785	0.96	1.6
	<b>Greater Glasgow &amp; Clyde</b>	<b>1,199,000</b>	<b>1.31</b>	<b>1.28</b>	<b>1.22</b>	<b>1.17</b>	<b>1.13</b>	<b>1.09</b>	<b>1.03</b>	<b>1.16</b>	<b>851</b>	<b>1.19</b>	<b>3.4</b>
	Highland	311,000	1.06	1.06	1.02	1.02	1.00	1.00	0.89	1.13	884	1.02	0.8
	Lanarkshire	562,500	1.14	1.05	1.02	0.97	0.97	0.95	0.87	1.05	763	1.01	1.2
	<i>Lothian</i>	<i>826,200</i>	<i>1.01</i>	<i>0.96</i>	<i>0.94</i>	<i>0.92</i>	<i>0.89</i>	<i>0.87</i>	<i>0.80</i>	<i>0.95</i>	<i>673</i>	<i>0.93</i>	<i>2.8</i>
	Orkney	20,000	1.15	1.14	1.14	0.93	1.12	1.07	0.68	1.68	950	1.09	0.4
	Shetland	22,000	0.74	0.55	0.45	0.66	0.46	0.60	0.33	1.09	500	0.57	1.1
	Tayside	399,600	1.19	1.15	1.14	1.10	1.04	1.08	0.98	1.20	911	1.11	1.9
Western Isles	26,100	0.92	0.58	0.55	0.88	0.79	0.75	0.47	1.20	690	0.75	0.6	
Northern Ireland	<b>Belfast</b>	<b>334,600</b>		<b>1.38</b>	<b>1.37</b>	<b>1.35</b>	<b>1.30</b>	<b>1.21</b>	<b>1.08</b>	<b>1.35</b>	<b>882</b>	<b>1.32</b>	<b>1.1</b>
	Northern	458,300		1.21	1.22	1.16	1.12	1.06	0.96	1.17	803	1.15	0.6
	Southern	354,000		1.15	1.07	1.00	1.02	1.00	0.88	1.13	703	1.04	0.7
	South Eastern	344,200		1.12	1.07	1.02	1.01	0.97	0.86	1.10	747	1.04	0.4
	Western	297,900		1.14	1.18	1.16	1.12	1.16	1.02	1.31	826	1.15	0.5

### Case mix in prevalent RRT patients

#### Time on RRT

Table 2.7 shows the median time, in years, since starting RRT of the prevalent RRT patients on 31/12/2009. Median time on RRT for all prevalent patients was 5.4 years. (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 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 (3.1 and 2.0 years respectively  $p < 0.001$ ). The median time on RRT increased for both transplant and haemodialysis patients over the past 5 years (additional 0.7 and 0.4 years respectively) but not for peritoneal dialysis patients.

#### Age

The median age of prevalent UK patients on RRT at 31st December 2009 was slightly higher (57.7 years) compared with 2008 (57.3 years) (table 2.8), this has changed little in the last few years. There were marked

**Table 2.6.** Summary of the regional distribution of PCT/HB areas with significantly high, low or normal values of SPR and mean (weighted by PCT/HB size) % non-Whites per region on 31/12/2009

Region	SPR group			Total	Mean % non-White	Weighted mean % non-White
	Low	Normal	High			
NE England	3	9	0	12	4.4	4.2
NW England	10	11	3	24	7.5	7.5
Yorkshire & Humber	5	8	1	14	7.9	9.2
East Midlands	5	1	3	9	11.3	9.0
West Midlands	3	7	7	17	14.1	13.5
East of England	9	4	1	14	9.1	7.9
London	2	4	25	31	28.9	29.3
South Coast of England	5	3	0	8	6.6	6.7
South Central England	3	5	1	9	9.7	8.8
SW England	7	6	1	14	4.7	4.6
<b>England</b>	<b>52</b>	<b>58</b>	<b>42</b>	<b>152</b>	<b>12.6</b>	<b>11.3</b>
<b>N Ireland</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>0.7</b>	<b>0.7</b>
<b>Scotland</b>	<b>1</b>	<b>12</b>	<b>1</b>	<b>14</b>	<b>1.3</b>	<b>2.0</b>
<b>Wales</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>2.0</b>	<b>2.1</b>
<b>UK</b>	<b>54</b>	<b>77</b>	<b>47</b>	<b>178</b>	<b>10.9</b>	<b>9.8</b>

PCT/HB = Primary Care Trust in England, Health and Social Care Areas in Northern Ireland, Local Health Boards in Wales and Health Boards in Scotland

SPR = standardised prevalence ratio

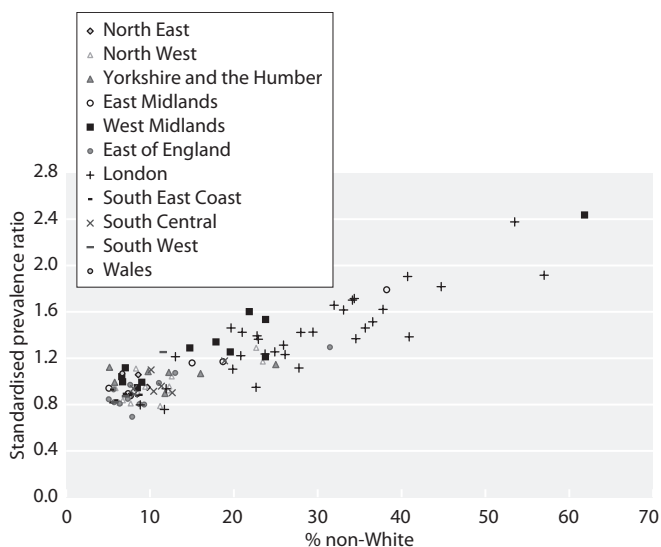
differences between modalities; the median age of HD patients (65.9 years) was greater than those on PD (61.2 years) and substantially higher than those of transplanted patients (50.8 years). These represent slightly older ages compared with 2008. Although the median age for Northern Ireland patients on PD increased by

about 3 years from 2008 (59.8 years in 2008 vs. 63.1 years in 2009), the median age for all prevalent RRT patients in Northern Ireland decreased slightly in 2009 (59.2 years in 2008 vs. 58.9 years in 2009). About half of the UK prevalent RRT population were in the age group 40–64 years of age, with Northern Ireland and Wales having a higher proportion (16.9% and 16.4% respectively) of patients older than 75+ years compared with England (14.6%) and Scotland (12.9%) (table 2.9). Furthermore there existed a wide range between centres in the proportion of patients aged over 75 (range 8% to 32%). As a result, prevalent dialysis patients were slightly older in Northern Ireland and Wales compared with the rest of the UK.

**Table 2.7.** Median time on RRT of prevalent patients on 31/12/2009

Modality	N	Median time treated (years)
Haemodialysis	21,135	3.1
Peritoneal dialysis	3,826	2.0
Transplant	22,159	10.3
<b>All RRT</b>	<b>47,120</b>	<b>5.4</b>

Median time on 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 is not accurately known

**Fig. 2.3.** Ethnicity and standardised prevalence ratios for all PCT/HB areas by percentage non-White on 31/12/2009 (excluding areas with <5% ethnic minorities)

