

Chapter 4: All Patients Receiving Renal Replacement Therapy in the United Kingdom in 2004

Summary

- The estimated prevalence of RRT in the UK at the end of 2004 was 638 pmp.
- The detailed analysis includes 33,511 patients in England, Scotland and Wales.
- The annual increase in prevalence in the 38 renal units participating in the Registry since 2000 was 5.9%. The overall increase over the last 4 years was 23%.
- There is substantial variation in the crude Local Authority area prevalence from 322 pmp to 1,108 pmp.
- Median vintage of the whole RRT population was 5.0 years. That of transplanted patients was 9.6 years, HD patients 2.7 years and PD patients 2.1 years.
- In numerical terms, prevalence of RRT was maximal in the age range 55–65 years, the maximal prevalence rate occurred in the 80–85 year age band (2,065 pmp) in men and in the 65–74 year age band in women (1,073 pmp).
- 61% of prevalent RRT patients were male. This male preponderance was evident across all age groups.
- In the 36 centres with ethnicity returns of 70% or more in each RRT modality, the proportion of Whites was slightly but significantly higher in the transplant cohort (88%) than in the HD (83%: $p=0.001$) and PD (83%: $p=0.009$) cohorts.
- The most common identifiable diagnosis was glomerulonephritis (22.3%) for those under 65 and diabetes (13.4%) in those over 65.
- Of RRT patients in the UK, 45% had a functioning transplant, 42% were on HD and 13% on PD.

- In England and Wales hospital based HD accounted for 47% of the whole dialysis program. The proportion receiving HD in satellite units was 27%. Only 2% were on home HD.
- The proportion of prevalent dialysis patients on PD varies widely across the Registry units ranging from 0% to over 40%.

Introduction

In 2004, the UK Renal Registry received complete returns from an estimated 83% of England and 100% of Wales. Data on prevalent patients in Scotland were obtained from the Scottish Renal Registry and summary data for Northern Ireland from the renal unit in the Royal Belfast Hospital, which coordinates renal service provision in Northern Ireland. Extrapolating from Registry data to derive information relating to the whole UK must still be viewed with caution, although estimates become more reliable as coverage increases. For comparisons between renal units and between local areas fully covered by the Renal Registry, the data from the Registry are fully valid.

The proportion of the population aged over 65 years covered by the Registry in England was similar to the fully covered population (defined below, ie based on Local Authority areas whose population was thought to be fully covered by participating renal units) when compared with the general population of England. The proportion from ethnic minority groups was lower in the covered population at 8.1% compared with 9.0% in the total population, as some areas not reporting to the Registry have catchment populations with a high ethnic minority. Extrapolating from Registry data will therefore tend to underestimate the prevalence of new patients for the whole UK, as the prevalence of renal failure is high in South Asian and African–Caribbean ethnic minority populations.

Paediatric data can be found in Chapter 18.

Table 4.1: Prevalence of renal replacement therapy in UK, 31/12/2004

	England	Wales	Scotland	N. Ireland	UK
No of adult renal units	44/53	5	10	5	73
Patient numbers	25,553* (30,762)**	2,214	3,588	1,284	37,848
Population (millions)	49.6	2.9	5.1	1.7	59.2
Prevalence pmp (95% CI)	620 (612–628)	763 (731–794)	709 (686–732)	755 (714–797)	638 (101–105)

*Patient number returned only from fully covered Local Authority areas.

**Calculated number for the whole of England.

All adult patients receiving Renal Replacement Therapy in the UK, 31/12/2004

There were estimated to be over 37,800 adult patients receiving RRT in the UK at the end of 2004. This equates to a total population prevalence of 638 pmp (Table 4.1). The prevalence was calculated using an overall total for England extrapolated from the data for those renal units in England participating in the Registry's activity, which cover an estimated 41.2 million people. As indicated above this may be an underestimate.

The calculated prevalence in England does not show the expected rise from 2003, as many of the new renal units joining the Registry in 2004 had a prevalence rate below the previous Registry average. However as shown below, in those renal units continuously reporting for the last 5 years there is an average rise in prevalence of between 4% and 5%.

Prevalent patients on 31/12/2004

For 2004, detailed data on prevalent patients were returned from 44 of the 53 renal units in England, all 5 units in Wales and all 10 units in Scotland (the Stobhill renal unit is part of Glasgow Royal Infirmary), a total of 33,511 patients. Of the 27,853 patients in England

25,553 were from geographical areas completely covered by the Registry, with an estimated population of 41.2 million, representing 83% of the population. The number of prevalent patients in each renal unit and the distribution of their treatment modalities are shown in Table 4.2 and Figure 4.1.

The numbers of patients calculated for each country quoted above by adding the patient numbers in each renal unit differ marginally from those quoted elsewhere when patients are allocated to areas by their individual post codes, as some units treat patients from across national boundaries.

The wide variation in the proportion of transplanted patients in each renal unit is partly the result of different policies for follow up of patients at transplant centres; some transplant centres continue to follow up the patients they transplant for other renal units, others transfer them back to their parent unit but at variable times post transplant, and some renal units do not follow up any transplanted patients. Thus the 22 renal units with a transplant centre tend to have a higher proportion of transplant patients under follow up compared with the 38 units without a transplant centre, and are also the units with the largest number of prevalent RRT patients overall (Figure 4.1). Transplant centres are also significantly larger, with on average twice as many prevalent dialysis patients as other centres (approximately 500 vs. 220: $p < 0.001$).

Table 4.2: Distribution of prevalent patients and modalities 31/12/2004

Treatment centre	Total	% on HD	% on PD	% with transplant	Treatment centre	Total	% on HD	% on PD	% with transplant
Barts	1,306	33	17	50	Sheffield	1,148	46	14	39
Basildon	160	68	16	16	Shrewsbury	227	54	17	29
Bradford	329	48	15	37	Stevenage	551	58	11	31
Brighton	601	47	15	38	Southend	173	71	13	16
Bristol	1,093	37	6	57	Sunderland	269	50	5	45
Cambridge	790	31	12	57	Truro	279	53	20	27
Carlisle	182	41	9	50	Wirral	186	87	13	0
Carshalton	956	44	19	37	Wolverhampton	419	66	13	21
Chelmsford	139	72	24	4	York	178	58	15	28
Coventry	604	41	13	47	England	27,853	42	13	45
Derby	290	75	23	2	Aberdeen	389	42	11	47
Dorset	369	32	22	46	Airdrie	180	81	19	0
Dudley	255	42	22	35	Dumfries & Galloway	60	70	20	10
Exeter	582	43	16	41	Dundee	324	41	13	46
Gloucester	262	52	11	36	Dunfermline	137	66	15	18
Guys	1,220	30	8	61	Edinburgh	649	37	9	54
H&CX	1,148	48	15	37	Glasgow RI	193	82	17	1
Heartlands	503	62	5	32	Glasgow WI	1,197	21	7	72
Hull	557	54	8	38	Inverness	179	41	21	38
Ipswich	283	37	27	36	Kilmarnock	161	57	29	15
Kings	602	44	14	42	Stobhill*	133	100	0	0
Leeds	1,308	35	9	56	Scotland	3,602	42	11	46
Leicester	1,335	33	16	51	Bangor	99	75	25	0
Liverpool	1,268	32	9	59	Clwyd	74	82	8	9
ManWst	629	35	22	44	Cardiff	1,225	34	11	55
Middlesbrough	582	43	4	53	Swansea	460	55	18	27
Newcastle	798	27	6	67	Wrexham	198	56	25	19
Norwich	362	60	12	28	Wales	2,056	44	15	41
Nottingham	824	36	16	48	England	27,853	42	13	45
Oxford	1,205	30	12	59	Scotland	3,602	42	11	46
Plymouth	346	34	12	53	Wales	2,056	44	15	41
Portsmouth	1,055	30	9	60	UK	33,511	42	13	45
Preston	771	41	13	46					
QEH	1,334	50	10	40					
Reading	375	42	24	34					

