Chapter 3
ESRD incident rates in 2007 in the UK: national and centre-specific analyses

Ken Farrington[a], Udaya Udayaraj[b], Julie Gilg[b] and John Feehally[c]

[a]Lister Hospital, Stevenage, UK; [b]UK Renal Registry, Bristol, UK; [c]Leicester General Hospital, Leicester, UK

Abstract

Introduction: This chapter describes the characteristics of adult patients starting renal replacement therapy (RRT) in the UK in 2007 and the acceptance rate for RRT in Primary Care Trusts (PCT) or equivalent Health Authority (HA) areas in the UK. *Methods:* The basic demographics are reported for all UK centres and clinical characteristics of patients starting RRT from all except 1 centre in the UK. Late presentation, defined as time between first being seen by a nephrologist and start of RRT being <90 days was also studied. Age and gender standardised ratios for acceptance rate in PCTs or equivalent HAs were calculated. *Results:* In 2007, the acceptance rate in the UK was 109 per million population (pmp) compared to 111 pmp in 2006. Acceptance rates in England (107 pmp), Scotland (108 pmp) and Northern Ireland (105 pmp) have fallen slightly, whilst that in Wales (140 pmp) has risen. There were wide variations between PCTs/HAs with respect to the standardised ratios which were lower in more PCTs in the North West and South East of England and higher in London, the West Midlands and Wales. The median age of all incident patients was 64.1 years and for non-Whites 57.1 years. There was an excess of males in all age groups starting RRT and nearly 80% of patients were reported to be White. Diabetic renal disease remained the single most common cause of renal failure (21.9%). By 90 days, 67.4% of patients were on haemodialysis, 21.3% on peritoneal dialysis, 5.2% had had a transplant and 6.1% had died or had stopped treatment. The incidence of late presentation in those centres supplying adequate data was 21%. *Conclusions:* The acceptance rate has fallen in England, Northern Ireland and Scotland but continues to rise in Wales with wide variations in acceptance rate between PCTs/HAs.

Introduction

This chapter includes analyses regarding adult patients starting renal replacement therapy (RRT) in the UK in 2007. It is divided into 3 sections: regional and national variations in acceptance rate onto RRT in the UK; the demographics and clinical characteristics of all patients starting RRT in the UK; and late presentation to a renal centre for initiation of RRT. The methodology and the results for these analyses are discussed for the 3 sections separately.

The term Established Renal Failure (ERF) used within this chapter is synonymous with the terms of 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.

UK Renal Registry coverage

In 2007, the UK Renal Registry (UKRR) received returns from all 5 renal centres in Wales, all 6 in Northern Ireland and 51 of the 52 in England. Data from all 9 centres in Scotland were obtained from the Scottish Renal Registry. In addition, summary data were obtained separately from Colchester, to enable calculation of whole UK acceptance rates. A degree of caution must still be exercised in view of this extrapolation, although with almost full coverage the reliability of estimates must now be high. The proportion of the population aged over 65 years was similar in the fully covered population (based on PCT/HA areas whose population was thought to be fully covered by participating renal centres) compared with the UK general population. The proportion from ethnic minority groups was 8.1% in the fully covered population compared with 8.0% in the total population. For comparisons between renal centres and between local areas fully covered by the Renal Registry, the data from the Registry are fully valid. Data on children and young adults can be found in chapter 13.

1 Geographical variation in acceptance rates

Equity of access to RRT is an important aim. Need for RRT depends on many factors including social and demographic factors such as age, gender, social deprivation and ethnicity. Hence comparison of crude acceptance rates by geographical area can be misleading. This section, as in previous reports, uses age and gender standardisation and ethnic minority profile to compare RRT incident rates. The impact of social deprivation was recorded in the 2003 Report [1].

Methods

Crude acceptance rates were calculated per million population (pmp) and standardised acceptance ratios were calculated as detailed in appendix D: methodology used for analyses of PCT incidence and prevalence rates and of standardised ratios (www.renalreg.org). Briefly, data from all covered areas were used to calculate overall age and gender specific acceptance rates. The age and gender breakdown of the population in each PCT area in England or equivalent areas in Scotland, Northern Ireland and Wales were obtained from the 2001 Census data from the Office for National Statistics (ONS) [2]. This population breakdown was extrapolated by the ONS from the 2001 census data to mid-2006 estimates. The population breakdown and the overall acceptance rates were used to calculate the expected age and gender specific acceptance numbers for each PCT or HA area. The age and gender standardised acceptance ratio was the observed acceptance numbers divided by the expected acceptance numbers. 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 incident numbers for one year can be small for smaller areas, a combined years' analysis was also done. The proportion of non-Whites in each PCT or HA area was obtained from the ONS.

Results

In 2007, the number of adult patients starting RRT in the whole UK was 6,644. This equated to an acceptance rate of 109 pmp (table 3.1), slightly less than the 111 pmp in 2006. Acceptance rates in England (107 pmp), Scotland (108 pmp) and Northern Ireland (105 pmp) have fallen slightly, whilst that in Wales remained highest in the UK and increased to 140 pmp (figure 3.1). There continued to be very marked gender differences in take-on rates, 137 pmp (95% CI 132–141) in males and 82 pmp (95% CI 79–86) in females.

Acceptance rates and standardised ratios are shown in table 3.2 for PCTs and HAs with complete coverage by the Registry. The 95% confidence intervals are given for the standardised ratios from the combined years' analysis and ratios which are significantly different from 1 are highlighted provided that the area has been covered for at least three years. Confidence intervals are not presented for the crude rates but figure 3.2 has been included to enable assessment of whether an observed acceptance rate differs significantly from the national average. For any population size (x-axis), the upper and lower 95% confidence intervals around the national average acceptance rate (dotted lines) can be read from the y-axis. An observed acceptance rate outside these limits is significantly different from the national average. In order to be judged as significantly

Table 3.1. Number of new adult patients starting RRT in the UK in 2007

	England	Wales	Scotland	N Ireland	UK
Centres contributing to UKRR (71)	5,456	416	556	185	**6,613**
All UK centres (71 + 1 = 72)	5,487	416	556	185	**6,644**
*Total estimated population mid 2007 (millions)	51.1	3.0	5.1	1.8	**61.0**
Acceptance rate (pmp)	107	140	108	105	**109**
(95% CI)	(105–110)	(126–153)	(99–117)	(90–120)	**(106–112)**

*Data extrapolated by the Office for National Statistics – based on the 2001 census

different from national norms the observed acceptance rate for a population of 80,000 would have to be outside the limits of 37 to 181 pmp per year, whilst for a population of 1 million, the limits are from 89 to 129 pmp per year. The plot begins at population 80,000 because below this the number of expected cases is small and the statistical assumptions needed to produce the plot are not valid. Although the largest PCT has about 1.3 million population, the plot extends to 4 million. This is because for the combined years' analysis the population on the x-axis is the area's population multiplied by the number of years that the area has been covered (up to 6). The plot has been curtailed at 4 million, even though a few areas have 'combined populations' above 4 million, as the confidence intervals are relatively consistent above this size.

The crude acceptance rates in 2007 for adults varied from 18 pmp in Armagh (population 56,400) to 302 pmp in Carrickfergus (population 39,800) (table 3.2) but this merely reflected a change in 1 or 2 patients in both these populations. There were similar wide variations in the standardised ratios for acceptance from 0.17 in the Isle of Wight (population 138,200) to 2.95 in Carrickfergus. Changes over the 6 years between 2002 and 2007 showed the wide variations in annual standardised acceptance ratios in areas with small populations. Over the period 2002–2007, of those PCT or HA areas with data for a minimum of 3 years, 39 had significantly low ratios, 51 had high ratios and 118 normal ratios. There were significant differences between regions (p < 0.0001), with acceptance rates being lower in more PCTs in North West England and South East England and higher in London, the West Midlands and Wales (table 3.3).

In those PCT/HA areas with significantly high ratios the median percentage of population who were non-
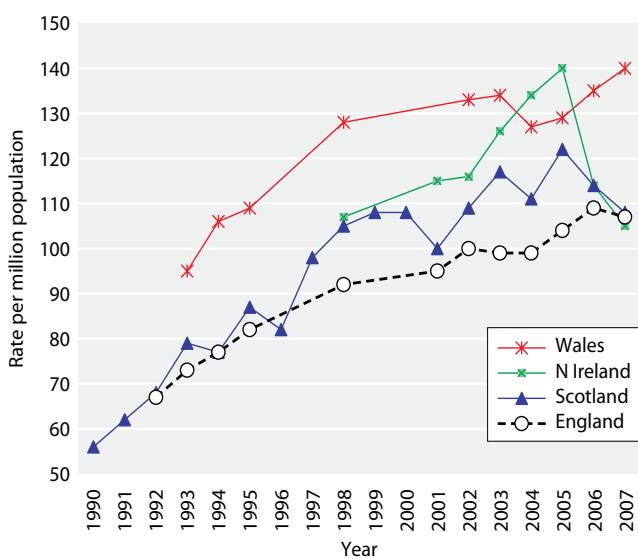

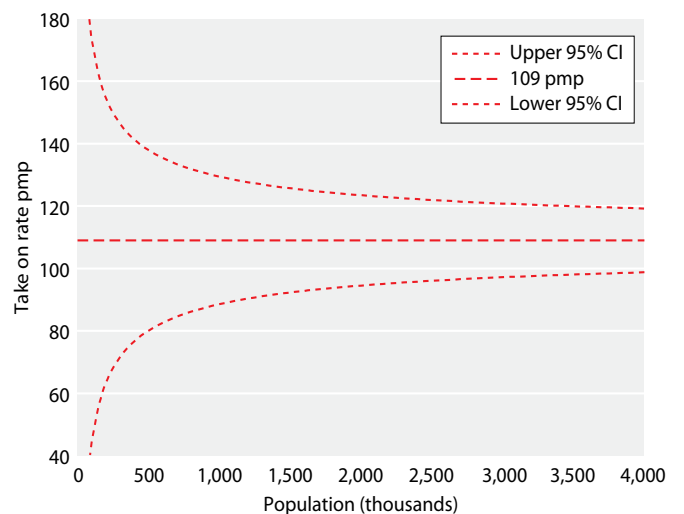**Fig. 3.1.** RRT incident rates in the countries of the UK 1990–2007

Fig. 3.2. 95% confidence limits for take on rate of 109 pmp for population size 80,000–4 million

Table 3.2. Crude adult annual acceptance rates (pmp [a]) and standardised ratios 2002–2007

[a] per million population
[b] for those areas not covered by the Registry for the entire period 2002–2007, the standardised acceptance ratio and the acceptance rates are averages for the years covered by the Registry
O/E = standardised acceptance ratio
Blank cells – no data returned to the Registry for that year
Areas with data for a minimum 3 years and with significantly high acceptance ratios are bold in darker grey cells, areas with significantly low acceptance ratios are italicised in lighter grey cells
% non-White = the sum of % South Asian and Black from the 2001 UK census

UK area	PCT or HA	Tot pop	2002 O/E	2003 O/E	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2007 pmp[a]	2002–2007[b] O/E	LCL	UCL	pmp	% non-White
North East	*County Durham*	*500,400*	*1.01*	*0.79*	*0.88*	*0.94*	*0.85*	*0.70*	*80*	*0.86*	*0.76*	*0.96*	*93*	*1.0*
	Darlington	99,100	0.93	0.99	0.79	0.46	0.70	1.17	131	0.84	0.64	1.10	89	2.1
	Redcar and Cleveland	139,200	1.85	1.15	1.08	0.76	0.90	0.99	115	1.11	0.91	1.34	122	1.1
	Hartlepool	91,100	0.69	1.32	0.88	0.83	1.37	0.50	55	0.93	0.71	1.22	97	1.1
	Middlesbrough	138,500	1.14	1.16	0.92	1.16	1.44	1.20	123	1.17	0.96	1.44	114	6.3
	North Tees	189,200	0.98	0.88	1.09	0.82	0.83	0.70	74	0.88	0.72	1.07	88	2.7
	Gateshead	190,500	1.16	0.86	1.00	0.90	0.85	0.87	100	0.93	0.78	1.12	101	1.6
	Newcastle	270,400	0.92	0.87	1.11	1.12	0.85	1.27	129	1.03	0.88	1.20	99	6.9
	North Tyneside	195,100	1.03	0.64	0.93	0.83	0.78	0.85	97	0.84	0.69	1.01	91	1.9
	Northumberland	*309,900*	*0.73*	*0.85*	*0.93*	*0.60*	*0.74*	*0.74*	*90*	*0.76*	*0.65*	*0.89*	*88*	*1.0*
	South Tyneside	151,000	0.80	0.70	1.01	0.95	1.01	1.04	119	0.92	0.75	1.13	100	2.7
	Sunderland Teaching	280,600	1.01	1.20	0.64	0.76	0.72	1.07	118	0.90	0.77	1.05	94	1.9
North West	Wirral	311,100	0.83	1.04	1.24	1.20	0.73	0.72	84	0.95	0.83	1.10	105	1.7
	Liverpool	436,200	1.07	0.81	1.11	1.32	1.23	1.08	110	1.11	0.98	1.24	107	5.7
	Central and Eastern Cheshire	451,200						0.67	78	0.67	0.48	0.94	78	1.6
	Western Cheshire	235,100	1.05	0.68	1.07	0.56	0.95	0.80	94	0.85	0.72	1.01	94	1.6
	Knowsley	151,500	0.95	1.32	0.98	0.65	0.74	1.02	106	0.94	0.76	1.16	92	1.6
	Sefton	*277,500*	*1.03*	*0.69*	*0.56*	*0.92*	*0.78*	*0.54*	*65*	*0.75*	*0.64*	*0.89*	*86*	*1.6*
	Halton and St Helens	297,000	0.94	0.79	0.82	1.22	1.19	1.06	114	1.01	0.87	1.17	103	1.2
	Warrington	*194,300*	*1.00*	*0.63*	*0.94*	*0.74*	*0.79*	*0.62*	*67*	*0.78*	*0.64*	*0.96*	*80*	*2.1*
	Blackburn with Darwen	**141,200**	**1.58**	**1.33**	**1.00**	**1.41**	**1.40**	**1.29**	**120**	**1.33**	**1.10**	**1.62**	**118**	**22.0**
	Blackpool	*142,800*	*1.09*	*0.32*	*0.38*	*0.73*	*0.57*	*0.88*	*105*	*0.66*	*0.52*	*0.84*	*75*	*1.6*
	North Lancashire	*329,000*	*0.60*	*0.63*	*0.35*	*0.41*	*0.46*	*0.60*	*73*	*0.51*	*0.42*	*0.61*	*59*	*1.7*
	Cumbria	*496,000*	*0.74*	*0.74*	*0.61*	*0.85*	*0.64*	*0.63*	*77*	*0.70*	*0.62*	*0.80*	*81*	*0.7*
	Central Lancashire	*451,600*	*0.44*	*0.49*	*0.66*	*0.67*	*0.59*	*0.75*	*82*	*0.61*	*0.52*	*0.70*	*63*	*5.6*
	East Lancashire	*384,500*	*0.81*	*0.70*	*0.66*	*0.73*	*0.90*	*0.73*	*78*	*0.76*	*0.65*	*0.88*	*77*	*8.1*
	Ashton, Leigh and Wigan	*305,500*		*0.86*	*0.79*	*0.94*	*0.71*	*0.67*	*72*	*0.79*	*0.66*	*0.94*	*82*	*1.3*
	Bolton	262,500		1.03	0.79	0.71	0.88	0.87	91	0.86	0.71	1.03	87	11.0
	Bury	*182,900*		*0.57*	*0.85*	*0.80*	*0.50*	*0.62*	*66*	*0.67*	*0.52*	*0.85*	*68*	*6.1*
	Manchester	451,900						1.21	104	1.21	0.91	1.61	104	19.0
	Heywood, Middleton and Rochdale	206,400						0.95	97	0.95	0.61	1.47	97	11.4
	Oldham	*219,800*		*0.79*	*0.69*	*0.56*	*0.83*	*0.86*	*86*	*0.75*	*0.60*	*0.93*	*73*	*13.9*
	Salford	*217,800*		*1.36*	*0.53*	*0.41*	*0.90*	*0.49*	*51*	*0.73*	*0.59*	*0.91*	*73*	*3.9*
	Stockport	280,800						0.79	89	0.79	0.53	1.17	89	4.3
	Tameside and Glossop	247,700						1.38	145	1.38	1.00	1.92	145	4.9
	Trafford	212,100						0.96	104	0.96	0.63	1.46	104	8.4