**Table 2.8.** Median age of prevalent RRT patients by treatment modality by centre on 31/12/2009

Centre	Median age HD	Median age PD	Median age transplant	Median age RRT	Centre	Median age HD	Median age PD	Median age transplant	Median age RRT
Abrdn	65.6	55.8	51.1	56.1	L Rfree	65.2	61.2	49.7	55.4
Airdrie	59.4	54.2	48.6	54.1	L St.G	67.7	63.1	51.3	59.0
Antrim	71.4	68.3	49.6	65.0	L West	66.5	60.8	51.7	57.5
B Heart	67.0	65.0	51.9	63.2	Leeds	66.3	59.1	49.9	55.9
B QEH	65.6	58.7	50.3	56.6	Leic	65.6	64.7	50.6	58.5
Bangor	65.6	69.4		66.3	Liv Ain	62.9	59.7		62.8
Basldn	65.5	70.1	47.5	63.6	Liv RI	62.0	56.9	50.0	53.7
Belfast	63.2	58.4	49.3	53.6	M Hope	62.2	57.8	48.2	55.5
Bradfd	62.2	56.5	49.6	54.5	M RI	61.1	54.0	49.9	53.0
Brightn	71.0	65.4	52.5	62.3	Middlbr	66.6	64.4	50.7	57.7
Bristol	67.2	61.7	52.4	58.6	Newc	63.1	59.0	52.4	56.6
Camb	70.7	57.1	50.9	57.1	Newry	66.6	59.9	51.3	61.9
Cardff	67.8	61.3	50.1	56.2	Norwch	70.2	62.7	49.9	62.9
Carlisle	68.2	59.3	51.5	57.7	Nottm	66.3	56.7	48.4	56.4
Carsh	68.8	62.8	50.2	60.5	Oxford	65.9	60.6	50.4	55.7
Chelms	69.4	68.3	56.5	62.8	Plymth	71.4	63.5	53.4	59.0
Clwyd	64.1	53.7	54.7	60.6	Ports	65.7	63.9	51.2	56.7
Colchr	69.4			69.4	Prestn	63.4	59.0	51.8	58.0
Covnt	66.8	64.0	49.3	57.6	Redng	69.5	60.2	55.0	60.7
D & Gall	71.5	58.2	48.2	60.0	Sheff	66.0	62.0	51.1	58.4
Derby	66.2	63.3	53.8	63.3	Shrew	67.4	57.6	51.8	60.8
Derry	65.4	55.7	51.3	60.7	Stevng	66.5	54.8	48.9	59.8
Donc	65.7	60.0	53.8	62.2	Sthend	68.2	60.3	58.0	63.5
Dorset	69.1	69.2	55.7	63.0	Stoke	65.6	59.7	49.6	57.4
Dudley	61.7	61.3	59.1	60.2	Sund	62.7	48.7	50.6	55.9
Dundee	70.6	61.3	53.1	61.5	Swanse	69.3	66.4	52.6	63.4
Dunfn	64.7	65.5	50.8	58.6	Truro	73.4	65.1	54.5	64.1
Edinb	61.0	62.0	50.0	54.9	Tyrone	66.7	64.4	45.4	61.6
Exeter	71.4	63.6	50.5	60.9	Ulster	71.7	54.4	50.1	69.5
Glasgw	63.5	57.2	50.5	55.0	Wirral	64.9	60.3		64.1
Glouc	72.0	55.3	52.8	63.1	Wolve	67.5	58.8	49.2	61.4
Hull	64.9	62.4	50.2	57.3	Wrexm	65.0	68.6	50.6	55.9
Inverns	68.8	70.4	47.4	56.2	York	62.5	57.8	52.2	57.1
Ipswi	65.0	63.8	51.5	57.6	<b>England</b>	<b>65.9</b>	<b>61.0</b>	<b>50.9</b>	<b>57.7</b>
Kent	68.3	63.2	51.9	60.4	<b>N Ireland</b>	<b>67.3</b>	<b>63.1</b>	<b>49.5</b>	<b>58.9</b>
Klmarnk	64.7	59.1	48.4	58.9	<b>Scotland</b>	<b>64.4</b>	<b>60.0</b>	<b>50.2</b>	<b>56.4</b>
L Barts	58.7	58.8	49.4	53.9	<b>Wales</b>	<b>67.6</b>	<b>64.8</b>	<b>50.9</b>	<b>59.3</b>
L Guys	61.6	57.2	49.9	53.7	<b>UK</b>	<b>65.9</b>	<b>61.2</b>	<b>50.8</b>	<b>57.7</b>
L Kings	62.8	56.7	51.1	56.1					

Blank cells – no patients for that treatment modality

There were wide inter-centre variations in the median age of patients on RRT (53.0 to 69.5 years). Prevalent dialysis patients in Truro had the highest median age (72.6 years), whilst London Barts and Airdrie had the lowest median ages (58.8 years and 59.2 years respectively) and were the only centres with a prevalent dialysis median age below 60 (table 2.8). The median age of HD patients was slightly less in transplanting than in non-transplanting centres (65.7 vs. 66.6,  $p < 0.04$ ), but there

was no significant difference in the median ages of PD and transplant patients. This implies that a major factor accounting for the lower median age of RRT patients in transplanting centres was the large number of transplant patients they follow-up. Transplant centres also tend to be situated in the major cities where a larger proportion of the population are from the ethnic minorities, which are younger. The differing age distributions of the transplant and dialysis populations

**Table 2.9.** Percentage of prevalent RRT patients in each age group by centre on 31/12/2009

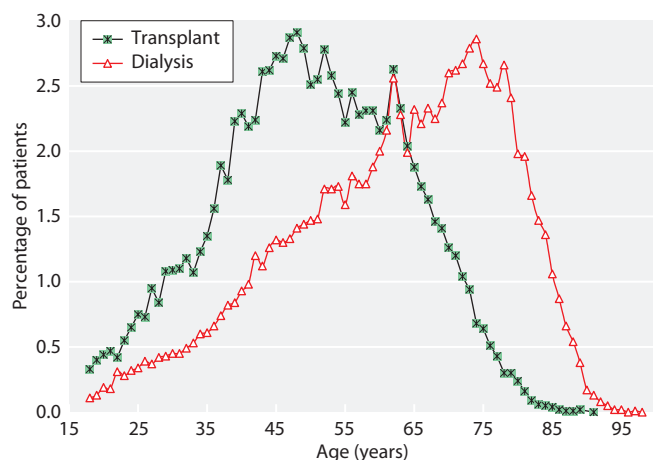
Centre	N	Percentage of patients			
		18–39 years	40–64 years	65–74 years	75+ years
Abrdn	452	17.9	51.8	17.7	12.6
Airdrie	310	19.4	51.3	18.4	11.0
Antrim	215	12.1	37.9	26.6	23.4
B Heart	622	12.7	41.2	26.4	19.8
B QEH	1,821	17.2	49.5	18.3	14.9
Bangor	110	8.2	38.2	24.5	29.1
Basldn	214	15.6	38.7	20.8	25.0
Belfast	680	18.1	53.9	16.2	11.8
Bradfd	422	22.5	47.4	19.2	10.9
Brightn	737	12.9	43.6	23.2	20.4
Bristol	1,223	15.9	50.6	20.8	12.8
Camb	940	17.1	51.3	16.8	14.8
Cardff	1,440	16.5	52.8	17.4	13.3
Carlisle	203	13.8	52.2	21.7	12.3
Carsh	1,302	13.4	47.2	20.1	19.3
Chelms	225	11.1	44.9	20.4	23.6
Clwyd	144	9.0	55.6	18.8	16.7
Colchr	116	5.2	35.3	28.4	31.0
Covnt	794	15.0	48.6	21.8	14.6
D & Gall	118	12.7	50.8	16.1	20.3
Derby	419	11.7	43.0	25.1	20.3
Derry	115	15.8	45.6	21.9	16.7
Donc	196	8.7	49.0	22.4	19.9
Dorset	552	12.3	42.2	26.1	19.4
Dudley	292	8.9	51.4	25.0	14.7
Dundee	395	13.7	45.6	23.0	17.7
Dunfn	233	15.9	48.1	23.2	12.9
Edinb	700	16.4	56.1	17.1	10.3
Exeter	731	12.2	47.2	18.9	21.8
Glasgw	1,468	17.2	53.7	17.8	11.3
Glouc	366	10.7	45.1	20.8	23.5
Hull	725	14.9	53.2	18.2	13.7
Inverns	224	18.8	48.2	16.5	16.5
Ipswi	308	13.0	54.5	19.8	12.7
Kent	744	14.1	46.9	22.6	16.4
Klmarnk	273	12.1	54.2	15.4	18.3
L Barts	1,638	18.1	57.3	16.4	8.1
L Guys	1,511	17.7	55.8	15.1	11.4
L Kings	786	15.3	52.7	19.7	12.3
L Rfree	1,546	19.5	50.2	16.9	13.5
L St.G	661	14.1	51.1	20.1	14.7
L West	2,725	13.5	52.7	20.5	13.2
Leeds	1,348	19.3	50.1	17.8	12.8
Leic	1,735	14.4	51.4	19.8	14.5
Liv Ain	146	12.3	42.5	25.3	19.9
Liv RI	1,223	18.6	54.4	16.5	10.5
M Hope	784	17.0	53.3	18.5	11.2
M RI	1,436	19.6	57.2	15.2	8.0
Middlbr	707	14.3	51.2	20.9	13.6
Newc	897	16.7	55.2	16.7	11.4
Newry	167	15.0	41.9	25.7	17.4
Norwch	591	12.8	43.2	21.8	22.3
Nottm	956	18.8	50.9	16.9	13.3
Oxford	1,320	17.6	52.9	18.0	11.5
Plymth	454	13.4	50.0	23.3	13.2

