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UK Renal Registry 19th Annual Report: Chapter 13 Home Therapies in 2015: National and Centre-specific Analyses

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Keywords

Comorbidity · Deprivation · Dialysis · End stage renal disease · Established renal failure · Ethnicity · Haemodialysis · Home haemodialysis · Home therapies · Incidence · Peritoneal dialysis · Prevalence · Renal replacement therapy · Technique failure · Transplantation · Treatment modality

Summary

- The use of peritoneal dialysis (PD) has continued to fall, down to 5.9% of all renal replacement therapy (RRT) patients in 2015 compared to 7.2% in 2011, whilst home haemodialysis (HHD) is slightly more common at 2.0% in 2015 compared to 1.7% in 2011.
- There was significant variability between centres in the use of home dialysis: the probability of starting PD within the first year ranged from 6.3% to 49.7%, whilst the probability of starting HHD in the first year ranged from 0.02% to 6.6%.
- The median age differed substantially between modalities, with prevalent HHD patients the youngest (55 years), PD intermediate (64 years) and in-centre haemodialysis (ICHD) the oldest (68 years).
- Home dialysis was used less by ethnic minorities, with non-Whites making up 28% of prevalent ICHD, 22% of PD and 13% of HHD.
- The proportion of prevalent patients on each dialysis modality differed by level of social deprivation, with 16.3% and 9.8% of the least and most deprived quintiles of deprivation using PD, respectively. The difference for HHD is less marked (5.6% and 4.6% for the same quintiles).
- Prevalent HHD patients had the lowest comorbidity burden (66% with no comorbidity), PD patients had an intermediate burden (61% with no comorbidity) and ICHD had the highest burden (52% with no comorbidity).
- HHD patients were more likely to have had a previous transplant (40.3% vs 7.2%). More than a third of HHD patients (36.8%) had previously received PD, whilst only a quarter of PD patients (24.3%) had previously received any form of haemodialysis (HD).
- Current absolute levels of both PD and HHD were negatively associated with transplantation levels, but only changes in PD were negatively associated with changes in transplantation levels.
- There was significant variability between centres in PD outcomes, with the probability of switching to HD within one year of starting PD ranging from 0.0% to 31.6%.

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Introduction

Previous UK Renal Registry (UKRR) annual reports have described country and centre-specific rates for home therapies (HTs), home haemodialysis (HHD) and peritoneal dialysis (PD), within the incidence and prevalence chapters. Although the use of HTs has changed significantly over time, until now they have not been the focus of a chapter. Furthermore, there has not been an assessment of whether the differences in prevalence of HT use are significant, and aside from mortality as an outcome, there has not been an assessment of differences in outcome by centre.

This chapter describes the home dialysis patient population compared with the in-centre haemodialysis (ICHD) population. It describes the variability in use of HTs and outcomes between countries and centres and begins to explore the factors that may drive some of this variability.

Methods

Prevalence of home therapies

Prevalent patients are defined as all patients over 18 years old, alive and receiving renal replacement therapy (RRT) on 31st December 2015 at a UK adult renal centre. Data from Scottish centres were obtained from the Scottish Renal Registry. Data from Welsh, Northern Irish and English centres were collected by the UKRR. Cambridge renal centre (Addenbrooke's) was unable to submit the 2015 data at patient level by the closing date of the 2015 database and was therefore excluded from all analyses on prevalent 2015 RRT patients.

Home therapies refer to PD, including continuous ambulatory PD (CAPD) and automated PD (APD), and HHD. Analyses are presented for all HT patients, or separately for PD and HHD patients, compared to ICHD patients. When looking at prevalence of HTs and changes over time, prevalence of transplantation is also presented for comparison, because changes in one modality may affect the use of another. Prevalent cohorts from 2011–2015 were analysed to compare changes in use of different treatments over time or correlation between initial prevalence of HT and its change with time (Pearson correlation coefficients are given).

The default method for allocating patients to centres was based on the centre sending quarterly data. Recognising the role of secondary care renal services in ensuring access to HHD and transplantation where these are not available locally, HHD and transplanted patients, and PD patients living in the area covered by Colchester (which does not offer a PD programme) were allocated to centres according to postcode of residence (see appendix E: Methodology for Estimating Catchment Populations of Renal Centres in the UK for Dialysis Patients). Where this was done, it has been specified in the relevant result.

Characteristics of patients on home therapies

Age, gender, primary renal disease (PRD), ethnic origin and level of social deprivation were examined for prevalent dialysis patients, by treatment modality (see appendix H: Coding www.renalreg.org). For the purpose of this analysis, patients were grouped into White, South Asian, Black, Other and Unknown. Social deprivation is expressed as quintiles of the index of multiple deprivation (IMD) for England (https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015), Northern Ireland (https://www.nisra.gov.uk/publications/nothern-ireland-multiple-deprivation-measure-2010-soa-results), Scotland (http://www.gov.scot/Topics/Statistics/SIMD) and Wales (http://gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en). For both HHD and PD prevalent patients, time on a HT was defined as the time a patient had been consecutively on a HT up to 31st December 2015, ignoring changes to another dialysis modality lasting fewer than 30 days.

Differences in demographic characteristics between treatment groups in the UK dialysis population were tested using the Chi-squared and Kruskal-Wallis tests for categorical and continuous variables, respectively. Likelihood ratio tests were used to test for the presence of interactions between demographic factors such as age and gender in multivariable logistic regression models where the outcome was the use of HTs. For centre-level analyses, logistic regression models were used to estimate if the proportion of ethnic minority dialysis patients on HTs differed from the expected proportion (based on each centre's dialysis population). The percentages of PD (or HHD) patients from ethnic minorities versus the percentage of ICHD from ethnic minorities, at centre level, are presented in the form of scatterplots. Where there was evidence of significant differences, centres with a minimum of five ethnic minority patients on HHD or PD were highlighted in figures as outliers. These analyses were conducted using SAS 9.3.

Competing risk analyses

Cumulative incidence competing risk (CICR) methodology was used to analyse time to HT uptake and time to PD treatment failure rather than using Kaplan-Meier survival analysis. This approach was adopted because an important assumption of Kaplan–Meier analysis is that subjects experiencing censored observations should have, at any time, the same survival probability as those who continue to be followed until the event of interest or the end of study [1]. This means that, for example, censoring at death when looking at PD uptake would translate into assuming that patients who died had a similar chance to start PD as those still at risk (alive and on HD), which is usually not the case and therefore results from a Kaplan-Meier analysis would be biased. Therefore, the CICR methodology has been adopted and considered both transplantation and death as competing events in the survival analyses described below and from these analyses derived unbiased estimates of the cumulative incidence for the event of interest and competing events.

HT uptake To estimate the uptake of HTs in the UK, a cohort of incident patients starting RRT between 2011 and 2014 was identified. Adult patients were followed from their first day of RRT until 31st December 2015, with the event of interest being start of PD or start of HHD. The competing risks in these analyses were transplantation and death on ICHD. Patients were censored when they recovered renal function, stopped treatment without

recovery, were lost to follow-up or ended follow-up without having had the event. Separate analyses were conducted with censoring at transplantation to allow comparisons with international data from the ANZDATA report [2]. As the UKRR did not receive patient level data from Cambridge, patients starting RRT in this centre were followed-up until 31st December 2014 and those starting RRT during 2014 were excluded from analyses to allow a minimum potential follow-up of one year. Results from these analyses are presented as unadjusted cumulative incidence curves for the uptake of HHD and PD up to two years from RRT start and are shown by country, whilst the unadjusted one-year cumulative incidence of PD and HHD uptake, with confidence intervals (CIs), are shown by centre.

PD technique failure The 2007–2014 incident PD cohort was analysed to investigate PD technique failure. The cohort included only patients starting RRT on PD at day zero and remaining on PD for a minimum of 90 days. PD technique survival from day 90 until 31st December 2015 onwards was then analysed using CICR methodology. Cambridge patients were followed-up only to 31st December 2014 and those starting PD in 2014 were excluded from analyses. The event of interest was PD technique failure, defined as a change to haemodialysis (HD) lasting more than 30 days. Transplantation and death on PD were considered as competing risks and censoring was applied at recovery of function, end of treatment without recovery, loss to follow-up or end of follow-up. Results were presented as unadjusted cumulative incidence curves for PD technique failure up to five years from 90 days after PD start. The cumulative incidence curves of the two competing events (transplantation and death on PD) are shown by country, whilst the unadjusted one-year cumulative incidence of PD technique failure, with CIs, are shown by centre.

All competing risks analyses were performed using Stata 12.

Results

Prevalence of home therapies in the UK

UK- and country-level home therapy use and changes over time

At the end of 2015, there were 59,567 adults receiving RRT in the UK. Of these, 27,912 (46.9%) were on some form of dialysis. The prevalence rates for RRT overall and the individual dialysis modalities in 2015 are shown in table 13.1.

Expressed as a percentage of the prevalent UK dialysis population, 16.9% of patients were on a HT, with 4.2% on HHD and 12.7% on PD (5.4% on CAPD and 7.3% on APD).

HHD was used less frequently than PD and this pattern was consistent across the individual countries. Patients using HHD constituted 6.7% of all dialysis patients in Wales (30.2% of all HT), compared with 4.2%, 2.6% and 2.9% of all dialysis in England, Scotland and Northern Ireland, respectively (25.0%, 20.1% and 19.2% of all HT, respectively).

The coding for sub-types of PD modality has not been extensively validated, so some caution is warranted in interpreting these data. This is likely to be a particular issue for assisted PD. That accepted, APD appeared to be more commonly used than CAPD, and the difference was particularly marked in Northern Ireland.

In an analysis stratified according to country and age group (figure 13.1), HT use followed a similar pattern

Table 13.1. Prevalence of dialysis in the UK, by country[a], on 31st December 2015

	England[c]	N Ireland	Scotland	Wales	UK[c]
Number of prevalent patients on RRT	49,972	1,679	4,828	3,088	59,567
Number of prevalent patients on dialysis	23,695	696	2,138	1,383	27,912
Total estimated population, mid-2015 (millions)[b]	54.8	1.9	5.4	3.1	65.1
Prevalence rate dialysis (pmp) (HT + in-centre)	432	376	398	446	429
Prevalence rate HHD (pmp)	18	11	10	30	18
Prevalence rate PD (pmp)	55	45	41	69	54
Prevalence rate CAPD (pmp)	24	3	14	34	23
Prevalence rate APD (pmp)	31	43	27	36	31
Prevalence rate HT (pmp)	74	56	51	99	72
95% CI of the prevalence rate HT (pmp)	71–76	45–67	45–57	88–110	70–75

RRT – renal replacement therapy; pmp – per million population; HT – home therapy; HHD – home haemodialysis; PD – peritoneal dialysis; CAPD – continuous ambulatory PD; APD – automated PD; CI – confidence interval

[a]Based on postcode of residency

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

[c]Prevalent numbers do not include Cambridge patients

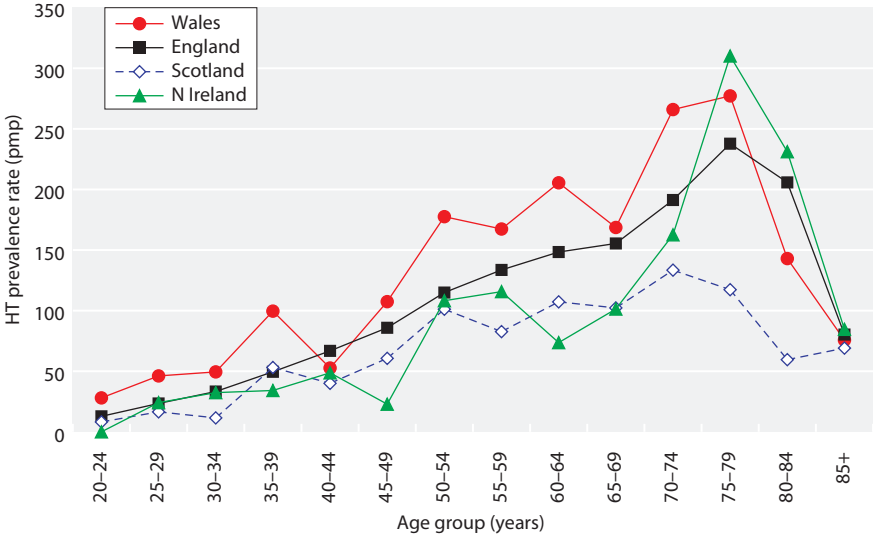

Fig. 13.1. Prevalence rate of HTs, per million population by age group and country*, on 31st December 2015
*Based on postcode of residency

to that seen for the dialysis population as a whole, with prevalence increasing with age (data not shown).

The overall use of HTs in the total UK RRT population fell by 1.0% between 2011–2015 (appendix 1, table 13.7). This fall was driven by the change in PD use (−1.2%) over this time, with HHD growing by 0.3%. Roughly the same pattern was evident throughout the countries, although Scotland and Northern Ireland both experienced a small fall in HHD use (−0.2% and −0.8% respectively). As changes in one modality may affect the use of another (e.g. transplantation rates may affect PD use), data on all the modalities are presented. Transplantation grew significantly over this time period, but the UK change of 3.6% masks differences between the countries: numbers of transplants in Wales grew by 2.9%, in England by 3.3%, in Scotland by 4.9% and in Northern Ireland by 11.5%.