*Stobhill renal unit is part of the Glasgow Royal Infirmary renal unit.

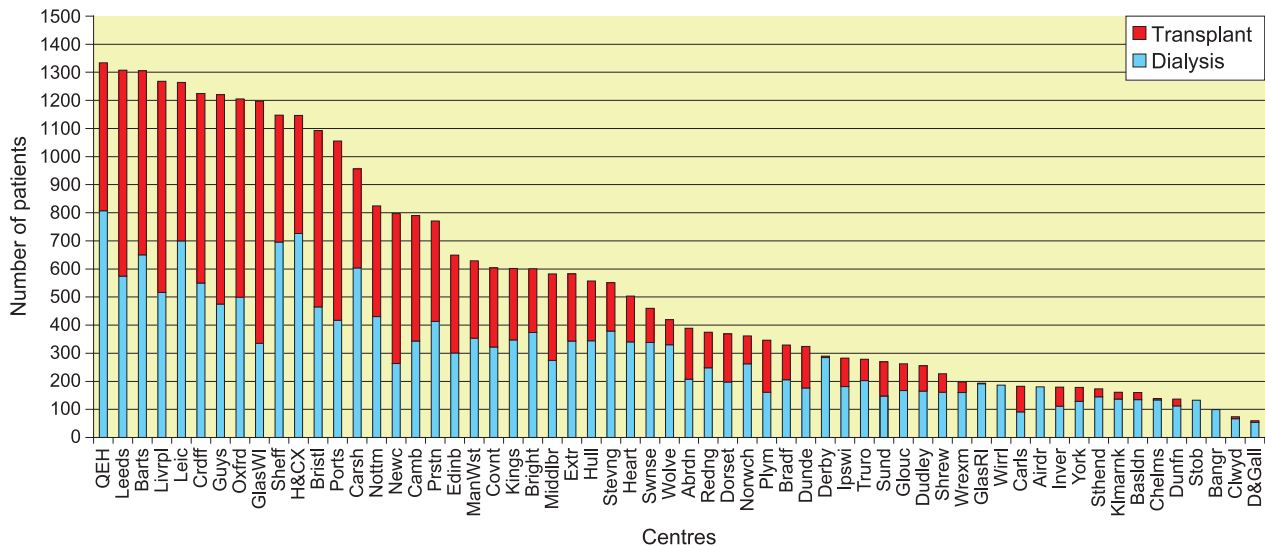


Figure 4.1: Distribution of dialysis and transplant patients in renal units, 31/12/04

Changes in prevalence 2000–2004

The total percentage increase in the number of patients in the 37 renal units who have returned data continuously over the 5 years 2000–2004 followed a fairly linear pattern at 23% and averaging 5.9% per annum (Table 4.3). This varied between UK countries from 21% in Scotland, 27% in Wales and 24% in England. There were wide variations between centres, partly due to redistribution of patients, particularly with changes in pattern of follow-up of transplant patients who are now more frequently transferred from the transplanting centre back to the referring renal centre for long-term follow-up. There was also a major redistribution of both dialysis and transplant patients from Oxford to Leicester and Reading in 2004 accounting for the 3% reduction at the Oxford renal unit. This interpretation of the data is supported through analysis of

prevalence rates by postcode (according to Local Authority (LA) allocation) with Oxfordshire LA showing a continual rise from 604 pmp in 2001 to 684 pmp in 2004. Reading LA also shows a very similar increase from 587 pmp in 2001 to 678 pmp in 2004. Other renal units affected by redistribution of patients include Ipswich, Leicester, Truro, Wirral, Plymouth and Southend.

Consistent with these data, the increase was 5.1% in all 59 centres contributing to the Registry from 2003 to 2004. For individual centres, the changes in total numbers are shown in Table 4.4.

Local Authority prevalence

The prevalence of RRT and standardised prevalence ratios in those Local Authorities with complete coverage in 2004 are shown in Table 4.5.

Table 4.3: Prevalent patient numbers in renal units reporting continuously 2000–2004

Centre	31.12.2000	31.12.2001	31.12.2002	31.12.2003	31.12.2004	% change
Bristol	908	951	991	1,055	1,093	20
Carlisle	156	159	161	173	182	17
Carshalton	671	696	786	884	956	42
Coventry	515	548	565	577	604	17
Derby	132	174	n/a	274	290	120
Dudley	249	239	232	241	255	2
Exeter	423	455	514	528	582	38
Gloucester	236	195	211	245	262	11
Guys	1,124	1,142	1,185	1,186	1,220	9
Heartlands	426	458	449	495	503	18
Hull	424	450	512	523	557	31
Leeds	1,129	1,153	1,190	1,229	1,308	16
Leicester	976	1,030	1,071	1,104	1,335	37
Middlesbrough	433	436	519	550	582	34
Nottingham	750	802	788	804	824	10
Oxford	1,241	1,317	1,362	1,403	1,205	−3
Plymouth	410	394	379	341	346	−16
Preston	493	541	588	734	771	56
Reading	178	205	198	226	375	111
Sheffield	866	943	1,021	1,084	1,148	33
Stevenage	454	460	524	571	551	21
Southend	132	133	145	154	173	31
Sunderland	236	216	237	236	269	14
Wolverhampton	318	336	367	396	419	32
York	116	136	170	195	178	53
England	12,996	13,569	14,165	15,208	16,059	24
Aberdeen	311	326	354	349	389	25
Airdrie	104	148	169	171	180	73
Dumfries	55	71	72	78	60	9
Dundee	245	253	288	300	324	32
Dunfermline	90	112	119	127	137	52
Edinburgh	550	575	595	617	649	18
Glasgow RI	176	180	181	194	193	10
Glasgow WI	1,049	1,093	1,111	1,166	1,197	14
Inverness	99	127	147	160	179	81
Kilmarnock	140	147	157	168	161	15
Stobhill*	153	137	137	131	133	−13
Scotland	2,972	3,169	3,330	3,461	3,602	21
Cardiff	1,029	1,050	1,088	1,158	1,225	19
Swansea	232	390	388	426	460	98
Wrexham	227	205	207	213	198	−13
Wales	1,488	1,645	1,683	1,797	1,883	27
England	12,996	13,569	14,165	15,208	15,917	22
Scotland	2,972	3,169	3,330	3,461	3,602	21
Wales	1,488	1,645	1,683	1,797	1,883	27
Grand Total	17,456	18,383	19,178	20,466	21,544	23

*Stobhill renal unit is part of the Glasgow Royal Infirmary renal unit.

