

Chapter 3: New Adult Patients Starting Renal Replacement Therapy in the UK in 2005

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Summary

- In 2005, the acceptance rate for RRT in adults in the UK was 108 pmp. This was derived from complete data for adults in the UK, as data were obtained separately from the 5 English renal units not currently returning to the Registry. In addition, 87 children started RRT (see Chapter 13) giving a total incidence of 110 pmp.
- From 2001–2005 there has been an 7.3% rise in the acceptance numbers in those 42 renal units with full reporting throughout that period.
- In the UK, for adults in 2005, the crude acceptance rates in Local Authorities (LA) varied from 0 (in two very small LA areas in Scotland and Northern Ireland) to 271 pmp; the standardised rate ratios for acceptance varied from 0 to 2.76. Excluding the two areas with null returns, 20 areas had significantly low ratios, all of them in England. Thirty had significantly high ratios, seven in Northern Ireland, four in Scotland, three in Wales and seven in London.
- Over the period 2001–2005, 25 areas had a significantly low standardised acceptance rate; 24 in England and one in Scotland. All except one of these had ethnic minority populations of less than 10%. Thirty-seven had high standardised acceptance rates, seven in Scotland where ethnicity data were not available, 14 from areas with ethnic minority populations in excess of 10%, and 12 were in Wales or the Southwest of England.
- The median age of patients starting renal replacement therapy in England has increased from 63.8 years in 1998 to 65.2 years in 2005. The median age of incident non White patients is significantly lower at 56.8 years.
- In England the acceptance rate is highest in the 75–79 age band at 408 pmp, as in Scotland at 580 pmp; in Wales the peak is in the 80–84 age band at 525 pmp, as in Northern Ireland with a rate of 825 pmp.
- Diabetic renal disease (20%) remains the most common specific primary renal disease. There was a significant positive correlation between the percentage of incident RRT patients with diabetic renal disease and the percentage of non Whites in the incident cohort.
- Haemodialysis was the first modality of RRT in 76% of patients, peritoneal dialysis in 21% and pre-emptive transplant in 3%. In 1998 the proportion whose first modality was haemodialysis was 58% and this continues to increase.
- By day 90, 8% had died, a further 1% had stopped treatment or been transferred out leaving 91% of the original cohort on RRT. Of these, 71% were on haemodialysis, 26% on peritoneal dialysis and 3% had received a transplant.
- Data on first referral to a nephrologist were available from 22 centres for the period 2000–2005 (for a total of 5,611 patients and 59 centre-years).
- In 2005, the mean percentage of patients referred late (<90 days before dialysis initiation) was 30% (centre range 13–48%). This was similar to the value in 2000.
- Patients referred late were older, a higher proportion of them were male, a lower proportion non White, and a lower proportion with no recorded co-morbidity. Patients with polycystic kidney disease and diabetic nephropathy tended to be referred early compared to the whole incident cohort and those with uncertain aetiology and no recorded diagnosis referred late.

- Estimated GFR (eGFR) at the start of RRT appears to be higher in older than younger patients. eGFR is significantly lower in those referred late compared with those referred earlier and this is especially marked in the older patients.
- The geometric mean eGFR of all patients starting RRT rose from 6 in 1997 to above 7.5 in 2003, since when it has remained stable.

Introduction

The acceptance data presented were from the whole UK. In 2005, the UK Renal Registry received complete returns from all 5 renal units in Wales, all 5 renal units in Northern Ireland and 90% of the renal units in England. Data from all 10 renal units in Scotland were obtained from the Scottish Renal Registry. In addition summary data were obtained separately from the 5 remaining English renal units not currently returning to the Registry, to enable accurate calculation of acceptance rates and initial modality used.

Extrapolation from Registry data to derive other information relating to the whole UK was still necessary and these results must still be viewed with a little caution, although estimates become more reliable as coverage increases. The proportion of the population aged over 65 years was similar in the fully covered population (defined below, based on Local Authority areas whose population was thought to be fully covered by participating renal units) compared with the general population of England and Wales. The proportion from ethnic minority groups was lower in the fully covered population at 8.1% compared with 9.0% in the total population, because some areas not reporting to the Registry have catchments with high ethnic minority populations.

For comparisons between renal units 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.

Adult patients accepted for renal replacement therapy in the UK, 2005

Overall take-on rate

In 2005 there were 6,485 adult patients who started RRT in the whole UK. This equates to acceptance rates of 108 pmp for adults (Table 3.1) and 110 pmp including children. This represents an overall increase in the past 2 years. The adult acceptance rate in England was 104 pmp. Acceptance rates in Wales, Scotland and Northern Ireland were all higher than this, at 129, 122 and 140 pmp respectively (Figure 3.1). There continues to be very marked gender differences in take-on rate, the annual acceptance was 137 (95% CI 132–141) pmp in males and 81 (95% CI 77–84) pmp in females.

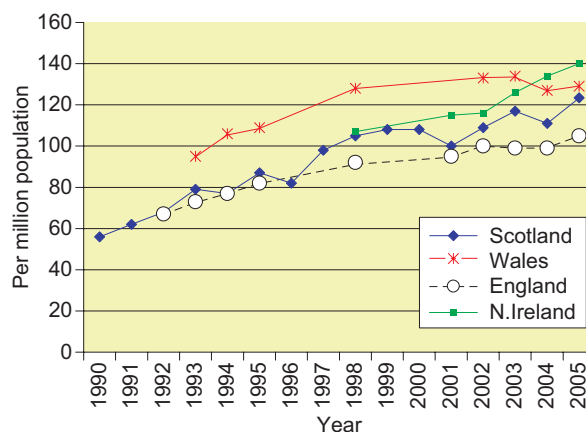


Figure 3.1: Incident rates in the countries of the UK; 1990–2005

Table 3.1: Number of new adult patients accepted in the UK in 2005

	England	Wales	Scotland	N. Ireland	UK
Centres contributing to RR (65)	4,598	383	624	242	5,847
All UK centres (65 + 5 = 70)	5,236	383	624	242	6,485
*Total estimated population mid 2005 (millions)	50.4	3.0	5.1	1.7	60.2
Acceptance rate (pmp)	104	129	122	140	108
(95% CI)	(101–107)	(116–142)	(113–132)	(123–158)	(105–111)

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

Local changes in acceptance rate

Acceptance rates of individual units

The number of patients accepted by each renal unit is shown in Table 3.2. There is variation in time trends between renal units, which may reflect chance fluctuation, completeness of reporting, changing incidence of ERF, changes in referral patterns or catchment populations and areas and the introduction of conservative care teams.

The percentage change over the period 2001–2005 is shown for those 42 renal units, which

had full reporting during that period and for the same data on a national level. Overall there has been an 7.3% rise in the acceptance numbers. There are wide variations between different renal units, the more extreme ones are related to changes in catchment populations, eg an increase of 70% since 2001 (Hull), a decrease of 25.8% (Liverpool). The Northamptonshire region has moved from the Oxford renal unit catchment to that of the Leicester renal unit. The increase seen in the national figures is similar to that reported for the period 2000–2004 in last year's report. Acceptance rates of individual renal units have not been calculated, as their catchment populations are not precisely defined.

Table 3.2: Number of new patients accepted by individual renal units reporting to the UK Renal Registry 2000–2005

Country	Centre	Year					% change since 2001	
		2000	2001	2002	2003	2004		2005
England	Barts					187	180	
	Basildon				53	46	30	
	Bradford		61	62	75	62	65	+6.6
	Brighton					119	108	
	Bristol	148	151	127	163	166	175	+15.9
	Cambridge		93	77	98	109	103	+10.8
	Carlisle	28	29	27	31	29	30	+3.4
	Carshalton	123	124	182	205	180	180	+45.2
	Chelmsford					55	40	
	Coventry	89	105	97	79	79	85	−19.0
	Derby	54	59		61	65	71	+20.3
	Dorset				71	62	51	
	Dudley	40	35	25	42	55	38	+8.6
	Exeter	71	98	82	99	113	111	+13.3
	Gloucester	47	50	55	53	54	62	+24.0
	Guys	126	115	146	100	104	111	−3.5
	H&CX			180	153	195	147	
	Heartlands	86	85	61	105	103	115	+35.2
	Hull	82	74	106	80	108	126	+70.3
	Ipswich			44	39	43	60	
	<i>Kent</i>						104	
	Kings			117	108	110	133	
	Leeds	163	166	151	190	182	164	−1.2
	Leicester	179	187	152	171	165	224	+19.8
	Liverpool		221	153	114	135	164	−25.8
	<i>London St Georges</i>						90	
	<i>London St Mary's</i>						176	
	<i>Manchester RI & East</i>						181	
	ManWst				142	110	109	
	Middlesbrough	86	82	111	104	102	74	−9.8
	Newcastle			109	106	106	93	
	Norwich					98	121	
	Nottingham	114	120	87	116	108	147	+22.5

Table 3.2: (continued)

Country	Centre	Year						% change since 2001
		2000	2001	2002	2003	2004	2005	
	Oxford	159	172	171	186	170	156	-9.3
	Plymouth	59	64	79	67	62	57	-10.9
	Portsmouth		144	146	143	120	153	+6.3
	Preston	117	136	113	99	81	118	-13.2
	QEH					202	194	
	Reading	52	68	44	73	71	75	+10.3
	Royal Free						126	
	Sheffield	137	155	157	162	170	158	+1.9
	Shrewsbury					55	43	
	Southend	40	37	34	42	41	35	-5.4
	Stevenage	134	129	100	123	85	86	-33.3
	<i>Stoke</i>						87	
	Sunderland	50	41	58	57	52	58	+41.5
	Truro		41	62	53	67	32	-22.0
	Wirral			43	53	68	55	
	Wolverhampton	80	78	101	89	103	92	+17.9
	York	41	37	63	58	49	43	+16.2
Wales	Bangor			29	33	36	38	
	Cardiff	139	155	181	166	186	178	+14.8
	Clwyd			20	12	14	27	
	Swansea	92	114	114	130	93	97	-14.9
	Wrexham	53	35	42	33	29	43	+22.9
Scotland	Aberdeen	57	44	61	52	68	63	+43.2
	Airdrie	57	58	60	52	51	38	-34.5
	Dumfries	20	23	21	21	16	18	-21.7
	Dundee	48	50	68	61	63	75	+50.0
	Dunfermline	46	37	28	26	29	44	+18.9
	Edinburgh	101	59	81	89	98	101	+71.2
	Glasgow RI	75	76	73	97	81	101	+32.9
	Glasgow WI	76	102	100	124	102	99	-2.9
	Inverness	29	29	29	35	34	43	+48.3
	Kilmarnock	38	27	32	40	24	42	+55.6
N Ireland	Antrim						42	
	Belfast						138	
	Newry						28	
	Tyrone						24	
	Ulster						10	
England		2,305	2,957	3,322	3,763	4,446	5,236	
Wales		284	304	386	374	358	383	
Scotland		547	505	553	597	566	624	
N Ireland							242	
UK		3,136	3,766	4,261	4,734	5,370	6,485	
Including only units reporting continuously 2001–2005								
England			2,898	2,829	2,977	2,925	3,037	+4.8
Wales			304	337	329	308	318	+4.6
Scotland			505	553	597	566	624	+25.5
Total			3,707	3,719	3,903	3,799	3,979	+7.3

Blank cells – no data returned to the Registry for that year.
Renal units in italics are those providing summary data only.

Geographical variation in acceptance rates in England, Northern Ireland, Scotland and Wales

Introduction

Equity of access to RRT is an important goal of service provision. The need for RRT depends on social and demographic factors including age, gender, social deprivation and ethnicity, so comparison of crude acceptance rates by geographical area alone 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 2002 report. The population used for standardisation is the sum of all Local Authority areas for which the Registry had full coverage in 2005.

Methods

Standardised acceptance rate ratios were calculated as detailed in web Appendix D (www.renalreg.org). Briefly, age and gender specific acceptance numbers were first calculated using the available registry data on the number of incident patients for the covered areas of England, Wales, Scotland and Northern Ireland. The age and gender breakdown of the population of each Local Authority area was obtained from the 2001 Census data from the Office for National Statistics (ONS), and used to calculate the expected age and gender specific acceptance numbers for each LA area. The age and gender standardised acceptance rate ratio is the observed acceptance numbers divided by the expected acceptance numbers. A ratio below 1 indicates that the observed rate is less than expected given the LA area's population structure. This is statistically significant at the 5% level if the upper confidence limit is less than 1.

Results

Local Authority acceptance rates

Acceptance rates in Local Authorities with complete coverage by the Registry are shown in Table 3.3.

Acceptance rates for RRT in relatively small populations such as those covered by individual

Primary Care Trusts or Local Authorities have wide confidence intervals for any observed frequency. To enable assessment of whether an observed acceptance rate differs significantly from the national average, Figure 3.2 has been included.