Centre-level home therapy use and changes over time

The breakdown of modality use in prevalent dialysis patients between centres is shown in table 13.2. Data from this table are also displayed, ordered by increasing

Table 13.2. Proportion of prevalent RRT patients using HTs, ICHD and transplantation, by country and centre*, on 31st December 2015

Centre	RRT patients *N*	% of prevalent RRT patients				Ratio HT/dialysis
		HT	ICHD	Tx	HT + Tx	
England						
B Heart	822	7.8	49.5	42.7	50.5	0.14
B QEH	1,917	9.6	49.9	40.5	50.1	0.16
Basldn	358	10.3	45.3	44.4	54.7	0.19
Bradfd	628	4.3	36.0	59.7	64.0	0.11
Brightn	1,077	10.7	36.1	53.2	63.9	0.23
Bristol	1,341	5.5	37.5	57.0	62.5	0.13
Carlis	280	13.6	28.9	57.5	71.1	0.32
Carsh	1,788	8.2	44.0	47.9	56.0	0.16
Chelms	348	7.8	41.4	50.9	58.6	0.16
Colchr	226	4.4	53.1	42.5	46.9	0.08
Covnt	899	11.2	37.6	51.2	62.4	0.23
Derby	627	17.9	33.2	49.0	66.8	0.35
Donc	396	9.6	43.2	47.2	56.8	0.18
Dorset	738	7.3	38.1	54.6	61.9	0.16
Dudley	379	19.8	42.0	38.3	58.0	0.32
Exeter	1,049	8.2	41.0	50.8	59.0	0.17

Table 13.2. Continued

Centre	RRT patients *N*	% of prevalent RRT patients				Ratio HT/dialysis
		HT	ICHD	Tx	HT + Tx	
Glouc	524	8.6	42.6	48.9	57.4	0.17
Hull	931	9.3	37.6	53.1	62.4	0.20
Ipswi	345	8.7	41.4	49.9	58.6	0.17
Kent	1,135	7.0	35.9	57.1	64.1	0.16
L Barts	2,190	10.4	44.9	44.7	55.1	0.19
L Guys	1,318	4.2	47.6	48.2	52.4	0.08
L Kings	1,321	8.3	41.9	49.7	58.1	0.17
L Rfree	1,837	9.6	37.7	52.7	62.3	0.20
L St.G	808	6.9	41.3	51.7	58.7	0.14
L West	3,114	2.9	45.8	51.3	54.2	0.06
Leeds	1,453	5.4	33.7	61.0	66.3	0.14
Leic	2,251	7.4	37.7	54.9	62.3	0.16
Liv Ain	390	13.8	42.3	43.8	57.7	0.25
Liv Roy	956	10.1	36.3	53.6	63.7	0.22
M RI	1,337	8.2	35.6	56.2	64.4	0.19
Middlbr	911	4.2	37.1	58.7	62.9	0.10
Newc	952	7.1	30.6	62.3	69.4	0.19
Norwch	740	8.4	42.3	49.3	57.7	0.17
Nottm	1,012	11.4	35.5	53.2	64.5	0.24
Oxford	1,485	7.3	28.3	64.4	71.7	0.21
Plymth	474	8.9	27.4	63.7	72.6	0.24
Ports	1,691	7.4	36.1	56.5	63.9	0.17
Prestn	1,354	6.9	39.4	53.7	60.6	0.15
Redng	937	8.1	31.7	60.2	68.3	0.20
Salford	1,278	8.2	30.0	61.8	70.0	0.22
Sheff	1,235	7.9	40.3	51.7	59.7	0.16
Shrew	442	13.6	40.7	45.7	59.3	0.25
Stevng	1,026	3.8	47.4	48.8	52.6	0.07
Sthend	303	6.6	40.9	52.5	59.1	0.14
Stoke	831	12.4	36.2	51.4	63.8	0.25
Sund	507	4.1	43.2	52.7	56.8	0.09
Truro	411	7.8	36.7	55.5	63.3	0.17
Wirral	436	7.3	40.1	52.5	59.9	0.15
Wolve	691	15.5	42.7	41.8	57.3	0.27
York	475	8.2	31.4	60.4	68.6	0.21
Northern Ireland						
Antrim	276	8.7	43.1	48.2	56.9	0.17
Belfast	589	5.1	29.5	65.4	70.5	0.15
Newry	245	10.2	32.7	57.1	67.3	0.24
Ulster	247	3.6	42.5	53.8	57.5	0.08
West NI	324	4.9	35.5	59.6	64.5	0.12
Scotland						
Abrdn	525	5.9	40.6	53.5	59.4	0.13
Airdrie	511	3.7	38.2	58.1	61.8	0.09
D & Gall	137	10.2	37.2	52.6	62.8	0.22
Dundee	426	4.5	43.4	52.1	56.6	0.09
Edinb	740	4.6	37.6	57.8	62.4	0.11
Glasgw	1,580	4.9	36.6	58.5	63.4	0.12
Inverns	254	6.7	35.4	57.9	64.6	0.16
Klmarnk	355	13.0	35.5	51.5	64.5	0.27
Krkcldy	306	6.5	49.0	44.4	51.0	0.12

Table 13.2. Continued

Centre	RRT patients *N*	% of prevalent RRT patients				Ratio HT/dialysis
		HT	ICHD	Tx	HT + Tx	
Wales						
Bangor	189	17.5	36.5	46.0	63.5	0.32
Cardff	1,481	7.2	31.7	61.2	68.3	0.18
Clwyd	185	13.0	41.6	45.4	58.4	0.24
Swanse	888	11.0	37.0	51.9	63.0	0.23
Wrexm	289	14.2	37.0	48.8	63.0	0.28
England	**49,974**	**8.1**	**39.4**	**52.5**	**60.6**	**0.17**
N Ireland	**1,681**	**6.2**	**35.3**	**58.5**	**64.7**	**0.15**
Scotland	**4,834**	**5.7**	**38.6**	**55.6**	**61.4**	**0.13**
Wales	**3,032**	**10.0**	**34.7**	**55.4**	**65.3**	**0.22**
UK	**59,521**	**7.9**	**39.0**	**53.1**	**61.0**	**0.17**

RRT – renal replacement therapy; HT – home therapy; ICHD – in-centre haemodialysis; Tx – transplant
*Based on postcode of residency

rate of combined transplant/HT use (figure 13.2). Across the whole of the UK, 7.9% of the RRT population were using a HT, but rates between centres varied widely from 2.9% to 19.8%. Rates for combined transplant/HT use also varied widely between centres, from 46.9% to 72.7%. Due to this variability, incidence rates for HTs between centres, and their relationship with transplant rates, are explored later in this chapter.

As numerous centres have specifically sought to increase HHD and/or PD, the change in use of these modalities over the last five years is displayed in appendix 1, table 13.7. There is an association between the level of PD use and the change in that level over time, with higher baseline (2011) levels of PD use being more likely to be associated with a fall in PD use over time – there is a correlation of −0.53 between the proportion of RRT patients on PD in 2011 and the change in the proportion of RRT patients on PD from 2011–2015. Despite the overall fall, some centres have managed to increase PD use (e.g. Clwyd, Wrexham, Liverpool Aintree and Carlisle). However, these centres started with low to medium levels of PD use in 2011.

The changes in HHD use range from a fall of 2.1% to an increase of 3.3% from 2011–2015. There is no

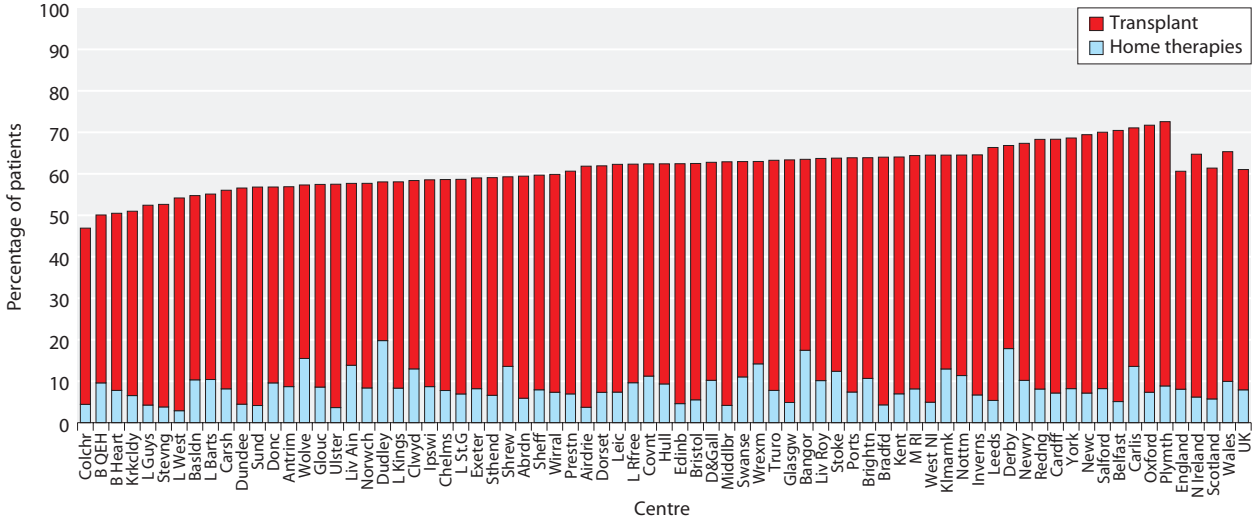

Fig. 13.2. Centre specific proportion of prevalent RRT patients* using a HT or transplantation on 31st December 2015
*Based on postcode of residency

apparent association between the 2011 HHD use and the subsequent change, but the overall HHD use rate was much lower than for PD.

It has also been suggested that levels of transplantation may affect rates of HTs and this is borne out in simple correlations. Levels of PD use in 2011 correlate negatively with levels of transplantation in 2011 ($r = -0.35$) and five-year changes in PD use correlate negatively with five-year changes in transplantation ($r = -0.44$). Levels of HHD use in 2011 also correlate negatively with levels of transplantation in 2011 ($r = -0.42$), but there was no significant association between changes in HHD and transplantation during the five-year follow up ($r = -0.02$). It is not clear to what extent these correlations with transplantation reflect a lower probability of starting home dialysis, or a higher probability of stopping home dialysis due to transplantation.

There was some evidence that quality improvement initiatives can affect HT use. Between 2010 and 2012, the West Midlands introduced a commissioning target to increase HT uptake, with evidence that this led to an increase in HT rates [3]. This can also be seen in the UKRR data. The average rates of HHD and PD in the Midlands grew from 1.6% and 10.2% in 2010, respectively, to 3.3% and 11.4% in 2012, respectively. However, this growth appears not to have continued, with the average HHD and PD rates stable or slightly reduced in 2015 at 3.4% and 9.4%, respectively.

Home therapies patient demographics: UK, country and centre-level

Age

The median age of prevalent UK HT patients was 61 years (table 13.3), considerably younger than the ICHD median age of 68 years. As has been noted previously, the HHD population was younger than the PD population, with a median age of 55 and 64 years respectively. Practice patterns such as the use of assisted PD may influence the age of patients using different modalities between centres, so the median age for patients using

Table 13.3. Median age and gender of prevalent dialysis patients, by country and centre, on 31st December 2015

Centre	HT patients *N*	Median age (years)				% male	
		HHD	PD	HT	ICHD	HT	ICHD
England							
B Heart	64	53	67	64	68	62.5	60.4
B QEH	192	49	60	58	66	61.5	57.7
Basldn	36		58	57	68	58.3	64.2
Bradfd	25	49	53	52	63	40.0	58.0
Brightn	112	58	66	64	69	67.9	66.6
Bristol	79	58	68	63	70	58.2	64.4
Carlis	38	n/a	70	70	70	63.2	69.1
Carsh	142	57	66	63	69	54.9	63.8
Chelms	27	n/a	70	70	69	63.0	71.5
Colchr	0				73	n/a	68.3
Covnt	102	57	65	63	68	65.7	59.2
Derby	116	63	63	63	68	61.2	59.1
Donc	33	64	69	66	69	72.7	58.5
Dorset	50	64	73	70	72	62.0	63.1
Dudley	70	56	61	59	68	51.4	67.9
Exeter	86	42	68	67	72	61.6	65.1
Glouc	42	69	67	68	72	52.4	65.5
Hull	84	58	65	62	69	60.7	68.6
Ipswi	38	n/a	69	69	70	65.8	70.6
Kent	76	54	64	63	70	63.2	64.0
L Barts	230	50	61	60	62	65.7	59.5
L Guys	82	52	62	54	62	46.3	60.3
L Kings	102	54	59	57	64	61.8	62.1
L Rfree	175	58	64	63	69	52.0	62.0
L St.G	53	53	71	70	66	60.4	55.5
L West	89	58	65	62	66	53.9	60.6
Leeds	81	49	53	52	65	56.8	59.9
Leic	168	59	66	61	68	63.1	61.8

Table 13.3. Continued

Centre	HT patients *N*	Median age (years)				% male	
		HHD	PD	HT	ICHD	HT	ICHD
Liv Ain	48	54	60	58	70	64.6	63.0
Liv Roy	104	53	61	59	62	56.7	60.8
M RI	115	51	66	57	67	60.0	57.6
Middlbr	37	50	54	51	68	56.8	62.1
Newc	70	49	69	59	65	67.1	61.9
Norwch	63	67	64	65	71	63.5	55.6
Nottm	111	51	65	61	72	55.9	56.8
Oxford	113	57	66	62	68	64.6	60.2
Plymth	42	58	64	63	71	71.4	63.1
Ports	128	52	65	59	69	66.4	64.2
Prestn	93	59	68	63	67	69.9	59.3
Redng	71	45	68	66	70	64.8	62.3
Salford	100	58	62	61	64	62.0	62.4
Sheff	102	56	65	61	68	63.7	60.1
Shrew	55	58	58	58	70	67.3	60.6
Stevng	39	57	68	59	69	69.2	62.1
Sthend	19		70	69	69	63.2	63.7
Stoke	108	55	69	65	69	63.0	57.5
Sund	20		65	63	66	50.0	60.3
Truro	32	54	64	64	70	50.0	64.2
Wirral	31	51	66	59	69	58.1	56.0
Wolve	102	52	63	63	66	63.7	69.8
York	40	50	65	60	68	75.0	61.1
Northern Ireland							
Antrim	22		61	61	74	63.6	70.0
Belfast	33	54	67	61	70	48.5	60.9
Newry	25	55	75	74	66	72.0	52.9
Ulster	8		69	66	74	62.5	54.3
West NI	16	56	62	58	72	56.3	58.0
Scotland							
Abrdn	31	47	53	53	66	48.4	61.5
Airdrie	16	n/a	60	60	65	37.5	54.4
D & Gall	14	49	69	52	68	64.3	62.8
Dundee	19		64	64	68	57.9	57.8
Edinb	33	51	63	59	60	48.5	62.2
Glasgw	81	57	62	60	66	60.5	57.5
Inverns	16	51	59	55	67	68.8	54.4
Klmarnk	47	67	61	62	64	68.1	61.9
Krkcldy	20	n/a	63	63	69	40.0	52.0
Wales							
Bangor	30	55	69	65	69	73.3	65.2
Cardff	107	58	66	63	69	64.5	63.8
Clwyd	27	55	65	65	68	66.7	59.7
Swanse	98	57	62	61	73	59.2	65.1
Wrexm	42	45	58	53	73	61.9	60.8
England	**4,035**	**55**	**64**	**61**	**68**	**61.2**	**61.5**
N Ireland	**104**	**55**	**69**	**64**	**72**	**59.6**	**59.9**
Scotland	**277**	**56**	**61**	**60**	**66**	**56.7**	**58.2**
Wales	**304**	**55**	**64**	**62**	**70**	**63.5**	**63.7**
UK	**4,720**	**55**	**64**	**61**	**68**	**61.1**	**61.3**