Table 4.4: Number of patients on RRT in each participating centre 2000–2004

Treatment centre	31/12/2000	31/12/2001	31/12/2002	31/12/2003	31/12/2004
Barts	n/a	n/a	n/a	n/a	1,306
Basildon	n/a	n/a	n/a	166	160
Bradford	n/a	251	279	313	329
Brighton	n/a	n/a	n/a	n/a	601
Bristol	908	951	991	1,055	1,093
Cambridge	n/a	651	711	741	790
Carlisle	156	159	161	173	182
Carshalton	671	696	786	884	956
Chelmsford	n/a	n/a	n/a	n/a	139
Coventry	515	548	565	577	604
Derby	132	174	n/a	274	290
Dorset	n/a	n/a	n/a	354	369
Dudley	249	239	232	241	255
Exeter	423	455	514	528	582
Gloucester	236	195	211	245	262
Guys	1,124	1,142	1,185	1,186	1,220
H&CX	n/a	n/a	1,090	1,089	1,148
Heartlands	426	458	449	495	503
Hull	424	450	512	523	557
Ipswich	n/a	n/a	236	244	283
Kings	n/a	n/a	561	578	602
Leeds	1,129	1,153	1,190	1,229	1,308
Leicester	976	1,030	1,071	1,104	1,335
Liverpool	n/a	1,031	1,142	1,227	1,268
ManWst	n/a	n/a	n/a	602	629
Middlesbrough	433	436	519	550	582
Newcastle	n/a	n/a	788	802	798
Norwich	n/a	n/a	n/a	n/a	362
Nottingham	750	802	788	804	824
Oxford	1,241	1,317	1,362	1,403	1,205
Plymouth	410	394	379	341	346
Portsmouth	n/a	998	1,014	1,031	1,055
Preston	493	541	588	734	771
QEH	n/a	n/a	n/a	n/a	1,334
Reading	178	205	198	226	375
Sheffield	866	943	1,021	1,084	1,148
Shrewsbury	n/a	n/a	n/a	n/a	227
Stevenage	454	460	524	571	551
Southend	132	133	145	154	173
Sunderland	236	216	237	236	269
Truro	n/a	181	210	231	279
Wirral	n/a	n/a	140	157	186
Wolverhampton	318	336	367	396	419
York	116	136	170	195	178
England	12,996	16,681	20,336	22,743	27,853

Table 4.4: (continued)

Treatment centre	31/12/2000	31/12/2001	31/12/2002	31/12/2003	31/12/2004
Aberdeen	311	326	354	349	389
Airdrie	104	148	169	171	180
Dumfries	55	71	72	78	60
Dundee	245	253	288	300	324
Dunfermline	90	112	119	127	137
Edinburgh	550	575	595	617	649
Glasgow RI	176	180	181	194	193
Glasgow WI	1,049	1,093	1,111	1,166	1,197
Inverness	99	127	147	160	179
Kilmarnock	140	147	157	168	161
Stobhill**	153	137	137	131	133
Scotland	2,972	3,169	3,330	3,461	3,602
Bangor	n/a	81	95	102	99
Clwyd	n/a	n/a	86	66	74*
Cardiff	1,029	1,050	1,088	1,158	1,225
Swansea	232	390	388	426	460
Wrexham	227	205	207	213	198
Wales	1,488	1,726	1,864	1,965	2,056
England	12,996	16,681	20,336	22,743	27,853
Scotland	2,972	3,169	3,330	3,461	3,602
Wales	1,488	1,726	1,864	1,965	2,056
UK	17,456	21,576	25,530	28,169	33,511

*Clwyd numbers might be underestimated.

**Stobhill renal unit is part of the Glasgow Royal Infirmary renal unit.

Table 4.5: Prevalence of RRT and standardised prevalence ratios in Local Authorities with complete coverage by the Registry

Areas with significantly high prevalence ratios are bold, those with significantly low prevalence ratios are italicised.

UK Area	LA	Name	Total		RRT rate pmp	Ratio	L	U	HD rate pmp	PD rate pmp	Dialysis rate pmp	Tx rate pmp	% ethnicity
			Pop	Total			95% CI	95% CI					
North East	County Durham & Tees Valley	Darlington	97,838	59	603	0.93	0.72	1.20	286	20	307	296	2.1
		Durham	493,469	314	636	0.97	0.87	1.08	253	28	282	355	1.0
		Hartlepool	88,610	59	666	1.04	0.81	1.35	214	45	260	406	1.2
		Middlesbrough	134,855	89	660	1.10	0.89	1.35	245	22	267	393	6.3
		Redcar & Cleveland	139,132	91	654	0.99	0.81	1.22	208	14	223	431	1.1
		Stockton-on-Tees	178,408	104	583	0.93	0.77	1.12	247	22	269	314	2.8
	Northumberland, Tyne & Wear	Gateshead	191,151	129	675	1.02	0.86	1.21	220	42	262	413	1.6
		Newcastle upon Tyne	259,536	145	559	0.92	0.78	1.08	193	31	223	335	6.9
		North Tyneside	191,658	121	631	0.95	0.79	1.13	203	21	224	407	1.9
		Northumberland	307,190	195	635	0.93	0.80	1.06	182	75	257	378	1.0
		South Tyneside	152,785	92	602	0.92	0.75	1.13	223	26	249	353	2.7
		Sunderland	280,807	182	648	1.02	0.89	1.18	228	36	264	385	1.9

Table 4.5: (continued)