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. (The example plot shown in Figure 3.2 assumes that the national average is 109 pmp). An observed acceptance rate outside these limits is significantly different from the national average. In order to be judged as significantly different from national norms the observed take-on rate for a population of 50,000 would have to be outside the limits of 17 to 200 per million population per year, whilst for a population of 1 million, the limits are from 88 to 129 per million population per year.

In the UK, for adults in 2005, the crude acceptance rates in Local Authorities varied from 0 (in two very small Local Authority areas; in Scotland [Eilean Siar – population 26,502] and Northern Ireland [Moyle – population 15,932]) to 271 pmp. There were also wide variations in the standardised rate ratios for acceptance (0–2.76). Excluding the two null returns, 20 areas had significantly low ratios, all of them in England. Four of these had ratios <0.5: Salford (0.35), Darlington (0.37), Isle of Wight (0.46) and Poole (0.47). Thirty had significantly high ratios: 7 in Northern Ireland, 4 in Scotland, 3 in Wales and 7 in London. Nine had ratios of 2.0 or more. Six of these were in Northern Ireland (Antrim [2.58], Armagh [2.00], Carrickfergus [2.73], Castlereigh [2.50], Coleraine [2.66] and Cookstown [2.76]) one in Scotland (Dundee City [2.20]) and the others in London (Newham [2.10] and Greenwich [2.11]).

In Table 3.3 the trends over the 5 years 2001–2005 are shown, illustrating the wide variations in annual standardised acceptance ratios in areas with small populations, especially those with habitually low take-on rates.

Also depicted in Table 3.3 are the standardised acceptance ratios derived from combined 2001–2005 data. Only data from areas with 3 or more years' data are included in the following analysis. This excludes data from Northern

Table 3.3: Crude adult annual acceptance rates and standardised rate ratios 2001–2005

Areas with significantly low acceptance ratios over 5 years are italicised in greyed areas, those with significantly high ratios are bold in greyed areas.

O/E = Standardised acceptance rate ratio.

% non White = sum of % South Asian and African–Caribbean from 2001 Census.

UK Area	LA name	Tot pop	2001	2002	2003	2004	2005	pmp	2001–2005				% non White
			O/E	O/E	O/E	O/E	O/E		O/E	LCL	UCL	pmp	
North East	Darlington	97,838	0.74	0.91	0.96	0.77	0.37	41	0.74	0.54	1.02	78	2.1
	Durham	493,469	0.56	1.04	0.81	0.88	0.83	93	0.83	0.72	0.95	87	1.0
	Hartlepool	88,610	1.07	0.57	1.30	0.99	0.62	68	0.91	0.67	1.23	93	1.2
	Middlesbrough	134,855	1.09	1.13	1.14	1.00	1.02	104	1.07	0.85	1.36	102	6.3
	Redcar & Cleveland	139,132	0.80	1.83	1.07	1.07	0.76	86	1.10	0.89	1.37	116	1.1
	Stockton-on-Tees	178,408	0.86	1.06	0.89	1.07	0.75	78	0.92	0.74	1.15	91	2.8
	Gateshead	191,151		1.27	0.96	0.92	0.69	78	0.95	0.76	1.19	103	1.6
	Newcastle upon Tyne	259,536		0.98	0.89	1.09	0.96	100	0.98	0.81	1.19	97	6.9
	North Tyneside	191,658		0.95	0.76	0.91	0.59	68	0.80	0.63	1.01	87	1.9
	Northumberland	307,190		0.76	0.98	0.87	0.52	62	0.78	0.65	0.95	88	1.0
	South Tyneside	152,785		0.88	0.66	0.97	0.86	98	0.84	0.65	1.09	92	2.7
	Sunderland	280,807	0.80	0.99	1.29	0.60	0.77	82	0.89	0.75	1.06	89	1.9
	North West	Cheshire											
Halton		118,209	1.64	0.84	1.23	1.51	1.35	135	1.32	1.05	1.65	124	1.2
Knowsley		150,459	0.75	0.94	1.30	0.97	0.92	93	0.98	0.78	1.24	93	1.6
Liverpool		439,471	1.94	0.96	0.74	1.05	1.20	123	1.17	1.03	1.32	112	5.7
Sefton		282,958	0.98	1.00	0.70	0.51	0.91	106	0.81	0.68	0.97	89	1.6
St. Helens		176,843	1.20	0.98	0.55	0.50	1.15	124	0.87	0.70	1.09	88	1.2
Warrington		191,080	0.81	1.06	0.63	0.95	0.76	79	0.84	0.67	1.05	82	2.1
Wirral		312,293	0.55	0.81	1.00	1.18	1.09	125	0.94	0.80	1.10	100	1.7
Blackburn with Darwen		137,470	0.89	1.37	1.29	0.98	1.39	131	1.19	0.94	1.50	105	22.1
Blackpool		142,283	0.80	1.09	0.37	0.31	0.64	77	0.63	0.48	0.83	72	1.6
Cumbria		487,607	0.87	0.76	0.76	0.62	0.86	103	0.78	0.68	0.89	86	0.7
Lancashire		1,134,975	0.95	0.64	0.59	0.61	0.61	67	0.67	0.61	0.74	70	5.3
Bolton		261,037			0.96	0.74	0.74	77	0.81	0.64	1.04	82	11.0
Bury		180,607			0.56	0.62	0.75	78	0.64	0.46	0.89	65	6.1
Manchester													19.0
Oldham		217,276			0.72	0.67	0.59	60	0.66	0.49	0.89	64	13.9
Rochdale		205,357			1.01	0.82	0.53	54	0.78	0.59	1.04	76	11.4
Salford		216,105			1.22	0.50	0.35	37	0.69	0.51	0.92	71	3.9
Stockport													4.3
Tameside												5.4	
Trafford												8.4	
Wigan	301,415			0.89	0.86	1.01	106	0.92	0.75	1.14	94	1.3	
Yorkshire and the Humber	East Riding of Yorkshire	314,113	0.85	0.91	1.06	0.75	1.14	137	0.95	0.81	1.10	106	1.2
	Kingston upon Hull	243,588	0.97	1.07	0.96	1.27	1.24	127	1.10	0.93	1.31	106	2.3
	North East Lincolnshire	157,981	0.27	1.15	0.67	1.10	1.22	133	0.89	0.71	1.13	91	1.4
	North Lincolnshire	152,848	0.80	0.95	0.66	1.28	0.98	111	0.94	0.75	1.17	99	2.5
	North Yorkshire	569,660	0.86	1.23	1.02	1.08	0.91	107	1.02	0.91	1.14	112	1.1
	York	181,096	0.86	1.44	1.62	0.95	0.90	99	1.15	0.95	1.39	119	2.2
	Barnsley	218,063	0.77	1.10	0.74	0.92	0.71	78	0.85	0.69	1.03	87	0.9
	Doncaster	286,865	0.94	0.94	0.96	0.90	0.69	77	0.88	0.74	1.05	91	2.3
	Rotherham	248,175	1.67	0.86	0.98	1.18	1.23	133	1.18	1.00	1.39	119	3.1
	Sheffield	513,234	1.00	0.98	0.97	1.16	1.03	111	1.03	0.91	1.16	104	8.8
	Bradford	467,664	1.60	1.32	1.52	1.31	1.32	130	1.41	1.26	1.58	130	21.7
	Calderdale	192,405	1.18	0.65	1.33	0.88	0.78	83	0.96	0.78	1.18	96	7.0
	Kirklees	388,567	0.98	1.23	1.26	1.30	0.78	80	1.11	0.97	1.27	106	14.4
	Leeds	715,403	1.08	0.87	1.03	1.00	1.19	123	1.04	0.94	1.15	100	8.2
	Wakefield	315,172	0.81	0.85	0.87	1.06	0.62	67	0.84	0.71	0.99	84	2.3

Table 3.3: (continued)

UK Area	LA name	Tot pop	2001	2002	2003	2004	2005	pmp	2001–2005				% non White
			O/E	O/E	O/E	O/E	O/E		O/E	LCL	UCL	pmp	
East Midlands	Leicester	279,920	1.27	1.57	1.67	1.41	1.41	132	1.47	1.27	1.70	129	36.1
	<i>Leicestershire</i>	<i>609,578</i>	<i>1.22</i>	<i>0.84</i>	<i>0.81</i>	<i>0.74</i>	<i>0.82</i>	<i>90</i>	<i>0.88</i>	<i>0.78</i>	<i>0.99</i>	<i>91</i>	<i>5.3</i>
	<i>Northamptonshire</i>	<i>629,676</i>	<i>0.97</i>	<i>0.97</i>	<i>0.76</i>	<i>0.71</i>	<i>0.89</i>	<i>92</i>	<i>0.86</i>	<i>0.76</i>	<i>0.97</i>	<i>83</i>	<i>4.9</i>
	Rutland	34,563	0.58	0.28	1.60	0.27	0.76	87	0.71	0.41	1.22	75	1.9
	Derby	221,709			0.97	1.03	1.27	135	1.09	0.87	1.37	113	12.6
	<i>Derbyshire</i>	<i>734,585</i>	<i>0.90</i>	<i>0.45</i>	<i>0.83</i>	<i>0.71</i>	<i>0.69</i>	<i>79</i>	<i>0.71</i>	<i>0.64</i>	<i>0.80</i>	<i>76</i>	<i>1.5</i>
	<i>Lincolnshire</i>	<i>646,644</i>	<i>0.69</i>	<i>0.63</i>	<i>0.62</i>	<i>0.78</i>	<i>1.08</i>	<i>131</i>	<i>0.77</i>	<i>0.68</i>	<i>0.86</i>	<i>87</i>	<i>1.3</i>
	Nottingham	266,988	1.73	0.69	0.88	1.10	1.31	127	1.14	0.96	1.34	103	15.1
	Nottinghamshire	748,508	0.93	0.84	1.05	0.95	1.23	138	1.01	0.91	1.11	106	2.6
West Midlands	Birmingham	977,085				1.70	1.66	163	1.68	1.51	1.88	160	29.6
	Dudley	305,153	0.60	0.61	0.82	1.16	0.96	108	0.84	0.71	0.99	88	6.3
	Sandwell	282,904				1.83	1.41	152	1.62	1.32	1.98	170	20.3
	Solihull	199,515	1.28	0.69	1.54	1.36	1.24	140	1.22	1.03	1.46	129	5.4
	Walsall	253,498	1.21	1.36	1.21	1.60	1.12	122	1.30	1.12	1.51	133	13.6
	Wolverhampton	236,582	1.24	1.70	1.65	1.54	1.58	173	1.55	1.34	1.79	159	22.2
	Coventry	300,849	1.68	1.50	1.25	0.85	0.90	93	1.22	1.06	1.42	118	16.0
	Herefordshire, County of	174,871				1.03	0.79	97	0.91	0.66	1.25	109	0.9
	Warwickshire	505,858	1.10	1.00	0.76	0.88	0.99	111	0.94	0.83	1.07	98	4.4
	Worcestershire	542,105				0.95	0.79	89	0.86	0.71	1.05	95	2.5
	Shropshire	283,173				1.16	0.89	106	1.03	0.81	1.30	118	1.2
	Staffordshire												2.4
	Stoke-on-Trent												5.2
Telford & Wrekin	158,325				1.38	0.85	82	1.11	0.79	1.56	104	5.2	
East of England	Bedfordshire	381,572	0.91	0.99	0.93	0.86	0.74	76	0.88	0.76	1.03	85	6.7
	Hertfordshire	1,033,978	0.88	0.58	0.64	0.55	0.62	65	0.65	0.58	0.73	64	6.3
	Luton	184,373	1.48	0.91	1.84	0.75	1.65	152	1.33	1.10	1.61	115	28.1
	Essex	1,310,837				1.01	0.74	83	0.87	0.77	0.99	95	2.9
	Southend-on-Sea	160,259	0.95	1.26	1.31	0.97	1.09	125	1.12	0.92	1.37	120	4.2
	Thurrock	143,128				1.52	1.15	112	1.33	0.96	1.84	126	4.7
	Cambridgeshire	552,659	0.93	0.69	0.85	1.00	1.01	107	0.90	0.79	1.02	88	4.1
	Norfolk	796,728				1.01	1.17	146	1.09	0.95	1.25	132	1.5
	Peterborough	156,061	1.03	1.20	1.20	1.01	1.15	115	1.12	0.90	1.39	105	10.3
	Suffolk	668,555				0.93	1.09	129	1.01	0.87	1.19	116	2.8
London	Barnet	314,561					0.61	60	0.61	0.39	0.96	60	26.0
	Camden	198,020					0.87	76	0.87	0.52	1.44	76	26.8
	Enfield	273,559					1.05	102	1.05	0.72	1.52	102	22.9
	Haringey	216,505					1.40	115	1.40	0.95	2.07	115	34.4
	Islington	175,797					1.66	142	1.66	1.12	2.46	142	24.6
	Barking & Dagenham	163,942				1.06	0.63	61	0.84	0.57	1.23	79	14.8
	City of London												15.4
	Hackney	202,824				1.65	1.62	128	1.63	1.24	2.15	126	40.6
	Havering												4.8
	Newham	243,889				1.94	2.10	160	2.02	1.61	2.54	150	60.6
	Redbridge	238,634				1.39	1.06	105	1.22	0.94	1.58	117	36.5
	Tower Hamlets	196,105				1.25	1.44	112	1.35	0.99	1.83	102	48.6
	Waltham Forest												35.5
	Brent												54.7
	Ealing	300,948		1.78	1.52	1.81	1.28	116	1.59	1.37	1.85	138	41.3
	Hammersmith & Fulham	165,244		1.86	1.88	1.77	0.98	85	1.61	1.31	1.99	133	22.2
	Harrow												41.2
	Hillingdon	243,006				1.37	0.96	95	1.16	0.89	1.51	111	20.9
	Hounslow	212,342				2.20	1.46	132	1.82	1.43	2.31	160	35.1
	Kensington & Chelsea												21.4
Westminster												26.8	