Table 3.2. Continued

UK area	PCT or HA	Tot pop	2002 O/E	2003 O/E	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2007 pmp[a]	2002–2007[b] O/E	2002–2007[b] LCL	2002–2007[b] UCL	2002–2007[b] pmp	% non-White
Yorkshire and the Humber	*East Riding of Yorkshire*	*331,100*	*0.84*	*1.02*	*0.69*	*1.03*	*0.59*	*0.68*	*85*	*0.80*	*0.70*	*0.93*	*95*	*1.2*
	Hull	256,200	1.08	0.98	1.19	1.28	0.76	1.01	101	1.04	0.89	1.22	100	2.3
	North East Lincolnshire	159,900	1.16	0.68	1.04	1.21	1.03	1.12	125	1.04	0.86	1.26	110	1.4
	North Lincolnshire	155,200	0.96	0.67	1.39	0.97	0.97	0.78	90	0.95	0.78	1.16	105	2.5
	North Yorkshire and York	783,200	1.29	1.10	1.01	0.89	0.85	0.73	86	0.97	0.89	1.06	108	1.4
	Barnsley	223,700	1.11	0.71	0.88	0.75	0.94	0.84	94	0.87	0.73	1.04	92	0.9
	Doncaster	*290,400*	*0.92*	*1.02*	*0.87*	*0.73*	*0.81*	*0.58*	*65*	*0.82*	*0.70*	*0.96*	*87*	*2.3*
	Rotherham	253,000	0.87	0.95	1.18	1.11	0.91	1.04	115	1.01	0.86	1.18	105	3.1
	Sheffield	526,100	1.02	0.97	1.20	1.08	1.11	1.18	124	1.10	0.99	1.22	109	8.8
	Bradford and Airedale	**493,000**	**1.34**	**1.55**	**1.27**	**1.35**	**0.84**	**1.56**	**150**	**1.31**	**1.18**	**1.46**	**120**	**21.7**
	Calderdale	198,600	0.76	1.35	0.93	0.78	0.92	0.75	81	0.91	0.76	1.10	92	7.0
	Wakefield District	*321,000*	*0.82*	*0.88*	*1.06*	*0.64*	*0.99*	*0.57*	*62*	*0.82*	*0.71*	*0.96*	*86*	*2.3*
	Kirklees	398,400	1.24	1.26	1.31	0.76	1.21	0.68	70	1.07	0.94	1.21	104	14.4
	Leeds	750,300	0.89	1.06	0.99	1.18	0.95	0.80	80	0.98	0.89	1.07	93	8.1
East Midlands	**Leicester City**	**289,700**	**1.63**	**1.71**	**1.34**	**1.49**	**1.60**	**1.86**	**169**	**1.61**	**1.42**	**1.82**	**138**	**36.1**
	Leicestershire County and Rutland	*673,600*	*0.81*	*0.80*	*0.71*	*0.79*	*0.83*	*0.87*	*98*	*0.80*	*0.72*	*0.89*	*86*	*5.1*
	Northamptonshire	*669,200*	*0.92*	*0.74*	*0.72*	*0.83*	*0.87*	*0.98*	*103*	*0.85*	*0.76*	*0.94*	*84*	*4.9*
	Nottinghamshire County	657,500	0.86	1.07	1.02	1.21	1.17	1.09	125	1.08	0.98	1.18	116	2.8
	Bassetlaw	111,000	0.72	0.94	0.60	1.04	0.60	1.63	189	0.93	0.73	1.18	102	1.4
	Derby City	236,400		0.93	1.05	1.16	1.17	0.89	93	1.04	0.87	1.24	106	12.6
	Derbyshire County	*720,800*	*0.45*	*0.85*	*0.70*	*0.69*	*0.66*	*0.77*	*90*	*0.69*	*0.62*	*0.77*	*76*	*1.5*
	Lincolnshire	*688,700*	*0.61*	*0.58*	*0.74*	*1.02*	*0.84*	*0.82*	*102*	*0.77*	*0.70*	*0.86*	*91*	*1.4*
	Nottingham City	286,400	0.72	0.93	1.19	1.43	1.29	0.93	84	1.09	0.93	1.27	93	15.1
West Midlands	Dudley	305,200	0.62	0.81	1.18	1.00	0.91	0.86	98	0.90	0.78	1.04	98	6.4
	Birmingham East and North	**395,900**			**1.58**	**1.86**	**1.81**	**1.32**	**131**	**1.64**	**1.45**	**1.86**	**160**	**22.3**
	Heart of Birmingham Teaching	**271,400**			**2.24**	**2.11**	**2.37**	**2.62**	**206**	**2.34**	**2.03**	**2.69**	**181**	**59.9**
	South Birmingham	**339,400**			**1.62**	**1.19**	**1.07**	**1.33**	**133**	**1.30**	**1.12**	**1.51**	**126**	**15.1**
	Sandwell	**287,700**			**1.91**	**1.49**	**1.31**	**1.55**	**163**	**1.56**	**1.35**	**1.80**	**161**	**20.3**
	Solihull	203,000	0.74	1.56	1.22	1.11	1.25	0.81	94	1.12	0.95	1.31	122	5.4
	Walsall Teaching	**254,700**	**1.35**	**1.25**	**1.55**	**1.13**	**1.45**	**1.18**	**130**	**1.32**	**1.15**	**1.51**	**138**	**13.6**
	Wolverhampton City	**236,900**	**1.78**	**1.70**	**1.65**	**1.63**	**1.24**	**1.01**	**110**	**1.49**	**1.30**	**1.70**	**154**	**22.2**
	Coventry Teaching	**306,600**	**1.58**	**1.21**	**0.89**	**0.97**	**1.14**	**1.30**	**130**	**1.17**	**1.02**	**1.35**	**112**	**16.0**
	Herefordshire	178,000			0.92	0.77	0.73	0.80	101	0.80	0.64	1.01	100	0.9
	Warwickshire	522,300	0.97	0.72	0.88	0.97	1.04	1.02	117	0.94	0.84	1.04	101	4.4
	Worcestershire	*553,000*			*0.93*	*0.80*	*0.65*	*0.83*	*98*	*0.80*	*0.70*	*0.92*	*91*	*2.4*
	North Staffordshire	211,400						0.56	66	0.56	0.33	0.95	66	1.5
	South Staffordshire	603,500						0.96	109	0.96	0.76	1.22	109	2.7
	Shropshire County	289,500			1.10	0.83	0.98	0.64	79	0.88	0.74	1.05	107	1.2
	Stoke on Trent	247,600						1.22	133	1.22	0.87	1.72	133	5.1
	Telford and Wrekin	161,800			1.34	0.82	1.13	1.59	161	1.22	0.98	1.52	121	5.2
East of England	*Bedfordshire*	*403,600*	*0.93*	*0.93*	*0.83*	*0.68*	*1.10*	*0.59*	*62*	*0.84*	*0.73*	*0.97*	*84*	*6.7*
	Luton	**187,200**	**0.92**	**1.74**	**0.87**	**1.58**	**1.05**	**1.42**	**134**	**1.27**	**1.07**	**1.51**	**113**	**28.1**
	West Hertfordshire	*530,600*	*0.64*	*0.63*	*0.62*	*0.74*	*1.00*	*0.89*	*94*	*0.76*	*0.67*	*0.86*	*76*	*7.6*
	East and North Hertfordshire	*527,800*	*0.85*	*0.95*	*0.71*	*0.76*	*0.89*	*0.66*	*70*	*0.80*	*0.71*	*0.90*	*80*	*5.0*
	Mid Essex	361,400			1.13	0.86	0.98	0.96	105	0.98	0.84	1.15	105	2.4
	North East Essex													2.6
	South East Essex	329,900			1.21	0.90	1.15	1.03	121	1.07	0.92	1.25	124	3.0

Table 3.2. Continued

UK area	PCT or HA	Tot pop	2002 O/E	2003 O/E	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2007 pmp[a]	2002–2007[b] O/E	2002–2007[b] LCL	2002–2007[b] UCL	2002–2007[b] pmp	% non-White
East of England	South West Essex	388,300			1.27	0.81	1.10	0.96	100	1.03	0.89	1.20	106	3.8
	West Essex	*274,700*			*1.01*	*0.71*	*0.77*	*0.72*	*80*	*0.80*	*0.65*	*0.98*	*86*	*4.2*
	Cambridgeshire	*589,600*	*0.66*	*0.82*	*0.90*	*0.92*	*1.10*	*0.91*	*97*	*0.89*	*0.80*	*1.00*	*90*	*4.1*
	Peterborough	163,400	1.19	1.14	0.93	1.26	1.19	1.03	104	1.12	0.93	1.36	107	10.3
	Norfolk	738,900			0.89	1.19	1.01	1.05	133	1.04	0.94	1.15	128	1.5
	Suffolk	585,300			0.80	0.99	0.80	0.95	111	0.88	0.78	1.00	101	3.1
	Great Yarmouth and Waveney	**210,600**			**1.46**	**1.26**	**1.26**	**1.15**	**147**	**1.28**	**1.08**	**1.52**	**160**	**1.3**
London	**Barnet**	**328,400**				**0.80**	**1.48**	**1.77**	**174**	**1.36**	**1.14**	**1.61**	**133**	**26.0**
	Camden	227,200				0.77	1.31	1.28	106	1.12	0.88	1.44	92	26.8
	Enfield	**285,400**				**1.04**	**1.58**	**1.09**	**105**	**1.24**	**1.02**	**1.51**	**120**	**22.9**
	Haringey Teaching	**225,600**				**1.44**	**1.36**	**1.24**	**102**	**1.35**	**1.07**	**1.69**	**111**	**34.4**
	Islington	**185,500**				**1.74**	**1.66**	**1.44**	**119**	**1.61**	**1.28**	**2.03**	**133**	**24.6**
	Barking and Dagenham	165,400			1.24	0.76	0.78	0.87	79	0.90	0.69	1.18	80	14.8
	City and Hackney Teaching	216,200				1.31	1.34	106	1.32	0.99	1.76	106	39.7	
	Havering	227,500				0.97	0.77	88	0.87	0.65	1.17	101	4.8	
	Newham	**248,300**			**2.01**	**2.39**	**2.42**	**1.83**	**137**	**2.17**	**1.85**	**2.53**	**158**	**60.6**
	Redbridge	251,800			1.42	0.99	0.97	1.33	127	1.17	0.97	1.41	109	36.5
	Tower Hamlets	**212,500**			**1.32**	**1.43**	**1.50**	**1.72**	**127**	**1.50**	**1.22**	**1.84**	**108**	**48.6**
	Waltham Forest	222,100				1.82	2.43	212	2.12	1.71	2.63	187	35.5	
	Brent Teaching	271,400				1.72	2.66	243	2.18	1.81	2.63	203	54.7	
	Ealing	**306,400**	**1.99**	**1.96**	**2.37**	**1.60**	**1.51**	**2.48**	**225**	**1.98**	**1.77**	**2.21**	**170**	**41.3**
	Hammersmith and Fulham	**171,400**	**1.71**	**1.98**	**1.78**	**1.05**	**1.07**	**1.22**	**105**	**1.45**	**1.22**	**1.74**	**119**	**22.2**
	Harrow	214,600				1.44	1.39	140	1.41	1.10	1.81	144	41.2	
	Hillingdon	**250,100**			**1.44**	**1.10**	**1.48**	**1.19**	**116**	**1.30**	**1.09**	**1.56**	**124**	**20.9**
	Hounslow	**218,600**			**2.24**	**1.58**	**1.69**	**1.73**	**156**	**1.80**	**1.52**	**2.13**	**158**	**35.1**
	Kensington and Chelsea	178,000				0.80	0.76	73	0.78	0.53	1.14	76	21.4	
	Westminster	231,700				1.39	1.18	108	1.29	0.99	1.68	119	26.8	
	Bexley	221,600	1.26	1.06	0.78	0.95	1.06	1.14	122	1.04	0.88	1.23	106	8.6
	Bromley	299,400	0.91	0.97	1.00	1.04	0.86	0.70	77	0.91	0.78	1.06	95	8.4
	Greenwich Teaching	**222,600**	**1.57**	**1.43**	**0.55**	**2.13**	**0.98**	**1.56**	**139**	**1.37**	**1.17**	**1.60**	**116**	**22.9**
	Lambeth	**272,200**	**1.63**	**1.38**	**1.50**	**1.83**	**1.48**	**2.01**	**162**	**1.64**	**1.43**	**1.88**	**126**	**37.6**
	Lewisham	**255,600**	**1.87**	**1.01**	**1.94**	**1.86**	**1.63**	**2.13**	**180**	**1.74**	**1.52**	**1.99**	**140**	**34.1**
	Southwark	**269,000**	**1.77**	**1.42**	**1.19**	**1.82**	**1.50**	**2.35**	**193**	**1.68**	**1.47**	**1.93**	**131**	**37.0**
	Croydon	**337,000**	**1.57**	**1.29**	**1.18**	**1.62**	**1.02**	**1.66**	**160**	**1.39**	**1.23**	**1.57**	**127**	**29.8**
	Kingston	156,000						0.95	90	0.95	0.56	1.61	90	15.5
	Richmond and Twickenham	179,500						0.85	84	0.85	0.51	1.41	84	9.0
	Sutton and Merton	382,000						1.36	131	1.36	1.03	1.80	131	18.1
	Wandsworth	279,200						1.90	158	1.90	1.41	2.55	158	22.0
South East	*Isle of Wight*	*138,200*	*0.70*	*0.67*	*0.66*	*0.40*	*0.53*	*0.17*	*22*	*0.51*	*0.39*	*0.67*	*64*	*1.3*
	Hampshire	*1,265,900*	*0.75*	*0.70*	*0.61*	*0.69*	*0.81*	*0.80*	*91*	*0.73*	*0.68*	*0.79*	*79*	*2.2*
	Portsmouth City Teaching	*196,300*	*0.67*	*0.92*	*0.58*	*0.70*	*0.77*	*0.95*	*92*	*0.77*	*0.62*	*0.95*	*70*	*5.3*
	Southampton City	*229,100*	*0.80*	*0.85*	*0.65*	*0.71*	*0.76*	*0.87*	*83*	*0.78*	*0.64*	*0.95*	*70*	*7.6*
	West Kent													3.9
	Medway													5.4
	Eastern and Coastal Kent													2.4
	Hastings and Rother	176,200			1.05	0.72	1.06	0.57	74	0.85	0.68	1.06	108	2.4
	Brighton and Hove City	251,500			1.04	0.85	0.88	0.87	87	0.91	0.74	1.12	89	5.7
	East Sussex Downs and Weald	330,200			1.18	0.68	0.93	0.78	100	0.89	0.76	1.04	112	2.3