UK Area	LA	Name	Total		RRT rate pmp	L 95% CI			HD rate pmp	PD rate pmp	Dialysis rate pmp	Tx rate pmp	% ethnicity	
			Pop	Total		Ratio	95% CI	U 95% CI						
North West	Cheshire & Merseyside	Halton	118,209	73	618	1.01	0.80	1.27	245	85	330	288	1.2	
		Knowsley	150,459	109	724	1.20	0.99	1.45	306	106	412	312	1.6	
		Liverpool	439,471	309	703	1.17	1.04	1.30	332	73	405	298	5.7	
		Sefton	282,958	156	551	0.83	0.71	0.97	237	71	307	244	1.6	
		St. Helens	176,843	87	492	0.77	0.62	0.94	198	74	271	221	1.2	
		Warrington	191,080	108	565	0.90	0.74	1.08	215	73	288	277	2.1	
		Wirral	312,293	216	692	1.06	0.92	1.21	327	58	384	307	1.7	
	Cumbria & Lancashire	Blackburn with Darwen	137,470	86	626	1.10	0.89	1.36	386	51	436	189	22.1	
		Blackpool	142,283	71	499	0.73	0.58	0.92	190	49	239	260	1.6	
		Cumbria	487,607	270	554	0.81	0.72	0.91	199	68	267	287	0.7	
		Lancashire	1,134,975	624	550	0.85	0.79	0.92	205	69	274	276	5.3	
	Greater Manchester	Bolton	261,037	128	490	0.79	0.67	0.94	142	111	253	238	11.0	
		Bury	180,607	49	271	0.43	0.33	0.57	111	61	172	100	6.1	
		Oldham	217,276	70	322	0.53	0.42	0.67	110	92	203	120	13.9	
		Rochdale	205,357	74	360	0.60	0.47	0.75	166	68	234	127	11.4	
		Salford	216,105	90	416	0.67	0.55	0.82	153	74	227	190	3.9	
		Wigan	301,415	129	428	0.67	0.57	0.80	153	96	249	179	1.3	
	Yorkshire & the Humber	North & East Yorkshire & Northern Lincolnshire	East Riding of Yorkshire	314,113	186	592	0.86	0.74	0.99	283	67	350	242	1.2
			Kingston upon Hull, City of	243,588	152	624	1.04	0.88	1.22	328	45	374	250	2.3
			North East Lincolnshire	157,981	104	658	1.04	0.86	1.26	348	51	399	260	1.4
			North Lincolnshire	152,848	94	615	0.93	0.76	1.13	334	52	386	229	2.5
North Yorkshire			569,660	323	567	0.83	0.75	0.93	249	46	295	272	1.1	
York			181,096	111	613	0.96	0.79	1.15	276	66	342	271	2.2	
South Yorkshire		Barnsley	218,063	171	784	1.21	1.04	1.41	339	96	436	349	0.9	
		Doncaster	286,865	200	697	1.08	0.94	1.24	307	119	425	272	2.3	
		Rotherham	248,175	194	782	1.22	1.06	1.41	359	137	496	286	3.1	
		Sheffield	513,234	347	676	1.08	0.97	1.20	351	76	427	249	8.8	
West Yorkshire		Bradford	467,664	365	780	1.34	1.21	1.48	340	92	432	349	21.7	
		Calderdale	192,405	139	722	1.14	0.97	1.35	260	73	333	390	7.0	
		Kirklees	388,567	290	746	1.22	1.09	1.37	288	69	358	389	14.4	
		Leeds	715,403	442	618	1.02	0.93	1.12	259	66	324	294	8.2	
		Wakefield	315,172	175	555	0.87	0.75	1.01	203	70	273	282	2.3	
East Midlands	Leicestershire, Northamptonshire & Rutland	Leicester	279,920	280	1000	1.79	1.59	2.01	414	161	575	425	36.1	
		Leicestershire	609,578	387	635	0.97	0.88	1.08	213	98	312	323	5.3	
		Northamptonshire	629,676	359	570	0.91	0.82	1.01	199	73	272	299	4.9	
		Rutland	34,563	22	637	0.95	0.63	1.45	58	87	145	492	1.9	
	Trent	Derby	221,709	176	794	1.29	1.11	1.49	465	135	600	194	12.6	
		Derbyshire	734,585	396	539	0.81	0.73	0.89	245	87	332	207	1.5	
		Lincolnshire	646,644	356	551	0.80	0.72	0.89	189	88	277	274	1.3	
Nottingham	266,988	197	738	1.30	1.13	1.49	356	101	457	281	15.1			
Nottinghamshire	748,508	490	655	0.99	0.91	1.08	259	124	383	271	2.6			
West Midlands	Birmingham & the Black Country	Birmingham	977,085	894	915	1.60	1.50	1.71	550	69	618	297	29.6	
		Dudley	305,153	186	610	0.92	0.80	1.07	256	121	377	233	6.3	
		Sandwell	282,904	247	873	1.40	1.24	1.59	477	106	583	290	20.3	
		Solihull	199,515	133	667	1.01	0.85	1.20	391	55	446	221	5.4	
		Walsall	253,498	202	797	1.25	1.09	1.44	442	87	529	268	13.6	
		Wolverhampton	236,582	200	845	1.34	1.17	1.54	499	89	588	258	22.2	
	Coventry, Warwickshire, Herefordshire & Worcestershire	Coventry	300,849	223	741	1.24	1.09	1.41	346	93	439	302	16.0	
		Herefordshire, County of	174,871	105	600	0.87	0.71	1.05	286	86	372	229	0.9	
		Warwickshire	505,858	368	727	1.10	0.99	1.22	283	93	376	352	4.4	
	<i>Worcestershire</i>	<i>542,105</i>	<i>299</i>	<i>552</i>	<i>0.83</i>	<i>0.74</i>	<i>0.93</i>	247	92	339	212	2.5		
	Shropshire & Staffordshire	<i>Shropshire</i>	283,173	161	569	0.83	0.72	0.97	279	92	371	198	1.2	
Telford & Wrekin		158,325	85	537	0.90	0.73	1.11	316	95	411	126	5.2		

Table 4.5: (continued)