Table 3.3: (continued)

UK Area	LA name	Tot pop	2001	2002	2003	2004	2005	pmp	2001–2005				% non White	
			O/E	O/E	O/E	O/E	O/E		O/E	LCL	UCL	pmp		
London	Bexley	218,307	0.84	1.28	0.99	0.77	0.94	101	0.96	0.79	1.17	96	8.6	
	Bromley	295,532	0.64	0.95	0.93	0.94	0.86	95	0.87	0.73	1.03	89	8.4	
	Greenwich	214,404		1.51	1.37	0.58	2.11	196	1.40	1.16	1.69	124	22.9	
	Lambeth	266,169	0.74	1.65	1.35	1.43	1.58	128	1.36	1.15	1.61	103	37.6	
	Lewisham	248,923	0.96	1.86	1.02	1.82	1.68	145	1.48	1.26	1.73	119	34.1	
	Southwark	244,866		1.67	1.51	1.33	1.84	155	1.59	1.34	1.90	128	37.0	
	Croydon	330,588	0.76	1.54	1.29	1.20	1.64	157	1.30	1.13	1.49	116	29.8	
	Kingston upon Thames												15.5	
	Merton													25.0
	Richmond upon Thames													9.0
Sutton													10.8	
Wandsworth													22.0	
South East	<i>Hampshire</i>	<i>1,240,102</i>	<i>0.68</i>	<i>0.74</i>	<i>0.74</i>	<i>0.61</i>	<i>0.70</i>	<i>77</i>	<i>0.70</i>	<i>0.63</i>	<i>0.76</i>	<i>72</i>	<i>2.2</i>	
	<i>Isle of Wight</i>	<i>132,731</i>	<i>0.67</i>	<i>0.70</i>	<i>0.67</i>	<i>0.67</i>	<i>0.46</i>	<i>60</i>	<i>0.63</i>	<i>0.48</i>	<i>0.83</i>	<i>77</i>	<i>1.3</i>	
	<i>Portsmouth</i>	<i>186,700</i>	<i>1.16</i>	<i>0.70</i>	<i>0.88</i>	<i>0.61</i>	<i>0.63</i>	<i>64</i>	<i>0.79</i>	<i>0.62</i>	<i>1.00</i>	<i>75</i>	<i>5.3</i>	
	<i>Southampton</i>	<i>217,444</i>	<i>0.70</i>	<i>0.83</i>	<i>0.82</i>	<i>0.59</i>	<i>0.70</i>	<i>69</i>	<i>0.73</i>	<i>0.58</i>	<i>0.91</i>	<i>67</i>	<i>7.6</i>	
	Kent												3.1	
	Medway												5.4	
	Brighton & Hove	247,817				0.97	0.73	77	0.84	0.63	1.14	87	5.7	
	East Sussex	492,326				1.11	0.68	87	0.89	0.74	1.07	112	2.3	
	Surrey	1,059,017				0.78	0.61	67	0.69	0.59	0.81	74	5.0	
	West Sussex	753,612				0.60	0.78	94	0.69	0.58	0.83	82	3.4	
	Bracknell Forest	109,616				1.29	0.82	73	1.05	0.68	1.63	91	4.9	
	Buckinghamshire	479,026	1.01	0.70	0.71	0.77	0.64	67	0.76	0.66	0.88	75	7.9	
	Milton Keynes	207,057	0.76	1.04	1.37	1.22	0.88	77	1.06	0.86	1.30	87	9.3	
	Oxfordshire	605,489	1.05	0.91	1.14	0.78	0.91	94	0.96	0.85	1.07	92	4.9	
	Reading	143,096	1.04	0.84	1.34	1.04	1.06	98	1.06	0.84	1.35	92	13.2	
	Slough	119,064	1.39	1.24	1.66	2.07	1.96	176	1.68	1.35	2.08	141	36.3	
	West Berkshire	144,485	1.02	0.68	0.93	1.30	1.16	118	1.02	0.81	1.29	97	2.6	
	Windsor & Maidenhead													7.6
	Wokingham	150,231	1.10	0.53	1.14	1.08	0.96	93	0.97	0.76	1.23	88	6.1	
South West	Bath & NE Somerset	169,040	0.66	0.63	0.70	1.31	0.93	106	0.85	0.68	1.06	91	2.8	
	Bristol, City of	380,616	1.59	1.01	1.34	1.26	1.20	121	1.28	1.12	1.45	120	8.2	
	Gloucestershire	564,559	0.88	0.84	0.85	0.87	0.89	101	0.87	0.77	0.98	92	2.8	
	North Somerset	188,564	1.11	0.92	1.38	1.24	1.13	138	1.16	0.97	1.38	132	1.4	
	South Gloucestershire	245,641	0.98	1.29	1.06	1.02	1.32	138	1.14	0.96	1.34	112	2.4	
	Swindon	180,051	0.63	1.04	0.98	1.28	0.66	67	0.92	0.74	1.15	87	4.8	
	Wiltshire	432,972	0.74	0.51	0.63	0.57	0.83	92	0.66	0.56	0.77	68	1.6	
	Bournemouth	163,444				0.59	0.76	92	0.68	0.46	1.00	80	3.3	
	Dorset	390,980				0.74	0.59	79	0.66	0.52	0.84	87	1.3	
	Poole	138,288				0.87	0.47	58	0.67	0.44	1.01	80	1.8	
	Somerset	498,095	0.83	0.92	0.82	0.91	0.66	80	0.82	0.73	0.94	93	1.2	
	Cornwall & Isles of Scilly	501,267	1.05	1.55	1.26	1.39	0.72	90	1.18	1.07	1.32	139	1.0	
	Devon	704,491	0.88	0.83	0.89	1.08	1.07	135	0.95	0.86	1.05	112	1.1	
	Plymouth	240,722	1.53	1.47	1.39	1.03	1.01	108	1.27	1.09	1.49	127	1.6	
	Torbay	129,706	1.17	0.46	1.13	1.32	1.01	131	1.02	0.82	1.27	123	1.2	
	Wales	Cardiff	305,353	1.07	1.69	1.56	1.36	1.32	131	1.40	1.22	1.61	130	8.4
		Merthyr Tydfil	55,979	0.76	1.82	1.72	2.26	1.65	179	1.65	1.24	2.20	168	1.0
Rhondda, Cynon, Taff		231,947	1.14	1.53	1.08	1.63	1.31	142	1.34	1.14	1.56	136	1.2	
The Vale of Glamorgan		119,292	0.87	1.16	1.02	1.27	0.75	84	1.01	0.79	1.29	106	2.2	
Carmarthenshire		172,842	1.09	1.05	1.44	1.15	1.04	127	1.16	0.96	1.39	132	0.9	
Ceredigion		74,941	1.42	1.24	0.59	0.94	0.78	93	0.98	0.72	1.33	109	1.4	
Pembrokeshire		114,131	1.24	0.87	1.21	0.76	1.08	131	1.03	0.81	1.31	117	0.9	
Powys		126,353	0.73	0.69	0.26	0.86	1.32	166	0.78	0.60	1.01	92	0.9	

Table 3.3: (continued)

UK Area	LA name	Tot pop	2001	2002	2003	2004	2005	pmp	2001–2005				% non White
			O/E	O/E	O/E	O/E	O/E		O/E	LCL	UCL	pmp	
Wales	Blaenau Gwent	70,064	1.33	1.27	0.13	1.08	1.28	143	1.01	0.73	1.40	106	0.8
	Caerphilly	169,519	0.96	1.47	1.05	1.05	1.56	165	1.22	1.01	1.48	122	0.9
	Monmouthshire	84,885	1.95	1.21	0.73	1.26	0.99	118	1.21	0.93	1.57	134	1.1
	Newport	137,012	1.25	1.05	1.43	0.93	1.02	109	1.14	0.91	1.42	114	4.8
	Torfaen	90,949	1.36	1.42	1.14	0.83	0.89	99	1.12	0.86	1.47	117	0.9
	Bridgend	128,645	1.21	1.16	1.68	1.40	1.12	124	1.31	1.07	1.62	137	1.4
	Neath Port Talbot	134,468	1.32	1.40	1.54	1.34	0.89	104	1.29	1.06	1.58	141	1.1
	Swansea	223,300	2.05	1.45	1.74	1.18	1.08	125	1.49	1.29	1.72	161	2.2
	Conwy	109,596		1.23	0.51	1.10	0.69	91	0.88	0.66	1.16	109	1.1
	Denbighshire	93,065	0.31	0.68	0.37	1.02	1.94	236	0.89	0.67	1.18	101	1.2
	Flintshire	148,594		1.32	1.19	1.13	1.39	148	1.26	1.00	1.57	128	0.8
	Gwynedd	116,843		1.68	1.52	1.22	1.52	180	1.48	1.19	1.85	167	1.2
	Isle of Anglesey	66,829		0.96	1.30	1.17	1.86	224	1.33	0.98	1.81	153	0.7
	Wrexham	128,476	1.15	1.03	1.27	0.83	1.43	156	1.15	0.91	1.44	117	1.1
Scotland	Aberdeen City	212,125	0.83	1.15	0.99	1.62	1.13	118	1.15	0.96	1.37	112	
	Aberdeenshire	226,871	1.01	1.11	0.70	0.88	1.05	110	0.95	0.79	1.15	93	
	Angus	108,400	1.55	2.18	0.91	1.33	1.10	129	1.40	1.13	1.74	153	
	Argyll & Bute	91,306	0.95	0.71	1.35	0.97	0.83	99	0.96	0.73	1.27	107	
	Scottish Borders	106,764	0.36	0.94	0.73	1.39	0.77	94	0.84	0.64	1.11	96	
	Clackmannanshire	48,077	0.91	1.10	1.46	1.05	1.19	125	1.15	0.79	1.67	112	
	West Dunbartonshire	93,378	1.74	0.56	0.63	1.38	0.40	43	0.93	0.69	1.25	92	
	Dumfries & Galloway	147,765	1.52	1.34	1.33	1.04	1.16	142	1.27	1.05	1.54	146	
	Dundee City	145,663	1.41	1.42	1.79	1.36	2.20	247	1.65	1.38	1.96	173	
	East Ayrshire	120,235	1.31	0.75	1.19	0.56	1.21	133	1.00	0.78	1.29	103	
	East Dunbartonshire	108,243	0.68	0.75	1.33	0.71	0.68	74	0.83	0.62	1.11	85	
	East Lothian	90,088	0.91	0.98	0.31	0.83	1.08	122	0.82	0.60	1.12	87	
	East Renfrewshire	89,311	0.60	0.46	0.98	0.77	1.05	112	0.78	0.56	1.09	78	
	Edinburgh, City of	448,624	0.87	0.81	1.03	1.07	1.01	105	0.96	0.84	1.10	93	
	Falkirk	145,191	1.03	0.57	0.67	0.68	1.15	124	0.82	0.64	1.06	83	
	Fife	349,429	1.20	1.10	0.90	1.02	1.46	160	1.14	0.99	1.31	117	
	Glasgow City	577,869	1.18	1.25	1.68	1.37	1.23	126	1.34	1.21	1.49	129	
	Highland	208,914	1.36	1.26	1.45	1.38	1.77	201	1.45	1.24	1.69	154	
	Inverclyde	84,203	1.61	2.14	1.13	1.02	0.97	107	1.36	1.05	1.76	140	
	Midlothian	80,941	0.80	1.02	1.70	1.71	1.04	111	1.26	0.96	1.66	126	
	Moray	86,940	0.72	0.92	1.31	1.10	1.36	150	1.09	0.83	1.45	113	
	North Ayrshire	135,817	0.46	1.34	1.20	1.06	1.21	133	1.06	0.85	1.33	109	
	North Lanarkshire	321,067	1.38	1.22	1.28	0.97	0.83	84	1.13	0.97	1.31	107	
	Orkney Islands	19,245	1.04	1.50	1.90	0.48	1.81	208	1.35	0.80	2.28	145	
	Perth & Kinross	134,949	0.79	1.24	1.24	1.31	0.87	104	1.09	0.88	1.36	123	
	Renfrewshire	172,867	1.05	1.79	1.13	1.14	1.24	133	1.27	1.05	1.53	127	
	Shetland Islands	21,988	0.00	0.00	0.46	1.40	0.44	45	0.47	0.20	1.14	45	
South Ayrshire	112,097	0.85	0.65	1.16	0.54	0.96	116	0.84	0.64	1.09	95		
South Lanarkshire	302,216	1.36	1.24	0.91	0.98	0.87	93	1.06	0.91	1.24	106		
Stirling	86,212	0.75	0.72	0.68	0.68	0.32	35	0.62	0.43	0.91	63		
West Lothian	158,714	0.54	0.96	0.56	0.71	1.21	113	0.80	0.62	1.04	71		
Eilean Siar	26,502	0.35	0.68	0.97	1.29	0.00	0	0.66	0.35	1.22	75		
N Ireland	Antrim	48,366					2.58	227	2.58	1.43	4.66	227	
	Ards	73,244					1.33	137	1.33	0.72	2.48	137	
	Armagh	54,262					2.00	184	2.00	1.08	3.73	184	
	Ballymena	58,610					1.50	154	1.50	0.78	2.89	154	
	Ballymoney	26,895					1.90	186	1.90	0.79	4.57	186	
	Banbridge	41,389					1.03	97	1.03	0.39	2.74	97	
	Belfast	277,391					1.31	130	1.31	0.95	1.82	130	
	Carrickfergus	37,658					2.73	266	2.73	1.47	5.08	266	