**Table 2.9.** Continued

Centre	N	Percentage of patients			
		18–39 years	40–64 years	65–74 years	75+ years
Ports	1,301	14.8	54.0	17.4	13.7
Prestn	939	14.1	52.9	19.2	13.8
Redng	618	12.9	46.1	21.0	19.9
Sheff	1,216	13.8	50.0	21.2	15.0
Shrew	337	14.2	45.1	21.7	19.0
Stevng	580	13.4	45.3	23.4	17.8
Sthend	207	10.1	44.4	23.7	21.7
Stoke	640	16.1	48.0	19.8	16.1
Sund	368	15.8	53.8	19.8	10.6
Swanse	598	11.7	41.5	24.6	22.2
Truro	320	11.9	40.9	21.9	25.3
Tyrone	143	20.4	37.3	22.5	19.7
Ulster	114	8.9	27.7	31.3	32.1
Wirral	222	11.3	39.6	24.8	24.3
Wolve	477	10.9	47.0	22.6	19.5
Wrexm	219	18.7	45.7	21.0	14.6
York	321	19.6	44.5	17.8	18.1
<b>England</b>	<b>40,962</b>	<b>15.5</b>	<b>50.5</b>	<b>19.5</b>	<b>14.6</b>
<b>N Ireland</b>	<b>1,434</b>	<b>16.2</b>	<b>45.7</b>	<b>21.1</b>	<b>16.9</b>
<b>Scotland</b>	<b>4,173</b>	<b>16.5</b>	<b>52.3</b>	<b>18.3</b>	<b>12.9</b>
<b>Wales</b>	<b>2,511</b>	<b>14.7</b>	<b>49.0</b>	<b>19.8</b>	<b>16.4</b>
<b>UK</b>	<b>49,080</b>	<b>15.5</b>	<b>50.4</b>	<b>19.4</b>	<b>14.6</b>

are illustrated in figure 2.4, demonstrating that the age peak for prevalent dialysis patients is around 25 years later than for prevalent transplant patients.

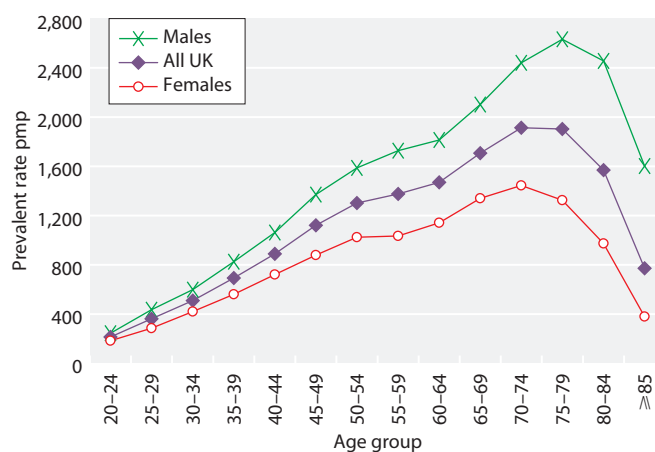
In the UK on 31st December 2009, 60% of patients aged under 65 years on RRT had a functioning transplant (table 2.15) compared with only 23% aged 65 years and over. This was similar in all four UK countries.



**Fig. 2.4.** Age profile of prevalent RRT patients by modality on 31/12/2009

*Gender*

Standardising the age of the UK RRT prevalent patients by using the age and gender distribution of the UK population by PCT/HB (from ONS mid-2009 population estimates), allowed estimation of crude prevalence rates by age and gender (figure 2.5). This shows a progressive increase in prevalence rate with age, peaking



**Fig. 2.5.** Prevalence rate of RRT patients per million population by age and gender on 31/12/2009



at 1,912 pmp (a slight decrease from 1,925 pmp in 2008) in the age group 70–74 years before showing a reducing prevalence rate in age groups over 80 years. Crude prevalence rates in males exceeded those of females for all age groups, peaking in age group 75–79 years at 2,632 pmp and for females in age group 70–74 years at 1,444 pmp.

#### *Ethnicity*

Forty-one of the 72 centres (57%) provided ethnicity data that were at least 90% complete (table 2.10), this was an improvement compared with 2008. Ethnicity completeness for prevalent RRT patients improved in the UK from 81.0% in 2008 to 83.3% in 2009 with a 3.5% improvement in ethnicity completeness in England in 2009. Data from 63 centres had greater than 50% ethnicity returns. Ethnicity completeness is generally slightly worse in prevalent HD patients with the best ethnicity completeness recorded for prevalent transplant patients, this may relate to the fact that the intensive work-up for transplantation may increase the recording of data.

In 2009, 16.1% of the prevalent UK RRT population (with assigned ethnicity) were from ethnic minorities and 18.9% in England were from ethnic minorities. The proportions in Wales, Scotland and Northern Ireland were very small, although there was a high level of missing ethnicity data in Scotland (where ethnicity is not a mandated item). This compared with approximately 12% [1] of the UK general population who were designated as belonging to an ethnic minority. The number of patients reported to the UKRR as receiving RRT and belonging to an ethnic minority has doubled in the last 5 years which may be due to both improvements in coding of ethnicity as well as increasing incidence of ERF in these populations.

Among the centres with more than 50% returns, there was wide variation between centres with respect to the proportion of patients from ethnic minorities, ranging from 0% in one centre (Derry) to over 40% in London Barts (56.5%), London Royal Free (47.8%) and London Kings (45.0%). Centres with an ethnic minority population greater than 10% had the higher number of prevalent patients on RRT, both on dialysis and with functioning transplants. Sixty one percent of transplanting centres had an ethnic minority population greater than 10% compared with 23% of non-transplanting centres.

As would be expected, ethnicity also affected the median age of the prevalent cohort. Those centres with an ethnic minority population of >10% had a slightly lower median age (57 years vs. 58 years).

#### *Primary renal diagnosis*

Data for primary renal diagnosis (PRD) were not sent in 3.3% of patients (4.4% in 2008) and there remained a marked inter-centre difference in completeness of data returns. Where centres had  $\geq 50\%$  primary renal diagnosis data not sent they were excluded from the following analyses. The UKRR is also concerned about some centres with very high rates of primary renal diagnosis uncertain (EDTA codes 00 and 10). It is accepted that there will inevitably be a number of patients with uncertain aetiology and that the proportion of these patients will vary between clinicians and centres as the definitions of renovascular disease, hypertensive nephropathy and chronic glomerulonephritis (GN) without tissue diagnosis remain relatively subjective. However, some centres with very high rates of uncertain diagnosis appear to also have fewer patients with the more objective diagnoses such as polycystic kidney disease or biopsy-proven GN. It is believed that the software in these centres defaults any missing data to 'uncertain' (EDTA code 00). This issue has been raised with the centres and software suppliers in 2010 and although not completely resolved for the current data collection, the situation has improved markedly. As a result, only one centre with  $\geq 40\%$  'uncertain' diagnosis has been excluded from the inter-centre analysis and the UK and national totals have been adjusted. The two centres with a high rate of primary renal diagnosis uncertain and data not sent have also been excluded from other analyses where PRD is included in the case-mix adjustment.