Table 3.2. Continued

UK area	PCT or HA	Tot pop	2002 O/E	2003 O/E	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2007 pmp[a]	2002–2007[b] O/E	2002–2007[b] LCL	2002–2007[b] UCL	2002–2007[b] pmp	% non-White
South East	*Surrey*	*1,073,400*			*0.77*	*0.61*	*0.80*	*0.81*	*89*	*0.75*	*0.67*	*0.83*	*81*	*4.9*
	West Sussex	*770,600*			*0.59*	*0.81*	*0.87*	*0.82*	*100*	*0.78*	*0.69*	*0.87*	*93*	*3.4*
	Milton Keynes	230,100	0.88	1.25	0.99	0.79	0.83	1.18	109	0.98	0.82	1.18	85	9.1
	Berkshire East	382,200	0.69	0.98	0.92	1.22	1.23	1.32	128	1.07	0.94	1.22	99	16.0
	Berkshire West	445,400	0.63	1.04	0.94	1.00	0.94	0.97	97	0.93	0.81	1.05	87	7.3
	Oxfordshire	*607,400*	*0.88*	*1.10*	*0.73*	*0.89*	*0.85*	*0.70*	*72*	*0.86*	*0.77*	*0.96*	*84*	*5.0*
	Buckinghamshire	*500,700*	*0.77*	*0.78*	*0.81*	*0.63*	*0.68*	*0.78*	*84*	*0.74*	*0.65*	*0.84*	*76*	*7.7*
South West	Bath and North East Somerset	175,600	0.65	0.73	1.34	1.00	0.84	1.02	114	0.93	0.77	1.13	99	2.8
	Bristol	**410,700**	**0.97**	**1.39**	**1.25**	**1.20**	**1.36**	**1.01**	**97**	**1.20**	**1.07**	**1.35**	**109**	**8.2**
	Gloucestershire	*578,500*	*0.84*	*0.86*	*0.91*	*0.85*	*1.01*	*0.89*	*104*	*0.90*	*0.81*	*1.00*	*99*	*2.9*
	Swindon	192,600	1.06	1.00	1.17	0.84	0.79	0.51	52	0.88	0.73	1.08	86	4.8
	South Gloucestershire	254,200	1.21	0.99	0.99	1.12	1.02	0.90	98	1.04	0.89	1.21	107	2.4
	Wiltshire	*448,600*	*0.45*	*0.61*	*0.54*	*0.81*	*0.68*	*0.67*	*76*	*0.63*	*0.55*	*0.73*	*68*	*1.6*
	Bournemouth and Poole	*297,900*			*0.70*	*0.66*	*0.68*	*0.61*	*74*	*0.66*	*0.54*	*0.81*	*78*	*2.6*
	Dorset	*403,100*			*0.73*	*0.56*	*0.53*	*0.69*	*94*	*0.62*	*0.53*	*0.74*	*84*	*1.2*
	North Somerset	201,200	0.85	1.31	1.20	1.14	0.91	0.82	99	1.03	0.88	1.22	119	1.4
	Somerset	*518,800*	*0.92*	*0.81*	*0.87*	*0.63*	*0.76*	*0.67*	*83*	*0.77*	*0.69*	*0.87*	*90*	*1.2*
	Devon	740,600	0.82	0.85	1.02	1.01	0.90	1.01	128	0.94	0.86	1.03	113	1.1
	Plymouth Teaching	**247,900**	**1.54**	**1.46**	**1.12**	**1.06**	**1.86**	**1.75**	**186**	**1.47**	**1.29**	**1.68**	**148**	**1.6**
	Torbay	133,000	0.47	1.09	1.32	1.01	0.79	0.93	120	0.94	0.76	1.15	115	1.2
	Cornwall and Isles of Scilly	526,200	1.48	1.20	1.35	0.71	1.02	0.92	116	1.10	1.00	1.21	132	1.0
Wales	**Cardiff**	**317,500**	**1.71**	**1.65**	**1.39**	**1.35**	**1.34**	**1.50**	**145**	**1.48**	**1.31**	**1.68**	**135**	**8.4**
	Merthyr Tydfil	**55,800**	**1.87**	**1.78**	**2.47**	**1.83**	**2.83**	**1.78**	**197**	**2.10**	**1.68**	**2.64**	**221**	**1.0**
	Rhondda, Cynon, Taff	**234,100**	**1.57**	**1.11**	**1.66**	**1.41**	**1.36**	**1.48**	**162**	**1.43**	**1.25**	**1.64**	**149**	**1.2**
	Vale of Glamorgan	123,200	1.16	0.95	1.26	0.74	1.40	1.01	114	1.09	0.88	1.34	116	2.2
	Carmarthenshire	**177,800**	**1.10**	**1.41**	**1.14**	**1.12**	**1.02**	**1.32**	**163**	**1.18**	**1.01**	**1.39**	**139**	**0.9**
	Ceredigion	77,100	1.36	0.59	1.05	0.66	0.41	0.85	104	0.81	0.60	1.09	93	1.4
	Pembrokeshire	116,800	0.87	1.21	0.75	1.13	0.93	0.82	103	0.95	0.76	1.18	113	0.9
	Powys	130,900	0.68	0.33	0.96	1.21	0.80	1.06	138	0.85	0.68	1.05	104	0.9
	Blaenau Gwent	69,500	1.32	0.14	1.11	1.18	0.99	1.02	115	0.96	0.71	1.29	103	0.8
	Caerphilly	**171,300**	**1.62**	**1.07**	**1.06**	**1.61**	**1.31**	**1.73**	**187**	**1.40**	**1.19**	**1.65**	**144**	**0.9**
	Monmouthshire	87,800	1.18	0.72	1.01	1.15	0.90	0.65	80	0.93	0.72	1.20	108	1.1
	Newport	140,500	1.07	1.46	0.94	0.96	1.09	1.26	135	1.13	0.93	1.38	115	4.8
	Torfaen	91,000	1.45	1.17	0.95	0.90	0.94	1.35	154	1.12	0.88	1.43	121	0.9
	Bridgend	**132,600**	**1.16**	**1.69**	**1.31**	**1.10**	**1.49**	**1.74**	**196**	**1.42**	**1.19**	**1.70**	**152**	**1.4**
	Neath Port Talbot	**137,100**	**1.44**	**1.51**	**1.29**	**0.90**	**1.33**	**1.68**	**197**	**1.36**	**1.14**	**1.62**	**151**	**1.1**
	Swansea	**227,000**	**1.46**	**1.72**	**1.21**	**1.06**	**1.34**	**1.15**	**132**	**1.32**	**1.14**	**1.51**	**144**	**2.2**
	Conwy	111,300	1.24	0.52	1.17	0.76	1.05	1.21	162	0.99	0.80	1.23	126	1.0
	Denbighshire	95,900	0.68	0.37	1.01	1.82	0.57	0.67	83	0.86	0.66	1.11	101	1.2
	Flintshire	150,000	1.17	1.25	1.04	1.29	1.10	1.13	127	1.17	0.97	1.40	123	0.8
	Gwynedd	**118,200**	**1.54**	**1.39**	**1.22**	**1.52**	**1.71**	**1.54**	**186**	**1.49**	**1.25**	**1.78**	**171**	**1.2**
	Isle of Anglesey	**68,800**	**0.94**	**1.42**	**1.15**	**1.69**	**1.25**	**1.64**	**203**	**1.36**	**1.07**	**1.73**	**160**	**0.7**
	Wrexham	131,000	1.03	1.29	0.83	1.14	0.87	0.89	99	1.00	0.81	1.25	106	1.1
Scotland	Aberdeen City	207,000	1.14	1.03	1.77	1.11	0.79	0.72	77	1.08	0.91	1.28	110	2.9
	Aberdeenshire	236,300	1.10	0.76	0.88	0.98	0.74	1.21	135	0.94	0.80	1.11	99	0.7
	Angus	109,500	2.16	0.91	1.31	1.08	0.80	1.05	128	1.20	0.98	1.48	139	0.8
	Argyll & Bute	91,200	0.70	1.44	0.95	0.81	0.76	1.05	132	0.95	0.74	1.22	113	0.8
	Scottish Borders	110,300	0.93	0.73	1.36	0.76	0.93	1.25	154	0.99	0.79	1.24	116	0.6

Table 3.2. Continued

UK area	PCT or HA	Tot pop	2002 O/E	2003 O/E	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2007 pmp[a]	2002–2007[b] O/E	2002–2007[b] LCL	2002–2007[b] UCL	2002–2007[b] pmp	% non-White
Scotland	Clackmannanshire	48,800	0.87	1.45	1.03	1.16	0.73	1.50	164	1.12	0.80	1.57	116	0.8
	West Dunbartonshire	91,100	0.59	0.67	1.45	0.42	1.38	0.71	77	0.87	0.66	1.16	90	0.7
	Dumfries & Galloway	148,000	1.32	1.38	1.03	1.24	1.06	0.84	108	1.14	0.95	1.36	140	0.7
	Dundee City	**142,100**	**1.51**	**1.99**	**1.36**	**2.31**	**1.46**	**1.69**	**190**	**1.72**	**1.47**	**2.01**	**184**	**3.7**
	East Ayrshire	119,300	0.77	1.22	0.73	1.22	1.65	0.81	92	1.08	0.87	1.34	116	0.7
	East Dunbartonshire	105,700	0.75	1.35	0.71	0.67	1.27	0.65	76	0.90	0.71	1.16	99	3.1
	East Lothian	92,600	0.97	0.31	0.82	1.06	0.73	1.50	173	0.90	0.69	1.18	99	0.7
	East Renfrewshire	89,000	0.46	0.99	0.88	1.24	0.97	1.10	124	0.95	0.73	1.24	101	3.8
	Edinburgh, City of	463,300	0.78	1.11	1.07	1.03	1.03	0.72	73	0.96	0.85	1.08	92	4.1
	Falkirk	149,500	0.64	0.67	0.60	1.14	0.89	1.47	161	0.92	0.74	1.13	95	1.0
	Fife	359,200	1.12	0.96	1.01	1.38	1.04	0.94	106	1.07	0.95	1.22	114	1.3
	Glasgow City	**580,600**	**1.38**	**1.85**	**1.50**	**1.33**	**1.20**	**1.07**	**107**	**1.38**	**1.26**	**1.51**	**130**	**5.5**
	Highland	**215,400**	**1.30**	**1.37**	**1.24**	**1.81**	**0.91**	**0.86**	**102**	**1.24**	**1.07**	**1.43**	**140**	**0.8**
	Inverclyde	81,300	2.38	1.19	1.07	1.01	0.84	1.09	123	1.24	0.97	1.58	133	0.9
	Midlothian	**79,000**	**1.06**	**1.77**	**2.14**	**1.07**	**1.56**	**0.92**	**101**	**1.41**	**1.12**	**1.79**	**148**	**0.9**
	Moray	86,700	0.91	1.30	0.97	1.32	1.34	0.59	69	1.07	0.84	1.38	119	0.9
	North Ayrshire	**135,300**	**1.41**	**1.20**	**1.27**	**1.26**	**1.57**	**0.64**	**74**	**1.22**	**1.01**	**1.48**	**133**	**0.7**
	North Lanarkshire	323,700	1.20	1.27	0.98	0.80	0.92	1.04	108	1.03	0.89	1.18	101	1.3
	Orkney Islands	20,000	1.44	1.83	0.45	1.29	0.81	0.42	50	1.02	0.61	1.73	117	0.4
	Perth & Kinross	140,200	1.21	1.28	1.27	0.84	0.68	0.99	121	1.03	0.85	1.26	120	1.0
	Renfrewshire	**169,300**	**1.79**	**1.23**	**1.23**	**1.27**	**0.93**	**0.96**	**106**	**1.22**	**1.03**	**1.45**	**128**	**1.2**
	Shetland Islands	22,000	0.00	0.45	1.33	0.42	0.00	1.62	182	0.64	0.33	1.24	68	1.1
	South Ayrshire	111,900	0.66	1.18	0.70	1.03	0.69	0.86	107	0.85	0.67	1.08	101	0.7
	South Lanarkshire	307,700	1.23	0.94	0.97	0.86	1.01	0.89	97	0.98	0.85	1.13	102	1.1
	Stirling	87,600	0.73	0.69	0.69	0.32	1.02	1.05	114	0.76	0.56	1.03	78	1.5
	West Lothian	165,700	0.92	0.53	0.60	1.13	1.07	0.73	72	0.84	0.67	1.04	78	1.3
	Eilean Siar	25,900	0.71	1.01	1.34	0.00	0.89	1.83	232	0.97	0.61	1.54	116	0.6
N Ireland	**Antrim**	**51,500**				**2.40**	**1.64**	**1.26**	**117**	**1.76**	**1.19**	**2.60**	**162**	**0.5**
	Ards	76,000				1.02	0.84	0.86	92	0.90	0.59	1.37	96	0.9
	Armagh	56,400				1.91	0.72	0.19	18	0.93	0.56	1.54	89	0.5
	Ballymena	61,400				1.27	1.05	1.55	163	1.29	0.87	1.91	136	1.3
	Ballymoney	29,300				1.81	0.68	1.76	171	1.41	0.80	2.48	137	0.6
	Banbridge	45,400				0.96	1.35	0.69	66	1.01	0.58	1.73	95	0.4
	Belfast	**267,600**				**1.24**	**1.40**	**1.48**	**146**	**1.38**	**1.14**	**1.66**	**136**	**0.4**
	Carrickfergus	**39,800**				**2.53**	**2.15**	**2.95**	**302**	**2.54**	**1.78**	**3.61**	**260**	**0.3**
	Castlereagh	**65,600**				**2.39**	**1.33**	**0.69**	**76**	**1.46**	**1.03**	**2.06**	**163**	**0.4**
	Coleraine	**56,900**				**2.56**	**0.97**	**1.49**	**158**	**1.66**	**1.16**	**2.37**	**176**	**0.3**
	Cookstown	34,600				2.67	0.95	1.29	116	1.62	0.98	2.68	145	1.3
	Craigavon	86,800				1.62	0.47	0.97	92	1.01	0.68	1.49	96	0.6
	Derry	107,800				1.01	1.58	0.76	65	1.12	0.79	1.60	96	0.8
	Down	**68,400**				**1.71**	**1.91**	**0.75**	**73**	**1.46**	**1.01**	**2.10**	**141**	**0.7**
	Dungannon	52,700				1.27	0.40	0.62	57	0.75	0.42	1.36	70	0.7
	Fermanagh	60,600				1.01	1.43	0.98	99	1.15	0.75	1.76	116	0.8
	Larne	31,400				0.89	1.12	0.87	96	0.96	0.52	1.79	106	0.4
	Limavady	33,900				1.73	1.31	1.34	118	1.45	0.84	2.50	128	0.6
	Lisburn	113,300				1.54	0.73	0.93	88	1.06	0.76	1.48	100	0.7
	Magherafelt	42,900				1.05	0.99	0.25	23	0.76	0.40	1.47	70	0.7
	Moyle	17,000				0.00	1.62	0.56	59	0.74	0.28	1.98	78	0.3

Table 3.2. Continued

UK area	PCT or HA	Tot pop	2002 O/E	2003 O/E	2004 O/E	2005 O/E	2006 O/E	2007 O/E	2007 pmp[a]	2002–2007[b] O/E	LCL	UCL	pmp	% non-White
N Ireland	Newry & Mourne	93,600				0.85	0.69	0.59	53	0.71	0.44	1.12	64	0.4
	Newtownabbey	81,400				1.09	1.14	1.17	123	1.13	0.79	1.63	119	0.3
	North Down	79,000				1.29	0.88	1.02	114	1.06	0.73	1.53	118	1.0
	Omagh	51,200				0.66	1.25	1.07	98	1.00	0.59	1.69	91	0.4
	Strabane	39,200				0.55	0.78	1.60	153	0.98	0.54	1.76	94	0.8

White was 13.6% which was significantly higher (Wilcoxon rank sum test p < 0.001) than in those areas with low (2.6%) or normal (1.4%) ratios (figure 3.3).

Of the 208 PCTs and HAs with coverage for at least three years, 36 had relatively high non-White percentages (>10%). Twenty-six of these had high standardised acceptance ratios (51% of all areas with high ratios), 15 of these were in London and 7 in the West Midlands. Nine had normal ratios (8% of all areas with normal ratios), and one (Oldham) had a low ratio (3% of all areas with low ratios).

The number of patients accepted by each renal centre in the years 2002 to 2007 is shown in table 3.4, along with the percentage difference between the 2002 and 2007 numbers for each of those 48 centres with full reporting during that period and for the same centres on a national level. There have been large variations in acceptance trends between centres ranging from an increase of 127.5% in Reading to a reduction of 44.4% in York. The variation may reflect chance fluctuation, completeness of reporting, changing incidence of established renal failure, changes in referral patterns or catchment populations and areas, and the introduction of conservative care programmes. Acceptance rates of individual renal centres have not been calculated, as their catchment populations are not precisely defined.