HT – home therapy; HHD – home haemodialysis; PD – peritoneal dialysis; ICHD – in-centre haemodialysis
n/a – no patients on this treatment; Blank cells – data for only one to two patients

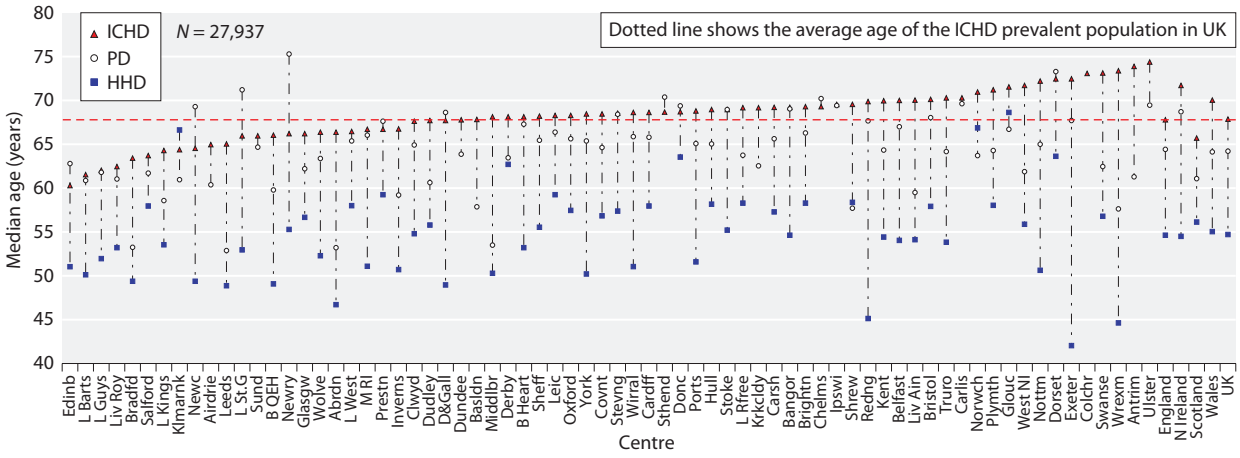

Fig. 13.3. Median age in prevalent dialysis population, by dialysis modality and centre, on 31st December 2015

each modality is shown by centre in figure 13.3. The same general pattern is evident, with HHD having the youngest population and ICHD having the oldest, but there do appear to be exceptions.

Caution is necessary when interpreting differences in ages between centres, particularly where centres have low numbers of patients on HTs. However, there does appear to be some difference in the median age of PD patients, ranging from 52.9 in Leeds to 75.3 years in Newry. Looking only at centres with larger patient numbers on HTs, Wrexham, Shrewsbury, Leeds and Swansea had PD populations that were markedly younger than their ICHD populations (difference >10 years). Conversely, London St. George's and Newcastle were unusual in having PD populations with a median age 5.3 and 4.8 years older than their ICHD populations, respectively.

Differences in the HHD population were less clear due to the smaller patient numbers. Despite this, there do appear to be differences in patient ages between centres, with median ages ranging from 42.0 in Exeter to 68.6 in Gloucester. Looking just at the larger HHD populations, Derby had a median age for HHD of 62.7 years (compared with ICHD 68.1 years), whilst Portsmouth had a median of 51.6 years (compared with ICHD 68.8 years). Together, these differences do raise the possibility that non-patient factors may be having an impact on the age of patients who use HTs.

Gender

Across the UK, the gender of patients on ICHD and HT modalities was similar, with 61.3% and 61.1% of these groups being male respectively (table 13.3). The distribution of HT use according to gender at the individual country level was largely similar, but some large variation was observed by centre with for example, Dudley using HT less than expected in males and Preston using HT more than expected in males (table 13.3).

As shown in figure 13.4, there is a suggestion of an interaction between age and gender in the use of different dialysis modalities. In prevalent dialysis patients, younger

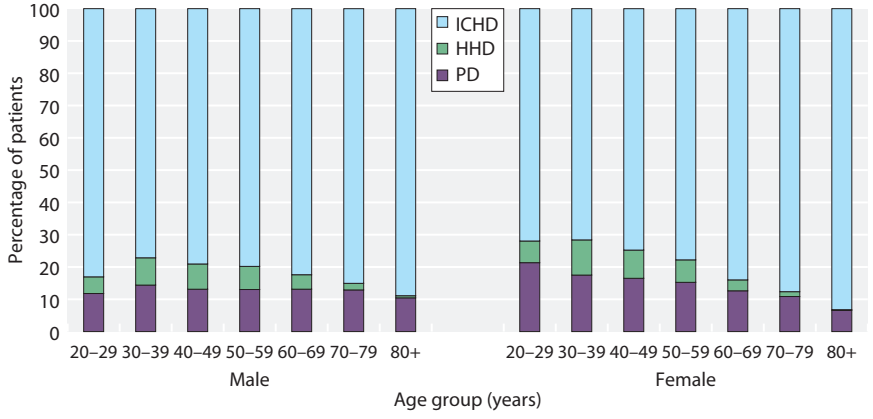

Fig. 13.4. Percentage of prevalent dialysis patients, by age and gender, on 31st December 2015

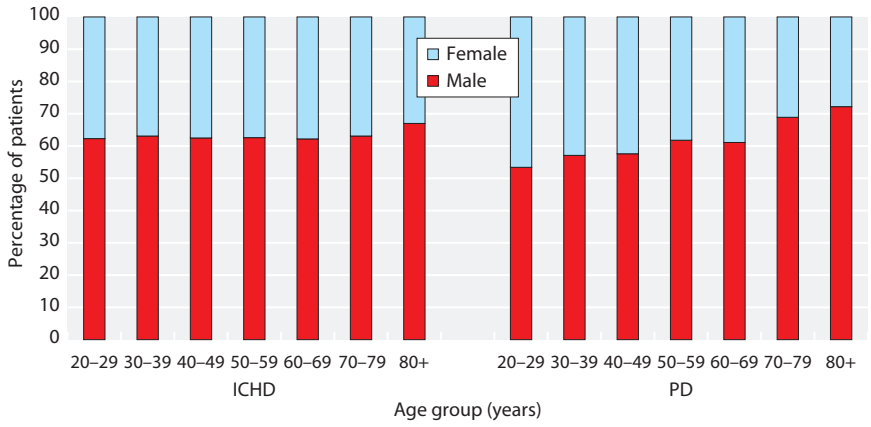

Fig. 13.5. Dialysis modality at start, by age and gender, in the incident ICHD and PD dialysis* cohort, 2011–2015
*Patients starting on HHD are excluded because they comprise <1% of the cohort ($N = 69$)

females appear slightly more likely to use a HT than males, whilst a similar or lower proportion of older females used a HT compared to older males (age-gender interaction p-value <0.001). Most of this difference appears to be through differences in PD use. This difference has been further explored in incident patients, using the percentage of patients starting dialysis on either PD or ICHD who are male/female by age (figure 13.5). The same pattern emerged, with females over-represented in the younger age group on PD compared to ICHD, and under-represented in the older PD patients (age-gender interaction p-value <0.0001).

Ethnicity

A summary of patient ethnicity by centre on 31st December 2015 is presented in table 13.4. There appears to be a systematic difference in the proportion of patients using HTs by ethnicity. For the England, Wales and Northern Ireland ICHD population, 28% of the patients are from a non-White background, compared to only 13% of patients using HHD. PD appears to be intermediate between HHD and ICHD with 22% of patients described as non-White.

This also appears to vary between centres, but at the centre level the proportion of dialysis patients from

Table 13.4. Ethnicity of prevalent dialysis patients, by dialysis modality, country* and centre, on 31st December 2015

Centre	HHD patients *N*	HHD % ethnicity		PD patients *N*	PD % ethnicity		ICHD % ethnicity	
		non-White	White		non-White	White	non-White	White
England								
B Heart	13	31	69	51	22	78	45	55
B QEH	50	28	72	142	32	68	48	52
Basldn				35	14	86	16	84
Bradfd	7	0	100	18	39	61	51	49
Brightn	45	2	98	64	11	89	9	91
Bristol	22	5	95	54	4	96	13	87
Carlis	0	n/a	n/a	38	0	100	0	100
Carsh	29	14	86	110	24	76	36	64
Chelms	0	n/a	n/a	23	13	87	9	91
Covnt	16	13	88	86	29	71	25	75
Derby	38	18	82	78	14	86	19	81
Donc	10	10	90	23	9	91	5	95
Dorset	7	0	100	43	9	91	3	97
Dudley	13	8	92	57	19	81	13	87
Exeter	5	0	100	80	3	98	1	99
Glouc	5	0	100	37	11	89	4	96
Hull	8	0	100	76	3	97	4	96
Ipswi	0	n/a	n/a	35	26	74	13	87
Kent	16	6	94	60	7	93	5	95

Table 13.4. Continued

Centre	HHD patients *N*	HHD % ethnicity non-White	HHD % ethnicity White	PD patients *N*	PD % ethnicity non-White	PD % ethnicity White	ICHD % ethnicity non-White	ICHD % ethnicity White
L Barts	23	48	52	207	71	29	73	27
L Guys	49	29	71	33	30	70	54	46
L Kings	12	33	67	90	50	50	57	43
L Rfree	20	50	50	151	56	44	59	41
L St.G	4	25	75	46	41	59	69	31
L West	18	39	61	71	54	46	69	31
Leeds	23	4	96	58	12	88	24	76
Leic	60	10	90	102	18	82	32	68
Liv Ain	9	22	78	38	0	100	3	97
Liv Roy	37	3	97	63	8	92	10	90
M RI	48	35	65	65	26	74	37	63
Middlbr	15	7	93	22	0	100	9	91
Newc	24	4	96	46	7	93	11	89
Norwch	25	0	100	38	3	97	3	97
Nottm	29	14	86	82	10	90	19	81
Oxford	18	6	94	92	16	84	23	77
Plymth	7	0	100	35	6	94	3	97
Ports	53	6	94	65	5	95	9	91
Prestn	40	3	98	53	8	92	19	81
Redng	5	0	100	64	30	70	26	74
Salford	15	7	93	85	22	78	25	75
Sheff	43	9	91	59	7	93	14	86
Shrew	23	4	96	32	13	88	7	93
Stevng	23	26	74	16	13	88	26	74
Sthend				17	18	82	13	87
Stoke	33	3	97	73	3	97	9	91
Sund				18	6	94	5	95
Truro	10	0	100	22	5	95	1	99
Wirral	12	8	92	19	0	100	5	95
Wolve	23	13	87	78	36	64	35	65
York	11	0	100	28	4	96	5	95
Northern Ireland								
Antrim				20	10	90	0	100
Belfast	9	0	100	18	0	100	4	96
Newry	3	0	100	22	0	100	0	100
Ulster				6	17	83	5	95
West NI	4	0	100	12	0	100	0	100
Wales		1	99	211	8	92	5	95
Bangor	15	0	100	15	0	100	3	97
Cardff	28	0	100	77	12	88	9	91
Clwyd	7	0	100	20	5	95	4	96
Swanse	36	3	97	62	5	95	3	97
Wrexm	5	0	100	37	8	92	0	100
England	**1,001**	**14**	**86**	**2,978**	**23**	**77**	**30**	**70**
N Ireland	**20**	**0**	**100**	**78**	**4**	**96**	**2**	**98**
Wales	**91**	**1**	**99**	**211**	**8**	**92**	**5**	**95**
E, W & NI*	**1,112**	**13**	**87**	**3,267**	**22**	**78**	**28**	**72**

HHD – home haemodialysis; PD – peritoneal dialysis; ICHD – in-centre haemodialysis
n/a – no patients on this treatment; Blank cells – data for only one to two patients
*Scotland not included because of low completeness of ethnicity data

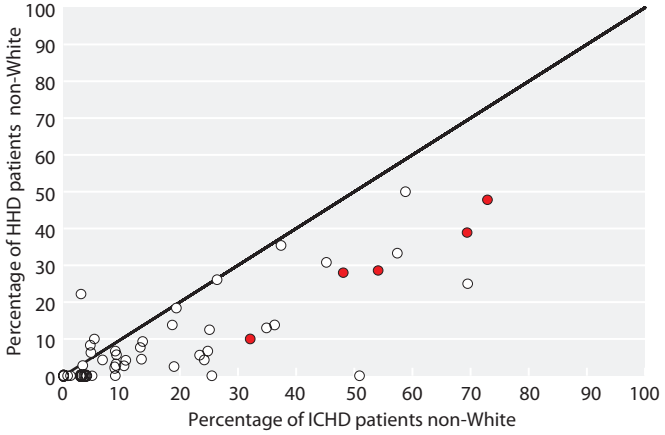

Fig. 13.6A. Percentage of non-White prevalent HHD patients relative to non-White ICHD patients on 31st December 2015
Centres with a lower than expected percentage of ethnic minorities on HHD are highlighted (shown as bold dots) only if they had a minimum of five non-White patients on HHD

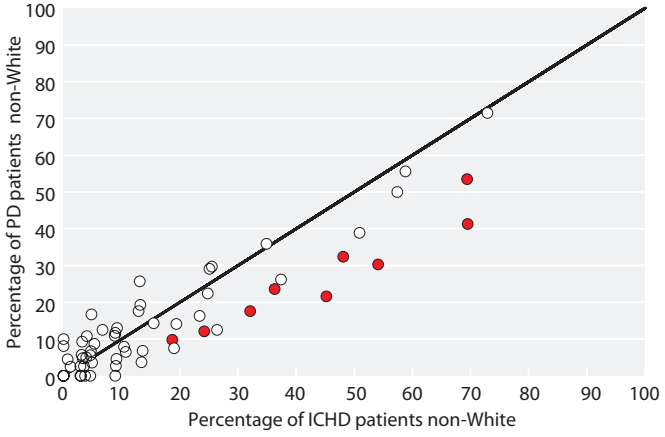

Fig. 13.6B. Percentage of non-White prevalent PD patients relative to non-White ICHD patients on 31st December 2015
Centres with a lower than expected percentage of ethnic minorities on PD are highlighted (shown as bold dots) only if they had a minimum of five non-White patients on PD

ethnic minorities varied widely. The data are therefore presented again in figures 13.6A and B for the HHD and PD groups respectively, highlighting centres where there were sufficient patients to have reasonable confidence that the differences were not due to chance. This suggests that there may be real differences in access to HTs for patients from non-White ethnic groups, though this is still confounded by other factors such as social deprivation.