Biopsy-proven glomerulonephritis remained the most common specific primary renal diagnosis in the 2009 prevalent cohort at 16.0% (table 2.11), although 20.6% of patients had an uncertain diagnostic code. Diabetes accounted for 14.7% of renal disease in the prevalent patients on RRT, although it was more common in the  $\geq 65$ -year age group compared to the under 65 age group (16.8% vs. 13.7%). This contrasted with the pattern seen in incident patients where diabetes is the predominant specific diagnostic code in 25% of new RRT patients. This reflects the different ages and survival of patients with these diagnoses; it is the younger fitter patients who survive longest and contribute highly to the prevalent numbers. Younger patients (age <65 years) are more likely to have a specific diagnosis and far less likely to have renal vascular disease or hypertension as the cause of their renal failure.

There was wide inter-centre variation in the proportion of primary renal diagnoses not sent in the RRT prevalent population, with 3 centres having >20% not

**Table 2.10.** Ethnicity of prevalent RRT patients by centre on 31/12/2009

Centre	N	% White	% Black	% Asian	% Chinese	% Other	% Missing
Abrdn	452	50.0	0.0	0.4	0.4	0.2	48.9
Airdrie	310	37.7	0.0	1.0	0.0	0.0	61.3
Antrim	215	99.1	0.0	0.9	0.0	0.0	0.0
B Heart	622	62.5	7.2	28.6	0.5	1.0	0.2
B QEH	1,821	66.1	9.8	20.8	0.9	2.0	0.4
Bangor	110	55.5	1.8	0.0	0.0	0.0	42.7
Basldn	214	91.5	3.8	2.4	0.5	0.9	0.9
Belfast	680	95.4	0.1	0.4	0.0	0.1	3.8
Bradfd	422	55.5	2.8	35.8	0.0	1.2	4.7
Brightn	737	76.3	1.9	4.3	0.0	0.7	16.8
Bristol	1,223	89.7	4.2	3.2	0.5	1.1	1.3
Camb	940	90.9	1.2	3.5	0.3	0.9	3.3
Cardff	1,440	61.1	0.6	2.2	0.5	0.0	35.6
Carlisle	203	98.0	0.0	0.5	0.0	0.0	1.5
Carsh	1,302	71.9	8.1	10.3	1.8	2.7	5.3
Chelms	225	71.1	2.2	1.8	1.8	1.8	21.3
Clwyd	144	60.4	0.0	0.0	0.7	0.0	38.9
Colchr	116	38.8	0.0	1.7	0.9	0.9	57.8
Covnt	794	79.1	3.0	12.5	0.5	0.1	4.8
D & Gall	118	10.2	0.0	0.0	0.0	0.0	89.8
Derby	419	79.5	3.8	10.0	0.5	0.2	6.0
Derry	115	96.5	0.0	0.0	0.0	0.0	3.5
Donc	196	95.9	0.5	2.6	0.5	0.0	0.5
Dorset	552	97.3	0.2	0.7	0.9	0.9	0.0
Dudley	292	86.3	2.7	9.2	0.7	0.0	1.0
Dundee	395	54.9	0.0	0.8	0.0	0.3	44.1
Dunfn	233	23.6	0.0	0.0	0.0	0.4	76.0
Edinb	700	6.6	0.0	0.7	0.1	0.0	92.6
Exeter	731	95.2	0.5	0.3	0.3	0.1	3.6
Glasgw	1,468	7.4	0.0	1.2	0.1	0.0	91.3
Glouc	366	71.9	0.3	0.5	0.5	0.3	26.5
Hull	725	39.6	0.3	0.3	0.1	0.4	59.3
Inverns	224	46.9	0.0	0.4	0.0	0.0	52.7
Ipswi	308	79.9	1.9	2.6	0.3	0.6	14.6
Kent	744	85.8	0.9	1.6	0.1	0.5	11.0
Klmarnk	273	7.0	0.0	0.0	0.4	0.0	92.7
L Barts	1,638	42.7	27.7	25.5	2.0	1.3	0.9
L Guys	1,511	53.4	22.0	2.2	1.1	0.1	21.2
L Kings	786	52.2	32.2	10.7	1.5	0.6	2.8
L Rfree	1,546	50.0	19.6	18.1	1.6	8.5	2.1
L St.G	661	48.1	20.7	7.4	1.7	6.1	16.0
L West	2,725	33.9	12.0	17.7	0.6	7.8	28.0
Leeds	1,348	74.8	3.6	12.2	0.0	1.5	8.0
Leic	1,735	74.1	3.5	16.7	0.2	1.0	4.5
Liv Ain	146	55.5	1.4	0.7	0.7	0.7	41.1
Liv RI	1,223	80.4	1.6	1.1	1.2	0.7	15.0
M Hope	784	82.5	1.4	13.8	0.4	1.7	0.3
M RI	1,436	79.7	5.4	11.1	0.8	0.1	2.9
Middlbr	707	94.1	0.3	2.8	0.1	0.1	2.5
Newc	897	95.1	0.4	2.7	0.6	1.0	0.2
Newry	167	98.8	0.0	0.0	0.6	0.0	0.6
Norwch	591	80.1	0.3	0.7	0.7	0.2	18.0
Nottm	956	87.6	5.1	6.1	0.0	1.2	0.1
Oxford	1,320	80.1	3.0	7.3	0.8	2.0	6.9
Plymth	454	54.2	1.5	0.0	0.2	0.4	43.6
Ports	1,301	92.8	1.2	2.5	0.6	1.0	2.0

**Table 2.10.** Continued

Centre	N	% White	% Black	% Asian	% Chinese	% Other	% Missing
Prestn	939	79.1	0.9	12.4	0.0	0.6	7.0
Redng	618	73.0	6.1	18.3	0.6	1.9	0.0
Sheff	1,216	78.2	1.4	3.0	0.4	0.8	16.2
Shrew	337	95.3	1.2	2.4	0.0	0.3	0.9
Stevng	580	73.6	8.8	16.4	0.5	0.7	0.0
Sthend	207	86.5	0.5	1.0	1.9	0.0	10.1
Stoke	640	47.0	0.2	2.3	0.3	0.5	49.7
Sund	368	95.4	1.1	1.6	0.5	0.3	1.1
Swanse	598	97.7	0.5	1.0	0.0	0.2	0.7
Truro	320	64.7	1.9	0.0	0.3	0.0	33.1
Tyrone	143	98.6	0.7	0.0	0.0	0.0	0.7
Ulster	114	99.1	0.0	0.0	0.9	0.0	0.0
Wirral	222	95.0	0.5	0.9	1.4	0.9	1.4
Wolve	477	73.0	8.8	16.6	0.4	0.0	1.3
Wrexm	219	98.6	0.0	0.5	0.0	0.5	0.5
York	321	88.2	0.3	0.3	0.0	0.3	10.9
<b>England</b>	<b>40,962</b>	<b>71.1</b>	<b>6.9</b>	<b>9.6</b>	<b>0.7</b>	<b>1.7</b>	<b>9.9</b>
<b>N Ireland</b>	<b>1,434</b>	<b>97.1</b>	<b>0.1</b>	<b>0.4</b>	<b>0.1</b>	<b>0.1</b>	<b>2.2</b>
<b>Scotland</b>	<b>4,173</b>	<b>21.7</b>	<b>0.0</b>	<b>0.7</b>	<b>0.1</b>	<b>0.1</b>	<b>77.3</b>
<b>Wales</b>	<b>2,511</b>	<b>72.8</b>	<b>0.6</b>	<b>1.6</b>	<b>0.3</b>	<b>0.1</b>	<b>24.7</b>
<b>UK</b>	<b>49,080</b>	<b>67.8</b>	<b>5.8</b>	<b>8.2</b>	<b>0.6</b>	<b>1.5</b>	<b>16.2</b>

(Appendix H ethnicity coding structure <http://www.renalreg.com/Report-Area/Report2010/Appendix-H.pdf>)

sent (Exeter 21%, London Royal Free 46% and Truro 22%). Uncertain primary renal diagnosis also ranged widely between centres and 5 centres had >30% uncertain diagnosis (Cambridge 31%, Bangor 33%, Liverpool RI 36%, Manchester Hope 37% and Stevenage 31%).