Although the overall number of accepted patients in the UK increased from 6,446 to 6,644 between 2006 and 2007, in those centres with complete reporting during the period 2002 to 2007, accepted numbers fell in the past year (4,867 to 4,676). Hence the increase in the number of UK patients accepted between 2002 and 2007 at 9.2% was less than the 12% increase between 2002 and 2006 which was reported last year. The increase between 2002 and 2007 was greater in England (10.8%) than in Wales (8.1%). There was no change in Scotland.

2 Demographics and clinical characteristics of patients accepted onto RRT

Methods

The proportion of patients starting RRT was examined by age group, gender, primary renal disease, ethnic origin and first modality of RRT. Some centres electronically upload ethnicity coding to their renal information technology (IT) system from the hospital Patient Administration Systems (PAS). Ethnicity coding in these PAS systems is based on self-reported ethnicity and uses a different coding system [3]. 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. The details of regrouping of the PAS codes into the above ethnic categories are provided in appendix G Ethnicity and ERA-EDTA coding. Chi-squared, Fisher's exact, ANOVA and Kruskal Wallis tests were used as appropriate to test for significant differences between groups.

Table 3.3. Number of PCTs or HAs with low, normal and high standardised acceptance rate ratios (2002–2007)

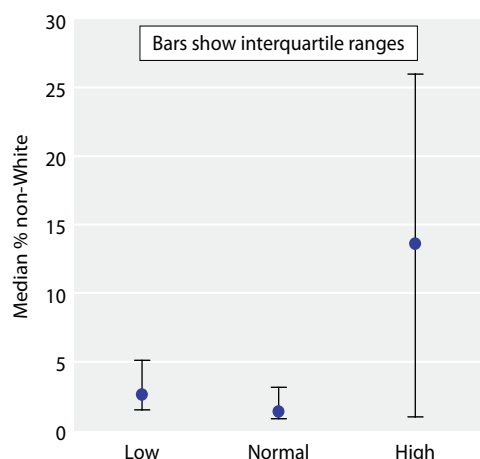| Region	Standardised acceptance rate ratio			
	Low	Normal	High	Total
NE England	2	10	0	12
NW England	11	6	1	18
Yorkshire & Humber	3	10	1	14
East Midlands	4	4	1	9
West Midlands	1	6	7	14
East of England	5	6	2	13
London	0	5	15	20
SE England	8	6	0	14
SW England	5	7	2	14
England	**39**	**60**	**29**	**128**
Wales	**0**	**12**	**10**	**22**
Scotland	**0**	**26**	**6**	**32**
N Ireland	**0**	**20**	**6**	**26**
Total	**39**	**118**	**51**	**208**

Fig. 3.3. Percentage non-Whites in PCT/HA areas with low, normal and high age-gender standardised ratios (2002–2007)

Estimated glomerular filtration rate (eGFR) at start of RRT was studied amongst patients with eGFR data within 14 days before the start of RRT. The eGFR was calculated using the abbreviated 4 variable MDRD study equation [4]. For the purpose of the eGFR calculation, patients who had missing ethnicity but a valid serum creatinine measurement were classed as Whites. The eGFR values were log transformed in order to normalise the data. Patients with an eGFR >20 ml/min/1.73 m^2 were excluded from the eGFR analyses due to concerns on possible data extraction errors. Patients starting RRT between 2001 and 2005 from one centre (London West) were also excluded due to errors in the data extraction process for this item. This extraction process had been rectified in 2006 and patients starting RRT in this centre in 2006–2007 have been included.

Table 3.4. Number of new patients accepted by individual renal centres reporting to the UK Renal Registry 2002–2007

| Country | Centre | Year | | | | | | % change since 2002 |
		2002	2003	2004	2005	2006	2007	
England	B Heart	66	103	102	116	115	95	43.9
	B QEH			194	196	186	222	
	Basldn		53	46	28	45	39	
	Bradfd	62	74	61	66	50	87	40.3
	Brightn			118	109	131	115	
	Bristol	124	163	164	175	177	154	24.2
	Camb	74	96	110	111	157	127	71.6
	Carlis	26	31	29	31	27	25	−3.8
	Carsh	172	198	165	180	184	196	14.0
	Chelms			52	38	49	52	
	Colchr						*31*	
	Covnt	94	75	76	83	102	109	16.0
	Derby		59	67	71	69	72	
	Donc						18	
	Dorset		65	59	45	53	58	
	Dudley	25	41	54	38	44	35	40.0
	Exeter	82	97	110	110	104	122	48.8
	Glouc	54	53	53	60	73	57	5.6
	Hull	105	81	109	126	98	99	−5.7
	Ipswi	43	38	45	59	42	40	−7.0
	Kent				*104*	*124*	163	
	L Barts			185	184	187	200	
	L Guys	141	93	104	132	134	150	6.4
	L Kings	115	108	114	136	113	128	11.3
	L Rfree				132	209	182	
	L St.G						89	
	L West	250	254	295	290	283	334	33.6
	Leeds	152	185	175	164	181	117	−23.0
	Leic	153	167	162	223	241	240	56.9
	Liv Ain			3	29	34	34	
	Liv RI	152	114	130	139	140	114	−25.0
	M Hope		143	111	112	129	99	
	M RI						159	

Table 3.4. Continued

Country	Centre	Year						% change since 2002
		2002	2003	2004	2005	2006	2007	
England	Middlbr	111	103	102	84	105	98	−11.7
	Newc	102	94	109	113	110	111	8.8
	Norwch			95	119	109	108	
	Nottm	87	115	107	145	135	127	46.0
	Oxford	170	188	171	156	162	139	−18.2
	Plymth	79	64	62	58	91	76	−3.8
	Ports	145	141	118	151	173	157	8.3
	Prestn	110	98	79	118	121	128	16.4
	Redng	40	63	59	74	77	91	127.5
	Sheff	156	159	168	157	168	166	6.4
	Shrew			55	42	54	55	
	Stevng	100	122	84	91	118	86	−14.0
	Sthend	34	42	40	34	47	34	0.0
	Stoke						87	
	Sund	56	55	50	58	56	61	8.9
	Truro	59	53	67	32	50	45	−23.7
	Wirral	43	53	66	58	55	53	23.3
	Wolve	98	88	105	92	87	68	−30.6
	York	63	57	48	43	47	35	−44.4
N Ireland	Antrim				42	33	36	
	Belfast				131	112	91	
	Derry					3	7	
	Newry				28	14	15	
	Tyrone				23	30	22	
	Ulster				9	8	14	
Scotland	Abrdn	60	52	69	64	53	56	−6.7
	Airdrie	60	51	51	39	56	50	−16.7
	D & Gall	22	22	16	21	21	17	−22.7
	Dundee	68	64	62	76	52	60	−11.8
	Dunfn	29	27	29	44	37	37	27.6
	Edinb	81	90	98	99	105	94	16.0
	Glasgw	175	221	188	202	189	185	5.7
	Inverns	29	34	33	44	26	25	−13.8
	Klmarnk	32	40	29	43	56	32	0.0
Wales	Bangor	29	33	36	40	41	36	24.1
	Cardff	181	166	186	182	207	207	14.4
	Clwyd	20	12	14	27	18	23	15.0
	Swanse	113	125	93	98	113	123	8.8
	Wrexm	42	32	29	40	26	27	−35.7
England		**3,343**	**3,786**	**4,478**	**4,912**	**5,246**	**5,487**	
N Ireland					**233**	**200**	**185**	
Scotland		**556**	**601**	**575**	**632**	**595**	**556**	
Wales		**385**	**368**	**358**	**387**	**405**	**416**	
UK		**4,284**	**4,755**	**5,411**	**6,164**	**6,446**	**6,644**	

Including only centres reporting continuously 2002–2007

England		**3,343**	**3,466**	**3,493**	**3,703**	**3,867**	**3,704**	**10.8**
Scotland		**556**	**601**	**575**	**632**	**595**	**556**	**0.0**
Wales		**385**	**368**	**358**	**387**	**405**	**416**	**8.1**
UK		**4,284**	**4,435**	**4,426**	**4,722**	**4,867**	**4,676**	**9.2**

Blank cells – no data returned to the UKRR for that year
Renal centres in italics are those providing summary data only

Results

Age

In 2007, the median age of patients starting renal replacement therapy was 64.1 years, a little lower than previously reported (table 3.5). The differences between the four countries of the United Kingdom were more marked than those detailed in previous reports. In Northern Ireland the median age of incident patients was 68.2 years, slightly higher than in Wales (67.6 years) and considerably higher than in England (63.8 years) and Scotland (61.8 years). The median age of incident UK non-White patients was considerably lower at 57.1 years. This may reflect the younger age distribution of ethnic minority populations in general compared with the White population (5.1% of ethnic minorities were over 65 years old compared to 16.9% of Whites) [5].

Acceptance rates of patients over the age of 80 were much higher in Northern Ireland and Wales, being approximately twice those in England and Scotland (table 3.6). In the latter two countries, the acceptance rate peaked in the 75–79 age band (at 414 and 446 pmp respectively). In Wales the peak was in the 80–84 age band (at 619 pmp). In Northern Ireland the acceptance rate reached a plateau between the ages of 70 and 85.

There were large differences between centres with respect to the median age of their incident patients (figure 3.4). In 10 centres, the median age was <60 years and in 8 it was over 70 years. Possible explanations include chance fluctuations due to low take-on rates, the transplant status of the centre, variations in ethnic mix, differences in local approaches to conservative management, and other potential differences in the prevalence, nature and management of renal disease. The median age of patients in transplant centres was slightly but significantly lower than that in non-transplant centres (63.0 vs 65.5 years: p < 0.0001). Five of the 10 centres

whose incident cohort had a median age <60 years were transplanting centres. Four of the 8 centres whose incident cohort had a median age >70 years accepted less than 40 patients during 2007.

Gender

As in previous UKRR reports there was an excess of males starting RRT in all age groups (figure 3.5). Peak acceptance rate was in the 75–79 year age band in both males and females. The proportion of males increased progressively with age from the 25–34 year age band (figure 3.6).

In the whole UK, 61.8% of the 2007 incident cohort was male. All reporting centres reported an excess of incident males, the male:female ratio varying from 1.0 to 3.3 (excluding Derry with only 7 incident patients) (figure 3.7). Higher ratios are likely to be an effect of small numbers. Ten of the 19 centres with a ratio greater than 2 in 2007 took on less than 50 patients in that year. There was no significant difference between the ratio in transplanting and non-transplanting centres.

Table 3.6 Acceptance rate pmp by age band and country in 2007

Age	Pmp			
---	England	Wales	Scotland	N Ireland
20–24	27	15	41	8
25–29	42	61	29	36
30–34	47	53	54	34
35–39	63	74	65	39
40–44	73	92	67	77
45–49	105	121	146	59
50–54	141	107	146	69
55–59	156	202	145	144
60–64	207	282	207	241
65–69	288	389	238	313
70–74	353	446	311	589
75–79	414	584	446	534
80–84	360	619	295	576
85+	132	225	137	229

Table 3.5. Median age of patients starting renal replacement therapy 2002–2007

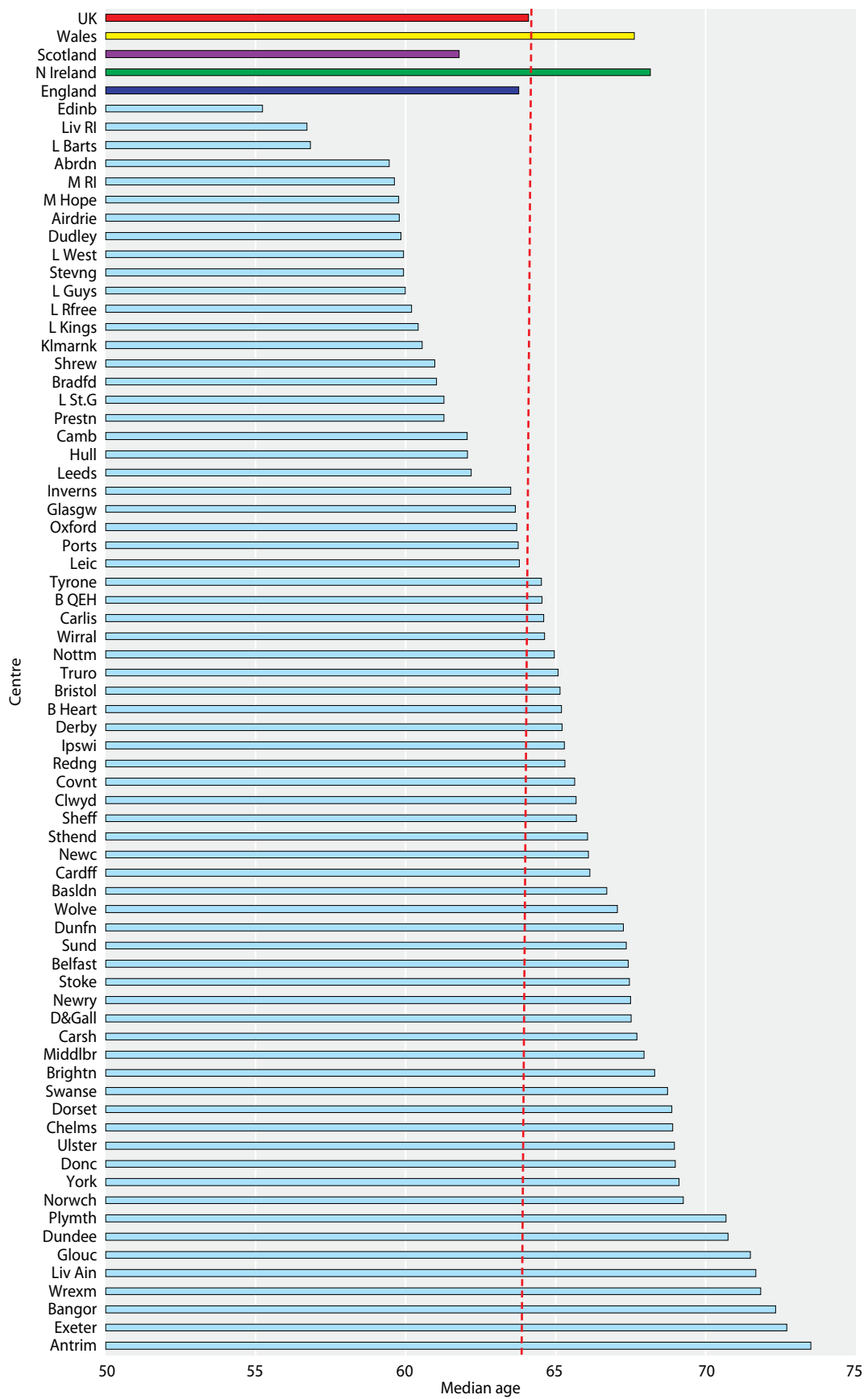| Country | Year | | | | | |
---	2002	2003	2004	2005	2006	2007
England	65.3	64.6	64.8	65.1	64.5	63.8
N Ireland				67.9	68.2	68.2
Scotland	65.3	66.4	65.5	65.9	65.8	61.8
Wales	67.0	66.5	68.7	67.4	67.3	67.6
UK	**65.5**	**65.0**	**65.2**	**65.4**	**64.9**	**64.1**

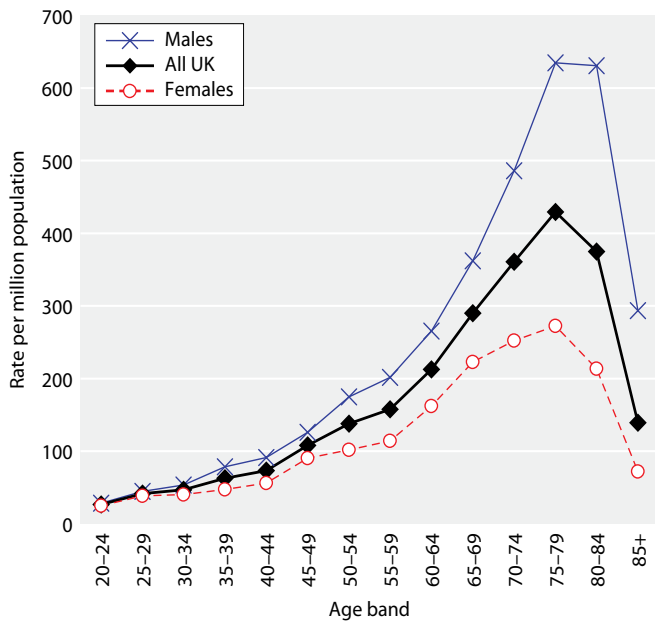**Fig. 3.4.** Median age of new patients in each centre in 2007