Primary renal disease

The distribution of primary renal disease (PRD) by dialysis modality in prevalent dialysis patients is shown in table 13.5. There is missing PRD data in only 4.6% of patients. There are statistically significant differences in PRD by modality, particularly for diabetic nephropathy in HHD patients, where only 12.3% of patients have this PRD, compared to 22.5% in PD patients and 25.4% in ICHD patients. The distribution of PRD causes in ICHD patients more closely reflects PD patients than HHD patients.

Table 13.5. PRD in prevalent dialysis patients, by dialysis modality, on 31st December 2015

PRD	% HHD	% PD	% ICHD	% overall dialysis
Aetiology uncertain	13.7	17.0	17.0	16.8
Diabetes	12.3	22.5	25.4	24.5
Glomerulonephritis	26.1	16.5	14.6	15.3
Hypertension	4.5	8.7	7.7	7.7
Other	19.8	14.7	15.7	15.7
Polycystic kidney	9.2	7.3	6.0	6.3
Pyelonephritis	12.0	7.7	8.3	8.4
Renal vascular disease	2.4	5.5	5.4	5.3
Missing	1.8	4.7	3.9	3.9

PRD – primary renal disease; HHD – home haemodialysis; PD – peritoneal dialysis; ICHD – in-centre haemodialysis
Excluded centre with ⩾40% PRD 'aetiology uncertain' (Colchester)

Social deprivation

Previous work has demonstrated that patients who are less socioeconomically deprived are more likely to be on HHD [4], so this finding was retested. Increasing deprivation was still associated with a decreasing proportion of the dialysis population using HTs (figure 13.7, chi-squared test p-value <0.001 for deprivation effect). On 31st December 2015, PD was used by 16.3% and 9.8% of prevalent dialysis patients from deprivation quintiles one and five respectively. The difference was less striking for HHD, with 5.0% and 3.4% of patients using HHD from quintiles one and five respectively. To look at the effect of social deprivation independent of ethnicity, the same analysis was done within the White population (data not shown). This revealed the same pattern of decreased HT use with increasing deprivation and the same dose-response pattern.

To control for the possibility that informative censoring was affecting the prevalence data, the association between deprivation and HT use was explored in an incident UK dialysis cohort (January 2014–September 2015). The cohort was curtailed in September 2015 to allow modality at day 90 to be determined. At day 90, the proportion of incident RRT patients on PD was 22.7% and 16.7% in the least and most deprived quintiles

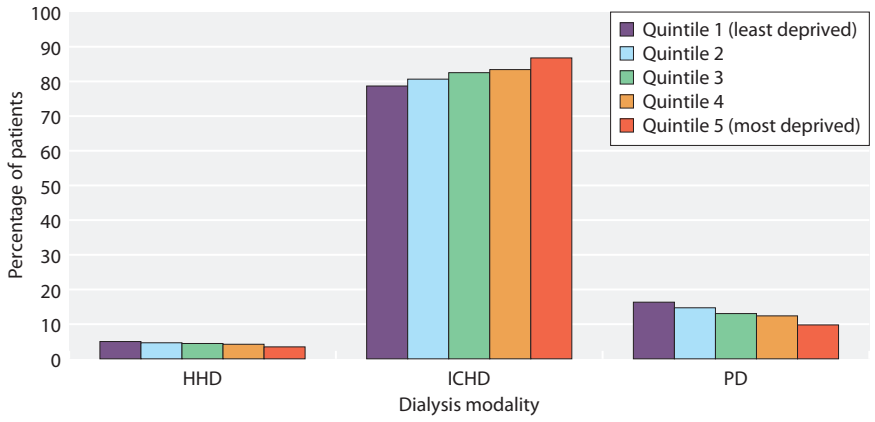

Fig. 13.7. Level of social deprivation in the prevalent dialysis population, by dialysis modality, on 31st December 2015

respectively. This pattern was also seen for transplantation by day 90, with 12.9% and 7.0% of patients from the least and most deprived quintiles respectively. Both of these trends have a clear dose-response pattern. A sensitivity analysis excluding late referrals gives consistent results. It therefore seems reasonable to conclude that increasing deprivation was associated with decreasing HT use, and that this is consistent when accounting for ethnicity, early referrals and early changes in modality.

Comorbidities

Using centres with >70% completeness for comorbidity data, the distribution of comorbidities within the prevalent dialysis population is shown in table 13.6 and figure 13.8. The highest comorbidity was found in the

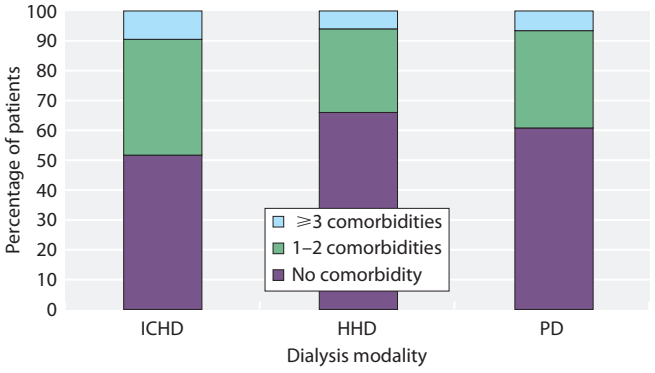

Fig. 13.8. Comorbidity of prevalent dialysis patients*, stratified by dialysis modality, on 31st December 2015

* Only data from centres with ⩾70% completeness for comorbidity data are included

Table 13.6. Comorbidity burden in the prevalent dialysis population, by dialysis modality and centre*, on 31st December 2015

Centre	Dialysis *N*	HT *N*	% no comorbidity			% 1–2 comorbidities			% ⩾3 comorbidities		
			HHD	PD	ICHD	HHD	PD	ICHD	HHD	PD	ICHD
B Heart	471	64	55.6	64.7	54.1	44.4	31.4	41.0	0.0	3.9	4.9
B QEH	1,149	192	86.0	76.1	67.8	14.0	23.9	28.2	0.0	0.0	4.0
Bangor	99	30	40.0	40.0	32.4	26.7	53.3	63.2	33.3	6.7	4.4
Basldn	198	36	n/a	55.2	47.1	n/a	37.9	46.4	n/a	6.9	6.4
Bradfd	251	25	85.7	77.8	47.7	0.0	11.1	40.5	14.3	11.1	11.7
Bristol	582	79	66.7	63.6	51.5	26.7	34.1	37.5	6.7	2.3	11.0
Cardff	576	107	55.6	53.9	42.9	33.3	39.5	44.4	11.1	6.6	12.7
Clwyd	104	27	57.1	56.3	35.3	42.9	25.0	48.5	0.0	18.8	16.2
Derby	324	116	43.2	47.5	47.5	54.1	44.1	43.8	2.7	8.5	8.6
Donc	204	33	77.8	56.3	59.7	11.1	37.5	34.9	11.1	6.3	5.4
Dorset	332	50	71.4	48.8	53.1	28.6	44.2	38.2	0.0	7.0	8.7
Exeter	516	86	60.0	66.7	47.5	20.0	26.4	38.7	20.0	6.9	13.8
Hull	434	84		57.5	53.6		39.7	41.0		2.7	5.4
Kent	484	76	62.5	80.0	61.5	31.3	20.0	35.3	6.3	0.0	3.2
L Barts	1,214	230	84.2	70.4	60.1	15.8	25.4	32.6	0.0	4.2	7.4
L Guys	709	82	61.2	63.6	54.5	32.7	33.3	38.8	6.1	3.0	6.7
L Kings	656	102	58.3	61.1	53.6	41.7	32.2	38.1	0.0	6.7	8.3

Table 13.6. Continued

Centre	Dialysis *N*	HT *N*	% no comorbidity			% 1–2 comorbidities			% ⩾3 comorbidities		
			HHD	PD	ICHD	HHD	PD	ICHD	HHD	PD	ICHD
Leeds	570	81	70.0	60.8	51.0	25.0	35.3	36.1	5.0	3.9	12.9
Middlbr	375	37	72.7	77.3	39.8	27.3	18.2	45.1	0.0	4.5	15.0
Newc	361	70	54.2	41.2	37.6	37.5	41.2	42.7	8.3	17.6	19.7
Newry	110	25	33.3	63.6	33.8	33.3	27.3	52.7	33.3	9.1	13.5
Nottm	470	111	85.7	55.2	60.3	10.7	39.7	35.1	3.6	5.2	4.6
Oxford	533	113	75.0	58.7	40.5	25.0	32.0	46.2	0.0	9.3	13.3
Plymth	172	42	20.0	56.5	42.3	60.0	34.8	41.2	20.0	8.7	16.5
Redng	368	71	80.0	42.9	33.6	20.0	39.7	47.4	0.0	17.5	19.0
Sheff	601	102	59.1	58.0	50.4	40.9	40.0	42.6	0.0	2.0	7.0
Sthend	143	19		73.3	67.4		6.7	22.8		20.0	9.8
Sund	239	20		77.8	53.3		22.2	34.3		0.0	12.4
Swanse	427	98	58.3	40.3	35.3	33.3	35.5	51.2	8.3	24.2	13.5
Ulster	112	8		50.0	34.0		50.0	49.0		0.0	17.0
West NI	135	16	33.3	66.7	51.0	33.3	25.0	41.2	33.3	8.3	7.8
Wolve	397	102	80.0	60.3	58.1	10.0	38.4	30.5	10.0	1.4	11.4
Wrexm	149	42	100.0	66.7	56.6	0.0	22.2	35.8	0.0	11.1	7.5
York	189	40	81.8	69.0	43.7	9.1	24.1	43.0	9.1	6.9	13.4
Total	**13,654**	**2,416**	**66.0**	**60.8**	**51.7**	**28.0**	**32.6**	**38.8**	**6.0**	**6.6**	**9.5**

HT – home therapy; HHD – home haemodialysis; PD – peritoneal dialysis; ICHD – in-centre haemodialysis
n/a – no patients on this treatment; Blank cells – data for only one to two patients
*Only data from centres with ⩾70% completeness for comorbidity data are included in this analysis

ICHD group, with HHD having the lowest comorbidity and the PD group an intermediate burden of comorbidity. At centre level, comorbidity burden varied considerably (table 13.6). Despite this, the same pattern of decreasing comorbidity with HT use was evident, although this was clearest in centres with large numbers of HT patients.

Home therapy patient treatment history

On 31st December 2015 there were 3,537 patients on PD in the UK. Ignoring temporary changes to HD of fewer than 90 days, these patients had been on PD for a median duration of 1.29 years (interquartile range [IQR] 0.50–2.65 years). Due to previous concerns about technique survival by PD programme size [5], the association between centre median PD duration and centre programme size was analysed and considerable variation and only a weak association was found (figure 13.9). Modality preceding PD in those patients is shown in figure 13.10 (panel B). The majority of patients (76.4%) had only ever been on PD, with a median duration on PD of 1.33 years (IQR 0.52–2.73 years), while a minority had received HD prior to PD (17.8%, median duration on PD 1.17 years [IQR 0.42–2.51 years]) or had had a prior functioning transplant (5.6%, median duration on PD 1.06 years [IQR 0.47–2.22 years]).

The prior modality history for HHD patients was markedly different from PD patients (figure 13.10A), with the great majority having moved onto HHD directly from ICHD (89.5%). The longer term RRT history was also quite different, with 40.3% of patients having had a previous transplant, compared with 7.2% for PD patients. This is at least in part related to the longer time spent on total RRT of the HHD prevalent patients compared to the prevalent PD patients (median time on RRT 7.3 and 1.6 years respectively). Of patients on HHD, 36.8% had previously been on PD, whilst only 24.3% of PD patients had previously been on any form of HD.

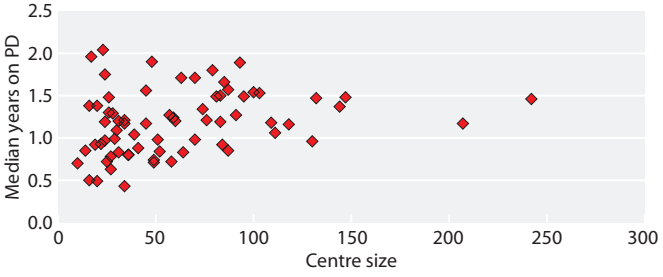

Fig. 13.9. Median duration of PD by centre size*, in PD prevalent patients, on 31st December 2015
*Number of incident patients starting RRT on PD during 2013–2015

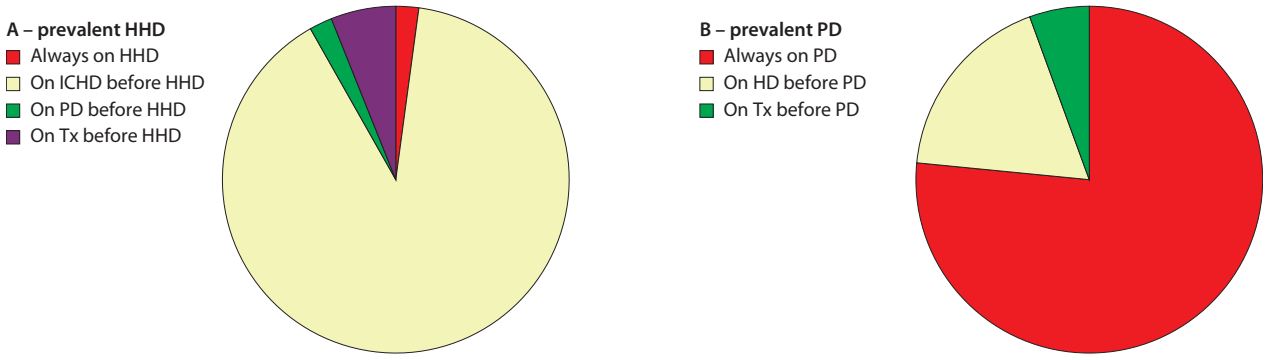

Fig. 13.10. RRT modality immediately prior to HHD in prevalent HHD patients (A) and prior to PD in prevalent PD patients (B)

There were insufficient data to calculate the duration of HHD by centre, but the 1,175 patients on HHD nationally had a median duration of 2.4 years (IQR 0.7–13.2 years).