The male:female ratio was greater than unity for all primary renal diagnoses. The gender imbalance may be influenced by the presence of factors such as hypertension, atheroma and renovascular disease, which are

more common in males and more common with increasing age and which may increase the rate of progression of kidney disease. As would be expected from the mode of inheritance, autosomal dominant polycystic kidney disease (ADPKD) was a major exception with the ratio approximating unity, this was similar in the incident cohort.

In older patients (age  $\geq 65$  years) the transplant rate was generally much lower for all primary renal diagnoses,

**Table 2.11.** Primary renal diagnosis in prevalent RRT patients by age and gender on 31/12/2009

Primary diagnosis*	N	% all patients	Inter centre range %	N age <65	% age <65	N age $\geq 65$	% age $\geq 65$	M:F ratio
Aetiology uncertain/GN (not biopsy proven)**	10,026	20.6	6.3–37.4	5,923	18.4	4,103	24.8	1.6
GN (biopsy proven)**	7,812	16.0	7.5–22.3	6,053	18.8	1,759	10.6	2.2
Pyelonephritis	5,782	11.9	3.8–18.7	4,361	13.5	1,421	8.6	1.1
Diabetes	7,184	14.7	6.7–25.2	4,401	13.7	2,783	16.8	1.5
Polycystic kidney	4,676	9.6	4.3–17.0	3,207	10.0	1,469	8.9	1.1
Hypertension	2,799	5.7	0.9–14.1	1,612	5.0	1,187	7.2	2.3
Renal vascular disease	1,652	3.4	0.8–13.2	358	1.1	1,294	7.8	1.9
Other	7,189	14.8	9.5–23.5	5,290	16.4	1,899	11.5	1.3
Not sent	1,622	3.3	0.1–46.1	1,010	3.1	612	3.7	1.5

\* See appendix H: ERA-EDTA coding <http://www.renalreg.com/Report-Area/Report 2010/Appendix-H.pdf>

\*\* GN = glomerulonephritis

Excluded centres with  $\geq 40\%$  primary renal diagnosis aetiology uncertain/glomerulonephritis (not biopsy proven) (Wirral) as well as centres with  $\geq 50\%$  primary renal diagnosis not sent (Colchester)

**Table 2.12.** Transplant:dialysis ratio by age and primary renal diagnosis in the prevalent RRT population on 31/12/2009

Primary diagnosis*	Transplant:dialysis ratio	
	<65	≥65
Aetiology uncertain/ GN (not biopsy proven)**	1.7	0.3
GN (biopsy proven)**	2.0	0.5
Pyelonephritis	2.3	0.3
Diabetes	0.7	0.1
Polycystic kidney	1.8	1.2
Hypertension	1.0	0.3
Renal vascular disease	0.8	0.1
Other	1.6	0.3
Not sent	1.4	0.2

\* See appendix H: ERA-EDTA coding [http://www.renalreg.com/Report-Area/Report 2010/Appendix-H.pdf](http://www.renalreg.com/Report-Area/Report%202010/Appendix-H.pdf)

\*\* GN = glomerulonephritis

Excluded centres with ≥40% primary renal diagnosis aetiology uncertain/glomerulonephritis (not biopsy proven) (Wirral) as well as centres with ≥50% primary renal diagnosis not sent (Colchester)

with the exception of polycystic kidney disease with a transplant:dialysis ratio of 1.2. (table 2.12).

#### Diabetes

Diabetes included all prevalent patients with type 1 or type 2 diabetes as primary renal diagnosis (ERA-EDTA coding) and did not include patients with diabetes as a comorbidity. This analysis did not differentiate between type 1 and type 2 diabetes as this distinction was not made in the data submitted by some centres.

The number of prevalent patients with diabetes as a primary renal diagnosis increased to 7,184 in 2009, representing 14.7% of all prevalent patients (tables 2.13 and 2.14). The median age at start of RRT for patients with diabetes was 9 years higher compared with patients without diabetes, although the median age at the end of 2009 for diabetic patients was only 3 years higher. This

**Table 2.13.** Median age, gender ratio and treatment modality in diabetic and non-diabetic prevalent RRT patients on 31/12/2009

	Diabetics	Non-diabetics
Number	7,184	39,936
M:F ratio	1.55	1.52
Median age on 31/12/08	60	57
Median age at start of RRT	56	47
Median years on RRT	3.1	6.4
% HD	62	41
% PD	10	8
% transplant	29	51

Excluded centres with ≥40% primary renal diagnosis aetiology uncertain/glomerulonephritis (not biopsy proven) (Wirral) as well as centres with ≥50% primary renal diagnosis not sent (Colchester) Diabetic patients are patients with a primary renal disease code of diabetes

Non-diabetic patients are calculated as all patients excluding diabetic patients and patients with a missing primary renal disease code

reflected reduced survival for patients with diabetes compared with patients without diabetes on RRT. Median time on RRT for patients with diabetes was less compared with patients without diabetes (3.1 years vs. 6.4 years). Patients with diabetes starting RRT in Scotland were 4 years younger and in Northern Ireland 4 years older compared with the UK average.

Diabetes as the primary renal diagnosis also influenced the modality distribution. The predominant mode of treatment for patients with diabetes was HD (62%). The percentage of patients with a functioning transplant was much lower in prevalent patients with diabetes than in prevalent patients without diabetes (29% vs. 51%). As would be expected, this difference was even more pronounced for older patients with diabetes (age ≥65 years) (table 2.14), with only 7.8% of older prevalent patients with diabetes having a functioning transplant compared with 26.3% of their non-diabetic peers. In Northern Ireland, only 22% of prevalent

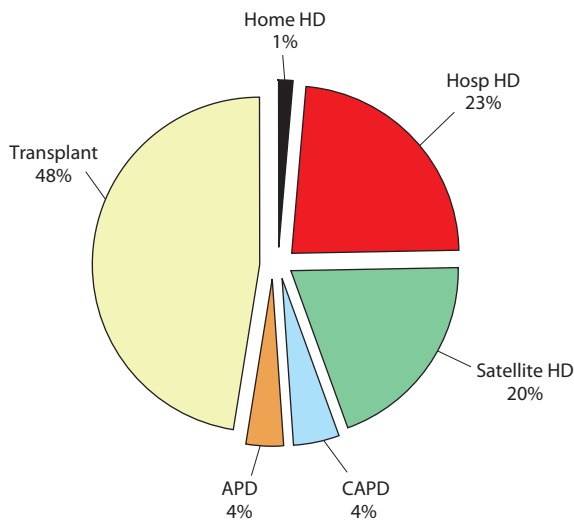
**Table 2.14.** Age relationships in diabetic and non-diabetic patients and modality in prevalent RRT patients on 31/12/2009

	<65		≥65	
	Diabetics	Non-diabetics	Diabetics	Non-diabetics
N	4,401	26,804	2,783	13,132
% HD	48.2	29.4	82.7	64.2
% PD	9.7	6.9	9.5	9.5
% transplant	42.1	63.7	7.8	26.3

Excluded centres with ≥40% primary renal diagnosis aetiology uncertain/glomerulonephritis (not biopsy proven) (Wirral) as well as centres with ≥50% primary renal diagnosis not sent (Colchester)

Diabetic patients are patients with a primary renal disease code of diabetes

Non-diabetic patients are calculated as all patients excluding patients with diabetes and patients with a missing primary renal disease code



**Fig. 2.6.** Treatment modality in prevalent RRT patients on 31/12/2009

patients with diabetes had a functioning transplant compared with the UK average of 29% although Northern Ireland diabetic patients were older. More prevalent patients without diabetes were on home dialysis therapies (home HD and PD) compared with prevalent patients with diabetes where the predominant treatment modality was hospital and satellite HD.