Table 3.3: (continued)

UK Area	LA name	Tot pop	2001	2002	2003	2004	2005	2001–2005				% non White	
			O/E	O/E	O/E	O/E	O/E	pmp	O/E	LCL	UCL		pmp
N Ireland	Castlereagh	66,488					2.50	271	2.50	1.58	3.97	271	
	Coleraine	56,314					2.66	266	2.66	1.60	4.41	266	
	Cookstown	32,581					2.76	246	2.76	1.38	5.53	246	
	Craigavon	80,671					1.72	161	1.72	1.00	2.96	161	
	Derry	105,066					1.30	105	1.30	0.72	2.35	105	
	Down	63,828					1.85	172	1.85	1.02	3.34	172	
	Dungannon	47,735					1.14	105	1.14	0.48	2.75	105	
	Fermanagh	57,527					1.06	104	1.06	0.48	2.36	104	
	Larne	30,833					0.93	97	0.93	0.30	2.89	97	
	Limavady	32,422					1.48	123	1.48	0.56	3.95	123	
	Lisburn	108,694					1.52	138	1.52	0.92	2.52	138	
	Magherafelt	39,778					1.43	126	1.43	0.59	3.43	126	
	Moyle	15,932					0.00	0	0.00			0	
	Newry & Mourne	87,058					0.91	80	0.91	0.43	1.91	80	
	Newtownabbey	79,996					1.12	113	1.12	0.58	2.15	113	
	North Down	76,323					1.33	144	1.33	0.73	2.39	144	
	Omagh	47,953					0.71	63	0.71	0.23	2.20	63	
	Strabane	38,246					0.58	52	0.58	0.15	2.34	52	

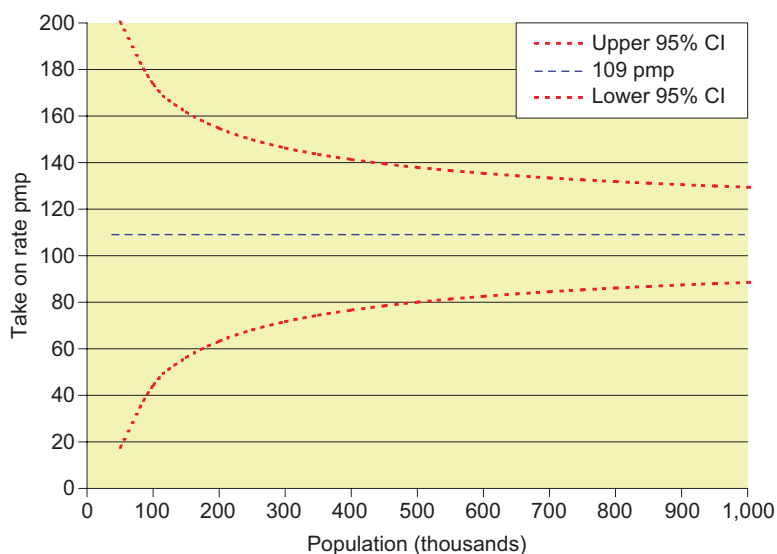


Figure 3.2: 95% confidence limits for take on rate of 109 pmp for population size 50,000–1 million

Ireland because data were only available for one year. Twenty-five areas had a significantly low take on rate (shaded and italicised in Table 3.3), 24 in England. All of these had ethnic minority populations of less than 10% (except Oldham, 13.9%). Nine areas had a standardised acceptance ratio less than 0.7 (excluding two Scottish areas with very small numbers). These were Isle of Wight, Blackpool, Stirling, Hertfordshire, Wiltshire, Lancashire, Bury, Salford and Oldham. Thirty-seven had significantly high standardised acceptance ratios

(shaded and bold in Table 3.3). Seven of these were in Scotland and ethnicity data were not available, and 14 had ethnic minority populations of greater than 10%. Of the remaining 16, 12 were in Wales or the Southwest of England.

In Figure 3.3 standardised acceptance ratios derived from these combined data are plotted against the percentage of non Whites in the general population (ONS 2001 census) corresponding to the same area. It can be seen that in general, areas with a high ethnic minority

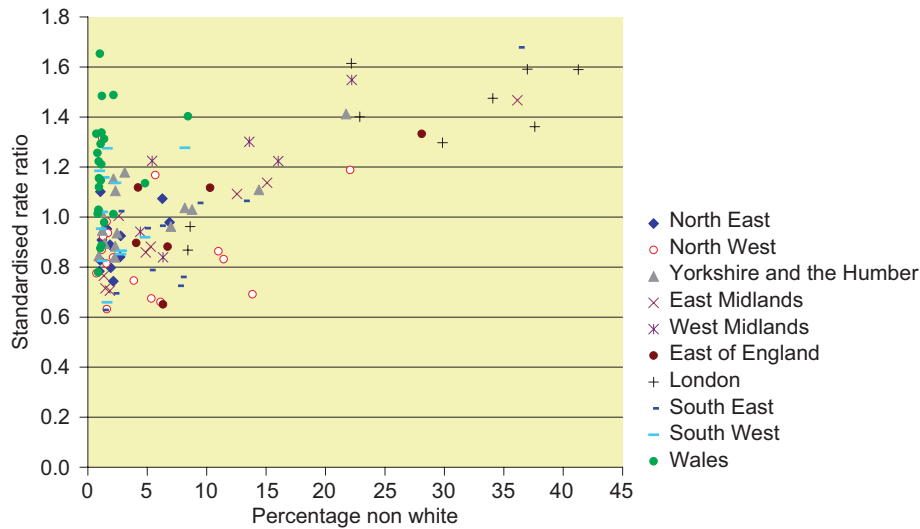


Figure 3.3: Relationship between ethnic mix and acceptance ratio

population (and/or a socially deprived population, as shown in previous reports) have high standardised acceptance rate ratios; although some areas with a very low ethnic minority population also have high standardised acceptance rate ratios. These age standardised rates (Table 3.3) are all relative to an overall acceptance rate which still needs to be adjusted for social deprivation and ethnicity so that the population RRT requirement can be calculated.

Ethnicity

Only 30 of the 65 renal units which submitted returns (46%) provided 90% or more complete ethnicity data (Table 3.4 includes only centres

with 50% or more returns). Nevertheless, this is an improvement on previous years. The percentage of renal units providing ethnicity data less than 50% complete also improved (ie decreased) to 31% (20 units). This degree of incompleteness still makes analysis of ethnicity data unreliable.

Within the renal units with over 90% returns there is a huge variation in the percentages of new patients from the ethnic minorities ranging from 0% (Belfast, Antrim, Newry, Tyrone, Ulster, York, Gloucester, Carlisle, Airdrie) to over 40% (Royal Free, Bradford, Hammer-smith and Charing Cross and Barts/Royal London). The latter renal units all include areas with high standardised acceptance rates.

Table 3.4: Percentage of patients in different ethnic groups by centre

	Centre	Completion %	Percentage in each ethnic group				
			White	Black	Asian	Chinese	Other
England	Gloucester	100	100				
	Carlisle	100	100				
	Dorset	100	98				2
	Dudley	100	92	5	3		
	Stevenage	100	81	2	16	1	
	Wolverhampton	100	78	5	15	1	
	Reading	100	76	7	15	1	1
	H&CX	100	43	11	25		21
	Nottingham	99	93	3	4		
	Middlesbrough	99	96		4		
	QEH	98	70	8	17	1	3
	York	98	100				
	Shrewsbury	98	95		5		
	Heartlands	98	73	6	20		2
	Newcastle	97	96		3		1
	Portsmouth	96	95	1	1	1	1
	Barts	95	40	16	29		15
	Royal Free	94	60	21	12	1	6
	ManWst	94	81	1	16	1	2
	Bradford	94	59	2	39		
	Basildon	93	96		4		
	Leicester	93	86	3	11		1
	Sunderland	90	96	2	2		
	Bristol	86	93	4	2	1	
	Kings	85	58	32	9	1	
	Oxford	85	87	5	6	1	2
	Preston	83	90		10		
	Ipswich	82	96	2	2		
	Cambridge	78	93	1	1	1	4
	Sheffield	76	90	1	6	1	3
	Coventry	75	81	5	13	2	
	Wirral	73	95	3			2.5
	Liverpool	71	94		3	3	1
Derby	62	100					
Southend	57	95		5.0			
Guys	57	59	38	2	2		
N Ireland	Belfast	100	100				
	Newry	100	100				
	Tyrone	100	100				
	Ulster	100	100				
	Antrim	98	100				
Scotland	Dundee	95	99			1	
	Airdrie	92	100				
Wales	Swansea	99	97	2	1		
	Bangor	68	100				
England		77	81	6	10	1	3
N Ireland		100	100				
Scotland		18	99			1	
Wales		41	98	1	1		
UK		69	83	5	9	1	2

Details of centres with less than 50% returns are not shown.

Age

The median ages of patients starting renal replacement therapy are 65.2 years in England, 68.3 years in Northern Ireland, 65.4 years in Scotland, 67.5 years in Wales and 65.5 years for the whole UK (Table 3.5). Within the UK, there was a small increase in the median age of patients starting RRT from 63.9 years in 1998 to a plateau of 65.5 years in 2002.

In England the acceptance rate is highest in the 75–79 age band at 408 pmp, as in Scotland at 580 pmp; in Wales the peak is in the 80–84 age band at 525 pmp, as in Northern Ireland with a rate of 825 pmp (Table 3.6).

The median age of incident UK non white patients in 2005 was considerably lower, at 56.8 years, than that of whole incident cohort ($p < 0.001$; Wilcoxon test). This probably reflects the lower median age of the ethnic minority populations compared with the White population.

There remain large variations by centre in median age of new patients (Figure 3.4), the maximum (Tyrone) and the minimum (Barts and the London) are separated by over 2

Table 3.6: Acceptance rate pmp by age band and country

Age	Pmp			
	England	Wales	Scotland	N Ireland
16–19	13	7	12	10
20–24	32	24	54	46
25–29	38	30	38	35
30–34	42	55	60	39
35–39	61	57	74	85
40–44	83	113	82	111
45–49	97	103	113	146
50–54	98	130	91	173
55–59	148	204	215	169
60–64	214	242	222	258
65–74	329	447	374	520
75–79	408	501	580	773
80–84	345	525	419	825
85–89	162	282	253	496
90+	62	103	69	418

decades. There are many possible reasons for these differences relating to local population demographics and the proportion of ethnic minorities in the catchment area. There may be differences in the prevalence, nature and management of renal disease and in approaches to conservative management.