Fig. 3.5. Incident rates by age and gender in 2007

Ethnicity

Only 46 of the 70 centres (65.7%) returned ethnicity data that was 50% or more complete (table 3.7). This is similar to last year. In view of this lack of completeness, the results of analysis of ethnicity data should be interpreted cautiously. There was great variation between centres with respect to the ethnic mix of incident patients. This ranged from 0% for ethnic minorities in York, Doncaster, Truro, Ulster, Antrim and Tyrone to over 50% in London St Georges, London Barts and London West. All the latter centres cover areas with high standardised acceptance ratios.
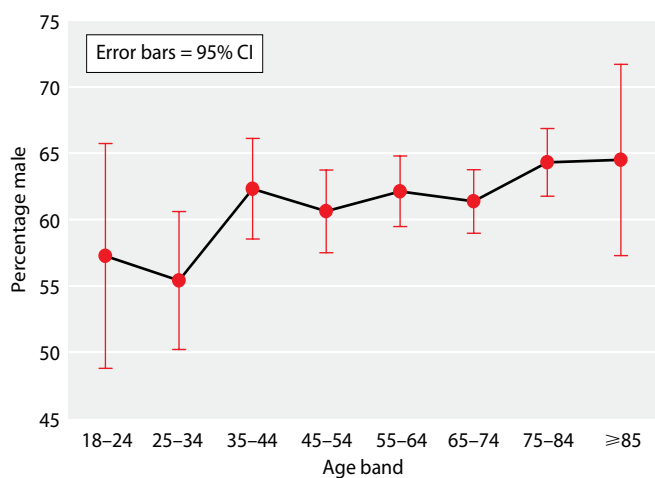
Fig. 3.6. Percentage of total starting RRT who are male, by age band in 2007

Primary renal diagnosis

The distribution of incident patients by age, gender and cause of renal failure is shown in table 3.8. The proportion of null returns for primary renal diagnosis at 9.7% has decreased from a UK mean of 14.4% in 2006. In table 3.8 distributions are shown as a proportion of all patients reported to the UKRR, and as a proportion of all those returned with data on primary renal disease excluding those with missing diagnoses. Proportions in the latter category are slightly higher, but relative proportions are the same using both methods.

In the following analysis the proportions were calculated after excluding missing diagnoses. Diabetes was the most common specific diagnosis accounting for 21.9% of incident diagnoses. This was the case irrespective of age, though the proportion was slightly higher in those aged <65 years. Biopsy proven glomerulonephritis (13.9% vs 7.1%) and adult polycystic kidney disease (10.9% vs 2.8%) were much more common in the younger incident cohort, whilst renal vascular disease was much more common in older incident patients (12.8% vs 2.5%). It was perhaps not surprising that uncertainty about the underlying diagnosis was also more common in the older cohort (30.2% vs 20.3%). For most primary renal diagnoses, the male to female ratio was greater than 1.5. The gender difference may relate to factors such as hypertension, atheroma and renal vascular disease, which are more common in males, and more common with increasing age. These factors may influence the rate of progression of renal failure. As would be expected from the mode of inheritance, adult polycystic kidney disease (APKD) is a major exception, the ratio approximating unity in this condition.

There are marked disparities between centres (table 3.9) with respect to missing data relating to primary renal disease. Twenty-eight centres had full returns, whilst 3 centres (Aberdeen, Manchester Royal Infirmary and Exeter) had less than 50% returns. There has been a further slight reduction in the UK as a whole with respect to uncertain aetiology, although there is great variation between centres. Some of this variation is likely to reflect the lack of clear definition of certain diagnostic categories e.g. hypertensive renal disease and renal vascular disease; some may result from differences between centres in attitudes to the degree of certainty required to record other diagnoses. In keeping with this, there were significant negative correlations between the frequency of uncertain diagnosis and all other diagnostic categories.
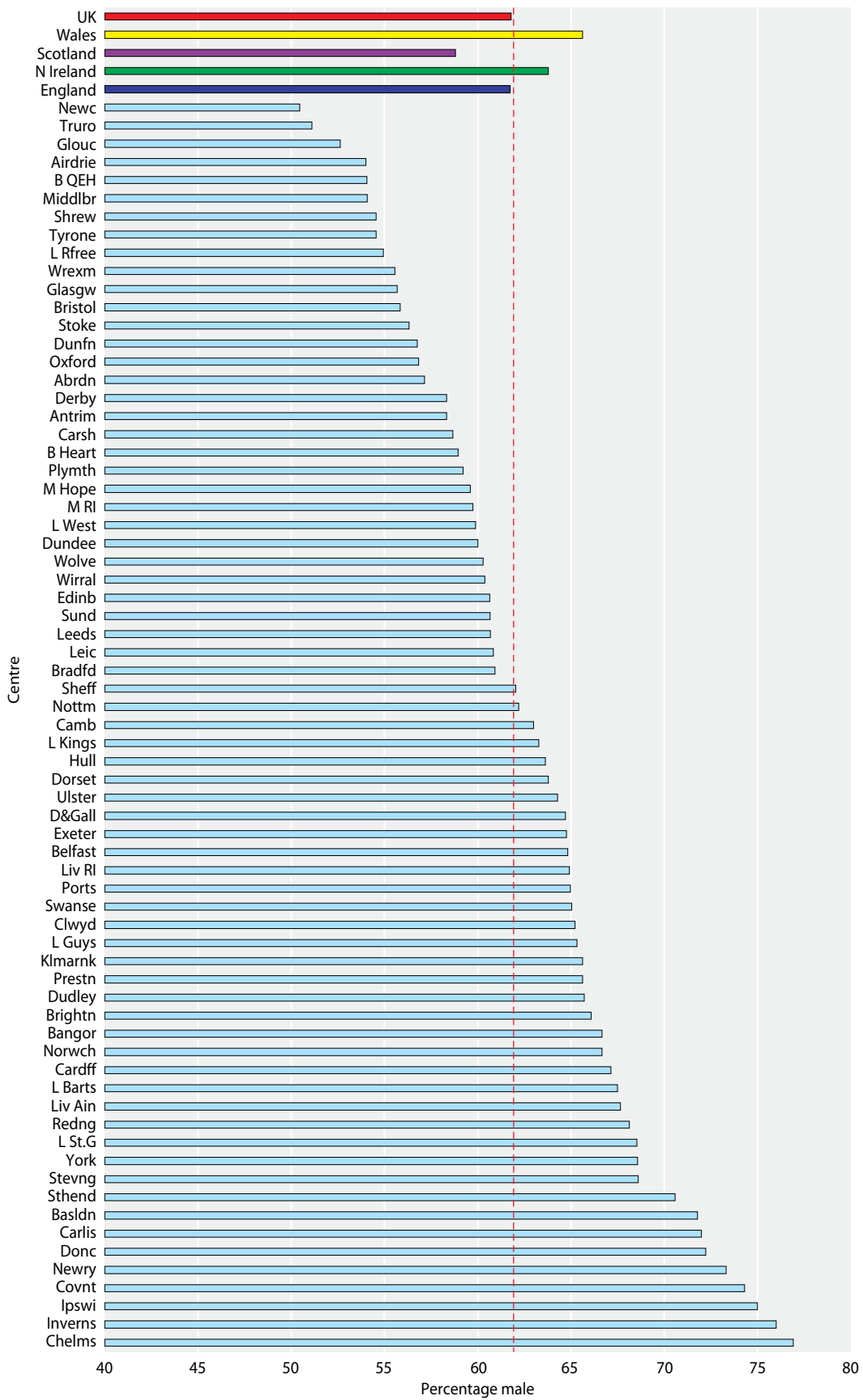
Fig. 3.7. Percentage of new patients who are male in renal centres reporting to the UKRR in 2007

Table 3.7. Percentage of patients in different ethnic groups by centre

Country	Centre	Completion %	Percentage				
			White	Black	South Asian	Chinese	Other
England	York	100.0	100.0				
	Shrew	100.0	96.4		3.6		
	Nottm	100.0	89.8	4.7	5.5		
	Redng	100.0	76.9	4.4	16.5	2.2	
	Newc	99.1	91.8		6.4	0.9	0.9
	B QEH	99.1	68.2	9.1	17.7		5.0
	L Rfree	98.9	57.2	21.7	13.9	0.6	6.7
	L Kings	98.4	51.6	36.5	8.7	3.2	
	Leic	97.9	76.6	3.8	17.4	0.4	1.7
	B Heart	97.9	62.4	10.8	26.9		
	Basldn	97.4	89.5	2.6	5.3	2.6	
	Wirral	96.2	92.2		2.0	3.9	2.0
	Carlis	96.0	95.8		4.2		
	M Hope	96.0	80.0	3.2	15.8		1.1
	Wolve	95.6	75.4	9.2	13.8	1.5	
	L Barts	95.0	45.3	10.5	26.3	1.6	16.3
	Oxford	95.0	84.8	4.5	6.8	0.8	3.0
	Dorset	94.8	92.7	3.6	1.8		1.8
	Prestn	93.8	87.5	0.8	11.7		
	M RI	93.7	81.9	8.1	8.7	1.3	
	Bristol	93.5	94.4	2.8	2.1	0.7	
	Bradfd	92.0	57.5	2.5	38.8		1.3
	Covnt	91.7	91.0		9.0		
	Dudley	91.4	90.6		9.4		
	Sund	90.2	98.2		1.8		
	Donc	83.3	100.0				
	Camb	81.1	95.1	1.0	2.9	1.0	
	Middlbr	80.6	96.2		3.8		
	Leeds	77.8	79.1	6.6	13.2		1.1
	Ports	77.1	91.7	2.5	3.3	0.8	1.7
	L St.G	73.0	40.0	40.0	15.4	1.5	3.1
	Carsh	73.0	76.2	6.3	12.6	1.4	3.5
	L Guys	65.3	57.1	38.8	4.1		
	Sheff	65.1	97.2	1.9	0.9		
	Chelms	63.5	97.0	3.0			
	L West	58.1	45.4	20.1	22.7		11.9
	Truro	57.8	100.0				
	Brightn	51.3	96.6	1.7			1.7
N Ireland	Ulster	100.0	100.0				
	Antrim	97.2	100.0				
	Belfast	92.3	98.8	1.2			
	Tyrone	86.4	100.0				
Wales	Bangor	100.0	97.2		2.8		
	Wrexm	96.3	92.3		3.8		3.8
	Swanse	94.3	96.6	2.6	0.9		
	Cardff	70.0	96.6	0.7	2.8		
England		**75.3**	**77.7**	**8.1**	**11.0**	**0.7**	**2.6**
N Ireland		**88.6**	**99.4**	**0.6**			
Scotland		**0.7**	**75.0**		**25.0**		
Wales		**77.9**	**96.3**	**1.2**	**2.2**		**0.3**
UK		**69.4**	**79.8**	**7.3**	**10.0**	**0.6**	**2.3**

Centres with less than 10 patients and those with less than 50% returns are not shown
The country and overall averages include all centres

Table 3.8. Percentage distribution of primary renal diagnosis by age and gender ratio, in 2007 incident cohort

Diagnosis	Age <65		Age ≥65		All patients		M:F
	Including data not available	Excluding data not available	Including data not available	Excluding data not available	Including data not available	Excluding data not available	
Uncertain aetiology*	18.5	*20.3*	27.0	*30.2*	22.6	*25.0*	1.6
Glomerulonephritis	12.7	*13.9*	6.3	*7.1*	9.6	*10.6*	2.3
Pyelonephritis	6.8	*7.4*	6.0	*6.7*	6.4	*7.1*	1.5
Diabetes	21.2	*23.2*	18.3	*20.5*	19.8	*21.9*	1.6
Renal vascular disease	2.3	*2.5*	11.4	*12.8*	6.7	*7.4*	2.1
Hypertension	5.5	*6.0*	4.9	*5.5*	5.2	*5.8*	2.0
Polycystic kidney	10.0	*10.9*	2.5	*2.8*	6.4	*7.1*	1.1
Other	14.4	*15.7*	12.7	*14.3*	13.6	*15.1*	1.3
Data not available	8.7	–	10.8	–	9.7	–	1.6

* includes presumed glomerulonephritis not biopsy proven
M:F – male:female ratio

Table 3.9. Percentage distribution of primary renal diagnosis by centre in 2007 incident cohort

Country	Centre	Data not available	Uncertain aetiology*	Diabetes	Glomerulo-nephritis	Hyper-tension	Other	Polycystic kidney	Pyelo-nephritis	Renal vascular disease
England	B Heart	0.0	25.3	32.6	11.6	3.2	10.5	5.3	7.4	4.2
	B QEH	3.2	16.3	28.8	10.2	7.4	13.0	4.2	8.4	11.6
	Basldn	0.0	10.3	20.5	15.4	5.1	18.0	5.1	15.4	10.3
	Bradfd	3.5	15.5	36.9	11.9	9.5	11.9	2.4	7.1	4.8
	Brightn	13.0	25.0	21.0	15.0	3.0	14.0	4.0	8.0	10.0
	Bristol	16.2	16.3	16.3	13.2	14.0	16.3	8.5	11.6	3.9
	Camb	0.8	65.9	2.4	4.8	2.4	16.7	4.8	1.6	1.6
	Carlis	0.0	0.0	12.0	8.0	0.0	24.0	20.0	4.0	32.0
	Carsh	5.1	31.7	19.9	8.6	5.9	14.0	7.0	7.0	5.9
	Chelms	0.0	38.5	25.0	7.7	3.9	11.5	3.9	0.0	9.6
	Covnt	0.9	15.7	25.0	8.3	11.1	14.8	5.6	8.3	11.1
	Derby	3.3	29.3	24.1	17.2	0.0	10.3	6.9	10.3	1.7
	Donc	0.0	38.9	16.7	16.7	0.0	5.6	5.6	5.6	11.1
	Dorset	3.5	12.5	23.2	14.3	1.8	14.3	12.5	8.9	12.5
	Dudley	5.7	21.2	21.2	6.1	6.1	15.2	6.1	12.1	12.1
	Exeter	64.8								
	Glouc	3.5	29.1	20.0	14.6	3.6	16.4	7.3	5.5	3.6
	Hull	1.0	22.5	18.4	21.4	5.1	14.3	11.2	4.1	3.1
	Ipswi	7.5	24.3	18.9	10.8	5.4	27.0	2.7	2.7	8.1
	L Barts	0.0	17.0	34.5	11.0	8.0	14.0	6.0	7.5	2.0
	L Guys	0.0	10.0	32.7	16.7	10.7	10.7	6.0	8.7	4.7
	L Kings	0.0	0.8	23.4	9.4	8.6	39.1	1.6	8.6	8.6
	L Rfree	11.5	13.7	23.0	9.9	13.0	29.8	6.2	1.9	2.5
	L St.G	21.4	18.6	22.9	14.3	4.3	20.0	12.9	1.4	5.7
	L West	26.7								
	Leeds	47.0								
	Leic	17.9	27.9	18.8	11.7	1.0	15.2	6.6	12.2	6.6
	Liv Ain	0.0	97.1	2.9	0.0	0.0	0.0	0.0	0.0	0.0
	Liv RI	0.0	56.1	9.7	7.9	3.5	9.7	7.0	3.5	2.6
	M Hope	4.0	97.9	1.1	0.0	0.0	0.0	1.1	0.0	0.0
	M RI	67.3								
	Middlbr	1.0	40.2	17.5	5.2	2.1	9.3	6.2	7.2	12.4