#### Modalities of treatment

Transplantation was the most common treatment modality (48%) for prevalent RRT patients in 2009, followed closely by centre-based HD (43%) in either hospital centre (23%) or satellite unit (20%) (figure 2.6). Home therapies made up the remaining 9% of treatment therapies, largely PD in its different formats (8%). This represented a 1% fall in PD compared with 9% of therapies in 2008. The proportion of PD patients on continuous ambulatory peritoneal dialysis (CAPD) and automated PD (APD) was 4.3% and 3.8%

respectively, though the proportion on APD may be an underestimate due to centre coding issues which mean the UKRR cannot always distinguish between these therapies. The term CAPD has been used for patients receiving non-disconnect as well as disconnect CAPD systems, because the proportion of patients using non-disconnect systems was very small. The number of patients on home HD has stopped falling and is beginning to show a slight rise (see below).

As mentioned earlier, treatment modality was related to patient age. Younger patients (age <65 years), were more likely to have a functioning transplant (60.3%) when compared with patients aged over 65 years (22.5%) (table 2.15). HD was the principal modality in the older patients (68.0%). There were differences among the four UK countries with respect to the proportion of prevalent patients on PD according to age. England and Wales had a higher proportion of older prevalent patients on PD.

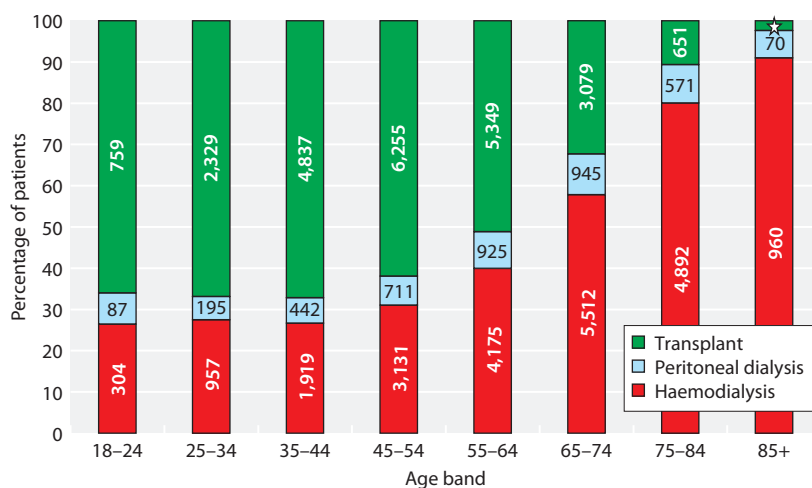
Figure 2.7 shows the effect of age on modality distribution. With increasing age beyond 64 years, transplant prevalence reduced, whilst HD prevalence increased. The proportion of each age group treated by PD remained fairly stable across the age spectrum.

The proportion of prevalent dialysis patients receiving HD, ranged from 71.8% in Bangor to 100% in Colchester (table 2.16).

The number of centres with no prevalent HD patients reported as treated at satellite units decreased in 2009, although some of these centres were unable to record these data in their renal IT systems. Overall the proportion of dialysis patients treated in a satellite haemodialysis centre has increased to 36% this year compared to 35% in 2008 and 32% in 2007. Although there are satellite units in Scotland, the data are not provided to distinguish between main centre and satellite unit haemodialysis except for the Glasgow renal centre. There was an increase in the number of centres to 25 in 2009 that had more than 50% of their HD activity

**Table 2.15.** Treatment modalities by age in UK countries on 31/12/2009

UK country	<65 years				≥65 years			
	N	% HD	% PD	% transplant	N	% HD	% PD	% transplant
England	27,017	32.4	7.5	60.1	13,945	67.7	9.6	22.7
N Ireland	886	35.1	5.1	59.8	548	75.4	6.1	18.6
Scotland	2,871	32.9	6.4	60.7	1,302	69.4	8.0	22.6
Wales	1,601	29.8	7.2	63.0	910	66.8	12.3	20.9
<b>UK</b>	<b>32,375</b>	<b>32.4</b>	<b>7.3</b>	<b>60.3</b>	<b>16,705</b>	<b>68.0</b>	<b>9.5</b>	<b>22.5</b>



**Fig. 2.7.** Treatment modality distribution by age in prevalent RRT patients on 31/12/2009  
\* Transplant in age group 85+, N = 25

taking place in satellite units (table 2.16 and figure 2.8). There was also wide variation between centres in the proportion of PD patients on APD treatment, ranging from 0 to 17.5% (table 2.16). Twelve of the 71 centres with a PD programme had no patients on APD, whilst in four Northern Ireland centres all PD patients were on this form of the modality. Cambridge PD patients (n = 39)

were all reported as receiving unknown PD and are not included in table 2.16.

*Home haemodialysis*

The proportion of prevalent dialysis patients on home HD has been declining since the first recorded prevalence numbers in 1982, when it was 43.0% of all dialysis