Table 3.5: Median age of patients starting renal replacement therapy 1998–2005

Country	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
	Median age							
England	63.8	63.6	64.0	64.7	65.4	64.6	64.8	65.2
N Ireland	n/a	n/a	n/a	n/a	n/a	n/a	n/a	68.3
Scotland	64.4	66.0	64.8	66.6	65.3	66.6	65.4	65.4
Wales	63.6	64.3	66.6	65.4	66.8	66.4	68.7	67.5
UK	63.9	64.2	64.4	65.0	65.5	65.0	65.2	65.5

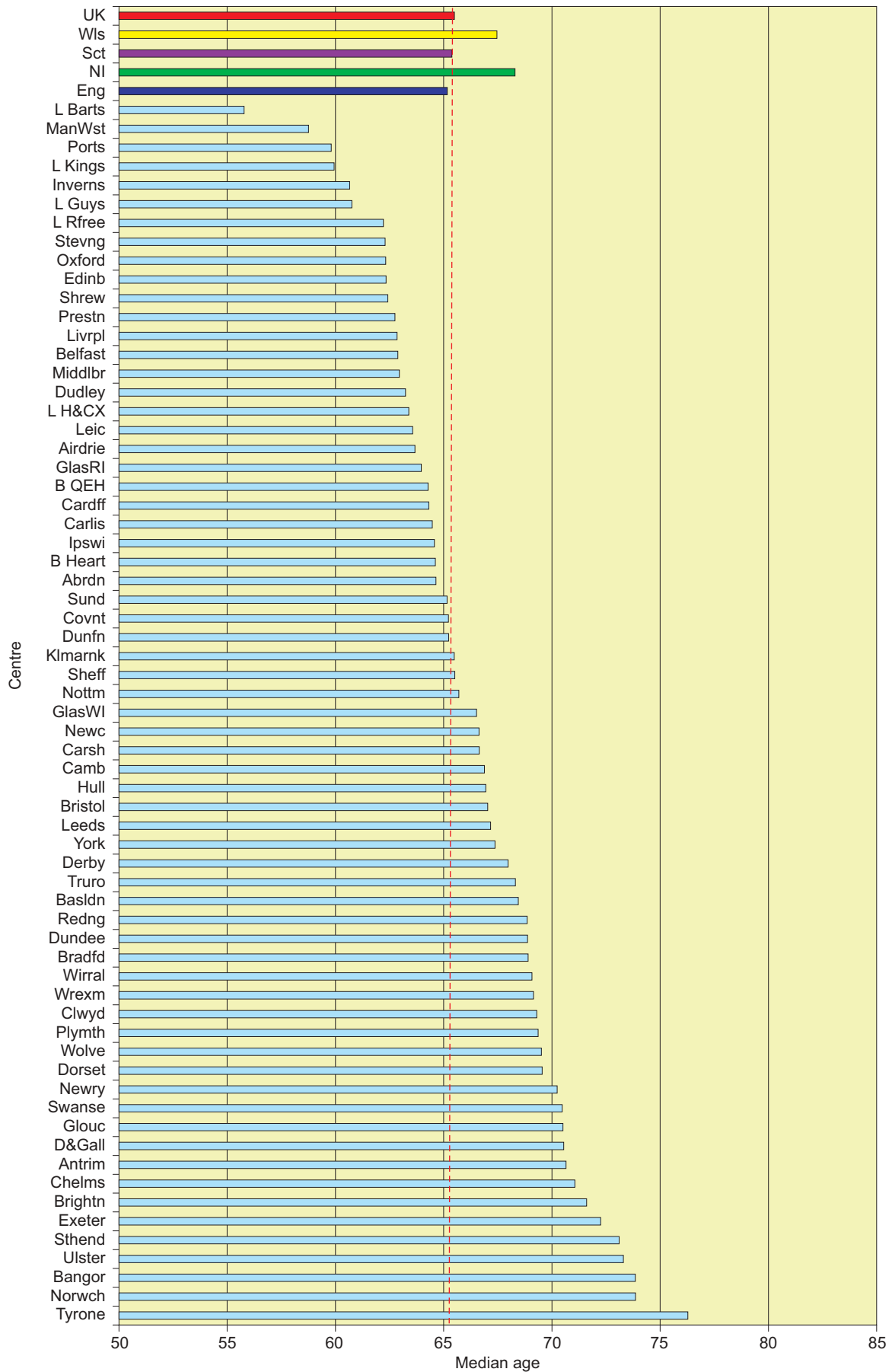


Figure 3.4: Median age of new patients in each centre in 2005

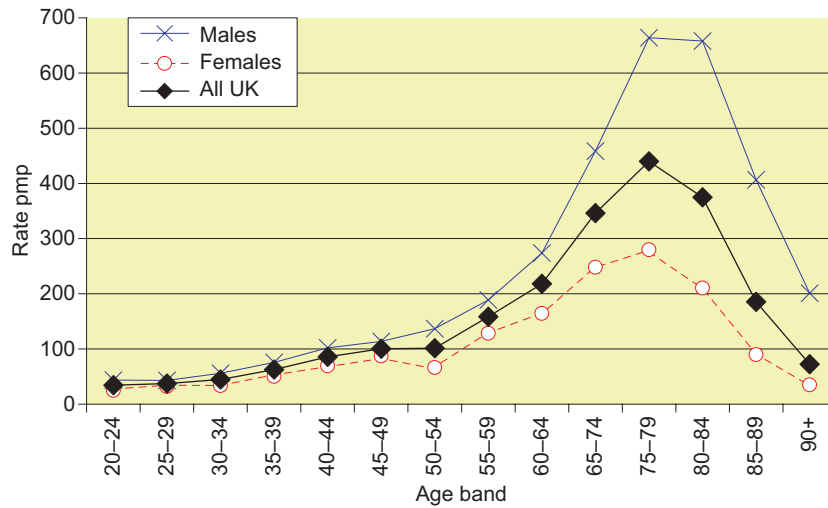


Figure 3.5: Incident rates by age and gender

Gender

As in previous years there was an excess of males starting RRT in all age groups (Figure 3.5). The ratio of males to females is fairly constant until the age of 75, but males are increasingly represented in the very old (Figure 3.6).

The mean UK male to female ratio in the 2005 incident cohort is 1.6:1. All reporting centres except Gloucester, Dumfries and Galloway, and Dunfermline report an excess of males in the 2005 incident cohort (Figure 3.7). The renal unit male to female ratio varies from 0.94 (Gloucester) to 6.5 (Carlisle). These high ratios are likely to be an effect of small numbers. All 5 renal units with a male to female ratio >2.5 in 2005 had a total take on number of 35 or less in that year.

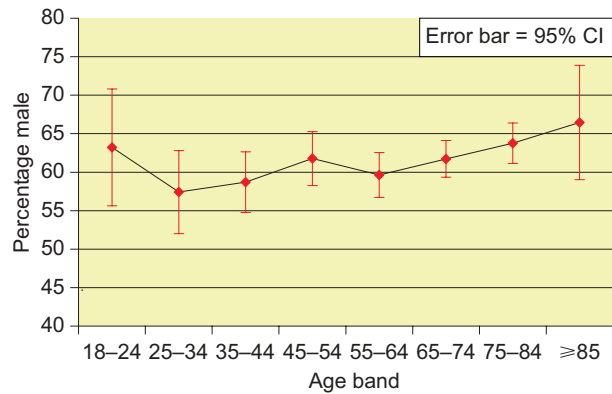


Figure 3.6: Percentage total starting RRT who are male, by age band

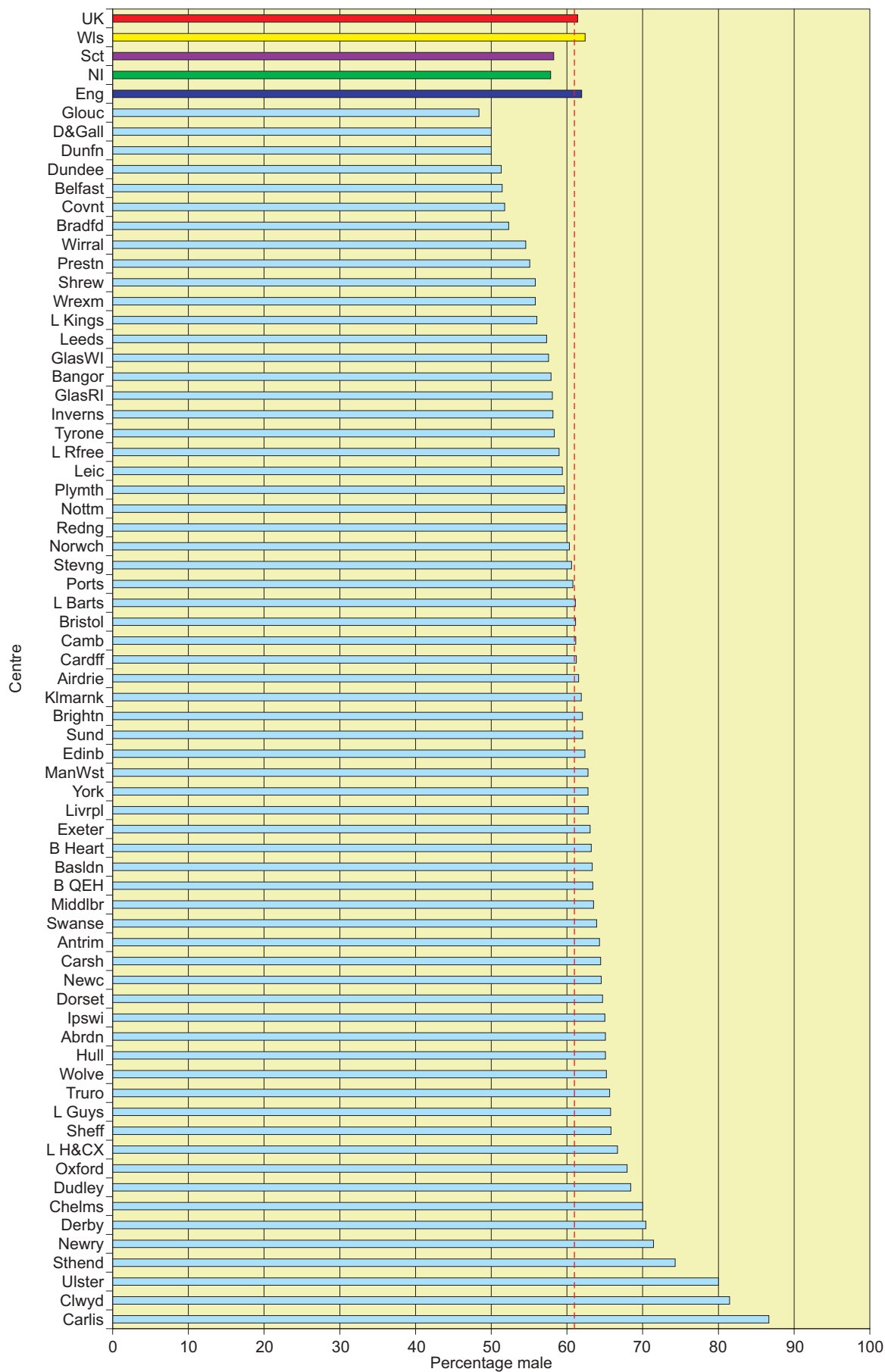


Figure 3.7: Percentage of new patients who are male in renal units reporting to UKRR in 2005

Primary renal diagnosis

The distribution of new patients by age, gender and cause of ERF is shown in Tables 3.7 and 3.8. For most types of kidney disease the male to female ratio is $>1.5:1$, as expected. The exception is adult polycystic kidney disease (APKD) for which the ratio approaches 1, as in the 2004 report. This would be expected from the mode of inheritance. Patients with APKD are relatively young when they develop ERF; approximately 4 times as many commence RRT in the under 65 cohort than the older cohort. This contrasts with renal vascular disease which is over 5 times more common in the older cohort. The gender imbalance may relate in part to the presence of factors, such as hypertension, atheroma and renal vascular disease, which are more common in males, and more common at increasing age. These factors may influence the rate of progression of renal failure.

The proportion of null returns for primary renal diagnosis has increased from a UK mean of 9.2% in 2004 to 12.0% in 2005. There is considerable national variation from 8.9% in Wales, through 10.1% in England, 16.9% in Northern Ireland, to 25% in Scotland. There is also very marked variation between centres (Table 3.8).

As in previous cohorts the diagnosis of aetiology uncertain/glomerulonephritis

unproven is the most common and in patients over the age of 65 accounts for approximately 30% of all diagnoses. Some centre variation with respect to this diagnosis is likely to reflect the lack of clear definition of certain diagnostic categories eg hypertensive disease and renal vascular disease; some may result from differences between centres in the degree of certainty required to record other diagnoses. In keeping with this there are significant negative correlations between the frequency of the aetiology uncertain diagnosis and those of diabetes, glomerulonephritis, pyelonephritis and renal vascular disease.

Diabetic renal disease remains the most common specific primary renal diagnosis in the UK, at about 20%. Diabetic kidney disease generally follows the pattern of population distribution of ethnic minorities, but is also related to social deprivation. In the 33 centres with greater than 70% ethnicity returns, and excluding 4 centres who classified 60% or more of their patients as having an uncertain diagnosis, there was a significant correlation between the percentage of incident RRT patients with diabetic renal disease and the percentage non Whites in the incident cohort ($r = 0.60$, $p < 0.001$). Five of the 8 centres (62.5%) with 20% or more non Whites in their incident cohort had a mean incidence of diabetic renal disease in that cohort of greater than 25%, compared with only 1 of 25 (4%) centres with less non Whites ($p = 0.001$: Fisher's exact test).