UK Area	LA	Name	Total Pop		RRT rate pmp	Ratio	L	U	HD rate pmp	PD rate pmp	Dialysis rate pmp	Tx rate pmp	% ethnicity
				Total			95% CI	95% CI					
East of England	Bedfordshire & Hertfordshire	Bedfordshire	381,572	227	595	0.95	0.84	1.08	244	89	333	262	6.7
		Hertfordshire	1,033,978	391	378	0.60	0.54	0.66	185	45	230	148	6.3
		Luton	184,373	124	673	1.19	1.00	1.42	396	22	418	255	28.1
	Essex	Essex	1,310,837	689	526	0.80	0.75	0.87	207	101	308	217	2.9
		Southend-on-Sea	160,259	108	674	1.04	0.86	1.26	424	94	518	156	4.2
		Thurrock	143,128	79	552	0.93	0.74	1.16	279	70	349	203	4.7
	Norfolk, Suffolk & Cambridgeshire	Cambridgeshire	552,659	314	568	0.90	0.81	1.01	226	92	318	250	4.1
		Norfolk	796,728	479	601	0.86	0.79	0.94	313	60	373	228	1.5
		Peterborough	156,061	95	609	1.01	0.83	1.24	243	135	378	231	10.3
		Suffolk	668,555	338	506	0.76	0.68	0.84	187	96	283	223	2.8
London	North East London	Barking & Dagenham	163,942	93	567	0.99	0.81	1.22	244	91	335	232	14.8
		Hackney	202,824	127	626	1.22	1.03	1.45	320	79	399	227	40.6
		Newham	243,889	176	722	1.48	1.27	1.71	336	152	488	234	60.6
		Redbridge	238,634	162	679	1.14	0.98	1.33	272	134	406	272	36.5
		Tower Hamlets	196,105	121	617	1.26	1.05	1.50	311	102	413	204	48.6
	North West London	Ealing	300,948	265	881	1.55	1.37	1.74	475	126	601	279	41.3
		Hammersmith & Fulham	165,244	144	871	1.58	1.34	1.86	533	85	617	254	22.2
		Hillingdon	243,006	137	564	0.95	0.80	1.12	235	111	346	218	20.9
		Hounslow	212,342	210	989	1.75	1.52	2.00	560	165	725	264	35.1
	South East London	Bexley	218,307	155	710	1.13	0.96	1.32	206	110	316	394	8.6
		Bromley	295,532	181	612	0.95	0.82	1.10	220	98	318	294	8.4
		Greenwich	214,404	116	541	0.96	0.80	1.15	210	103	312	229	22.9
		Lambeth	266,169	196	736	1.40	1.22	1.61	410	101	511	225	37.6
		Lewisham	248,923	236	948	1.74	1.53	1.97	490	68	558	390	34.1
		Southwark	244,866	225	919	1.71	1.50	1.95	412	90	502	417	37.0
	South West London	Croydon	330,588	225	681	1.16	1.01	1.32	330	130	460	221	29.8
South East	Hampshire & Isle of Wight	Hampshire	1,240,102	629	507	0.78	0.72	0.84	141	68	209	298	2.2
		Isle of Wight	132,731	68	512	0.71	0.56	0.91	173	30	203	309	1.3
		Portsmouth	186,700	132	707	1.19	1.00	1.41	268	43	311	396	5.3
		Southampton	217,444	118	543	0.93	0.78	1.12	189	46	235	308	7.6
	Surrey & Sussex	Brighton & Hove	247,817	126	508	0.82	0.69	0.98	238	61	299	210	5.7
		East Sussex	492,326	299	607	0.87	0.77	0.97	258	97	355	252	2.3
		Surrey	1,059,017	522	493	0.76	0.70	0.83	179	79	259	234	5.0
		West Sussex	753,612	390	518	0.76	0.69	0.84	211	64	275	243	3.4
	Thames Valley	Bracknell Forest	109,616	58	529	0.92	0.71	1.19	182	64	246	283	4.9
		Buckinghamshire	479,026	300	626	0.99	0.88	1.10	200	88	288	338	7.9
		Milton Keynes	207,057	122	589	1.04	0.87	1.24	232	77	309	280	9.3
		Oxfordshire	605,489	414	684	1.11	1.00	1.22	221	94	315	368	4.9
		Reading	143,096	97	678	1.20	0.98	1.46	252	70	321	356	13.2
Slough		119,064	114	957	1.71	1.43	2.06	378	227	605	353	36.3	
West Berkshire		144,485	90	623	1.00	0.81	1.22	145	125	270	353	2.6	
Wokingham	150,231	87	579	0.94	0.76	1.16	200	100	300	280	6.1		
South West	Avon, Gloucestershire & Wiltshire	Bath & North East Somerset	169,040	95	562	0.86	0.70	1.05	237	47	284	278	2.8
		Bristol, City of	380,616	314	825	1.39	1.24	1.55	352	58	410	415	8.2
		Gloucestershire	564,559	337	597	0.91	0.81	1.01	241	41	282	315	2.8
		North Somerset	188,564	144	764	1.11	0.94	1.30	302	37	339	424	1.4
		South Gloucestershire	245,641	174	708	1.12	0.96	1.29	277	49	326	383	2.4
		Swindon	180,051	109	605	0.99	0.82	1.19	211	100	311	294	4.8
		Wiltshire	432,972	193	446	0.69	0.59	0.79	136	51	187	259	1.6

Table 4.5: (continued)

UK Area	LA	Name	Total Pop		RRT rate pmp	Ratio	L	U	HD rate pmp	PD rate pmp	Dialysis rate pmp	Tx rate pmp	% ethnicity
				Total			95% CI	95% CI					
South West (continued)	Dorset & Somerset	Bournemouth	163,444	87	532	0.81	0.65	1.00	171	86	257	275	3.3
		<i>Dorset</i>	<i>390,980</i>	<i>239</i>	611	<i>0.84</i>	<i>0.74</i>	<i>0.95</i>	166	128	294	317	<i>1.3</i>
		Poole	138,288	77	557	0.82	0.65	1.02	181	101	282	275	1.8
		Somerset	498,095	302	606	0.89	0.79	1.00	235	70	305	301	1.2
	South West Peninsula	Cornwall & Isles of Scilly	501,267	404	806	1.14	1.04	1.26	357	150	507	299	1.0
		<i>Devon</i>	<i>704,491</i>	<i>433</i>	615	<i>0.88</i>	<i>0.80</i>	<i>0.96</i>	248	97	345	270	<i>1.1</i>
		Plymouth	240,722	153	636	1.02	0.87	1.19	253	46	299	336	1.6
	Torbay	129,706	96	740	1.05	0.86	1.28	332	100	432	308	1.2	
Wales	Bro Taf	Cardiff	305,353	224	734	1.26	1.11	1.44	305	75	380	354	8.4
		Merthyr Tydfil	55,979	62	1108	1.74	1.36	2.24	518	107	625	482	1.0
		Rhondda, Cynon, Taff	231,947	194	836	1.32	1.15	1.52	319	129	448	388	1.2
		The Vale of Glamorgan	119,292	87	729	1.12	0.91	1.39	251	117	369	360	2.2
	Dyfed Powys	Carmarthenshire	172,842	136	787	1.15	0.97	1.36	376	87	463	324	0.9
		Ceredigion	74,941	49	654	0.97	0.73	1.28	254	40	294	360	1.4
		Pembrokeshire	114,131	69	605	0.88	0.69	1.11	219	105	324	280	0.9
		Powys	126,353	76	601	0.85	0.68	1.07	293	95	388	214	0.9
	Gwent	Blaenau Gwent	70,064	52	742	1.15	0.88	1.51	271	71	343	400	0.8
		Caerphilly	169,519	121	714	1.14	0.95	1.36	248	112	360	354	0.9
		Monmouthshire	84,885	71	836	1.22	0.97	1.54	224	141	365	471	1.1
		Newport	137,012	106	774	1.24	1.02	1.50	321	95	416	358	4.8
		Torfaen	90,949	72	792	1.23	0.97	1.54	242	99	341	451	0.9
	Morgannwg	Bridgend	128,645	103	801	1.23	1.01	1.49	342	101	443	358	1.4
		Neath Port Talbot	134,468	108	803	1.20	0.99	1.45	335	126	461	342	1.1
		Swansea	223,300	198	887	1.35	1.17	1.55	363	116	479	408	2.2
	North Wales	Conwy	109,596	75	684	0.96	0.77	1.21	301	55	356	328	1.1
		Denbighshire	93,065	59	634	0.93	0.72	1.20	301	75	376	258	1.2
		Flintshire	148,594	110	740	1.16	0.96	1.39	357	101	458	283	0.8
		Gwynedd	116,843	88	753	1.13	0.92	1.39	377	103	479	274	1.2
		Isle of Anglesey	66,829	46	688	1.00	0.75	1.34	359	120	479	209	0.7
		Wrexham	128,476	108	841	1.31	1.09	1.58	444	86	529	311	1.1
	Scotland	Aberdeen City	212,125	160	754	1.21	1.03	1.41	354	90	443	311	
Aberdeenshire		226,871	140	617	0.96	0.81	1.13	264	62	326	291		
Angus		108,400	91	839	1.24	1.01	1.52	286	74	360	480		
Argyll & Bute		91,306	64	701	1.02	0.80	1.30	285	142	427	274		
Scottish Borders		106,764	58	543	0.78	0.61	1.01	215	94	309	234		
Clackmannanshire		48,077	26	541	0.85	0.58	1.25	229	62	291	250		
West Dunbartonshire		93,378	54	578	0.92	0.70	1.20	214	96	311	268		
Dumfries & Galloway		147,765	108	731	1.04	0.86	1.26	345	95	440	291		
Dundee City		145,663	125	858	1.34	1.12	1.59	378	89	467	391		
East Ayrshire		120,235	75	624	0.96	0.77	1.20	258	116	374	250		
East Dunbartonshire		108,243	83	767	1.17	0.95	1.46	286	65	351	416		
East Lothian		90,088	61	677	1.03	0.80	1.32	311	33	344	333		
East Renfrewshire		89,311	59	661	1.03	0.80	1.33	235	34	269	392		
Edinburgh, City of		448,624	286	638	1.03	0.92	1.16	279	49	328	310		
Falkirk		145,191	93	641	1.00	0.81	1.22	296	28	324	317		
Fife		349,429	219	627	0.97	0.85	1.11	283	77	361	266		
Glasgow City		577,869	477	825	1.36	1.24	1.48	374	55	429	396		
Highland		208,914	160	766	1.14	0.98	1.33	330	153	483	282		
Inverclyde		84,203	70	831	1.28	1.01	1.62	380	119	499	333		
Midlothian		80,941	65	803	1.25	0.98	1.60	408	99	507	297		
Moray		86,940	58	667	1.03	0.79	1.33	242	92	334	334		
North Ayrshire		135,817	110	810	1.25	1.04	1.50	339	140	479	331		
North Lanarkshire		321,067	238	741	1.20	1.06	1.36	330	75	405	336		
Orkney Islands	19,245	15	779	1.15	0.69	1.91	156	104	260	520			
Perth & Kinross	134,949	94	697	1.02	0.83	1.25	289	119	408	289			