Home therapy patient time to starting a home therapy

The ideal pathway for a HT would minimise the time to starting the HT, reducing time spent on ICHD, but without sacrificing training or support. Time to HT can be seen in figures 13.11 and 13.12, which show the probability of commencing PD or HHD by time since RRT commencement respectively (the cumulative incidence function (CIF) has been used to avoid bias in the presence of competing risks such as death, kidney transplantation or other HT). To aid international comparisons, specifically with ANZDATA, an alternative plot where transplants are censored (appendix 1, figures 13.18 and 13.19) are included. Within the total 2011–2014 incident RRT cohort, after two years follow-up, 18.0% of patients had died on ICHD, 1.9% had been lost to follow-up/had stopped dialysis or had recovered renal function, 13.7% had received a transplant, 40.3% remained on ICHD, 2.2% were on HHD and 23.9% were on PD.

Consistent with the data shown in figure 13.10B, the CIF plots show that the majority of patients who were ever going to receive PD started RRT on PD, with some further increase in patients starting PD over the first year of RRT, but little growth after this. The same pattern was evident across all countries, with the differences in HT use between countries described earlier reflected in the height of the CIF curves. HHD has a quite different pattern with almost no patients starting RRT with HHD. With the possible exception of Scotland, there was no evidence of a 'plateau' in the probability of starting HHD by two years after RRT commencement. There was also no evidence of a difference when transplantation was treated as censored or a competing risk.

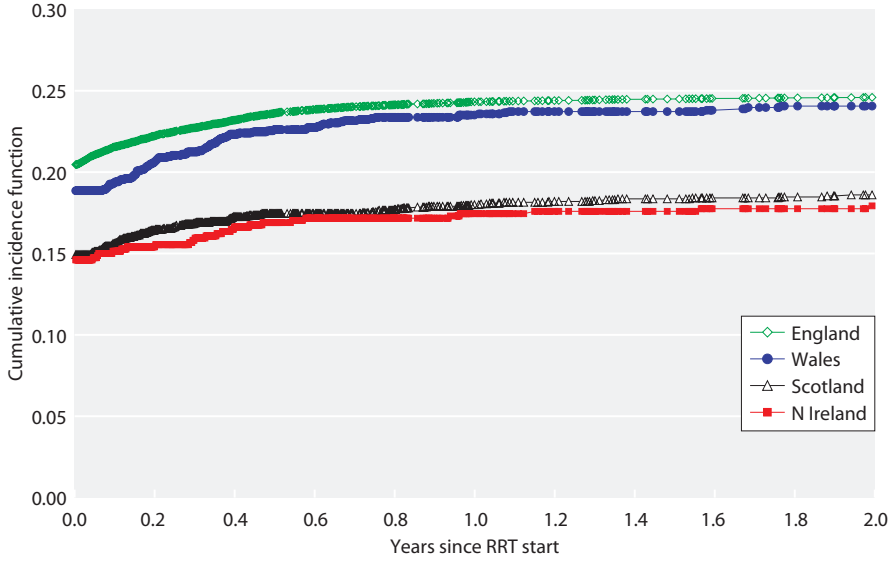

Fig. 13.11. Cumulative probability of starting PD since commencing RRT, by country, in the incident cohort 2011–2014

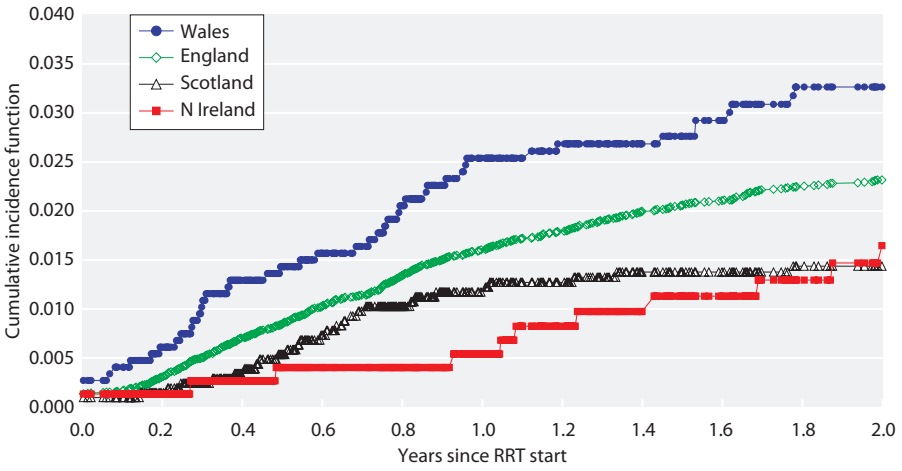

Fig. 13.12. Cumulative probability of starting HHD since commencing RRT, by country, in the incident cohort 2011–2014

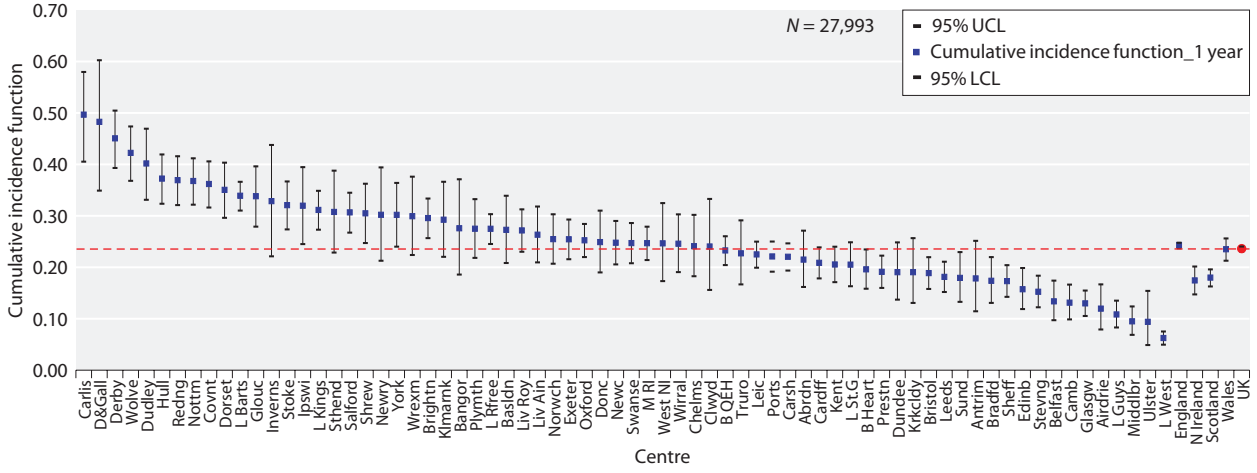

Fig. 13.13A. Cumulative probability of starting PD by one year after RRT start, by centre, in the incident cohort 2011–2014

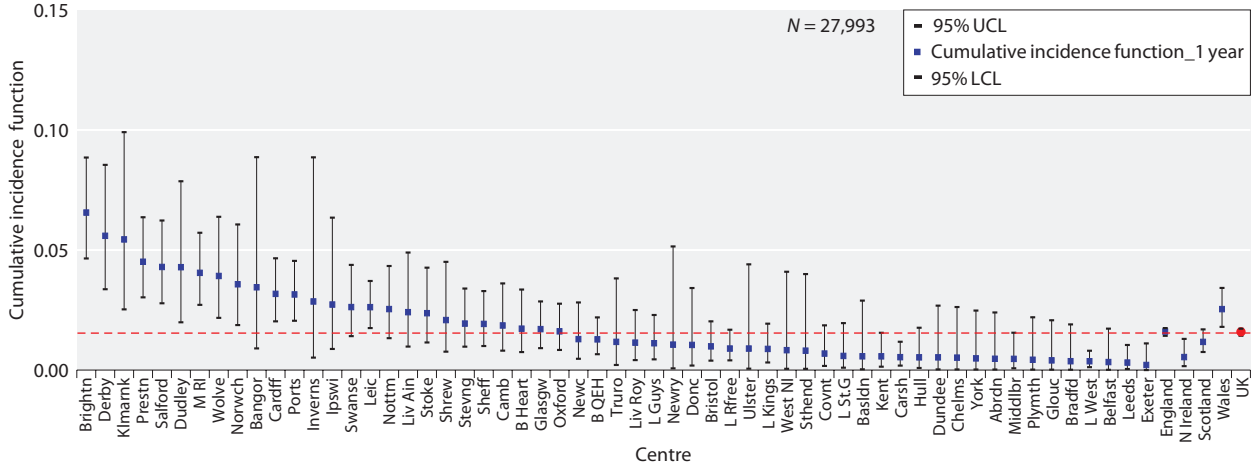

Fig. 13.13B. Cumulative probability of starting HHD by one year after RRT start, by centre, in the incident cohort 2011–2014

Compared with ANZDATA, which censors these analyses for transplantation, the increase in PD was mostly seen over the first year of RRT, whereas the rise in HHD was more gradual. The absolute values in the UK were lower but the rise in incidence appears to occur over the same time period [2].

For comparison, the time to death and time to transplantation CIFs have been derived for each country. No large differences in time to transplant could be seen between countries, but when assessing time to death, following adjustment for age of start and gender, Wales showed significantly higher incidence compared to England.

Analyses of PD and HHD uptake by centre are shown in figures 13.13A and 13.13B. The extent of variability between centres in PD use is unusual when compared with other UKRR analyses, with the 95% CI for only 34 centres crossing the national average. The magnitude of the difference between centres is also striking, with the percentage of patients starting PD by one year of RRT start ranging between 6% and 50% (CIF 0.06–0.50), an eight-fold difference. There was clear between centre variability in HHD use as well, with the percentage of patients starting HHD by one year of RRT start ranging between 0.2% and 6.6% (CIF 0.002–0.066).

Home therapy patient outcomes

The analysis of outcomes for HTs is more complex due to multiple possible outcomes, which may be either desired (transplantation and rarely recovery) or undesired (death and technique failure). Changes in the probability of any one of these events may change the probability of the other events, so data is provided on all the outcomes to aid interpretation. The numbers on HHD were too small to analyse, with only 1,212 patients starting HHD within two years of RRT start in the UK incident RRT cohort between 2007 and 2014. Of these, 91% had had ICHD prior to HHD, 1% had had a transplant prior to HHD and 11% had had PD prior to HHD.

PD technique outcomes in 9,337 incident PD patients are shown in figure 13.14. This figure describes the cumulative incidence probability for the three possible events of interest in incident PD patients: PD technique-failure (switch to HD), transplantation and death on PD. This analysis was done on a cohort of incident RRT patients from 2007–2014, starting RRT on PD at day zero and still on PD at day 90.

As suggested by work from ANZDATA, the definition used for transfer to ICHD was a switch that lasted for more than 30 days [6]. As shown in figure 13.14, whilst England, Scotland and Northern Ireland had broadly

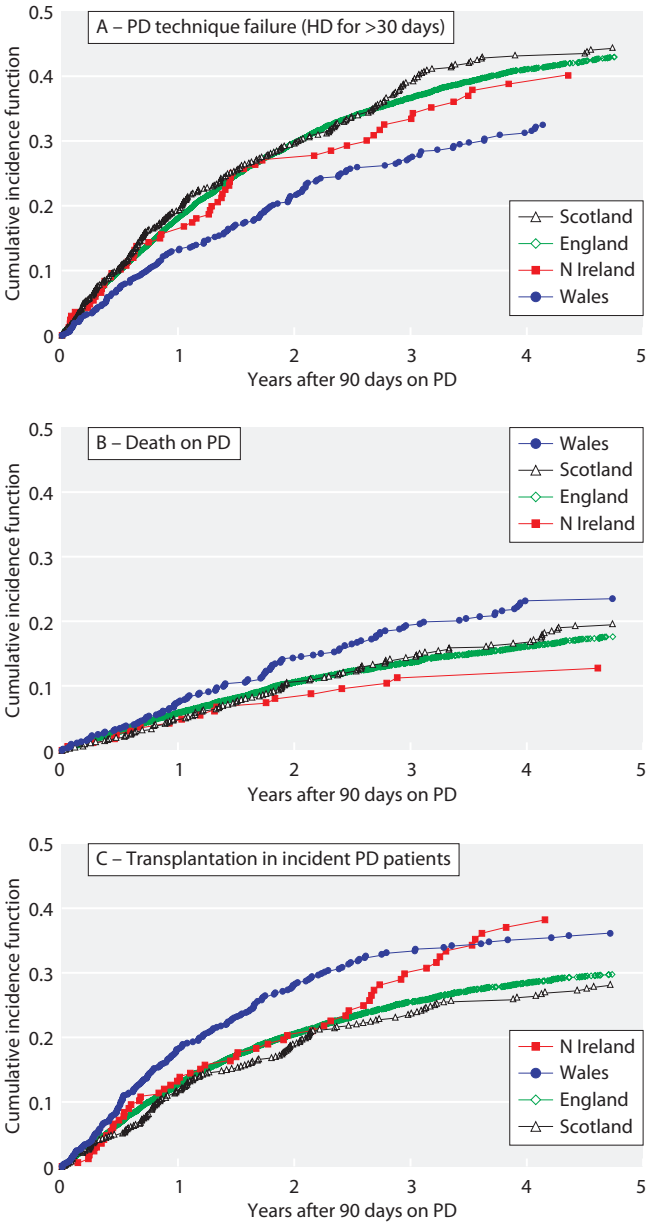

Fig. 13.14. Cumulative probability of technique failure (switch to HD, panel A), mortality on PD (panel B) and transplantation (panel C), in incident PD* patients 2007–2014, by country

*Patients starting RRT on PD at day zero and consecutively on PD for the first 90 days of RRT

comparable event rates for mortality, transplantation and technique failure, there is a suggestion that Wales had slightly higher transplant and mortality rates with possibly as a consequence, a slightly lower technique failure rate. This analysis is not adjusted for patient-level confounders such as age.