Table 3.9. Continued

Country	Centre	Data not available	Uncertain aetiology*	Diabetes	Glomerulo-nephritis	Hyper-tension	Other	Polycystic kidney	Pyelo-nephritis	Renal vascular disease
	Newc	0.9	19.1	22.7	12.7	2.7	17.3	10.9	7.3	7.3
	Norwch	0.0	42.6	10.2	13.0	2.8	8.3	7.4	7.4	8.3
	Nottm	0.0	22.1	29.9	7.1	2.4	16.5	7.9	8.7	5.5
	Oxford	1.4	19.7	20.4	14.6	4.4	14.6	8.0	8.8	9.5
	Plymth	1.3	22.7	9.3	5.3	0.0	25.3	10.7	2.7	24.0
	Ports	3.8	15.9	19.9	12.6	12.6	13.9	9.3	10.6	5.3
	Prestn	0.8	17.3	19.7	9.5	6.3	17.3	9.5	8.7	11.8
	Redng	0.0	19.8	26.4	12.1	3.3	16.5	7.7	6.6	7.7
	Sheff	0.0	39.8	15.1	6.0	1.8	11.5	6.6	10.8	8.4
	Shrew	9.1	22.0	32.0	6.0	10.0	12.0	12.0	2.0	4.0
	Stevng	0.0	19.8	20.9	5.8	0.0	39.5	5.8	3.5	4.7
	Sthend	0.0	8.8	23.5	14.7	2.9	14.7	5.9	8.8	20.6
	Stoke	1.2	31.4	16.3	8.1	10.5	12.8	5.8	7.0	8.1
	Sund	0.0	18.0	26.2	11.5	11.5	18.0	4.9	6.6	3.3
	Truro	11.1	7.5	35.0	15.0	5.0	20.0	5.0	5.0	7.5
	Wirral	9.4	97.9	0.0	0.0	2.1	0.0	0.0	0.0	0.0
	Wolve	0.0	22.1	26.5	14.7	5.9	22.1	1.5	4.4	2.9
	York	22.9	22.2	18.5	3.7	14.8	11.1	3.7	7.4	18.5
N Ireland	Antrim	0.0	27.8	38.9	5.6	0.0	11.1	5.6	2.8	8.3
	Belfast	0.0	13.2	20.9	7.7	6.6	14.3	12.1	15.4	9.9
	Newry	0.0	0.0	13.3	6.7	13.3	13.3	13.3	0.0	40.0
	Tyrone	0.0	13.6	4.6	9.1	18.2	27.3	18.2	9.1	0.0
	Ulster	0.0	28.6	28.6	14.3	0.0	14.3	0.0	14.3	0.0
Scotland	Abrdn	100.0								
	Airdrie	2.0	12.2	16.3	6.1	6.1	18.4	6.1	16.3	18.4
	D & Gall	0.0	23.5	17.7	0.0	0.0	5.9	29.4	5.9	17.7
	Dundee	8.3	10.9	20.0	7.3	5.5	12.7	7.3	7.3	29.1
	Dunfn	8.1	14.7	26.5	11.8	2.9	14.7	17.7	5.9	5.9
	Edinb	0.0	14.9	19.2	16.0	3.2	18.1	9.6	9.6	9.6
	Glasgw	8.1	19.4	19.4	12.4	1.2	15.9	11.2	11.2	9.4
	Inverns	4.0	25.0	33.3	12.5	4.2	8.3	8.3	0.0	8.3
	Klmarnk	40.6								
Wales	Bangor	0.0	22.2	8.3	16.7	11.1	30.6	2.8	8.3	0.0
	Clwyd	4.4	59.1	31.8	9.1	0.0	0.0	0.0	0.0	0.0
	Cardff	1.0	33.7	29.3	14.6	5.4	6.8	5.9	2.0	2.4
	Swanse	0.0	17.1	21.1	8.1	4.1	12.2	5.7	9.8	22.0
	Wrexm	0.0	33.3	22.2	11.1	3.7	11.1	7.4	11.1	0.0
England		**10.0**	**25.9**	**21.8**	**10.5**	**6.1**	**15.4**	**6.7**	**6.9**	**6.7**
N Ireland		**0.0**	**16.2**	**22.7**	**8.1**	**7.0**	**15.1**	**10.3**	**10.3**	**10.3**
Scotland		**16.9**	**16.5**	**20.1**	**11.5**	**3.0**	**15.2**	**11.5**	**9.5**	**12.8**
Wales		**0.7**	**29.1**	**24.7**	**12.4**	**5.1**	**10.4**	**5.3**	**5.3**	**7.8**
UK		**9.7**	**25.0**	**21.9**	**10.7**	**5.8**	**15.1**	**7.1**	**7.1**	**7.4**

* includes presumed glomerulonephritis not biopsy proven
The percentage in each category has been calculated after excluding those patients with a missing diagnosis
For those centres with a high percentage of missing primary diagnoses, the percentages in the other diagnostic categories has not been calculated

The proportion of incident patients whose primary renal disease was recorded as diabetes varied between centres from 0% to 38.9%. Much of this variation is artefactual; 5 of the 8 centres submitting returns reporting <10% of their incident patients with diabetes as the primary renal disease reported that >50% of their incident population had uncertain diagnoses. Some may relate to chance fluctuations due to low take-on numbers. The ethnic mix of the incident population also has a major role. Of the 9 centres reporting that

Table 3.10. Primary renal diagnosis incidence rates per million population (unadjusted) 2007

Diagnosis	England		Northern Ireland		Scotland		Wales		UK	
	Pmp	%	Pmp	%	Pmp	%	Pmp	%	Pmp	%
Uncertain aetiology[*]	25.2	23.3	17.1	16.2	14.8	13.7	40.3	28.8	24.8	22.6
Glomerulonephritis	10.2	9.5	8.5	8.1	10.3	9.5	17.1	12.3	10.5	9.6
Pyelonephritis	6.7	6.2	10.8	10.3	8.6	7.9	7.4	5.3	7.0	6.4
Diabetes	21.3	19.7	23.9	22.7	18.1	16.7	34.2	24.5	21.7	19.8
Polycystic kidney	6.5	6.0	10.8	10.3	10.3	9.5	7.4	5.3	7.0	6.4
Hypertension	5.9	5.5	7.4	7.0	2.7	2.5	7.0	5.0	5.7	5.2
Renal vascular disease	6.6	6.1	10.8	10.3	11.5	10.6	10.7	7.7	7.3	6.7
Other	15.0	13.9	15.9	15.1	13.6	12.6	14.4	10.3	14.9	13.6
Data not available	10.8	10.0	0.0	0.0	18.3	16.9	1.0	0.7	10.6	9.7
All	**108**	**100.0**	**105**	**100.0**	**108**	**100.0**	**140**	**100.0**	**110**	**100.0**

[*] includes presumed glomerulonephritis not biopsy proven

greater than 30% of their incident cohort had diabetes as the primary renal disease, 4 reported a high proportion of non-Whites in the incident population (38–55%) and the remaining 5 took on 55 patients or less in 2007. These factors undoubtedly contributed to the variation between centres with respect to the proportion of other primary renal disease in the incident cohort, as well as the variable diagnostic criteria in disease categories such as hypertension and renal vascular disease.

There were national variations in the distributions of primary renal disease in the incident cohort (table 3.10). The incidence rate of uncertain diagnoses was higher in England (25.2 pmp) and Wales (40.3 pmp) than in Scotland (14.8 pmp) and Northern Ireland (17.1 pmp). The incidence of diabetes was higher in Wales (34.2 pmp) than in England (21.3 pmp), Northern Ireland (23.9 pmp) and Scotland (18.1 pmp). Likewise, the incidence rate of glomerulonephritis was higher in Wales (17.1 pmp) than in England (10.2 pmp), Scotland (10.3 pmp) and Northern Ireland (8.5 pmp). In addition, the incidence rate of hypertension was lower in Scotland (2.7 pmp) than in Northern Ireland (7.4 pmp), Wales (7.0 pmp) and England (5.9 pmp), whilst that of renal vascular disease was lower in England (6.6 pmp) than in Scotland (11.5 pmp), Northern Ireland (10.8 pmp) and Wales (10.7 pmp).

First established treatment modality

In the whole UK in 2007, haemodialysis (HD) was the first modality of RRT (defined as first treatment recorded irrespective of any later change) in 74.9% of patients, peritoneal dialysis (PD) in 20.6% and pre-emptive transplant in 4.5%. After increasing successively over a number of years, the frequency of HD as the first treatment modality has decreased slightly from last year's 76.6%. Many patients, especially those presenting late, undergo a brief period of HD, before switches to other modalities can be considered. Hence, the established modality at 90 days is more representative of the elective first modality. By 90 days in the 2007 UK cohort, 5.7% of incident patients had died, a further 0.5% had stopped treatment, leaving 93.8% of the original cohort remaining on RRT (table 3.11). Expressed as a percentage of the whole 2007 UK incident cohort, 67.4% were on HD, 21.3% on PD and 5.2% had had a transplant. Expressed as a percentage of those still receiving RRT at 90 days, 71.8% were on HD, 22.7% on PD and 5.5% had received a transplant (figure 3.8). Of those still on RRT at 90 days, only 0.2% were receiving home haemodialysis, with the vast majority of HD patients on centre-based treatment either in main hospital centres (50.3% of total) or satellite units (19.3%). Around 30% of patients on PD are on automated treatments. The major national difference in modality distribution at 90 days, was the lower percentage of PD patients in the incident cohort in Northern Ireland (9.1% of the total incident cohort). The percentages in the 3 other countries all exceeded 20%.

Ninety day mortality in the incident cohort ranged between centres from 0 to 28.6% (table 3.11). Small numbers were likely to be a major factor in this variation. Nine of the 10 centres with zero deaths took on fewer than 40 patients, as did the centre with the highest 90 day mortality. Many other factors may be important particularly selection policies, including those relating to conservative management and to variations in the practice of offering a 'trial of dialysis', in cases for

Table 3.11. RRT modality at 90 days by centre in the 2007 cohort

Country	Centre	Percentage of patients				
		HD	PD	Tx	Stopped treatment	Died
England	B Heart	81.3	10.4	0.0	0.0	8.3
	B QEH	75.5	17.1	1.4	0.0	6.0
	Basldn	69.2	12.8	0.0	10.3	7.7
	Bradfd	73.1	15.4	2.6	0.0	9.0
	Brightn	62.6	27.8	2.6	0.0	7.0
	Bristol	62.9	21.4	3.8	0.0	11.9
	Camb	64.1	11.1	15.7	0.0	9.2
	Carlis	69.6	21.7	4.3	0.0	4.3
	Carsh	74.8	17.9	2.3	0.0	5.0
	Chelms	67.4	23.9	0.0	2.2	6.5
	Covnt	61.4	25.7	3.0	1.0	8.9
	Derby	56.9	32.8	0.0	1.7	8.6
	Donc	25.0	75.0	0.0	0.0	0.0
	Dorset	57.4	37.0	1.9	1.9	1.9
	Dudley	52.9	47.1	0.0	0.0	0.0
	Exeter	71.6	23.3	0.0	0.0	5.2
	Glouc	75.0	20.3	0.0	0.0	4.7
	Hull	66.4	28.4	1.7	0.9	2.6
	Ipswi	56.3	37.5	6.3	0.0	0.0
	L Barts	55.0	39.5	3.5	0.0	2.0
	L Guys	70.5	14.1	13.5	0.0	1.9
	L Kings	63.2	28.9	4.4	0.0	3.5
	L Rfree	67.0	16.2	13.2	0.0	3.6
	L St.G	55.0	26.7	18.3	0.0	0.0
	L West	74.8	6.2	16.8	0.0	2.2
	Leeds	69.5	19.8	6.9	0.0	3.8
	Leic	64.0	23.6	7.8	0.0	4.7
	Liv Ain	93.8	0.0	0.0	0.0	6.3
	Liv RI	71.8	17.9	4.3	0.0	6.0
	M Hope	68.3	26.9	1.0	0.0	3.8
	M RI	54.1	19.7	23.0	0.0	3.3
	Middlbr	72.3	14.9	3.2	0.0	9.6
	Newc	60.4	19.8	9.4	0.0	10.4
	Norwch	59.5	22.4	0.0	2.6	15.5
	Nottm	63.9	26.4	3.5	0.0	6.3
	Oxford	56.2	29.5	9.6	0.0	4.8
	Plymth	60.5	22.2	6.2	2.5	8.6
	Ports	60.2	20.5	9.3	0.0	9.9
	Prestn	77.4	19.4	0.0	0.0	3.2
	Redng	61.5	37.4	0.0	0.0	1.1
	Sheff	73.7	16.7	4.5	0.6	4.5
	Shrew	69.2	21.2	1.9	1.9	5.8
	Stevng	73.7	18.9	0.0	0.0	7.4
	Sthend	78.8	15.2	3.0	0.0	3.0
	Stoke	62.0	29.6	0.0	0.0	8.5
	Sund	85.7	8.2	0.0	0.0	6.1
	Truro	70.8	25.0	0.0	0.0	4.2
	Wirral	75.5	17.0	0.0	1.9	5.7
	Wolve	55.2	35.8	0.0	1.5	7.5
	York	65.7	34.3	0.0	0.0	0.0
N Ireland	Antrim	90.5	2.4	0.0	7.1	0.0
	Belfast	77.0	11.0	5.0	2.0	5.0
	Newry	62.5	31.3	0.0	6.3	0.0
	Tyrone	94.4	0.0	0.0	0.0	5.6
	Ulster	85.7	0.0	0.0	7.1	7.1

Table 3.11. Continued

Country	Centre	Percentage of patients				
		HD	PD	Tx	Stopped treatment	Died
Scotland	Abrdn	80.4	15.7	0.0	0.0	3.9
	Airdrie	86.3	11.8	0.0	0.0	2.0
	D & Gall	70.0	30.0	0.0	0.0	0.0
	Dundee	76.7	18.3	0.0	0.0	5.0
	Dunfn	66.7	30.3	0.0	0.0	3.0
	Edinb	61.0	29.5	5.7	0.0	3.8
	Glasgw	69.3	15.6	3.6	0.0	11.5
	Inverns	48.3	44.8	0.0	0.0	6.9
	Klmarnk	78.8	21.2	0.0	0.0	0.0
Wales	Bangor	45.7	17.1	0.0	8.6	28.6
	Clwyd	70.0	30.0	0.0	0.0	0.0
	Cardff	64.5	24.6	6.6	0.0	4.3
	Swanse	68.1	23.3	0.0	0.0	8.6
	Wrexm	53.6	35.7	3.6	0.0	7.1
England		**66.9**	**21.5**	**5.7**	**0.3**	**5.5**
N Ireland		**80.8**	**9.1**	**2.5**	**4.0**	**3.5**
Scotland		**70.4**	**21.3**	**2.3**	**0.0**	**6.1**
Wales		**63.4**	**24.6**	**3.7**	**0.7**	**7.6**
UK		**67.4**	**21.3**	**5.2**	**0.5**	**5.7**

which the benefits of long-term dialysis may be uncertain. This may also account for some of the variation in the proportions stopping treatment during the first 90 days. The range in the proportion of incident patients who had a functioning transplant at 90 days was 0 to 23%. Fifteen of the 16 centres in which more than 5% of their incident cohort had received a transplant by 90 days were transplant centres. The mean percentage of the incident cohort with a functioning transplant by 90 days was significantly greater in transplanting compared to non-transplanting centres (7.8 vs 2.2%: p < 0.0001).

Fig. 3.8. RRT modality at day 90 in the 2007 incident cohort

This suggests variation in organ allocation or more likely that patients transplanted pre-emptively or early were attributed to the incident cohort of the transplanting centre rather than that of the referring centre.

There were also major differences between individual centres in the percentage of new dialysis patients established on haemodialysis at 90 days (range 25–100%) (figure 3.9). Three centres had all their dialysis patients on haemodialysis (Tyrone, Ulster and Liverpool Aintree), although this may reflect that PD provision is provided through one of the larger local renal centres. Twenty-five centres had 80% or more of their dialysis patients on haemodialysis at 90 days and only one (Doncaster with 25%) had less than 50%. Six centres had 40% or more of their incident dialysis patients on PD at day 90. Apart from London Barts, these all took on 40 or less patients during 2007.