Table 4.5: (continued)

UK Area	LA	Name	Total Pop		RRT rate pmp	Ratio	L	U	HD rate pmp	PD rate pmp	Dialysis rate pmp	Tx rate pmp	% ethnicity
			95% CI	95% CI									
Scotland		Renfrewshire	172,867	134	775	1.20	1.02	1.43	336	75	411	364	
		Shetland Islands	21,988	11	500	0.80	0.44	1.44	136	45	182	318	
		South Ayrshire	112,097	74	660	0.95	0.76	1.20	187	152	339	321	
		South Lanarkshire	302,216	224	741	1.16	1.02	1.32	291	79	371	371	
		Stirling	86,212	47	545	0.85	0.64	1.14	267	35	302	244	
		West Lothian	158,714	94	592	0.99	0.81	1.21	189	76	265	328	
		Eilean Siar	26,502	15	566	0.81	0.49	1.34	113	264	377	189	

Standardised prevalence ratios

Methods

The methods of calculating the standardised rate ratio are described in detail in Appendix D. In summary, age and gender specific prevalences were first calculated using the available registry data on the number of prevalent patients for the covered area in England, Wales and Scotland and the data on the age and gender breakdown of the population of each Local Authority area obtained from the 2001 census data from the Office of National Statistics (ONS). These age and gender prevalences were then used to calculate the expected prevalence for each LA area. The age and gender standardised ratio is therefore equal to (observed prevalence)/(expected prevalence).

A ratio of 1 indicates that the LA area's prevalence was as expected if the age/gender rates found in the total covered population applied to the LA area's population structure; a level above 1 indicates that the observed prevalence is greater than expected given the LA area's population structure; if the lower confidence limit was above 1 this is statistically significant at the 5% level. The converse applies to standardised prevalence rate ratios under one.

Results

The mean LA prevalence rate in 2004 was 638 pmp.

In 2004, there is substantial variation in the crude LA area prevalence from 322 (Oldham) to 1,108 pmp (Methyr Tydfil). Local Authorities with small populations have wide confidence limits for the prevalence rate, such that the interpretation of an individual year may be

difficult. The confidence limits are often such that the limits for standardised prevalence ratios (SPR) include one. Nevertheless some areas have significantly high ratios: these are often areas with a high ethnic minority population and/or a socially deprived population, factors which have been shown to influence the prevalence of RRT (see 2003 Registry Report).

There was a close relationship between the ethnic composition of a LA area and its SPR. Of the 42 LA areas with significantly high SPRs, 9 were in Scotland where acceptance rates have been higher for some years and from where ethnicity data are not available, although the ethnic minority populations are known to be smaller than England. Of the 33 areas in England and Wales with a significantly high SPR, 22 (66%) had a non-white population of over 10%, and these were mostly in excess of 20%. By comparison only 3 of 29 (7%) of those areas with significantly low SPRs had ethnic minority populations of more than 10%, and these were all below 15% ($p < 0.001$) and were all in Lancashire. Similarly twenty-six of the 33 (79%) LA areas with non-white population proportions of $>10\%$ had high SPRs (69%) compared with 13 of the 110 (12%) of those with non-white populations of less than 10% ($p < 0.001$).

Thus ethnicity is a major factor underlying high SPR in some areas but not in others, such as Merthyr Tydfil and Liverpool where social deprivation may play a significant role. Neither ethnicity nor deprivation explain all these variations; local referral patterns, acceptance policies and resource availability may play a role. None of the LA areas in Wales and only 3 in south-west England (8%) had low SPRs compared

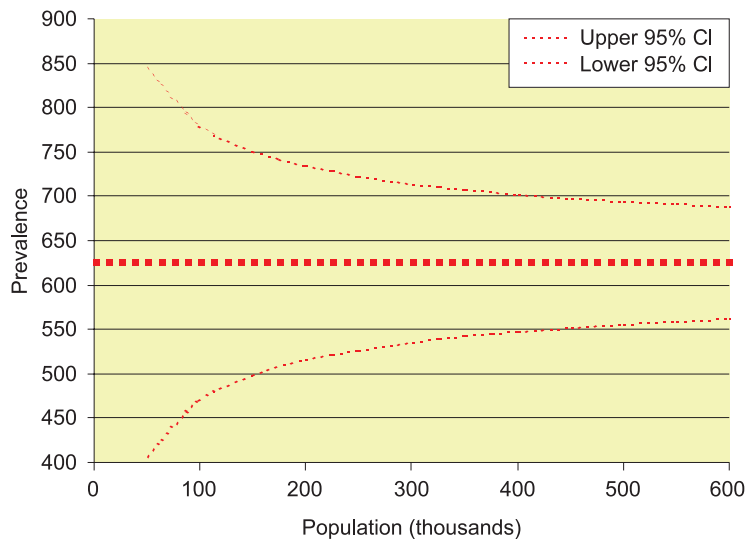


Figure 4.2: 95% confidence limits for prevalence of 630 pmp for population sizes 50,000–600,000