There was also significant between centre variability in technique failure rates, as shown in figure 13.15, with six

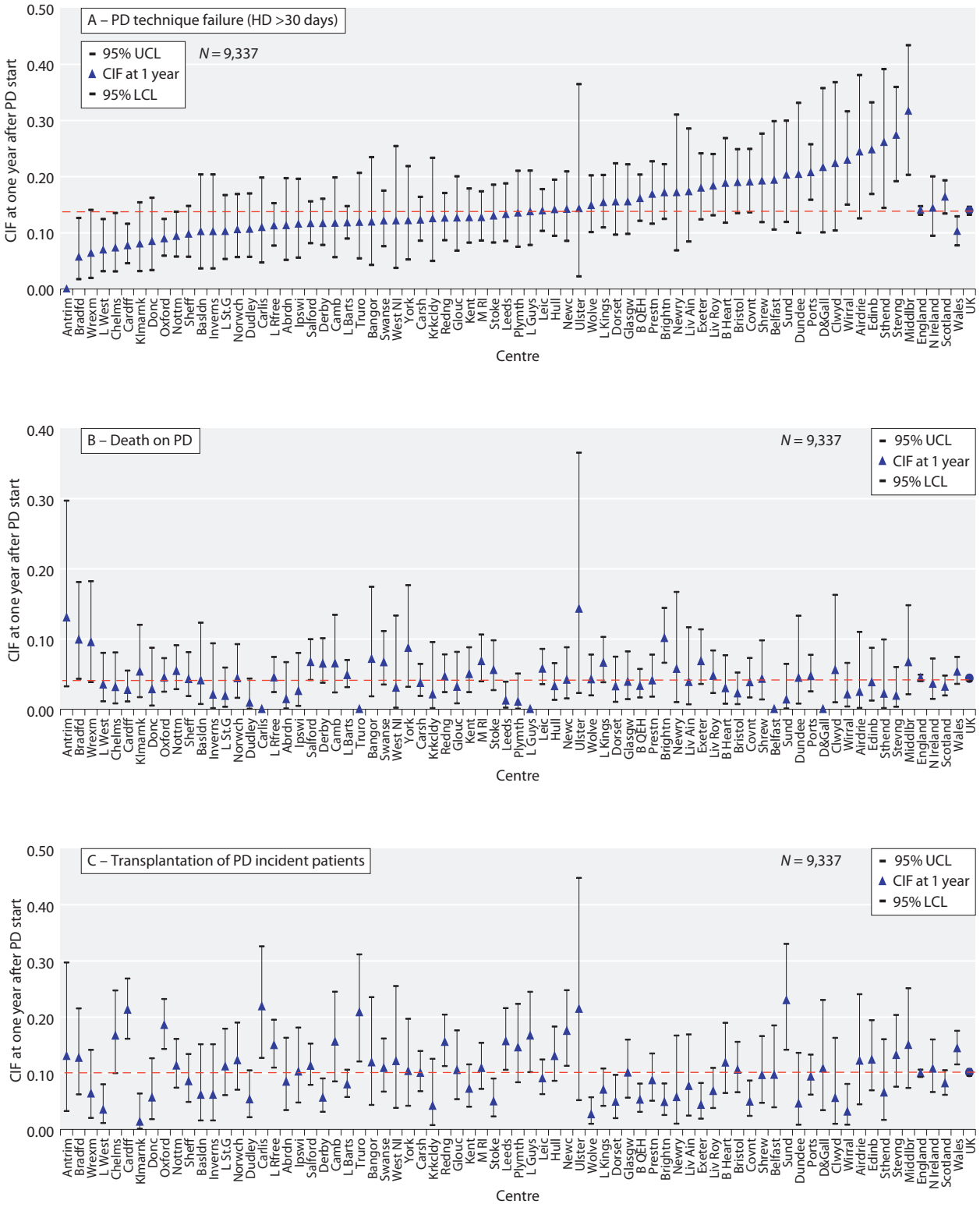

Fig. 13.15. One-year probability of technique failure (switch to HD, panel A), mortality on PD (panel B) and transplantation (panel C), in incident PD* patients 2007–2014, by centre

CIF = cumulative incidence function

*Patients starting RRT on PD at day zero and consecutively on PD for the first 90 days of RRT

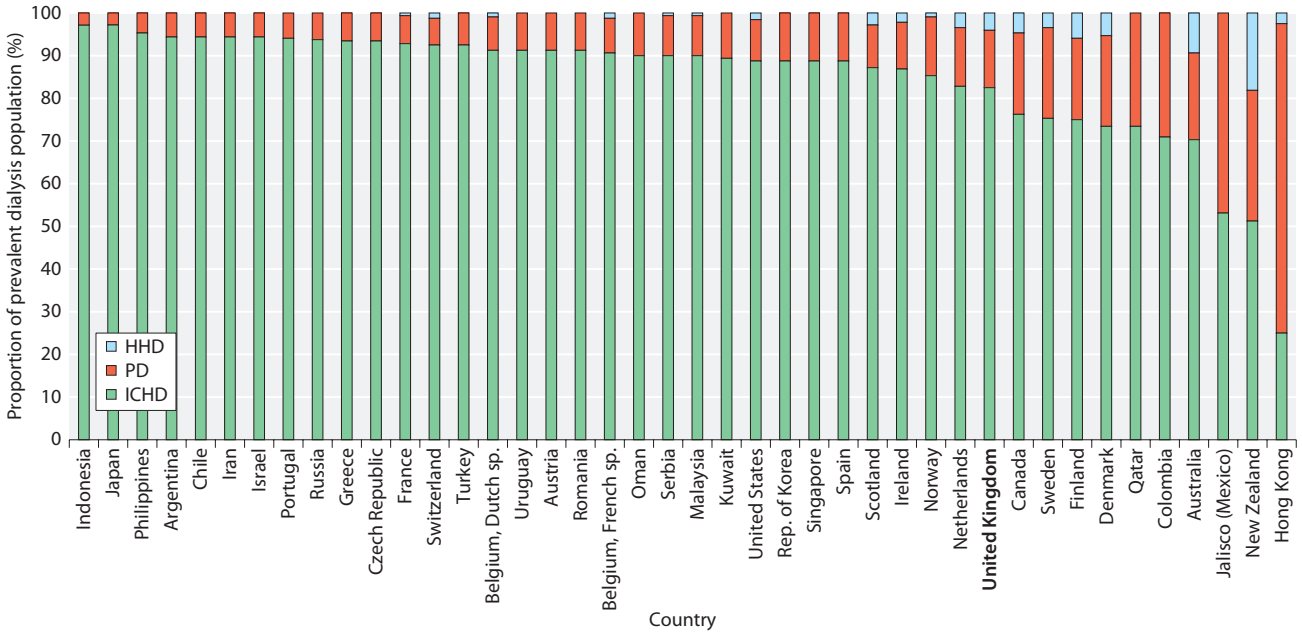

Fig. 13.16. Dialysis modality use by nation, 2014

centres having lower confidence limits that do not cross the national average, and five having upper confidence limits that do not cross the national average. The centre estimates range from a probability of 0.00 to 0.32. The plots for mortality and transplantation are shown ordered by technique failure rates to visually test whether centre variability in technique failure rates may be partially explained by the other outcomes. There was no apparent pattern. It should be borne in mind that none of these probabilities have been adjusted for potential patient-level confounders such as age.

Home therapies international comparison

HT prevalence rates internationally vary widely. As seen in figure 13.16, which shows the proportion of prevalent dialysis patients on each modality in 2014 as reported to the United States Renal Data System (USRDS) by registries around the world [7]. HT prevalence was particularly high in countries such as Hong Kong, where a PD first policy was used, whereas in countries like Japan, HT prevalence was less than 5%. Furthermore, as can be seen in figure 13.17, which looks at the serial change in the proportion of dialysis

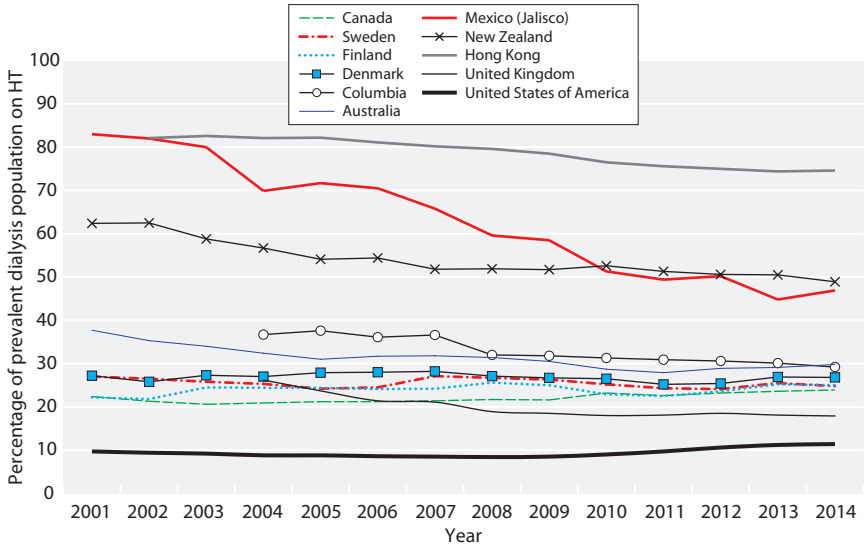

Fig. 13.17. Serial changes in proportion of prevalent dialysis patients using HTs (2001–2014, USRDS)

patients using a HT in the prevalent dialysis population between 2001–2014 in the top 15 providers of HT internationally, most countries were seeing gradual declines in HT prevalence. Such international differences in dialysis practices may be explained by multiple factors, including geography and climatic factors, healthcare structure, ethical approaches to conservative care and resourcing differences.

Discussion

This chapter has provided a clear description of the characteristics of the home dialysis population. Whilst many of the characteristics were expected (e.g. lower levels of deprivation, younger age, fewer comorbidities), or unsurprising (fewer ethnic minority patients), the interaction between gender and age was not expected and represents a novel finding. However, these findings are all purely descriptive and the mechanism for these differences remains unclear, making recommendations for changes in practice not possible.

There has also been a preliminary analysis to explore the determinants of the changes in prevalence of HHD and PD over time, with a suggestion that increasing transplantation is the primary driver of the falling PD prevalence and less of an impact on HHD. This requires a more robust exploration, examining the relative impact on starting versus stopping PD and HHD, including adjustments for patient mix. This work should also explore the extent to which HHD and PD compete for the same patient population. The results here suggest that the impact will be minimal, with the younger, less comorbid HHD patients usually having a far longer history of RRT (including previous PD), implying that HHD is being used for a particular sub-group of patients at a different point in their RRT pathway.

From the point of view of both patient outcomes and treatment costs, it is tempting to explore other areas, such as differences in HHD outcomes and the impact of different practice patterns, including assisted PD. This would require further work on data accuracy and coding and is therefore contingent on the prioritisation of home dialysis data.

Whilst the routine description of patient characteristics is an important feature of this chapter, one of the key strengths of the UKRR is the ability to compare outcomes in different centres. This analysis has robustly demonstrated significant differences between centres in both uptake of PD/HHD and outcomes for PD. These differences are large so, although it is possible that variability in patient mix (e.g. ethnicity, deprivation, comorbidity and age) could explain them, it seems unlikely that the differences will disappear after adjustment. This will be tested in subsequent analyses.

Acknowledgement

The (non-UK) data reported in the section on International comparisons have been supplied by the United States Renal Data System (USRDS). The interpretation and reporting of these data are the responsibility of the author(s) and in no way should be seen as an official policy or interpretation of the U.S. government.

Conflicts of interest: the authors declare no conflicts of interest

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Appendix 1

Table 13.7. Prevalence (as a proportion of the total RRT population) of treatment modalities between 2011 and 2015, by centre[a]

Centre	Modality	2011	2012	2013	2014	2015	% change 5 years
	HHD	0.85	1	1.38	1.22	0.95	0.1
	PD	4.7	5	4.91	5.51	4.95	0.3
Abrdn	HT	5.56	6	6.29	6.73	5.9	0.3
	Tx	49.36	48.6	51.28	53.06	53.52	4.2
	HT + Tx	54.91	54.6	57.56	59.8	59.43	4.5
	HHD	1.17	1.27	0.63	0.62	0.59	−0.6
	PD	2.34	2.34	2.92	1.86	3.13	0.8
Airdrie	HT	3.51	3.61	3.55	2.47	3.72	0.2
	Tx	55.74	55.2	56.58	60.21	58.12	2.4
	HT + Tx	59.25	58.81	60.13	62.68	61.84	2.6
	HHD	1.96	2.77	1.55	1.13	1.45	−0.5
	PD	5.49	5.14	5.81	4.89	7.25	1.8
Antrim	HT	7.45	7.91	7.36	6.02	8.7	1.3
	Tx	41.96	42.29	44.57	48.12	48.19	6.2
	HT + Tx	49.41	50.2	51.94	54.14	56.88	7.5
	HHD	2.88	2.08	2.57	2.17	1.58	−1.3
	PD	6.02	6.11	5.13	4.34	6.2	0.2
B Heart	HT	8.9	8.19	7.7	6.51	7.79	−1.1
	Tx	35.86	37.58	39.54	42.98	42.7	6.8
	HT + Tx	44.76	45.77	47.24	49.49	50.49	5.7
	HHD	2.1	2.44	2.65	2.45	2.19	0.1
	PD	10.01	9.23	7.72	7.79	7.41	−2.6
B QEH	HT	12.11	11.67	10.37	10.25	9.6	−2.5
	Tx	37.05	37.63	40.19	40.71	40.48	3.4
	HT + Tx	49.16	49.3	50.56	50.95	50.08	0.9
	HHD	8.67	9.93	11.29	10.32	9.52	0.9
	PD	14	10.64	10.48	12.7	7.94	−6.1
Bangor	HT	22.67	20.57	21.77	23.02	17.46	−5.2
	Tx	27.33	25.53	20.16	21.43	46.03	18.7
	HT + Tx	50	46.1	41.94	44.44	63.49	13.5
	HHD	0.32	0.3	0.28	0.28	0.56	0.2
	PD	8.2	9.61	8.4	7.73	9.78	1.6
Basldn	HT	8.52	9.91	8.68	8.01	10.34	1.8
	Tx	44.48	42.34	46.5	44.48	44.41	−0.1
	HT + Tx	53	52.25	55.18	52.49	54.75	1.8
	HHD	2.84	3.33	2.54	1.41	1.02	−1.8
	PD	5.3	4.81	4.89	2.64	4.07	−1.2
Belfast	HT	8.14	8.13	7.43	4.05	5.09	−3.1
	Tx	52.27	54.16	56.88	62.15	65.37	13.1
	HT + Tx	60.42	62.29	64.31	66.2	70.46	10.0
	HHD	0.2	0.73	1.22	1.68	1.43	1.2
	PD	6.26	5.26	5.21	3.52	2.87	−3.4
Bradfd	HT	6.46	5.99	6.42	5.2	4.3	−2.2
	Tx	55.97	56.99	59.2	58.56	59.71	3.7
	HT + Tx	62.43	62.98	65.63	63.76	64.01	1.6
	HHD	3.34	4.13	4.95	5.18	4.46	1.1
	PD	8.91	8.89	7.98	6.14	6.22	−2.7
Brightn	HT	12.25	13.02	12.93	11.31	10.68	−1.6
	Tx	52.78	51.53	51.41	52.44	53.2	0.4
	HT + Tx	65.03	64.55	64.34	63.76	63.88	−1.2