Table 3.7: Percentage distribution of primary renal diagnosis by age, and gender ratio, in 2005 incident cohort

Diagnosis	UK <65		UK ≥65		UK all		M:F
		<i>Excluding not sent</i>		<i>Excluding not sent</i>		<i>Excluding not sent</i>	
Aetiology unc./GN NP*	19.5	21.8	29.6	34.0	24.7	28.0	1.6
Glomerulonephritis	12.5	14.0	5.7	6.6	9.0	10.3	1.9
Pyelonephritis	8.2	9.2	6.3	7.2	7.2	8.2	1.7
Diabetes	19.7	22.1	15.3	17.6	17.5	19.8	1.6
Reno-vascular disease	2.0	2.2	11.1	12.8	6.7	7.6	1.8
Hypertension	4.0	4.5	4.4	5.0	4.2	4.8	2.4
Polycystic kidney	8.5	9.5	2.4	2.8	5.4	6.1	1.1
Other	14.8	16.6	12.1	13.9	13.4	15.2	1.4
Not sent	10.8	–	13.1	–	12.0	–	1.6
No of patients	2,897	2,584	3,034	2,638	5,931	5,222	

*GN NP, glomerulonephritis not proven.

Table 3.8: Percentage distribution of primary renal diagnosis by centre in 2005 incident cohort

Country	Treatment centre	<i>Not sent</i>	Aetiology			Glomerulo- nephritis	Hyper- tension	Other	Polycystic kidney	Pyelo- nephritis	Reno- vascular disease
			unc./GN not proven	Diabetes							
England	Barts	<i>0.0</i>	14.4	31.1	12.8	7.8	16.1	6.7	8.3	2.8	
	Basildon	<i>10.0</i>	22.2	18.5	0.0	0.0	25.9	11.1	11.1	11.1	
	Bradford	<i>4.6</i>	16.1	24.2	8.1	11.3	16.1	4.8	9.7	9.7	
	Brighton	<i>12.0</i>	30.5	16.8	5.3	3.2	13.7	6.3	13.7	10.5	
	Bristol	<i>23.4</i>	20.9	23.1	17.2	3.7	16.4	6.0	8.2	4.5	
	Cambridge	<i>0.0</i>	65.1	2.9	7.8	1.0	10.7	6.8	3.9	1.9	
	Carlisle	<i>0.0</i>	0.0	20.0	33.3	3.3	20.0	13.3	0.0	10.0	
	Carshalton	<i>24.4</i>	20.6	22.1	9.6	7.4	19.1	4.4	12.5	4.4	
	Chelmsford	<i>0.0</i>	32.5	15.0	7.5	5.0	10.0	7.5	12.5	10.0	
	Coventry	<i>0.0</i>	12.9	22.4	14.1	3.5	12.9	5.9	20.0	8.2	
	Derby	<i>2.8</i>	18.8	30.4	5.8	0.0	18.8	7.3	7.3	11.6	
	Dorset	<i>0.0</i>	19.6	15.7	13.7	5.9	21.6	5.9	5.9	11.8	
	Dudley	<i>0.0</i>	29.0	31.6	7.9	2.6	2.6	15.8	5.3	5.3	
	Exeter	<i>39.6</i>									
	Gloucester	<i>4.8</i>	25.4	13.6	13.6	0.0	23.7	6.8	10.2	6.8	
	Guys	<i>0.0</i>	16.2	28.8	6.3	9.0	18.0	7.2	6.3	8.1	
	H&CX	<i>6.1</i>	15.9	34.1	8.7	10.9	20.3	1.5	8.0	0.7	
	Heartlands	<i>0.8</i>	29.8	33.1	6.5	2.4	9.7	8.1	6.5	4.0	
	Hull	<i>0.8</i>	24.8	17.6	9.6	7.2	12.0	7.2	13.6	8.0	
	Ipswich	<i>1.7</i>	61.0	10.2	10.2	0.0	10.2	3.4	5.1	0.0	
	Kings	<i>1.4</i>	25.2	23.0	10.8	7.9	14.4	6.5	7.9	4.3	
	Leeds	<i>38.4</i>									
	Leicester	<i>16.1</i>	29.3	18.6	12.2	3.7	9.6	6.9	10.6	9.0	
	Liverpool	<i>1.2</i>	60.5	13.0	3.1	6.2	9.3	2.5	3.7	1.9	
	ManWst	<i>0.0</i>	83.7	3.1	4.7	0.0	3.1	1.6	1.6	2.3	
	Middlesbrough	<i>1.4</i>	32.9	21.9	9.6	12.3	12.3	2.7	5.5	2.7	
	Newcastle	<i>1.1</i>	21.7	12.0	10.9	6.5	27.2	9.8	6.5	5.4	
	Norwich	<i>0.8</i>	39.2	10.8	13.3	2.5	10.8	4.2	11.7	7.5	
	Nottingham	<i>0.0</i>	27.2	23.8	6.1	5.4	23.1	5.4	4.1	4.8	
	Oxford	<i>4.5</i>	22.8	24.2	12.1	2.7	15.4	6.7	8.7	7.4	
	Plymouth	<i>0.0</i>	12.3	15.8	17.5	3.5	19.3	5.3	10.5	15.8	
	Portsmouth	<i>5.9</i>	15.3	13.2	13.9	5.6	25.0	10.4	9.7	6.9	
	Preston	<i>3.4</i>	15.8	21.1	14.0	7.9	14.0	8.8	13.2	5.3	
	QEH	<i>17.5</i>	12.5	23.1	15.0	1.9	23.1	8.8	4.4	11.3	
	Reading	<i>0.0</i>	20.0	28.0	4.0	4.0	22.7	4.0	10.7	6.7	
	Royal Free	<i>99.3</i>									
	Sheffield	<i>0.0</i>	39.9	17.1	9.5	2.5	12.7	3.8	7.6	7.0	
	Shrewsbury	<i>0.0</i>	18.6	20.9	20.9	7.0	27.9	0.0	2.3	2.3	
	Southend	<i>14.3</i>	33.3	16.7	0.0	0.0	20.0	3.3	6.7	20.0	
	Stevenage	<i>0.0</i>	59.6	5.1	5.1	1.0	16.2	5.1	5.1	3.0	
	Sunderland	<i>0.0</i>	5.2	13.8	12.1	41.4	12.1	6.9	8.6	0.0	
	Truro	<i>18.8</i>	23.1	7.7	15.4	0.0	19.2	7.7	7.7	19.2	
	Wirral	<i>0.0</i>	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Wolverhampton	<i>0.0</i>	18.5	26.1	8.7	4.4	13.0	5.4	7.6	16.3	
	York	<i>7.0</i>	20.0	12.5	17.5	2.5	25.0	0.0	2.5	20.0	

Table 3.8: (continued)

Country	Treatment centre	Not sent	Aetiology		Glomerulo- nephritis	Hyper- tension	Other	Polycystic kidney	Pyelo- nephritis	Reno- vascular disease
			unc./GN not proven	Diabetes						
N Ireland	Antrim	0.0	21.4	23.8	11.9	4.8	11.9	4.8	7.1	14.3
	Belfast	26.8								
	Newry	7.1	11.5	23.1	7.7	0.0	11.5	7.7	3.9	34.6
	Tyrone	8.3	4.6	22.7	4.6	9.1	9.1	4.6	9.1	36.4
	Ulster	0.0	0.0	0.0	0.0	20.0	40.0	0.0	10.0	30.0
Scotland	Aberdeen	96.8								
	Airdrie	15.4	9.1	24.2	15.2	9.1	15.2	6.1	15.2	6.1
	Dumfries	33.3								
	Dundee	5.3	8.3	23.6	4.2	4.2	13.9	1.4	8.3	36.1
	Dunfermline	27.3								
	Edinburgh	22.8	14.1	12.8	21.8	3.9	14.1	14.1	10.3	9.0
	Glasgow RI	13.7	30.8	19.6	11.2	0.0	15.9	5.6	8.4	8.4
	Glasgow WI	16.2	27.7	20.5	6.0	3.6	16.9	6.0	7.2	12.1
	Inverness	4.7	4.9	22.0	22.0	4.9	4.9	19.5	14.6	7.3
	Kilmarnock	35.7								
Wales	Bangor	2.6	32.4	27.0	13.5	13.5	10.8	0.0	2.7	0.0
	Cardiff	6.2	34.7	24.0	12.0	2.4	12.6	7.2	3.0	4.2
	Clwyd	0.0	55.6	37.0	0.0	0.0	0.0	7.4	0.0	0.0
	Swansea	1.0	21.9	19.8	11.5	3.1	15.6	3.1	10.4	14.6
	Wrexham	48.8								
England	10.1	29.1	19.5	10.1	5.1	15.6	5.9	8.1	6.6	
N Ireland	16.9	16.4	18.4	10.0	3.0	15.9	7.5	12.4	16.4	
Scotland	25.0	19.9	20.3	11.3	3.7	14.0	8.2	9.7	12.9	
Wales	8.9	32.4	24.1	11.2	3.4	12.0	5.4	4.9	6.6	
Total		12.0	28.0	19.8	10.3	4.8	15.2	6.1	8.2	7.6

For those centres with a high percentage of missing primary diagnoses, the percentage in the other diagnostic categories has not been calculated. The percentage by each category has been calculated after excluding those patients with a missing diagnosis.

First established treatment modality

In the UK in 2005 haemodialysis was the first modality of RRT in 75.5% of patients, peritoneal dialysis in 21.4% and pre-emptive transplant in 3.1% (defined as first treatment recorded irrespective of any later change). This represents little change from the figures recorded in the 2004 report but a significant change from 1998 when the very first treatment modality was haemodialysis in 57.7%. Many patients, especially those referred late to renal units, undergo a brief period of haemodialysis before being established on peritoneal dialysis. As an indication of the elective treatment modality, the established modality at 90 days is more representative. By day 90 of treatment, 8.4% had died, a further 1.2% had stopped treatment or been transferred out, leaving

90.4% of the original cohort on RRT. Of these remaining patients 70.6% were on HD, 26.2% on PD and 3.2% had received a transplant (Figure 3.8).

In Table 3.9 these variables are represented as a percentage of the whole 2005 cohort, showing for the whole UK, 63.8% on HD, 23.7% on PD and 2.9% with a transplant. The percentage of the incident cohort which had died by day 90 varied considerably between individual renal units (0 to 35%). Small numbers are the likeliest explanation for these differences. Both of the two renal units with zero death rate and six of the seven units with a death rate above 15% took on less than 45 patients during the year. In addition the median age of incident patients was greater than 68 years in six of the seven with the higher death rate.

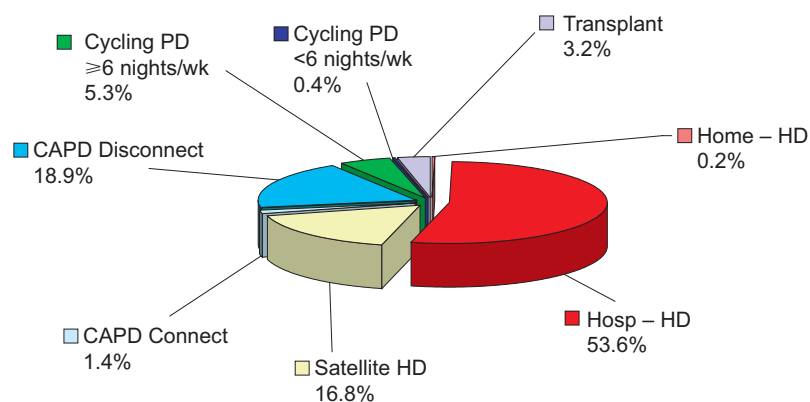


Figure 3.8: RRT modality at 90 days in the 2005 cohort

Table 3.9: Treatment modality at day 90

Country	Centre	Percentage of patients on each modality					
		HD	PD	Tx	Transferred	Stopped treatment	Died
England	Barts	59.0	36.4	1.7	0.6	0.0	2.3
	Basildon	50.0	27.5	2.5	0.0	5.0	15.0
	Bradford	72.1	16.4	0.0	1.6	0.0	9.8
	Brighton	66.7	25.2	0.0	0.0	0.0	8.1
	Bristol	63.0	16.7	4.3	0.0	3.7	12.4
	Cambridge	69.6	19.0	8.9	0.0	0.0	2.5
	Carlisle	80.0	20.0	0.0	0.0	0.0	0.0
	Carshalton	66.7	21.0	2.2	1.1	0.5	8.6
	Chelmsford	69.2	18.0	0.0	0.0	0.0	12.8
	Coventry	61.0	25.6	6.1	1.2	1.2	4.9
	Derby	58.2	37.3	0.0	0.0	0.0	4.5
	Dorset	35.4	58.3	0.0	0.0	0.0	6.3
	Dudley	46.3	41.5	0.0	0.0	0.0	12.2
	Exeter	54.7	32.5	0.9	0.0	0.0	12.0
	Gloucester	63.5	25.4	1.6	0.0	1.6	7.9
	Guys	74.8	12.2	9.4	0.0	0.0	3.7
	H&CX	75.3	15.4	1.2	2.5	0.0	5.6
	Heartlands	72.4	13.8	0.0	0.0	0.8	13.0
	Hull	63.9	21.3	0.0	1.6	0.8	12.3
	Ipswich	41.2	45.6	0.0	4.4	0.0	8.8
	Kings	67.3	23.4	4.7	0.9	0.0	3.7
	Leeds	70.7	14.7	1.3	1.3	0.0	11.5
	Leicester	55.7	28.1	8.9	0.0	0.0	7.4
	Liverpool	66.9	18.3	3.5	0.7	2.1	8.5
	ManWst	55.9	35.1	4.5	0.0	0.0	4.5
	Middlesbrough	77.9	5.8	0.0	1.2	0.0	15.1
	Newcastle	62.9	15.7	13.5	0.0	1.1	6.7
	Norwich	70.5	17.2	0.0	0.0	0.0	12.3
	Nottingham	58.7	26.8	1.5	0.0	0.7	12.3
	Oxford	52.4	28.6	10.7	2.4	0.0	6.0
	Plymouth	68.4	14.0	5.3	0.0	0.0	12.3
	Portsmouth	54.7	30.9	6.5	0.0	0.0	7.9
	Preston	49.1	44.4	0.9	0.0	0.9	4.6
	QEH	66.7	26.3	2.0	0.0	0.0	5.1