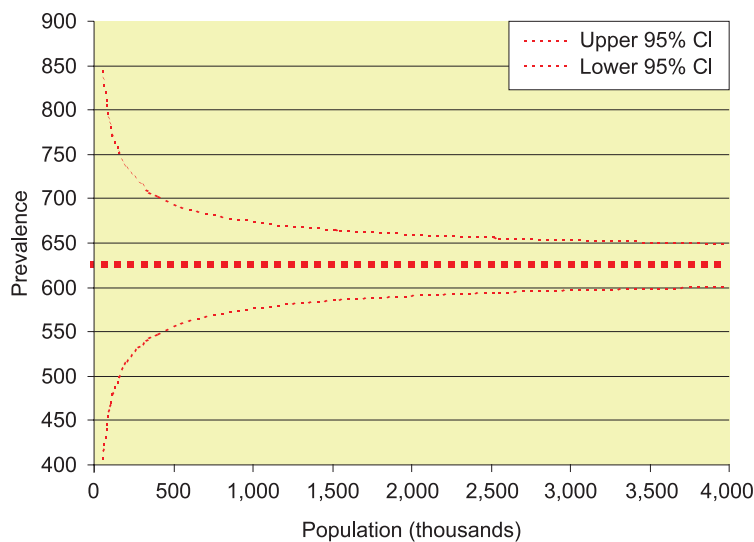


Figure 4.3: 95% confidence limits for prevalence of 630 pmp for population sizes 50,000–4 million

with 26 of 108 elsewhere in England ($p = 0.001$), and prevalences in Lancashire around Manchester seem low despite high ethnic minority populations (24%).

Prevalence rates for RRT in relatively small populations such as those covered by individual Primary Care Trusts, incur wide confidence intervals for any observed frequency. To enable assessment of whether an observed prevalence rate differs significantly from the national average, Figures 4.2 and 4.3 have been included. For any size of population (X axis), the upper and lower 1 in 20 confidence intervals around the national average prevalence can be read from the Y axis (dotted lines). Any observed prevalence for renal failure outside these limits

is significantly different from the national average. Thus for a population of 50,000, an observed prevalence outside the limits of 400 to 850 pmp is significantly different, whilst for a population of 500,000 the limits are 560 to 690 pmp.

Vintage of prevalent patients

Table 4.6 shows the median vintage (years since starting renal replacement therapy) of prevalent RRT patients in 2004. Median vintage of the whole RRT population was 5.0 years. Patients with functioning transplants had survived a median 9.6 years on RRT whilst the median vintage of HD and PD patients was much less (2.7 and 2.1 years respectively).

Table 4.6: Median vintage of prevalent RRT patients on 31.12.04

Modality	N	Median time on RRT (years)
Haemodialysis	13,606	2.7
Peritoneal dialysis	4,191	2.1
Transplant	14,237	9.6
RRT	32,034	5.0

Age

The overall age profile for prevalent patients is shown in Figure 4.4.

In terms of numbers of patients, prevalence of RRT was maximal in the age range 55–65 years (Figure 4.4). Figure 4.5 shows the maximal prevalence rate (calculated from Local Authority populations covered by the Registry using 2001 Census data) occurred in the age band 65–74 (1,460 pmp) overall, but was different in men (80–85 year age band; 2,065 pmp) from women (65–74 year age band; 1,073 pmp). This pattern is also similar for dialysis patients (Figure 4.6).

Figure 4.7 shows the changes in RRT prevalence rates during the period 2001–2004.

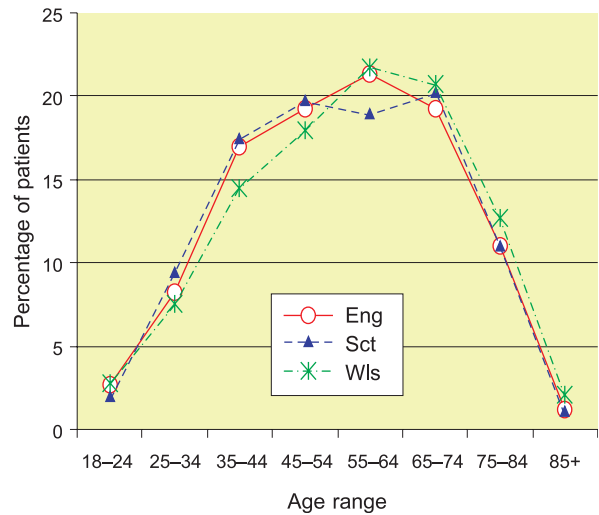


Figure 4.4: Age profile of prevalent adult patients* by country, 31/12/2004

*excludes data on those aged <18 which is reported in Chapter 18

Prevalence rates are increasing annually in all age bands over the age of 30 with the largest increases in patient prevalence rates in the 55–85 year bands.

Transplant prevalence was maximal between the ages of 40 and 60 years, whilst for dialysis treatment maximum prevalence was almost 20 years later (Figure 4.8).

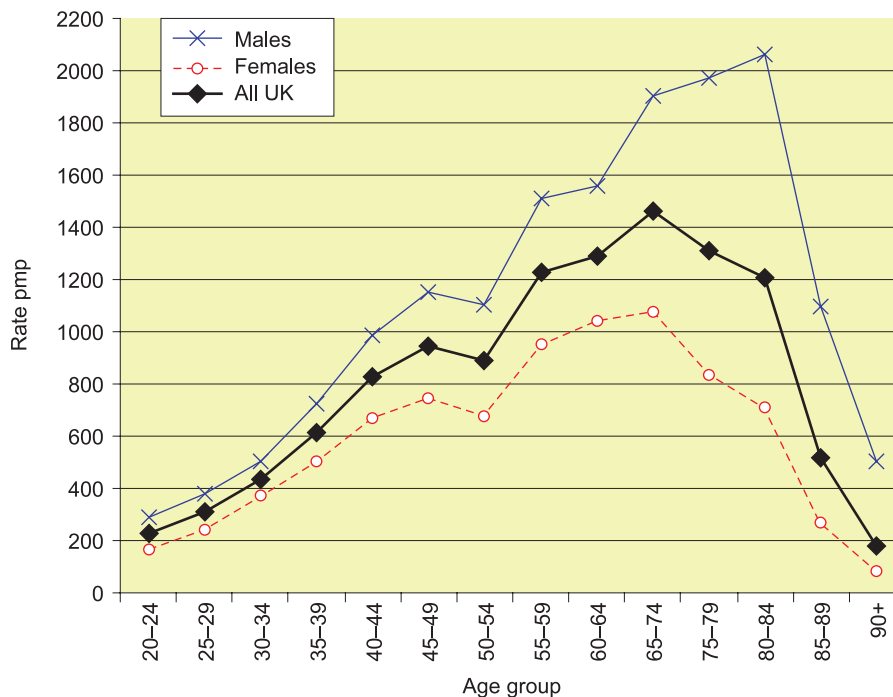


Figure 4.5: Crude prevalence rate of RRT patients per million population by age and gender on 31/12/04