Table 13.7. Continued

Centre	Modality	2011	2012	2013	2014	2015	% change 5 years
	HHD	2.12	2.04	1.63	1.36	1.27	−0.9
	PD	5.5	5.38	5.21	5.05	4.25	−1.3
Bristol	HT	7.62	7.42	6.84	6.4	5.52	−2.1
	Tx	55.04	54.81	55.48	55.5	56.97	1.9
	HT + Tx	62.66	62.23	62.32	61.9	62.49	−0.2
	HHD	0.84	1.3	1.82	2.23		
	PD	4.9	4.14	2.73	3.46		
Camb[b]	HT	5.73	5.44	4.55	5.69		
	Tx	51.85	54.73	54.66	55.8		
	HT + Tx	57.59	60.17	59.2	61.5		
	HHD	2.3	2.12	2.71	2.4	1.82	−0.5
	PD	7.32	5.51	5.07	5.43	5.33	−2.0
Cardff	HT	9.62	7.63	7.78	7.83	7.16	−2.5
	Tx	57.36	60.59	61.15	60.71	61.17	3.8
	HT + Tx	66.98	68.22	68.94	68.54	68.33	1.3
	HHD	0.47	0.46	0.43	0.4	0	−0.5
	PD	9.81	12.04	11.54	10.32	13.57	3.8
Carlis	HT	10.28	12.5	11.97	10.71	13.57	3.3
	Tx	59.81	59.26	59.4	59.92	57.5	−2.3
	HT + Tx	70.09	71.76	71.37	70.63	71.07	1.0
	HHD	1.1	1.24	1.55	1.61	1.85	0.8
	PD	6.63	6.87	7.17	7.84	6.32	−0.3
Carsh	HT	7.73	8.11	8.73	9.45	8.17	0.4
	Tx	46.65	46.78	47.34	47.03	47.87	1.2
	HT + Tx	54.39	54.89	56.07	56.48	56.04	1.7
	HHD	0.29	0.28	1.1	0.77	0.29	0.0
	PD	6.4	6.8	5.25	6.19	7.47	1.1
Chelms	HT	6.69	7.08	6.35	6.96	7.76	1.1
	Tx	58.43	56.09	60.22	58.51	50.86	−7.6
	HT + Tx	65.12	63.17	66.57	65.46	58.62	−6.5
	HHD	2.07	1.14	1.22	2.22	2.16	0.1
	PD	5.52	10.23	7.93	6.11	10.81	5.3
Clwyd	HT	7.59	11.36	9.15	8.33	12.97	5.4
	Tx	51.72	42.61	46.34	43.89	45.41	−6.3
	HT + Tx	59.31	53.98	55.49	52.22	58.38	−0.9
	HHD	0.39	0.38	0	0	0	−0.4
	PD	3.52	3.8	2.97	3.08	4.42	0.9
Colchr	HT	3.91	4.18	2.97	3.08	4.42	0.5
	Tx	49.61	51.33	54.28	56.16	42.48	−7.1
	HT + Tx	53.52	55.51	57.25	59.25	46.9	−6.6
	HHD	1.47	2.11	2.08	1.23	1.67	0.2
	PD	10.93	11.61	9.69	10.59	9.57	−1.4
Covnt	HT	12.41	13.72	11.76	11.82	11.23	−1.2
	Tx	45.21	46.19	47.06	48.61	51.17	6.0
	HT + Tx	57.62	59.91	58.82	60.42	62.4	4.8
	HHD	0.8	0.79	1.63	1.54	2.19	1.4
	PD	11.2	12.6	12.2	11.54	8.03	−3.2
D & Gall	HT	12	13.39	13.82	13.08	10.22	−1.8
	Tx	48.8	48.03	49.59	51.54	52.55	3.8
	HT + Tx	60.8	61.42	63.41	64.62	62.77	2.0

Table 13.7. Continued

Centre	Modality	2011	2012	2013	2014	2015	% change 5 years
	HHD	3.06	4.5	4.71	5.27	5.42	2.4
	PD	20	15.83	14.31	14	12.44	−7.6
Derby	HT	23.06	20.32	19.02	19.28	17.86	−5.2
	Tx	42.88	44.6	48.69	47.45	48.96	6.1
	HT + Tx	65.95	64.93	67.71	66.72	66.83	0.9
	HHD	2.35	1.95	2.79	4.09	3.79	1.4
	PD	7.65	8.08	9.75	6.91	5.81	−1.8
Donc	HT	10	10.03	12.53	11	9.6	−0.4
	Tx	42.65	42.06	42.34	44.25	47.22	4.6
	HT + Tx	52.65	52.09	54.87	55.24	56.82	4.2
	HHD	0.76	0.6	1.01	1.39	1.49	0.7
	PD	7.9	7	6.81	7.08	5.83	−2.1
Dorset	HT	8.66	7.6	7.83	8.47	7.32	−1.3
	Tx	54.86	53.65	53.91	53.89	54.61	−0.3
	HT + Tx	63.53	61.25	61.74	62.36	61.92	−1.6
	HHD	3.58	5.06	4.7	5.41	4.75	1.2
	PD	15.82	17.42	15.47	14.59	15.04	−0.8
Dudley	HT	19.4	22.47	20.17	20	19.79	0.4
	Tx	37.91	33.15	35.08	36.76	38.26	0.4
	HT + Tx	57.31	55.62	55.25	56.76	58.05	0.7
	HHD	0.25	0.25	1	0.99	0.47	0.2
	PD	4.75	4.81	5	5.69	3.99	−0.8
Dundee	HT	5	5.06	6	6.68	4.46	−0.5
	Tx	49.25	49.87	52.25	52.72	52.11	2.9
	HT + Tx	54.25	54.94	58.25	59.41	56.57	2.3
	HHD	0.9	0.87	0.72	0.85	0.95	0.0
	PD	5.99	5.52	4.32	2.98	3.65	−2.3
Edinb	HT	6.89	6.39	5.04	3.84	4.59	−2.3
	Tx	55.39	56.17	56.55	58.95	57.84	2.5
	HT + Tx	62.28	62.55	61.58	62.78	62.43	0.1
	HHD	0.44	0.43	0.41	0.39	0.48	0.0
	PD	8.46	8.12	7.47	9.06	7.72	−0.7
Exeter	HT	8.9	8.55	7.88	9.45	8.2	−0.7
	Tx	50	49.68	51.28	50.92	50.81	0.8
	HT + Tx	58.9	58.23	59.16	60.37	59.01	0.1
	HHD	2.04	2.03	1.7	1.68	1.39	−0.7
	PD	3.57	3.29	3	2.62	3.48	−0.1
Glasgw	HT	5.6	5.33	4.7	4.3	4.87	−0.7
	Tx	51.46	53.82	56.34	59.54	58.48	7.0
	HT + Tx	57.06	59.15	61.04	63.84	63.35	6.3
	HHD	1.5	1.46	1.21	1.98	1.53	0.0
	PD	8.33	7.48	6.68	8.53	7.06	−1.3
Glouc	HT	9.83	8.94	7.89	10.52	8.59	−1.2
	Tx	48.93	46.15	49.6	48.02	48.85	−0.1
	HT + Tx	58.76	55.09	57.49	58.53	57.44	−1.3
	HHD	1.12	1.32	1.05	1.15	1.18	0.1
	PD	11.07	10.94	9.3	8.82	8.16	−2.9
Hull	HT	12.19	12.26	10.35	9.97	9.34	−2.9
	Tx	49.63	50	52.67	53.49	53.06	3.4
	HT + Tx	61.82	62.26	63.02	63.46	62.41	0.6

Table 13.7. Continued

Centre	Modality	2011	2012	2013	2014	2015	% change 5 years
	HHD	2.18	3.18	0.91	1.32	1.57	−0.6
	PD	7.42	7.27	5.94	6.58	5.12	−2.3
Inverns	HT	9.61	10.45	6.85	7.89	6.69	−2.9
	Tx	55.9	58.64	62.1	63.16	57.87	2.0
	HT + Tx	65.5	69.09	68.95	71.05	64.57	−0.9
	HHD	1.34	1	0.63	0.91	0	−1.3
	PD	8.7	8.33	7.84	8.18	8.7	0.0
Ipswi	HT	10.03	9.33	8.46	9.09	8.7	−1.3
	Tx	49.83	49.33	53.92	53.64	49.86	0.0
	HT + Tx	59.87	58.67	62.38	62.73	58.55	−1.3
	HHD	2.39	2.17	2.18	1.89	1.67	−0.7
	PD	7.05	6.21	6.07	5.95	5.29	−1.8
Kent	HT	9.44	8.37	8.25	7.84	6.96	−2.5
	Tx	53.73	55.76	56.68	57.08	57.09	3.4
	HT + Tx	63.17	64.14	64.93	64.92	64.05	0.9
	HHD	2.08	2.59	2.03	3.17	2.54	0.5
	PD	13.35	11.82	12.46	10.37	10.42	−2.9
Klmarnk	HT	15.43	14.41	14.49	13.54	12.96	−2.5
	Tx	43.03	44.67	47.83	50.72	51.55	8.5
	HT + Tx	58.46	59.08	62.32	64.27	64.51	6.1
	HHD	0	0	0	0	0	0.0
	PD	9.79	6.99	6.53	5.21	6.54	−3.3
Krkcldy	HT	9.79	6.99	6.53	5.21	6.54	−3.3
	Tx	39.16	41.61	42.96	45.14	44.44	5.3
	HT + Tx	48.95	48.6	49.48	50.35	50.98	2.0
	HHD	0.46	0.71	0.46	0.62	0.96	0.5
	PD	9.57	10.43	9.8	10.63	9.45	−0.1
L Barts	HT	10.03	11.14	10.26	11.25	10.41	0.4
	Tx	40.08	41.1	42.19	43.85	44.7	4.6
	HT + Tx	50.12	52.24	52.45	55.1	55.11	5.0
	HHD	1.63	1.92	2.1	2.48	1.75	0.1
	PD	2.99	2.7	2.43	2.32	2.5	−0.5
L Guys	HT	4.62	4.62	4.53	4.8	4.25	−0.4
	Tx	43.66	44.43	46.44	47.24	48.18	4.5
	HT + Tx	48.28	49.04	50.96	52.04	52.43	4.2
	HHD	1.14	1.54	1.18	1.59	1.51	0.4
	PD	8.48	7.77	8.79	7.23	6.81	−1.7
L Kings	HT	9.62	9.3	9.97	8.82	8.33	−1.3
	Tx	46.29	47.06	48.27	49.05	49.74	3.5
	HT + Tx	55.9	56.37	58.24	57.87	58.06	2.2
	HHD	1.05	1.16	1.17	1.02	1.31	0.3
	PD	6.09	7.34	7.74	8.05	8.33	2.2
L Rfree	HT	7.13	8.51	8.91	9.08	9.64	2.5
	Tx	48.89	49.88	50.26	51.56	52.69	3.8
	HT + Tx	56.02	58.38	59.18	60.64	62.33	6.3
	HHD	0.9	0.59	0.7	0.92	0.87	0.0
	PD	8.13	7.51	6.76	6.28	6.06	−2.1
L St.G	HT	9.04	8.1	7.46	7.2	6.93	−2.1
	Tx	48.8	51.69	53.66	52.75	51.73	2.9
	HT + Tx	57.83	59.79	61.13	59.95	58.66	0.8

Table 13.7. Continued

Centre	Modality	2011	2012	2013	2014	2015	% change 5 years
	HHD	0.4	0.6	0.55	0.6	0.61	0.2
	PD	1.28	1.83	2.11	2.13	2.28	1.0
L West	HT	1.68	2.43	2.67	2.73	2.89	1.2
	Tx	47.34	47.78	49.39	50.83	51.28	3.9
	HT + Tx	49.01	50.21	52.06	53.56	54.17	5.2
	HHD	0.76	0.68	1.09	1.05	1.38	0.6
	PD	6.98	6.41	5.09	4.42	3.99	−3.0
Leeds	HT	7.74	7.09	6.18	5.47	5.37	−2.4
	Tx	54.17	56.41	58.28	59.3	60.98	6.8
	HT + Tx	61.91	63.5	64.46	64.77	66.35	4.4
	HHD	2.06	3.08	3.27	2.99	2.58	0.5
	PD	7.82	7.6	6.92	5.44	4.8	−3.0
Leic	HT	9.88	10.68	10.19	8.42	7.37	−2.5
	Tx	50.54	50.77	51.78	54.37	54.91	4.4
	HT + Tx	60.42	61.45	61.96	62.79	62.28	1.9
	HHD	2.91	3.12	2.82	3.78	4.1	1.2
	PD	4.36	5.67	8.45	10.27	9.74	5.4
Liv Ain	HT	7.27	8.78	11.27	14.05	13.85	6.6
	Tx	42.73	43.34	47.61	45.14	43.85	1.1
	HT + Tx	50	52.12	58.87	59.19	57.69	7.7
	HHD	2.53	3.23	3.7	3.09	3.14	0.6
	PD	7.7	7.26	6.51	6.4	7.01	−0.7
Liv Roy	HT	10.23	10.48	10.21	9.5	10.15	−0.1
	Tx	49.2	51.84	53.76	54.43	53.56	4.4
	HT + Tx	59.43	62.33	63.97	63.93	63.7	4.3
	HHD	5.36	5.25	4.62	3.5	3.29	−2.1
	PD	7.87	6.83	6.45	5.6	4.86	−3.0
M RI	HT	13.24	12.07	11.07	9.11	8.15	−5.1
	Tx	50.95	51.54	52.55	54.55	56.25	5.3
	HT + Tx	64.19	63.61	63.61	63.66	64.4	0.2
	HHD	1.82	1.74	1.77	1.6	1.76	−0.1
	PD	2.21	1.25	1.53	1.26	2.41	0.2
Middlbr	HT	4.04	2.99	3.31	2.86	4.17	0.1
	Tx	57.42	57.04	57.38	60.02	58.73	1.3
	HT + Tx	61.46	60.02	60.68	62.89	62.9	1.4
	HHD	2.11	2.83	2.35	2.16	2.31	0.2
	PD	5.5	5.32	4.7	5.62	4.83	−0.7
Newc	HT	7.61	8.14	7.05	7.78	7.14	−0.5
	Tx	63.47	62.44	64.88	63.57	62.29	−1.2
	HT + Tx	71.08	70.59	71.92	71.35	69.43	−1.6
	HHD	0.96	0.97	0.92	1.35	1.22	0.3
	PD	5.77	7.73	8.29	7.21	8.98	3.2
Newry	HT	6.73	8.7	9.22	8.56	10.2	3.5
	Tx	44.23	51.69	51.61	53.6	57.14	12.9
	HT + Tx	50.96	60.39	60.83	62.16	67.35	16.4
	HHD	2.81	3.23	3.7	3.95	3.24	0.4
	PD	8.89	8.14	5.35	4.76	5.14	−3.8
Norwch	HT	11.7	11.37	9.05	8.71	8.38	−3.3
	Tx	43.37	43.16	49.66	51.16	49.32	6.0
	HT + Tx	55.07	54.53	58.71	59.86	57.7	2.6