Table 3.9: (continued)

Country	Centre	Percentage of patients on each modality					
		HD	PD	Tx	Transferred	Stopped treatment	Died
England	Reading	50.0	40.3	0.0	4.2	0.0	5.6
	Royal Free	62.5	27.1	7.3	1.0	0.0	2.1
	Sheffield	64.4	23.0	1.7	0.6	0.0	10.3
	Shrewsbury	53.3	37.8	0.0	0.0	2.2	6.7
	Southend	63.3	20.0	0.0	0.0	0.0	16.7
	Stevenage	79.4	15.9	0.0	1.6	0.0	3.2
	Sunderland	84.1	4.6	2.3	0.0	0.0	9.1
	Truro	75.0	19.4	0.0	0.0	0.0	5.6
	Wirral	76.8	16.1	0.0	0.0	0.0	7.1
	Wolverhampton	74.4	15.9	0.0	0.0	1.2	8.5
	York	66.0	26.4	0.0	0.0	0.0	7.6
N Ireland	Antrim	75.8	24.2	0.0	0.0	0.0	0.0
	Belfast	61.1	17.6	0.9	0.0	7.4	13.0
	Newry	69.6	26.1	0.0	0.0	0.0	4.4
	Tyrone	64.7	0.0	0.0	0.0	0.0	35.3
	Ulster	83.3	16.7	0.0	0.0	0.0	0.0
Scotland	Aberdeen	65.0	25.0	1.7	0.0	0.0	8.3
	Airdrie	79.1	18.6	0.0	0.0	0.0	2.3
	Dumfries	52.9	23.5	0.0	0.0	5.9	17.7
	Dundee	50.0	32.9	1.4	0.0	1.4	14.3
	Dunfermline	60.0	30.0	0.0	0.0	0.0	10.0
	Edinburgh	67.9	17.9	6.3	0.9	0.9	6.3
	Glasgow RI	76.8	11.1	0.0	0.0	0.0	12.1
	Glasgow WI	64.8	24.8	1.9	0.0	0.0	8.6
	Inverness	50.0	44.1	0.0	0.0	0.0	5.9
	Kilmarnock	62.2	32.4	0.0	0.0	0.0	5.4
Wales	Bangor	58.1	22.6	0.0	0.0	0.0	19.4
	Cardiff	67.6	17.3	6.4	0.0	0.0	8.7
	Clwyd	73.9	17.4	0.0	0.0	0.0	8.7
	Swansea	64.1	19.6	2.2	0.0	0.0	14.1
	Wrexham	44.7	23.7	7.9	5.3	0.0	18.4
England		63.5	24.3	3.1	0.7	0.5	8.0
N Ireland		65.8	18.2	0.5	0.0	4.3	11.2
Scotland		65.0	23.7	1.8	0.2	0.5	8.9
Wales		63.9	19.1	4.5	0.6	0.0	12.0
UK		63.8	23.7	2.9	0.6	0.6	8.4

There were major differences between individual renal units in the percentage of new patients established on HD at 90 days (range 38–100%, Figure 3.9). Only 2 renal units had less than 50% on HD, whilst 19 had 80% or more. A significantly higher proportion ($p < 0.0001$) of incident dialysis patients over the age of 65 (82.0%) were on HD at 90 days compared with their younger counterparts (63.7%) (Table 3.10). This translates to the proportion of patients on

PD being twice as high in patients aged <65 years as the proportion in older patients (36.3% vs 18.0%). This trend appears to be increasing. These overall differences were reflected in the vast majority of renal units though in 5 the proportions were reversed and PD was more popular in the elderly (Dorset, Ulster, Clwyd, Inverness, and Southend). The male:female ratio in patients on HD was 1.70 compared with a ratio of 1.57 for patients on PD.

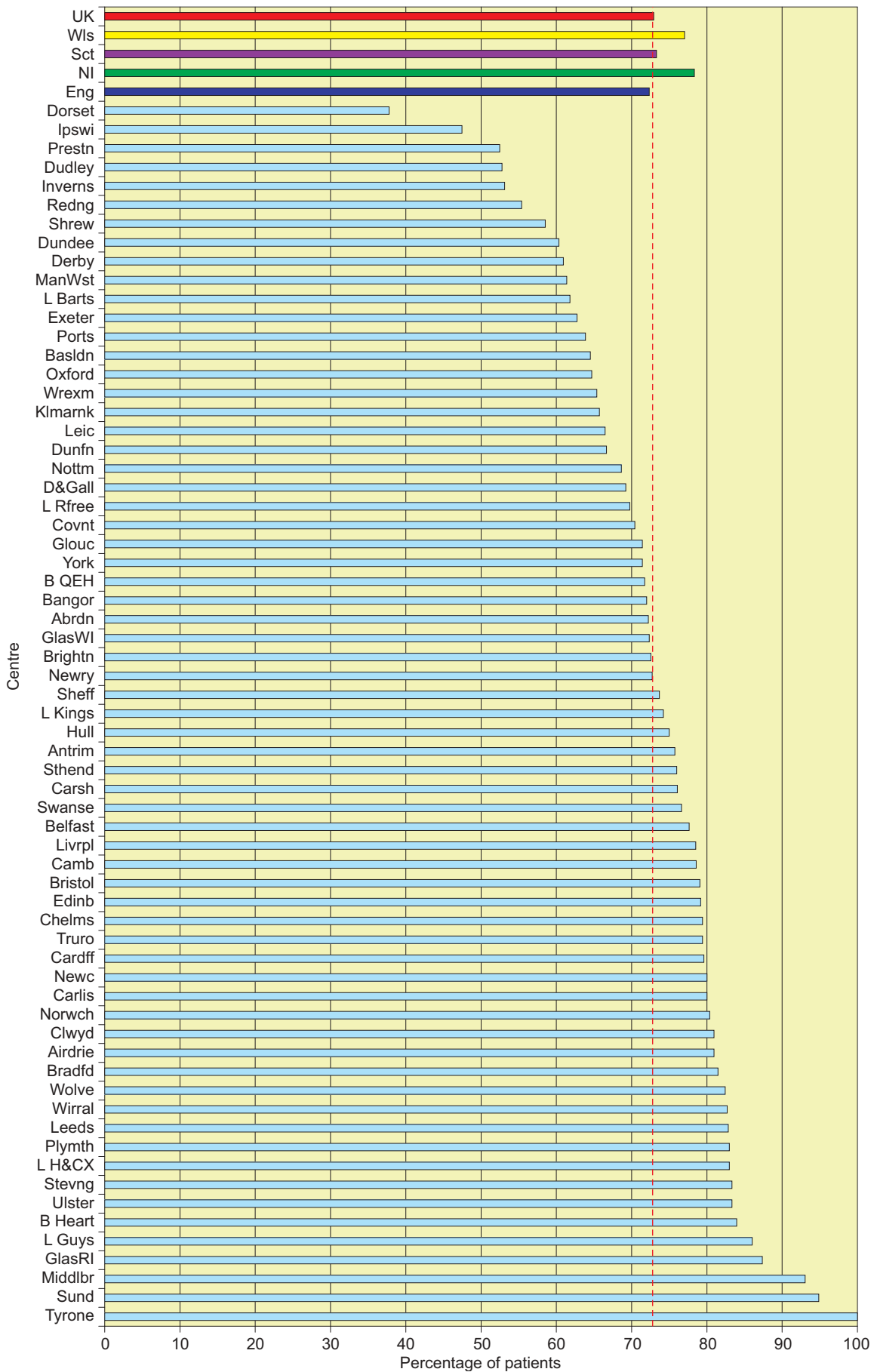


Figure 3.9: Percentage of incident dialysis patients in each centre on HD on day 90

Table 3.10: Take on figures for new patients on dialysis by modality and age

Treatment centre	Aged <65 (%)		Aged >65 (%)		Treatment centre	Aged <65 (%)		Aged >65 (%)	
	HD	PD	HD	PD		HD	PD	HD	PD
Aberdeen	56.7	43.3	91.7	8.3	H&CX	73.8	26.3	94.0	6.0
Airdrie	70.8	29.2	94.4	5.6	Kings	66.0	34.0	84.1	15.9
Antrim	58.3	41.7	85.7	14.3	Royal Free	58.7	41.3	82.5	17.5
Heartlands	78.4	21.6	89.1	10.9	Leeds	69.5	30.5	93.3	6.7
QEH	65.6	34.4	78.4	21.6	Leicester	65.1	34.9	67.9	32.1
Bangor	50.0	50.0	82.4	17.6	Liverpool	74.3	25.7	84.3	15.7
Basildon	53.3	46.7	75.0	25.0	ManWst	57.1	42.9	66.7	33.3
Belfast	75.5	24.5	80.6	19.4	Middlesbrough	90.5	9.5	96.7	3.3
Bradford	70.0	30.0	88.2	11.8	Newcastle	77.1	22.9	82.9	17.1
Brighton	59.5	40.5	80.0	20.0	Newry	40.0	60.0	100.0	
Bristol	68.2	31.8	90.5	9.5	Norwich	67.5	32.5	88.1	11.9
Cambridge	76.5	23.5	80.6	19.4	Nottingham	54.2	45.8	83.1	16.9
Cardiff	70.1	29.9	87.5	12.5	Oxford	51.4	48.6	78.8	21.2
Carlisle	69.2	30.8	91.7	8.3	Plymouth	78.3	21.7	87.5	12.5
Carshalton	68.6	31.4	84.4	15.6	Portsmouth	58.8	41.2	70.6	29.4
Chelmsford	66.7	33.3	86.4	13.6	Preston	43.3	56.7	65.9	34.1
Clwyd	85.7	14.3	78.6	21.4	Reading	51.9	48.1	57.9	42.1
Coventry	61.8	38.2	78.4	21.6	Sheffield	61.6	38.4	84.8	15.2
Dumfries	60.0	40.0	75.0	25.0	Shrewsbury	43.5	56.5	77.8	22.2
Derby	50.0	50.0	71.9	28.1	Stevenage	75.0	25.0	92.9	7.1
Dorset	50.0	50.0	29.6	70.4	Southend	77.8	22.2	75.0	25.0
Dudley	44.0	56.0	72.7	27.3	Sunderland	90.9	9.1	100.0	
Dundee	47.8	52.2	68.6	31.4	Swansea	64.5	35.5	84.8	15.2
Dunfermline	55.0	45.0	81.3	18.8	Truro	73.3	26.7	84.2	15.8
Edinburgh	67.4	32.6	90.0	10.0	Tyrone	100.0		100.0	
Exeter	44.4	55.6	77.2	22.8	Ulster	100.0		80.0	20.0
Glasgow RI	80.5	19.5	93.5	6.5	Wirral	72.2	27.8	88.2	11.8
Glasgow WI	47.7	52.3	94.0	6.0	Wolverhampton	75.8	24.2	87.8	12.2
Gloucester	54.2	45.8	84.4	15.6	Wrexham	33.3	66.7	82.4	17.6
Hull	59.1	40.9	86.7	13.3	York	59.1	40.9	81.5	18.5
Inverness	56.3	43.8	50.0	50.0	England	63.9	36.1	80.9	19.1
Ipswich	36.4	63.6	61.5	38.5	N Ireland	68.5	31.5	86.9	13.1
Kilmarnock	35.3	64.7	94.4	5.6	Scotland	59.8	40.2	86.1	13.9
Barts	60.2	39.8	65.4	34.6	Wales	65.6	34.4	85.1	14.9
Guys	81.6	18.4	90.9	9.1	UK	63.7	36.3	82.0	18.0

Survival of incident patients

This analysis is to be found in Chapter 12.