**Table 2.16.** Percentage of prevalent dialysis patients by dialysis modality by centre on 31/12/2009

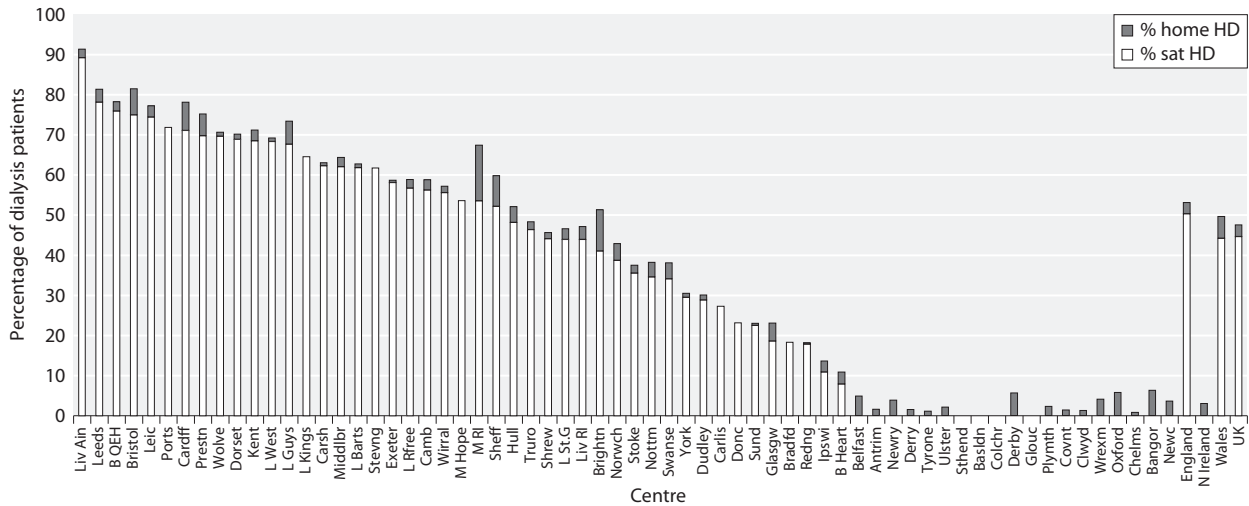
Centre	N	Haemodialysis			Peritoneal dialysis		
		Total	Home	Hospital	Satellite	CAPD	APD
Abrdn*	227	86.8	3.1	83.7	0.0	6.2	7.1
Airdrie*	180	92.8	0.0	92.8	0.0	3.3	3.9
Antrim**	140	89.9	1.4	88.5	0.0	1.4	8.6
B Heart	465	92.9	2.8	82.8	7.3	6.7	0.4
B QEH	1,024	84.5	2.0	18.4	64.2	6.5	9.1
Bangor	110	71.8	4.6	67.3	0.0	11.8	16.4
Basldn	171	83.4	0.0	83.4	0.0	6.5	10.1
Belfast	282	87.2	4.3	82.9	0.0	2.1	10.3
Bradfd	225	84.9	0.0	69.3	15.6	4.4	10.7
Brightn	415	79.3	8.2	38.6	32.5	9.9	10.8
Bristol	519	85.6	5.6	15.8	64.2	8.9	5.6
Camb	384	89.8	2.3	37.0	50.5	0.0	0.0
Cardff	612	83.0	5.9	18.1	59.0	17.0	0.0
Carlisle	81	81.5	0.0	59.3	22.2	6.2	12.4
Carsh	789	84.4	0.6	31.2	52.6	5.8	9.8
Chelms	155	76.1	0.7	75.5	0.0	17.4	6.5
Clwyd	83	91.6	1.2	90.4	0.0	6.0	2.4
Colchr	116	100.0	0.0	100.0	0.0	0.0	0.0
Covnt	429	80.9	1.2	79.7	0.0	19.1	0.0
D & Gall*	64	81.3	0.0	81.3	0.0	9.4	9.4
Derby	334	74.0	4.2	69.8	0.0	21.0	5.1
Derry**	69	95.6	1.5	94.1	0.0	0.0	4.4
Donc	154	78.6	0.0	60.4	18.2	3.9	17.5
Dorset	286	79.7	1.1	23.8	54.9	9.4	10.8
Dudley	212	73.6	0.9	51.4	21.2	26.4	0.0
Dundee*	210	86.7	0.0	86.7	0.0	2.4	11.0

**Table 2.16.** Continued

Centre	N	Haemodialysis				Peritoneal dialysis	
		Total	Home	Hospital	Satellite	CAPD	APD
Dunfn*	137	83.2	0.0	83.2	0.0	2.2	14.6
Edinb*	336	81.6	2.4	79.2	0.0	6.9	11.6
Exeter	404	82.7	0.5	34.2	48.0	10.2	7.2
Glasgw	683	91.4	4.1	70.3	17.0	6.4	2.2
Glouc	228	81.1	0.0	81.1	0.0	4.4	14.0
Hull	406	81.8	3.2	39.2	39.4	5.9	12.3
Inverns*	112	80.4	2.7	77.7	0.0	8.9	10.7
Ipswi	153	71.9	2.0	62.1	7.8	15.7	11.8
Kent	406	83.0	2.2	23.9	56.9	17.0	0.0
Klmarnk*	186	79.6	3.8	75.8	0.0	4.8	15.6
L Barts	900	79.1	0.8	29.4	48.9	8.1	12.8
L Guys	629	92.1	5.3	24.5	62.3	3.0	4.9
L Kings	480	82.3	0.0	29.2	53.1	5.8	11.9
L Rfree	719	90.3	2.0	37.1	51.2	2.5	7.2
L St.G	327	80.7	2.1	43.1	35.5	7.3	11.9
L West	1,313	97.3	0.8	29.9	66.5	1.1	1.6
Leeds	605	82.5	2.6	15.4	64.5	5.3	12.2
Leic	917	81.9	2.3	18.7	61.0	6.3	11.8
Liv Ain	146	95.2	2.1	8.2	84.9	1.4	3.4
Liv RI	492	81.9	2.6	43.3	36.0	7.3	10.6
M Hope	466	74.5	0.0	34.6	39.9	21.2	4.3
M RI	536	80.8	11.2	26.3	43.3	4.1	15.1
Middlbr	315	93.7	2.2	33.3	58.1	6.0	0.3
Newc	330	83.6	3.0	80.6	0.0	2.1	14.2
Newry**	115	89.6	3.5	86.1	0.0	0.0	10.4
Norwch	370	84.2	3.5	48.1	32.6	12.5	3.0
Nottm	519	78.6	2.9	48.6	27.2	6.6	14.8
Oxford	482	78.4	4.6	73.9	0.0	9.3	12.2
Plymth	169	75.2	1.8	73.4	0.0	16.0	8.9
Ports	571	83.4	0.0	23.5	59.9	16.6	0.0
Prestn	558	86.0	4.7	21.3	60.0	4.5	9.3
Redng	354	76.0	0.3	62.2	13.6	24.0	0.0
Sheff	672	89.3	6.9	35.9	46.6	10.7	0.0
Shrew	224	87.1	1.3	47.3	38.4	13.0	0.0
Stevng	408	92.9	0.0	35.5	57.4	7.1	0.0
Sthend	147	86.4	0.0	86.4	0.0	13.6	0.0
Stoke	373	80.7	1.6	50.4	28.7	5.4	13.9
Sund	206	86.4	0.5	66.5	19.4	5.8	7.8
Swanse	408	85.5	3.4	52.9	29.2	11.5	3.0
Truro	181	84.5	1.7	43.7	39.2	5.0	10.5
Tyrone**	101	89.0	1.0	88.0	0.0	0.0	11.0
Ulster**	97	97.9	2.1	95.8	0.0	0.0	2.1
Wirral	222	84.2	1.4	36.0	46.9	5.0	10.8
Wolve	351	85.5	0.9	25.1	59.5	14.3	0.3
Wrexm	100	73.0	3.0	70.0	0.0	26.0	1.0
York	206	92.2	1.0	64.1	27.2	7.3	0.5
<b>England</b>	<b>21,544</b>	<b>84.4</b>	<b>2.4</b>	<b>39.6</b>	<b>42.5</b>	<b>8.2</b>	<b>7.2</b>
<b>N Ireland**</b>	<b>804</b>	<b>90.2</b>	<b>2.8</b>	<b>87.5</b>	<b>0.0</b>	<b>1.0</b>	<b>8.7</b>
<b>Scotland*</b>	<b>2,135</b>	<b>86.6</b>	<b>2.5</b>	<b>78.6</b>	<b>5.4</b>	<b>5.6</b>	<b>7.8</b>
<b>Wales</b>	<b>1,313</b>	<b>82.6</b>	<b>4.5</b>	<b>42.7</b>	<b>35.4</b>	<b>14.9</b>	<b>2.5</b>
<b>UK</b>	<b>25,796</b>	<b>84.7</b>	<b>2.5</b>	<b>46.2</b>	<b>36.0</b>	<b>8.1</b>	<b>7.0</b>

\* All haemodialysis patients in centres in Scotland are shown as receiving treatment at home or in centre as no data is available regarding satellite dialysis (except Glasgow)

\*\* There are no satellite centres in Northern Ireland



**Fig. 2.8.** Percentage of prevalent haemodialysis patients treated with satellite or home haemodialysis by centre on 31/12/2009  
 \* Scottish centres (except Glasgow) excluded as information on satellite HD was not available

patients reducing to 2.5% of all dialysis patients in 2009 (figure 2.2 and table 2.16). There was a peak in the number of home haemodialysis patients in 1983, when 59% of HD patients were on home HD (about 2,200 patients, albeit fewer older patients were receiving RRT in this era). With the increase in the HD programme size, number of renal centres and provision of satellite HD there has been a continued fall in numbers of patients on home HD until 2003 when numbers levelled off and stabilised. In 2003 only 430 patients were on home HD and this number increased gradually over the years to 645 prevalent patients on home HD in 2009, accounting for 3.0% of the HD patient population.