Older patients were more likely to be on HD rather than PD at 90 days. In the whole UK, 69.4% of incident patients aged less than 65 years were on HD at this stage compared with 82.7% of patients aged over 65 (p < 0.001) (table 3.12). Equivalently, the percentage of patients on PD at 90 days was almost twice as high in patients aged <65 years as in older patients (30.6% vs 17.3%). In only 7 centres (Wirral, London St. Georges, London Kings, Basildon, Exeter, Stoke, Doncaster) was this trend reversed; these centres had a higher proportion of older than younger patients on PD.
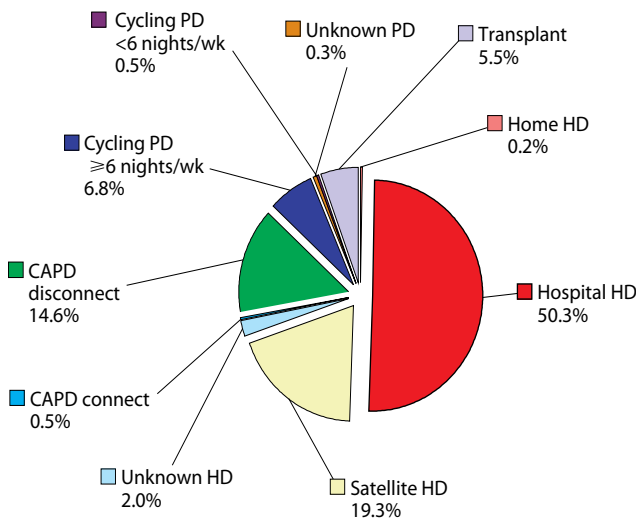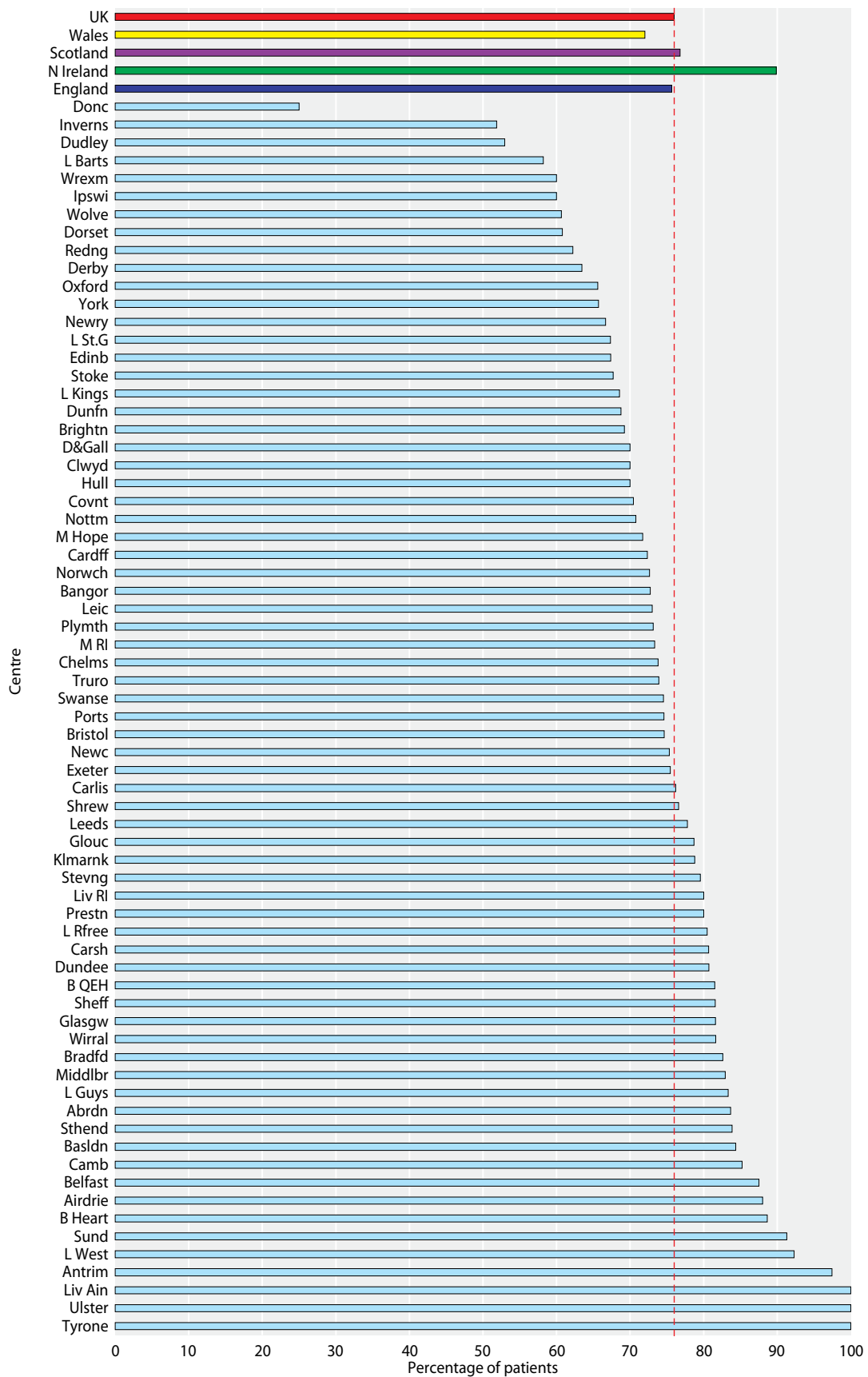
Fig. 3.9. Percentage of incident dialysis patients in each centre on HD on day 90 (2007)

Table 3.12. Percentage of incident patients on dialysis at 90 days by modality and age

Centre	Age <65 (%)		Age ⩾ 65 (%)		Centre	Age <65 (%)		Age ⩾ 65 (%)	
	HD	PD	HD	PD		HD	PD	HD	PD
Abrdn	75.0	25.0	95.2	4.8	L St.G	69.2	30.8	65.2	34.8
Airdrie	82.8	17.2	95.2	4.8	L West	91.0	9.0	93.7	6.3
Antrim	90.9	9.1	100.0	–	Leeds	67.2	32.8	89.3	10.7
B Heart	81.1	18.9	94.1	5.9	Leic	71.9	28.1	74.3	25.7
B QEH	73.1	26.9	88.8	11.2	Liv Ain	100.0	–	100.0	–
Bangor	70.0	30.0	75.0	25.0	Liv RI	72.1	27.9	94.6	5.4
Basldn	86.7	13.3	82.4	17.6	M Hope	66.7	33.3	81.8	18.2
Belfast	82.1	17.9	91.8	8.2	M RI	70.0	30.0	77.5	22.5
Bradfd	78.4	21.6	87.5	12.5	Middlbr	80.0	20.0	85.7	14.3
Brightn	55.6	44.4	79.7	20.3	Newc	65.9	34.1	85.7	14.3
Bristol	67.2	32.8	81.4	18.6	Newry	25.0	75.0	81.8	18.2
Camb	79.1	20.9	93.8	6.3	Norwch	64.7	35.3	77.0	23.0
Cardff	55.7	44.3	87.0	13.0	Nottm	61.3	38.7	79.4	20.6
Carlis	63.6	36.4	90.0	10.0	Oxford	52.4	47.6	79.0	21.0
Carsh	73.6	26.4	86.5	13.5	Plymth	68.2	31.8	75.6	24.4
Chelms	63.6	36.4	77.4	22.6	Ports	66.1	33.9	82.4	17.6
Clwyd	62.5	37.5	75.0	25.0	Prestn	78.5	21.5	81.8	18.2
Covnt	60.9	39.1	81.0	19.0	Redng	51.1	48.9	74.4	25.6
D & Gall	54.5	45.5	88.9	11.1	Sheff	77.8	22.2	84.6	15.4
Derby	55.6	44.4	72.0	28.0	Shrew	69.2	30.8	85.7	14.3
Donc	40.0	60.0	14.3	85.7	Stevng	78.3	21.7	81.0	19.0
Dorset	59.1	40.9	62.1	37.9	Sthend	80.0	20.0	87.5	12.5
Dudley	35.3	64.7	70.6	29.4	Stoke	72.4	27.6	63.9	36.1
Dundee	64.0	36.0	93.8	6.3	Sund	85.7	14.3	96.0	4.0
Dunfn	66.7	33.3	71.4	28.6	Swanse	56.5	43.5	88.3	11.7
Edinb	66.2	33.8	70.0	30.0	Truro	54.2	45.8	95.5	4.5
Exeter	79.1	20.9	73.1	26.9	Tyrone	100.0	–	100.0	–
Glasgw	77.4	22.6	86.1	13.9	Ulster	100.0	–	100.0	–
Glouc	64.0	36.0	88.9	11.1	Wirral	82.6	17.4	80.8	19.2
Hull	60.9	39.1	82.6	17.4	Wolve	52.0	48.0	66.7	33.3
Inverns	50.0	50.0	58.3	41.7	Wrexm	55.6	44.4	62.5	37.5
Ipswi	54.5	45.5	63.2	36.8	York	43.8	56.3	84.2	15.8
Klmarnk	62.5	37.5	94.1	5.9	**England**	**69.7**	**30.3**	**81.8**	**18.2**
L Barts	55.8	44.2	63.3	36.7	**N Ireland**	**83.1**	**16.9**	**94.4**	**5.6**
L Guys	76.3	23.7	92.9	7.1	**Scotland**	**70.3**	**29.7**	**85.1**	**14.9**
L Kings	70.3	29.7	65.9	34.1	**Wales**	**57.1**	**42.9**	**84.0**	**16.0**
L Rfree	73.8	26.2	87.5	12.5	**UK**	**69.4**	**30.6**	**82.7**	**17.3**

Between centres there was great variation between the male:female ratio of patients on HD and PD (figure 3.10). Overall, in the UK there was no significant difference between the male:female ratio of incident patients on HD (1.6) and PD (1.7).

Renal function at the time of starting RRT
In the 2007 cohort, older patient groups had a higher geometric mean eGFR at start of dialysis than younger groups (figure 3.11). The geometric mean eGFR at start of dialysis progressively increased from the 25–34 age-group onwards.

Analysis of serial data derived only from centres reporting continuously to the UKRR since 1998 indicated that over the last decade there has been a progressive tendency to initiate dialysis, both HD and PD, at a higher median eGFR (figure 3.12).

3 Late presentation (referral) of incident patients

Methods
It is recognised that the clinical event usually called 'late referral' is a complex phenomenon with a range of possible causes.
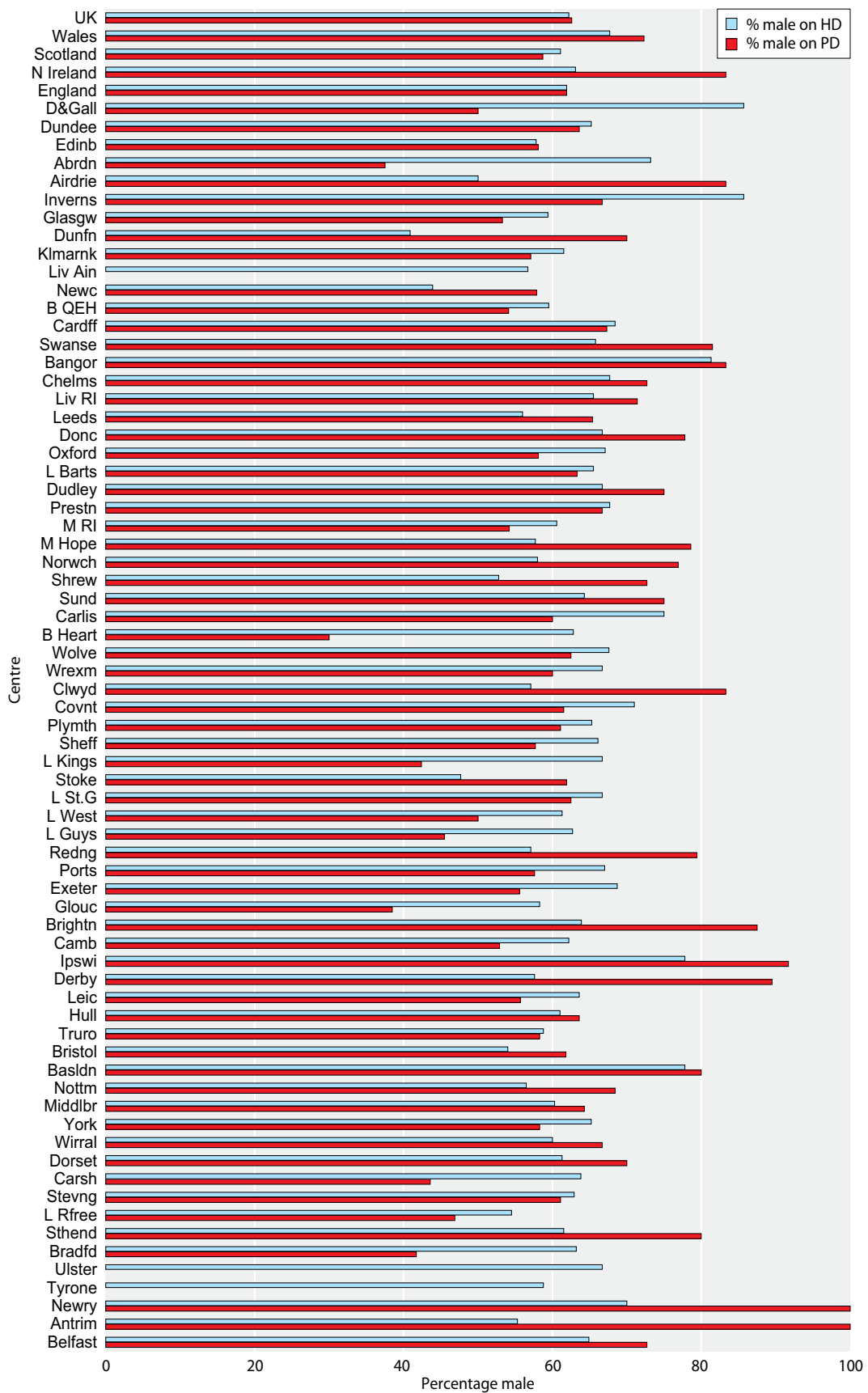
Fig. 3.10. Percentage of male patients by dialysis modality in incident cohort 2007
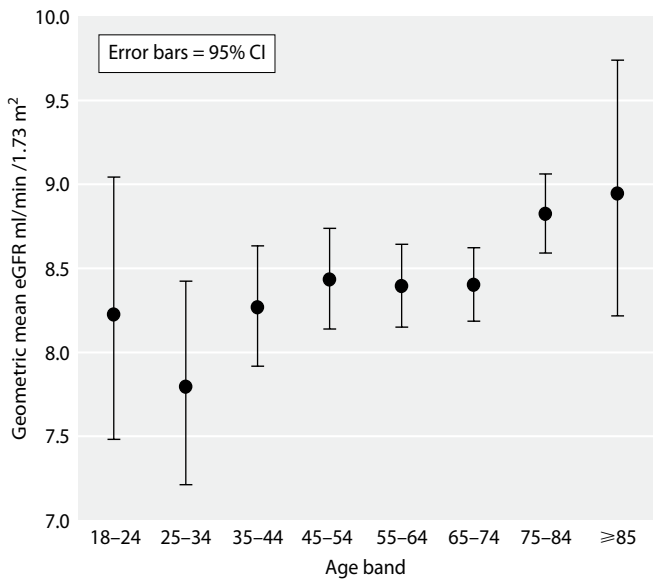
Fig. 3.11. Geometric mean eGFR at start of RRT by age band
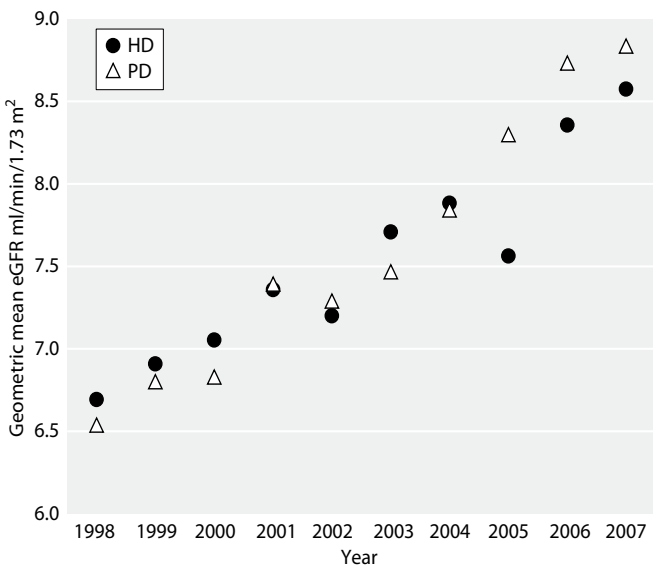p value from an ANOVA to test for differences between these age groups is 0.01

Fig. 3.12. eGFR on starting RRT 1998–2007; PD and HD

Renal disease may be asymptomatic until very advanced and therefore may present late to primary or secondary care services before referral onto renal services. 'Late referral' in this setting might be more appropriately labelled 'late presentation'. Alternatively patients may have been under follow-up in primary or secondary care with known renal failure and referral onto nephrological services may have been delayed. This is appropriately labelled 'late referral'. The data presented here encompasses both these moieties and are grouped under a single category of late presentation to the nephrologist.