Late referral of incident patients

Methodology

Data were included from all incident patients in the years 2000–2005 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 by a nephrologist is only available for a handful of people.
3. The small number of patients who recovered sufficient renal function to allow discontinuation of dialysis.

Referral time was calculated as the number of days between the date of first being seen by a nephrologist and the date of RRT initiation. A small proportion of data (1.8%) was excluded

Table 3.11: Percentage completeness of data from the centres and years included in the data set

Centre	Year					
	2000	2001	2002	2003	2004	2005
Bangor					97.2	89.5
Basildon				96.2	95.7	90.0
Bradford					95.2	100.0
Bristol	95.2	90.1				
Dorset				98.6	100.0	100.0
Exeter		78.6	77.8			
Gloucester						91.9
Ipswich			86.4			94.9
Leeds				76.1	87.7	88.3
Leicester		89.7	87.4	92.9	92.0	
Middlesbrough		84.1	91.0	92.3	87.3	90.5
Nottingham	98.2	99.2	93.8	99.1	98.1	98.6
Portsmouth		97.8	95.0	95.0	93.2	91.5
Preston		83.2				
Sheffield	94.8	95.4	97.4	98.1	98.2	97.4
Stevenage				95.9	86.9	
Swansea						93.8
Truro				75.5		
Tyrone						91.7
Ulster						90.0
Wolverhampton				79.3	99.0	97.8
York			87.3	82.8	93.6	

because of actual or potential inconsistencies. Only data from those centres/years with 75% or more completeness were used. Centre/years where 10% or more of the referral times were zero were excluded. After these exclusions, data on 5,611 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. 29 people were calculated to have negative referral times (−1 to −14 days). These were attributed as zero. After the exclusions outlined, the data available for analysis are detailed in Table 3.11, which shows the percentage completeness of data from the centres and years included in the data set.

Late referral by centre and year

The percentage of patients referred to a nephrologist less than 90 days before RRT initiation in the included centres and years in the period 2000–2005 is shown in Table 3.12.

The range in 2005 was 13–48%. The mean annual incidence of late referral in 2005 was 29.8%, which was similar to the value in 2000.

Time referred before dialysis initiation in the 2005 incident cohort

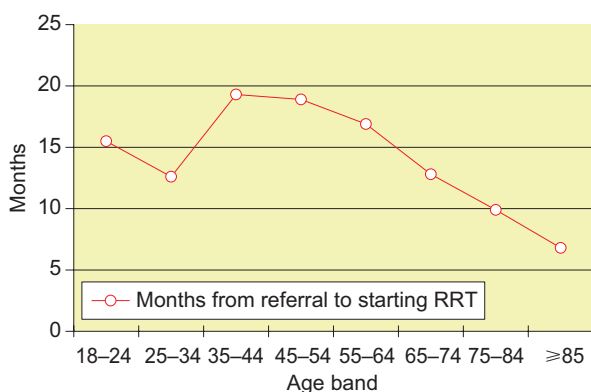
Just over half the patients (52.6%) had been referred over a year before they needed to start dialysis. There were 10.3% of patients referred within 6–12 months, 7.3% within 3–6 months and 29.8% within 3 months.

Age and late referral

Patients who were referred late (<90 days before dialysis initiation) were significantly older than patients referred earlier (median age 67.7 vs 64.3 years: $p < 0.001$). Furthermore the median duration of pre-dialysis care diminished progressively with increasing age beyond the 45–54 age group (Figure 3.10).

Table 3.12: Percentage of patients referred to a nephrologist less than 90 days before dialysis initiation

Centre	Year					
	2000	2001	2002	2003	2004	2005
Bangor					34.3	41.2
Basildon				39.2	36.4	18.5
Bradford					16.9	32.3
Bristol	30.4	25.7				
Dorset				23.2	19.4	37.3
Exeter		32.5	17.5			
Gloucester						21.1
Ipswich			39.5			48.2
Leeds				36.4	28.7	32.6
Leicester		21.1	28.8	19.1	22.0	
Middlesbrough		17.4	32.7	26.0	31.5	13.4
Nottingham	39.3	31.6	38.2	28.8	33.3	31.3
Portsmouth		42.6	33.6	24.6	30.9	26.4
Preston		20.2				
Sheffield	21.1	25.5	20.8	27.2	20.2	20.7
Stevenage				30.5	19.2	
Swansea						44.0
Truro				15.0		
Tyrone						22.7
Ulster						33.3
Wolverhampton				24.6	30.7	29.9
York			21.8	22.9	27.3	
Total	29.9	27.3	28.6	26.9	26.4	29.8

**Figure 3.10: Duration of pre-dialysis care by age**

Gender and late referral

There was a borderline significant difference in the male:female ratio in those referred late (<90 days) and those referred earlier (1.79 vs 1.59: $p = 0.047$), with late referral more common in males.

Ethnicity, social deprivation and late referral

Patients from the Chinese ethnic minority were excluded from this analysis as the numbers with referral data were too small ($n = 17$). Thirty patients with an ethnic background of 'other' were also excluded. The proportion of non Whites (South Asian and Black) referred late (<90 days) was significantly lower than in Whites (21.7% vs 27.7%: $p = 0.012$), implying that late referral may be less common in non Whites. This will be partly due to the high incidence of diabetes in non Whites (which tends to be referred earlier) and the Whites being an older group. Advancing age is also associated with late referral.

Importantly in the UK, there was no relationship between social deprivation and referral pattern.

Table 3.13: Early and late referral by primary renal diagnosis

Diagnosis	Early referral		Late referral	
	N	%	N	%
Diabetes	174	84.1	33	15.9
Glomerulonephritis	78	75.0	26	25.0
Pyelonephritis	66	77.6	19	22.4
Polycystic kidney disease	47	88.7	6	11.3
Reno-vascular disease	108	70.1	46	29.9
Other	101	52.6	91	47.4
Aetiology unc/GN NP*	180	66.4	91	33.6
Not sent	49	62.8	29	37.2

*GN NP – glomerulonephritis not proven.

Primary renal disease and late referral in 2005 incident cohort

Late referral (<3 months) differs significantly between primary renal diagnoses (Table 3.13, X^2 test $p < 0.001$). Multiple comparison tests between the different diagnoses groups have not been made as there would be a high risk of producing a significant test by chance. Patients with a diagnosis of ‘other identified category’ or ‘not sent’ appear to have higher rates of late referral, those with diabetes and polycystic disease have lower rates.

Modality and late referral

Referral pattern had a marked effect on initial modality choice. The proportion of patients whose initial modality was PD was significantly less in the late referral group in comparison to the group referred earlier (13.2% vs 31.8%: $p < 0.0001$). By 90 days after dialysis initiation the difference was partially redressed, though the proportion on PD was still significantly

lower after late referral (22.1 vs 34.7%: $p < 0.0001$).

Co-morbidity and late referral

Significantly fewer patients who had been referred late (<90 days) were assessed as having no co-morbidity compared to the group referred earlier (39.5% vs 44.5%: $p = 0.0046$). In terms of specific co-morbidities, peripheral vascular disease was significantly less common in the group referred late. On the other hand, liver disease and malignancy were significantly more common in those referred late, perhaps because of the potential for rapid decompensation in these conditions (Table 3.14).

Haemoglobin and late referral

Patients referred late had a significantly lower haemoglobin level at dialysis initiation than patients referred earlier (9.4 g/dl vs 10.3 g/dl: $p < 0.001$), presumably because of inadequate pre-dialysis care, and the lack of opportunity to optimise anaemia management.

Table 3.14: Frequency of specific co-morbidities amongst patients referred late (0–89 days) compared with those referred early (>89 days)

Co-morbidity	0–89 days	≥ 90 days	p-value
Ischaemic heart disease	21.9	24.4	0.0955
Peripheral vascular disease	11.3	14.1	0.019
Cerebrovascular disease	10.7	11.0	0.82
Diabetes (not a cause of ERF)	7.1	7.6	0.63
COPD*	7.8	6.6	0.19
Liver disease	3.3	1.8	0.0067
Malignancy	19.0	9.6	<0.0001
Smoking	20.1	17.9	0.11

*COPD – chronic obstructive pulmonary disease.

Renal function at the time of starting RRT

Using the abbreviated 4 variable MDRD calculation, the eGFR of patients starting RRT was calculated. Data from patients with no available creatinine measurement within 14 days before the start of RRT were not used. Patients with an eGFR >20 ml/min/1.73 m² were excluded from analysis. Data from one centre (Hammer-smith and Charing Cross) were excluded from analysis because of errors in the data extraction process of this item. The log of the eGFR was taken to normalise the data, and a two sample t-test was used to compare the means of the log(eGFR) of those patients with early referral against those with late referral (<3 months).

eGFR and late referral

Estimated GFR was slightly lower in patients referred late compared to earlier referrals (7.34 vs 7.58 ml/min/1.73 m²: $p = 0.045$). In those over the age of 65 at the time of dialysis initiation the difference was more pronounced (7.41 vs 7.99 ml/min/1.73 m²: $p = 0.0003$). In whites only, the difference between late and earlier referrals remained significant but there was little difference in Asians or in Blacks. There were no significant differences in eGFR between those referred late and those referred earlier when stratified by gender, Townsend score or primary renal disease, except that eGFR was significantly lower in patients with renal disease of uncertain aetiology who had been referred late rather than early (6.86 vs 7.40 ml/min/1.73 m²: $p = 0.02$). When

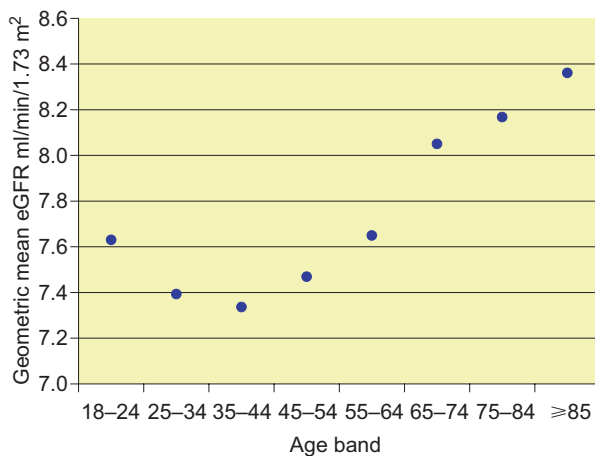


Figure 3.11: Geometric mean eGFR at start of RRT by age band

p value from an ANOVA to test for differences between these age groups is <0.0001

Table 3.15: Median eGFR at start of RRT in the UK, 2000–2005

Year	N	Median eGFR
2000	1,804	7.12
2001	2,285	7.24
2002	2,271	7.39
2003	2,527	7.80
2004	2,714	7.79
2005	2,861	7.85

stratifying by co-morbidity there were no significant differences in eGFR between the referral groups except that amongst smokers eGFR was significantly lower in those who had been referred late rather than early (7.27 vs 7.95 ml/min/1.73 m²: $p = 0.03$).

eGFR and age

Older patient groups appear to have a higher geometric mean eGFR at start of dialysis than younger groups (Figure 3.11).

Changes over time in eGFR at start of RRT

Analysis of serial data shows a small rise in median eGFR prior to start of RRT in the period 2000–2003 which now appears to have reached a plateau for the last 3 years (Table 3.15).

There appears to have been a small increase in eGFR at start of RRT between 1997 and 2003, since when it has remained stable (Figure 3.12). There is no consistent difference between dialysis modalities in eGFR at start of RRT (Figure 3.12).

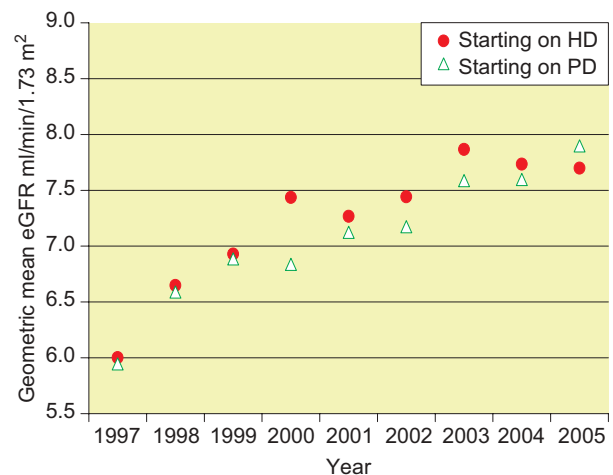


Figure 3.12: Change in eGFR on starting RRT 1997–2005; PD and HD