Table 13.7. Continued

Centre	Modality	2011	2012	2013	2014	2015	% change 5 years
	HHD	3.46	3.99	3.22	3.6	3.26	−0.2
	PD	10.27	9.38	8.63	8.63	8.1	−2.2
Nottm	HT	13.73	13.36	11.85	12.23	11.36	−2.4
	Tx	46.16	49.89	52.6	53.65	53.16	7.0
	HT + Tx	59.89	63.25	64.45	65.88	64.53	4.6
	HHD	1.02	1.13	1.53	0.97	1.01	0.0
	PD	7.22	6.27	7.2	5.68	6.33	−0.9
Oxford	HT	8.24	7.41	8.73	6.65	7.34	−0.9
	Tx	60.36	62.06	61.67	62.6	64.38	4.0
	HT + Tx	68.6	69.46	70.4	69.25	71.72	3.1
	HHD	1.19	1.65	1.3	1.71	1.48	0.3
	PD	10.71	8.25	7.78	7.26	7.38	−3.3
Plymth	HT	11.9	9.91	9.07	8.97	8.86	−3.0
	Tx	58.1	61.32	63.07	62.39	63.71	5.6
	HT + Tx	70	71.23	72.14	71.37	72.57	2.6
	HHD	0.21	0.54	1.54	2.55	3.13	2.9
	PD	6.66	5.63	5.44	4.91	4.26	−2.4
Ports	HT	6.87	6.18	6.97	7.46	7.39	0.5
	Tx	56.76	57.03	56.62	56.99	56.48	−0.3
	HT + Tx	63.63	63.2	63.6	64.45	63.87	0.2
	HHD	3.05	3.31	2.87	2.92	3.03	0.0
	PD	5.67	5.72	4.46	4.46	3.91	−1.8
Prestn	HT	8.72	9.03	7.33	7.38	6.94	−1.8
	Tx	49	49.88	51.79	52.34	53.69	4.7
	HT + Tx	57.72	58.91	59.12	59.72	60.64	2.9
	HHD	0.86	1.45	1.37	1.42	1.07	0.2
	PD	10.62	8.97	8.65	7.87	7.04	−3.6
Redng	HT	11.48	10.42	10.01	9.29	8.11	−3.4
	Tx	54.94	57.45	58.7	59.67	60.19	5.3
	HT + Tx	66.42	67.88	68.71	68.96	68.3	1.9
	HHD	1.91	2.07	2.43	1.84	1.56	−0.4
	PD	10.16	8.96	7.04	7.52	6.65	−3.5
Salford	HT	12.07	11.02	9.46	9.36	8.22	−3.9
	Tx	57.17	58.31	60.13	59.04	61.82	4.7
	HT + Tx	69.24	69.34	69.6	68.4	70.03	0.8
	HHD	2.82	2.58	2.75	2.95	3.16	0.3
	PD	5.3	5.66	5.66	4.94	4.78	−0.5
Sheff	HT	8.12	8.24	8.41	7.89	7.94	−0.2
	Tx	45.47	46.38	47.41	49.24	51.74	6.3
	HT + Tx	53.59	54.62	55.83	57.13	59.68	6.1
	HHD	3.02	4.41	5.04	4.39	6.33	3.3
	PD	8.79	10.05	8.06	7.8	7.24	−1.6
Shrew	HT	11.81	14.46	13.1	12.2	13.57	1.8
	Tx	43.72	41.67	44.08	44.39	45.7	2.0
	HT + Tx	55.53	56.13	57.18	56.59	59.28	3.8
	HHD	2.86	3.36	3.02	2.78	2.24	−0.6
	PD	3.3	3.36	4.24	2.42	1.56	−1.7
Stevng	HT	6.17	6.72	7.26	5.2	3.8	−2.4
	Tx	50.77	53.89	52.12	53.63	48.83	−1.9
	HT + Tx	56.94	60.61	59.38	58.83	52.63	−4.3

Table 13.7. Continued

Centre	Modality	2011	2012	2013	2014	2015	% change 5 years
	HHD	1.15	1.14	0.7	0.33	0.99	−0.2
	PD	6.92	5.32	6.27	6.62	5.61	−1.3
Sthend	HT	8.08	6.46	6.97	6.95	6.6	−1.5
	Tx	46.92	49.81	51.92	54.97	52.48	5.6
	HT + Tx	55	56.27	58.89	61.92	59.08	4.1
	HHD	2.32	3.76	2.96	3.79	3.49	1.2
	PD	11.17	11.28	11.2	10.13	8.9	−2.3
Stoke	HT	13.49	15.03	14.16	13.92	12.39	−1.1
	Tx	45.37	47.65	49.16	49.08	51.38	6.0
	HT + Tx	58.86	62.68	63.32	63	63.78	4.9
	HHD	0.91	0.85	0.42	0.4	0.59	−0.3
	PD	4.08	4.65	2.54	3.63	3.55	−0.5
Sund	HT	4.99	5.5	2.96	4.03	4.14	−0.9
	Tx	55.56	53.28	55.81	54.03	52.66	−2.9
	HT + Tx	60.54	58.77	58.77	58.06	56.8	−3.7
	HHD	3.32	3.36	2.38	4.61	4.05	0.7
	PD	7.13	8.46	6.89	6.26	6.98	−0.1
Swanse	HT	10.44	11.82	9.26	10.87	11.04	0.6
	Tx	48.77	50.5	54.04	54.37	51.91	3.1
	HT + Tx	59.21	62.31	63.3	65.25	62.95	3.7
	HHD	0.29	1.36	1.92	2.42	2.43	2.1
	PD	7.47	6.23	6.59	5.65	5.35	−2.1
Truro	HT	7.76	7.59	8.52	8.06	7.79	0.0
	Tx	49.14	52.03	52.47	54.57	55.47	6.3
	HT + Tx	56.9	59.62	60.99	62.63	63.26	6.4
	HHD	1.91	2.28	2.22	2.2	1.21	−0.7
	PD	1.44	3.2	2.67	1.76	2.43	1.0
Ulster	HT	3.35	5.48	4.89	3.96	3.64	0.3
	Tx	48.8	47.95	50.67	54.63	53.85	5.1
	HT + Tx	52.15	53.42	55.56	58.59	57.49	5.3
	HHD	1.39	2.2	2.17	1.31	1.23	−0.2
	PD	6.62	6.96	5.42	4.59	3.7	−2.9
West NI	HT	8.01	9.16	7.58	5.9	4.94	−3.1
	Tx	42.51	45.05	54.15	58.03	59.57	17.1
	HT + Tx	50.52	54.21	61.73	63.93	64.51	14.0
	HHD	0.23	0.93	2.38	1.76	2.98	2.8
	PD	9.51	7.42	7.58	4.85	4.36	−5.2
Wirral	HT	9.74	8.35	9.96	6.61	7.34	−2.4
	Tx	46.4	47.8	47.19	50	52.52	6.1
	HT + Tx	56.15	56.15	57.14	56.61	59.86	3.7
	HHD	2.58	3.21	3.12	3.62	4.05	1.5
	PD	11.43	14.1	12.46	11.43	11.43	0.0
Wolve	HT	14.01	17.31	15.58	15.05	15.48	1.5
	Tx	38.49	39.1	41.84	42.4	41.82	3.3
	HT + Tx	52.5	56.41	57.42	57.45	57.31	4.8
	HHD	0.43	0.41	0.79	0.36	1.38	1.0
	PD	8.7	9.13	8.66	10.71	12.8	4.1
Wrexm	HT	9.13	9.54	9.45	11.07	14.19	5.1
	Tx	53.04	51.04	51.57	48.93	48.79	−4.3
	HT + Tx	62.17	60.58	61.02	60	62.98	0.8

Table 13.7. Continued

Centre	Modality	2011	2012	2013	2014	2015	% change 5 years
	HHD	1.34	2.65	2.81	2.46	2.11	0.8
	PD	6.99	7.47	6.32	6.49	6.11	−0.9
York	HT	8.33	10.12	9.13	8.95	8.21	−0.1
	Tx	56.99	60.24	60.89	61.52	60.42	3.4
	HT + Tx	65.32	70.36	70.02	70.47	68.63	3.3
	HHD	1.68	1.98	2.05	2.05	2.02	0.3
	PD	7.35	7.11	6.62	6.35	6.05	−1.3
England	HT	9.03	9.09	8.67	8.4	8.07	−1.0
	Tx	49.28	50.08	51.5	52.28	52.54	3.3
	HT + Tx	58.31	59.17	60.17	60.68	60.62	2.3
	HHD	2.02	2.55	2.03	1.45	1.19	−0.8
	PD	5.11	5.43	5.3	3.9	5	−0.1
N Ireland	HT	7.13	7.97	7.33	5.35	6.19	−0.9
	Tx	47.01	49.23	52.65	56.74	58.54	11.5
	HT + Tx	54.14	57.2	59.97	62.09	64.72	10.6
	HHD	1.32	1.43	1.21	1.31	1.14	−0.2
	PD	5.66	5.22	4.92	4.38	4.59	−1.1
Scotland	HT	6.98	6.66	6.14	5.7	5.73	−1.3
	Tx	50.74	51.97	54.05	56.6	55.65	4.9
	HT + Tx	57.72	58.63	60.19	62.29	61.38	3.7
	HHD	2.78	2.66	2.73	3.19	2.94	0.2
	PD	7.65	7.24	6.34	6.54	7.03	−0.6
Wales	HT	10.43	9.9	9.07	9.73	9.96	−0.5
	Tx	52.49	53.92	55.51	54.95	55.38	2.9
	HT + Tx	62.92	63.82	64.58	64.68	65.34	2.4
	HHD	**1.72**	**1.98**	**2.01**	**2.04**	**1.97**	**0.3**
	PD	**7.17**	**6.92**	**6.44**	**6.14**	**5.95**	**−1.2**
UK	**HT**	**8.88**	**8.9**	**8.45**	**8.17**	**7.93**	**−1.0**
	Tx	**49.5**	**50.41**	**51.93**	**52.87**	**53.11**	**3.6**
	HT + Tx	**58.38**	**59.31**	**60.38**	**61.04**	**61.03**	**2.7**

HHD – home haemodialysis; PD – peritoneal dialysis; HT – home therapy; Tx – transplant
[a]Based on postcode of residency
[b]Cambridge was unable to submit patient level data for 2015 in time

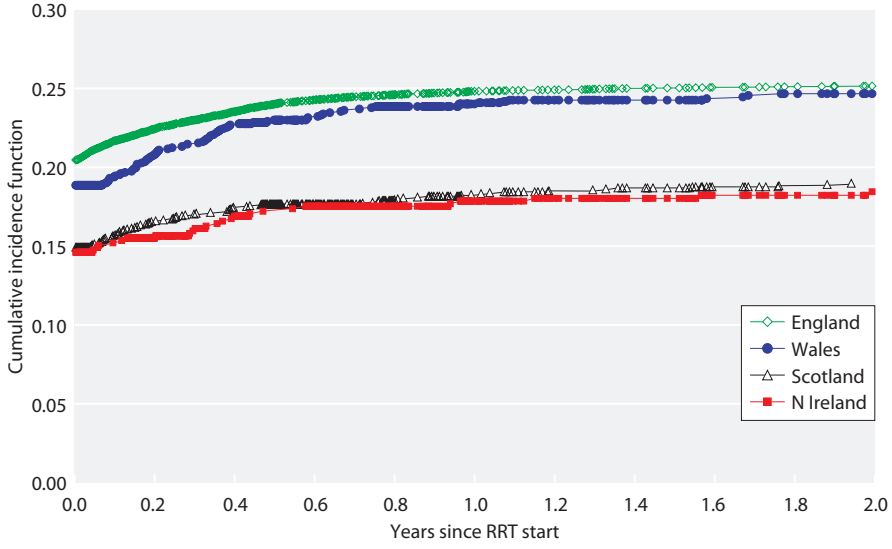

Fig. 13.18. Cumulative probability of starting PD since commencing RRT, by country, in the incident cohort 2011–2014, censoring at transplantation

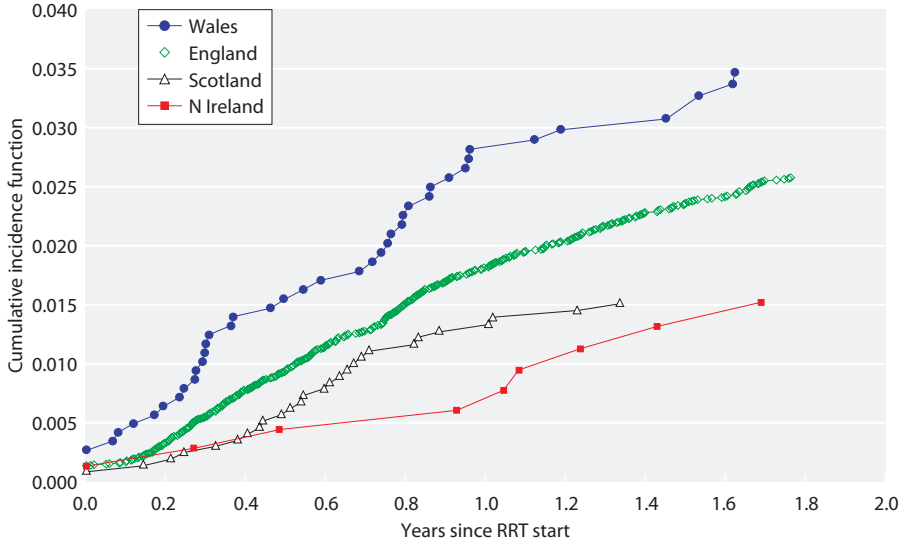

Fig. 13.19. Cumulative probability of starting HHD since commencing RRT, by country, in the incident cohort 2011–2014, censoring at transplantation