Data were included from all incident patients in the years 2002–2007 with the following exceptions:

1. All patients under 18 years of age at the start of RRT.
2. All Scottish data since the date first seen in the renal centre was only available for a handful of patients.
3. The small number of patients who recovered sufficient renal function to allow discontinuation of dialysis.

The date of starting RRT and the date first seen in a renal centre were used to calculate the referral time. This is the number of days between first being seen and starting RRT. Two percent of data were excluded because of actual or potential inconsistencies. Only data from those centres/years with 75% or more completeness were used. Centres/years where 10% or more of the referral times were zero were excluded. After these exclusions, data on 8,514 patients were available for analysis. Referral times of 90 days or more were defined as early referrals. Referral times of less than 90 days were defined as late referrals. Forty-seven people were calculated to have negative referral times (-1 to -14 days) probably related to an error in recording the exact RRT start date and these were attributed as zero. This accounted for only 0.6% of the cohort.

Results

Table 3.13 shows the percentage completeness of data from centres between 2002 and 2007.

Late presentation by centre and year
The percentage of patients presenting to a nephrologist less than 90 days before RRT initiation in the included centres in the period 2002–2007 are shown in table 3.14. The incidence of late presentation ranged from 3.8–29.2% in 2007, giving a mean incidence of 21%, which was lower for the second consecutive year.

Time referred before dialysis initiation in the 2007 incident cohort
In 2007, 63.6% of incident patients had been referred over a year before they needed to start dialysis. There were 10.4% of patients referred within 6–12 months, 5.1% within 3–6 months and 21% within 3 months. Table 3.15 shows data relating to time referred before dialysis initiation from those 4 centres supplying data for each of the last 6 years with >75% completeness (Nottingham, Oxford, Portsmouth and Sheffield). There has been a sustained reduction in late referral over that period, more marked over the last 2 years. There has also been an increase in the percentage of patients referred over 12 months before dialysis initiation.

37

Table 3.13. Percentage completeness of late presentation data (2002 to 2007) by centre

Centre	Year					
	2002	2003	2004	2005	2006	2007
Antrim				0.0	39.4	52.8
B Heart	0.0	0.0	0.0	0.0	0.0	0.0
B QEH			0.0	0.0	0.0	0.5
Bangor	64.3	0.0	97.1	89.7	0.0	0.0
Basldn		96.2	97.8	89.3	100.0	100.0
Belfast				53.4	63.1	75.8
Bradfd	0.0	0.0	95.1	98.5	98.0	95.4
Brightn			0.0	0.0	0.0	0.0
Bristol	72.1	72.2	75.0	80.8	85.7	55.6
Camb	1.4	0.0	63.3	66.1	50.3	63.8
Cardff	0.0	2.4	1.6	0.5	0.5	0.5
Carlis	0.0	0.0	3.4	0.0	0.0	0.0
Carsh	0.0	0.5	0.0	0.6	0.0	0.0
Chelms			76.9	47.4	87.8	75.0
Clwyd	0.0	0.0	0.0	0.0	0.0	0.0
Covnt	0.0	0.0	0.0	0.0	1.0	0.0
Derby		0.0	1.5	1.4	0.0	0.0
Donc						100.0
Dorset		98.5	100.0	97.8	100.0	98.3
Dudley	8.0	14.6	0.0	0.0	0.0	0.0
Exeter	78.8	54.6	64.5	49.5	54.4	17.6
Glouc	2.0	0.0	13.5	93.3	82.2	98.2
Hull	0.0	2.5	0.9	2.4	0.0	1.0
Ipswi	90.7	0.0	0.0	96.5	92.9	0.0
L Barts			0.5	0.0	19.8	0.0
L Guys	0.0	0.0	0.0	0.0	0.0	0.0
L Kings	15.7	23.4	16.8	10.3	0.0	0.0
L Rfree				0.0	0.0	0.0
L St.G						0.0
L West	0.0	0.0	0.0	0.0	0.0	0.0
Leeds	65.1	76.6	88.5	88.3	85.9	80.2
Leic	86.9	93.8	92.5	62.4	54.4	61.9
Liv Ain			0.0	0.0	0.0	0.0
Liv RI	0.7	0.0	0.8	0.0	0.7	0.0
M Hope		52.4	59.5	75.9	86.0	78.8
M RI						11.3
Middlbr	91.0	91.3	87.3	89.3	73.3	77.6
Newc	0.0	0.0	0.0	0.0	98.2	97.2
Newry				78.6	0.0	100.0
Norwch			50.5	29.4	19.3	12.0
Nottm	94.2	99.1	98.0	98.6	97.7	99.2
Oxford	95.1	88.6	88.2	87.7	88.5	97.8
Plymth	0.0	0.0	0.0	0.0	1.1	1.3
Ports	95.8	95.0	94.8	91.9	94.2	85.3
Prestn	71.6	0.0	0.0	0.0	0.8	0.8
Redng	7.5	3.2	11.9	6.8	7.8	3.3
Sheff	97.4	98.7	98.8	97.4	95.8	97.5
Shrew			0.0	0.0	0.0	0.0
Stevng	0.0	95.8	85.4	59.3	42.2	36.5
Sthend	0.0	0.0	0.0	0.0	0.0	0.0
Stoke						0.0
Sund	0.0	0.0	0.0	0.0	0.0	0.0
Swanse	40.2	54.8	61.5	92.9	99.1	93.4
Truro	57.6	75.5	58.2	71.0	52.0	93.2
Tyrone				95.7	96.6	86.4

Table 3.13. Continued

Centre	Year					
	2002	2003	2004	2005	2006	2007
Ulster				0.0	100.0	100.0
Wirral	34.9	37.7	48.5	75.9	71.7	69.2
Wolve	69.1	79.1	97.1	98.9	97.5	95.5
Wrexm	0.0	0.0	0.0	0.0	0.0	0.0
York	87.1	85.7	93.8	0.0	95.7	88.2
Total	**37.7**	**41.8**	**39.9**	**38.0**	**40.2**	**34.7**

Blank cells – data not available

Age and late presentation

In the whole cohort 2002–2007, patients who were referred late (<90 days before dialysis initiation) were significantly older than patients referred earlier (median age 67.5 vs 64.9 years: p < 0.001). Furthermore, the median duration of pre-dialysis care diminished progressively with increasing age beyond the 45–54 age group (figure 3.13).

Gender and late presentation

In the whole cohort 2002–2007, the male:female ratio was slightly, but not significantly, higher in those referred

Table 3.14. Percentage of patients presenting to a nephrologist less than 90 days before dialysis initiation

Centre	Year					
	2002	2003	2004	2005	2006	2007
Bangor			36.4	40.0		
Basldn		39.2	35.6	20.0	26.7	20.5
Belfast						29.0
Bradfd			15.5	32.8	16.3	20.5
Bristol			26.7	24.5	14.7	
Chelms			22.5		30.2	28.2
Donc						27.8
Dorset		26.6	19.0	36.4	17.0	22.8
Exeter	17.5					
Glouc				19.6	21.7	21.4
Ipswi	38.5			50.9	33.3	
Leeds		36.2	29.9	32.9	31.6	24.7
Leic	27.8	21.1	23.0			
M Hope				20.0	13.5	3.8
Middlbr	32.7	26.6	31.5	22.7		17.1
Newc					22.4	18.9
Newry				22.7		20.0
Nottm	38.3	29.5	34.0	33.6	24.0	17.9
Oxford	30.1	27.4	27.3	28.9	26.6	21.1
Ports	34.8	25.8	31.2	27.2	29.8	21.8
Sheff	22.8	27.9	22.0	22.4	22.0	19.5
Stevng		30.4	20.0			
Swanse				42.9	38.2	29.2
Truro		15.0				17.1
Tyrone				22.7	10.7	10.5
Ulster					12.5	28.6
Wirral				31.8		
Wolve		26.5	30.3	30.0	25.3	26.6
York	22.2	22.9	26.7		27.3	26.7
Total	**29.3**	**27.7**	**26.9**	**29.4**	**24.3**	**21.0**

Blank cells – data not available or high incompleteness

Table 3.15. Referral times in 4 groups by year restricted to 4 centres contributing continuous data 2002–2007

Year	% <3 months	% 3–6 months	% 6–12 months	% >12 months
2002	30.5	10.5	11.8	47.1
2003	27.6	6.2	11.7	54.4
2004	27.7	7.1	9.4	55.8
2005	27.9	5.5	11.8	54.8
2006	25.7	7.7	10.9	55.8
2007	20.1	5.7	11.3	63.0

Table 3.16. Late presentation by primary renal diagnosis

Diagnosis	Late presentation	
	N	%
Uncertain aetiology*	596	29
Diabetes	239	15
Glomerulonephritis	174	20
Other identified category	596	47
Polycystic kidney	44	8
Pyelonephritis	135	21
Renal vascular disease	305	28
Data not available	138	40

* includes presumed glomerulonephritis not biopsy proven

late (<90 days) than in those referred earlier (1.72 vs 1.61).

Ethnicity, social deprivation and late presentation

In this analysis of the whole cohort 2002–2007, only patients from centres with >70% ethnicity and >75% referral time data were included. Patients from the Chinese ethnic minority and others were excluded due to the small numbers with referral data. The percentage of non-Whites (South Asian and Black) referred late (<90 days) was significantly lower than in Whites (21.3% vs 25.9%: p = 0.014). The high incidence of diabetes in non-Whites (as discussed below, patients with diabetes tended to be referred earlier) and the older median age of incident Whites, may have a bearing. There was no relationship between social deprivation and referral pattern.
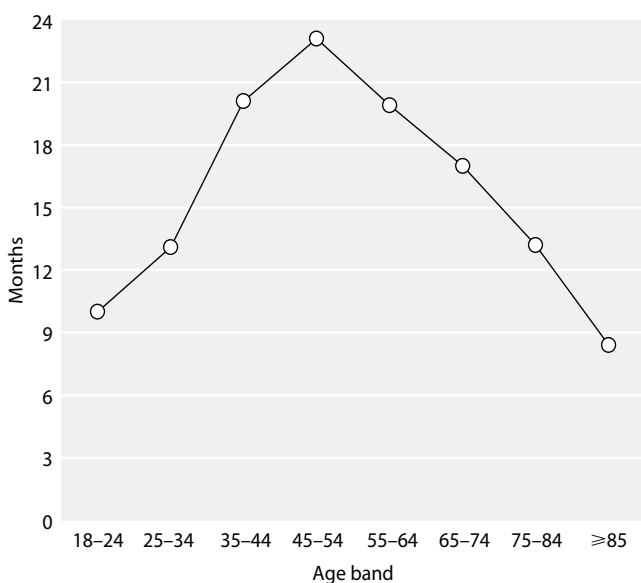
Primary renal disease and late presentation

In the 2002–2007 cohort, late referral (<3 months prior to dialysis initiation) differed significantly between primary renal diagnoses (p < 0.001) (table 3.16). Patients with a diagnosis of 'other identified category', 'data not available', and the aetiology uncertain/glomerulonephritis unproven groups appeared to have higher rates of late referral. Those with diabetes and particularly those with adult polycystic kidney disease had lower rates (table 3.16).

Modality and late presentation

In the whole 2002–2007 cohort, late presentation had a clear effect on the choice of modality. The percentage of patients whose first modality was PD was significantly less in the late referral group compared to those referred earlier (11.7% vs 28.5%: p < 0.0001). By 90 days after dialysis initiation the difference was less, though still highly significant (18.6% vs 30.9%: p < 0.0001).

Comorbidity and late presentation

In the whole 2002–2007 cohort, significantly fewer patients who had presented late (<90 days) were assessed as having no comorbidity when compared with the group who presented earlier (41% vs 44.9%: p = 0.01). Peripheral vascular disease was significantly less common in the group referred late. On the other hand, malignancies were significantly more common in those presenting late, perhaps because of the potential for rapid decompensation in renal function in this setting (table 3.17).

Haemoglobin and late presentation

In the whole 2002–2007 cohort, patients presenting late had a significantly lower haemoglobin concentration at dialysis initiation than patients presenting earlier

Fig. 3.13. Median duration of pre-dialysis care by age

Table 3.17. Percentage prevalence of specific comorbidities amongst patients presenting late (0–89 days) compared with those presenting early (≥90 days)

Comorbidity	0–89 days	≥90 days	p-value
Cerebrovascular disease	11	10	0.9
COPD	7	7	0.3
Diabetes (not a cause of ERF)	8	9	0.4
Ischaemic heart disease	23	24	0.4
Liver disease	2	2	0.3
Malignancy	18	10	<0.0001
Peripheral vascular disease	10	13	0.001
Smoking	16	16	0.8

(9.5 vs 10.4 g/dl: $p < 0.001$), presumably because of inadequate pre-dialysis care and the lack of opportunity to optimise anaemia management.

eGFR at start of RRT and late presentation

In the whole data set 2002–2007, eGFR was lower in patients who presented late compared to earlier presentation (7.6 vs 8.1 ml/min/1.73 m^2: $p < 0.0001$), both in males (7.8 vs 8.4: $p < 0.0001$) and females (7.2 vs 7.7: $p = 0.0006$). The same relationship held in older patients (>65 years) (7.8 vs 8.4: $p < 0.0001$) and in younger patients (18–44 years) (6.8 vs 7.9: $p < 0.0001$), but not in those in the intermediate age range (45–64 years (7.6 vs 7.8: NS). The relationship held in Whites (7.5 vs 8.1: $p < 0.0001$) but not in Blacks (8.5 vs 7.8: NS) or Asians (7.3 vs 7.7: NS), though the numbers were small in these groups. There were no clear differences with respect to the Townsend score of social deprivation. eGFR was significantly lower in late referrals with renal disease of uncertain aetiology (6.9 vs 7.9: $p < 0.0001$)) and 'other diagnoses' (7.5 vs 8.1: $p = 0.005$). When stratifying by comorbidity, eGFR was significantly lower in patients who presented late compared to earlier presentation in all comorbid groups except cerebrovascular and peripheral vascular disease and diabetes. For example, amongst patients with malignancy, the eGFR at start of RRT was 8.2 in those who presented early compared to 7.4 in those who presented late ($p = 0.007$).

Survival of incident patients

This analysis is to be found in chapter 7 Survival of incident and prevalent patients.

Conflict of interest: none

References

1 Ansell D, Feest T: The sixth annual report. Chapter 17: Social deprivation on renal replacement therapy. Bristol, UK Renal Registry, 2003,
2 Office of the national statistics (www.Statistics.Gov.Uk).
3 Office of the national statistics. The classification of ethnic groups. (www.Statistics.Gov. Uk).
4 Levey AS, Greene T, Kusek JW, Beck GJ: A simplified equation to predict glomerular filtration rate from serum creatinine [abstract]. J Am Soc Nephrol 2000;11:A0828.
5 Office of the national statistics. Focus on ethnicity and identity: Age/sex distribution: Non-White groups are younger (www.Statistics.Gov.Uk),