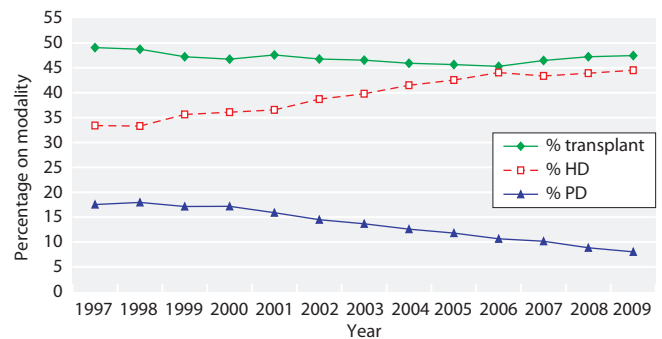
In 2009, the percentage of dialysis patients receiving home HD varied from 0% in 15 centres, to greater than 5% in 6 centres, namely Brighton 8.2%, Bristol 5.6%, Cardiff 5.9%, London Guys 5.3%, Manchester RI 11.2% and Sheffield 6.9% (table 2.16).

There was some evidence of a slow increase in home HD activity since the 2002 NICE guidance was issued encouraging increased rates of home haemodialysis treatment [5]. The number of prevalent dialysis patients on home HD increased from 2.1% in 2008 to 2.5% in 2009. This increase was mainly due to an increase in prevalent dialysis patients on home HD in Wales and Northern Ireland (1.7% in 2008 vs. 2.8% in 2009) at renal centres in Belfast, Derry and Ulster. Improved coding of patients on home HD in Wales resulted in an increase in the number of prevalent patients returned to the UKRR, in particular the 2008 numbers were an underestimate of the true number of patients in Cardiff on this treatment modality. Of the 15 centres with no

patients recorded to be on home haemodialysis in 2008, two centres (Derry 1.5% and Wolverhampton 0.9%) subsequently reported patients on this modality in 2009. Notable increases in the proportion of prevalent dialysis patients on home HD in 2008 compared with 2009 [3], were seen at Belfast (2.6% vs. 4.3%), Brighton (5.7% vs. 8.2%), Derry (0% vs. 1.5%), Kilmarnock (0.5% vs. 3.8%), Liverpool RI (1.2% vs. 2.6%) and Newry (1.8% vs. 3.5%). In 17 centres, the proportion of prevalent dialysis patients on home HD decreased slightly in 2009 compared with the previous year.

*Change in modality*

The relative proportion of RRT modalities in prevalent patients has changed dramatically over the past decade. The main features are depicted in figure 2.9, which describes a sustained decrease in the proportion of patients treated by PD after 2000. Possible explanations for this change include recently published evidence

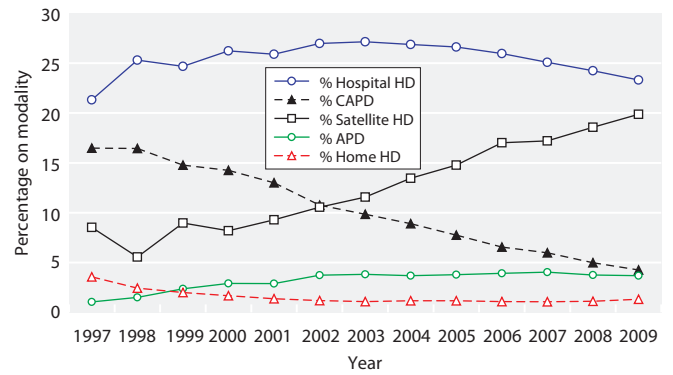


**Fig. 2.9.** Modality changes in prevalent RRT patients from 1997–2009



indicating that the equivalent survival demonstrated between HD and PD was only maintained for the first 2–3 years [6] and recent concerns regarding the risk of encapsulating peritoneal sclerosis which might result in patients being switched from PD to HD after a fixed time interval. Analysis of UKRR data has shown that this is not the explanation as the vintage of PD patients has not changed substantially over the last 8 years. The reduction in prevalent PD patients was due to a decrease in the number of new patients who were started on peritoneal dialysis in 2008 and 2009 and also to the declining proportion of patients starting RRT on peritoneal dialysis since 2001. The determinants of this pattern may be multi-factorial and include: an increase in HD capacity with the proliferation of satellite units, the effect of patient or physician choice regarding the treatment modality at start of RRT, the general health and fitness of patients starting RRT some of whom may be deemed less capable of undertaking PD independently and the rise in the number of patients receiving a live related transplant who may otherwise have gone onto PD. With the advent of assisted PD (more commonly used in France) [7] in conjunction with the increasing age of PD patients, there may be potential for some reversal or slowing in this decline.

The proportion of patients treated by HD was still increasing, although at a slower rate, and it may have begun to plateau from 2007 onwards. The proportion of patients with a functioning transplant had been on a slight downward trend but this has reversed since 2007, probably due to continued increases in living organ and non-heart beating donation [8]. It is worth noting that the proportion of patients with a functioning



**Fig. 2.10.** Detailed dialysis modality changes in prevalent RRT patients from 1997–2009

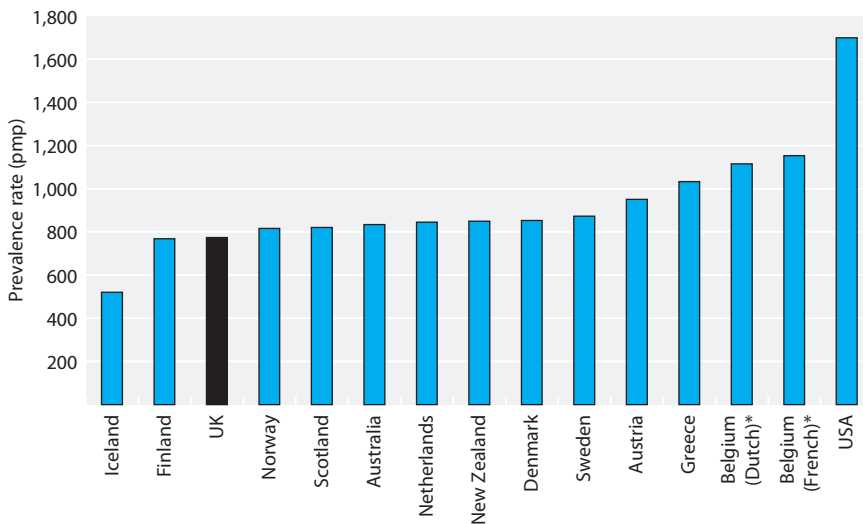
\* Scottish centres excluded as information on satellite HD is not available

transplant in 2009 was only marginally higher compared with 2008.

Figure 2.10 depicts in more detail the modality changes in the prevalent dialysis population during this time and highlights a sustained reduction in the proportion of patients treated by CAPD. There was a sustained increase in the proportion of prevalent HD patients treated at satellite units with a steady decline in hospital centre haemodialysis since 2004.

### International comparisons

Prevalence rates in the UK are similar to those in most other Northern European countries but lower than in Southern Europe and far lower than in the USA (figure 2.11).



**Fig. 2.11.** RRT Prevalence rates (pmp) by country (latest available data)

\* Data from USRDS, ERA-EDTA Registry and ANZDATA

## Summary

There continued to be growth across the UK in prevalent patients on RRT with national, regional and centre level variation. In general, areas with large ethnic minority populations had higher standardised prevalence ratios. There were increasing numbers of patients

on HD and with a functioning transplant and falling numbers on PD. Despite NICE guidance, increases in home HD have remained small and several centres are still unable to offer this modality.

Conflicts of interest: none

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