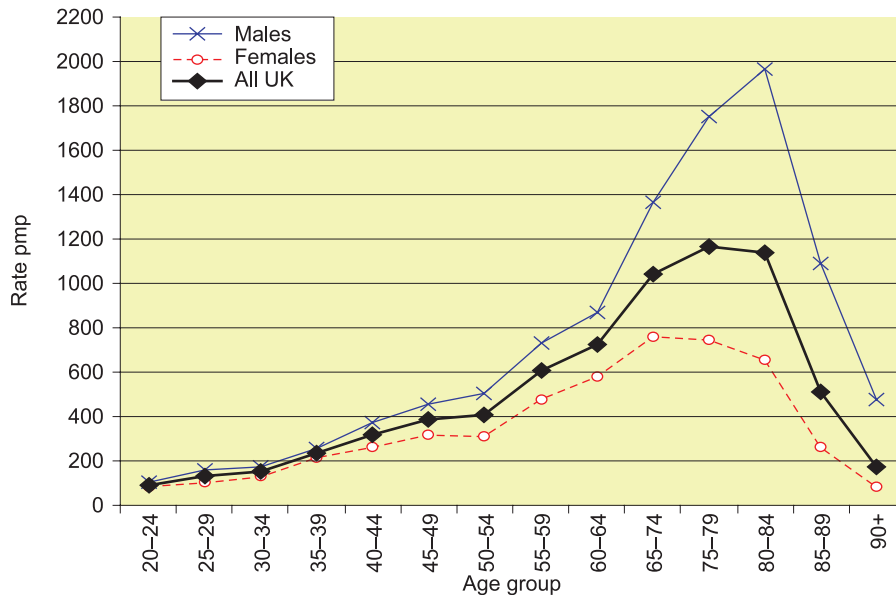


Figure 4.6: Crude prevalence rate of dialysis patients per million population by age and gender on 31/12/04

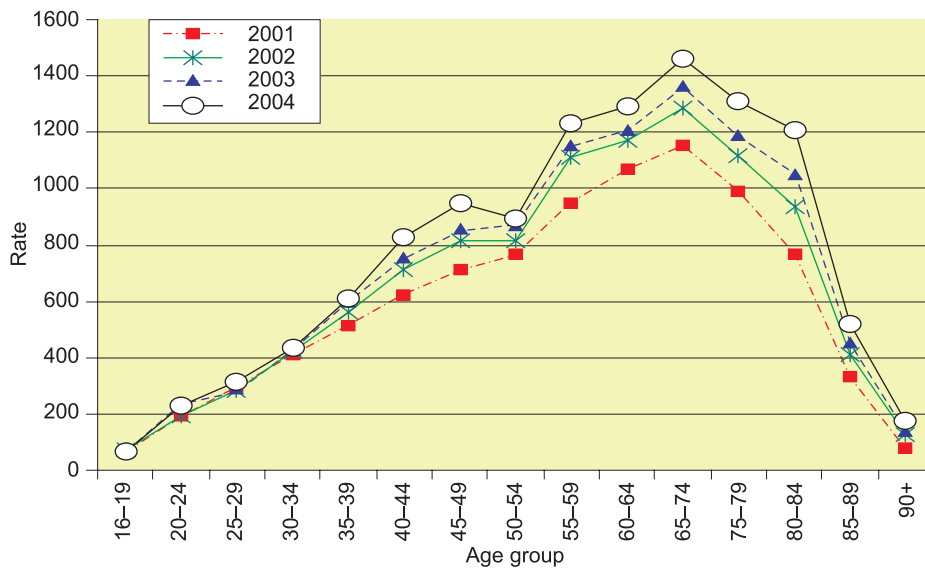


Figure 4.7: Crude prevalence rate of RRT per million population by age band, 2001-2004

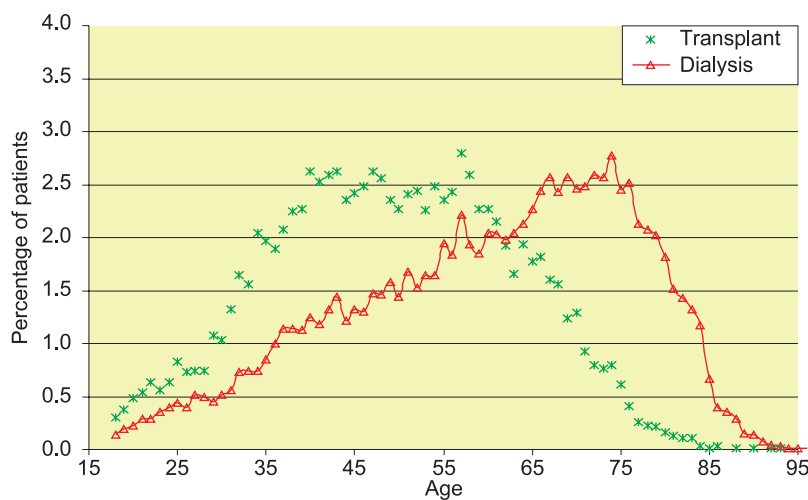


Figure 4.8: Age profile of prevalent dialysis and transplant patients 31/12/04

Gender

Of the prevalent patients 61% were male. Both England and Wales showed over 60% preponderance of males across all age groups. This contrasts with Scotland where this dropped to below 60% in the 55–64, 65–74, 75–84 and 85+ age groups where it was 59%, 58%, 54%, and 56% respectively.

Ethnicity

There has been no improvement in the provision of ethnicity data since 2002 with only

27 of 60 centres (45%) returning at least 90% complete ethnicity data (Table 4.7). This is disappointing and means that the available data are unlikely to be truly representative. Ethnicity distributions were not calculated for Wales due to the poor returns, or for centres with less than 50% of data returned. The Scottish Renal Registry does not collect ethnicity as a mandatory data item so returns have also not been calculated for Scotland.

These data demonstrate wide variation across the UK. In the 36 centres with returns of 70% or more in each RRT modality, the proportion of Whites was slightly but significantly higher in

Table 4.7: Ethnicity of prevalent patients by centre 2004

Treatment centre	% White	% Black	% South Asian	% Chinese	% Other	% return
Dudley	90	2	7	0	0	100
Gloucester	100	0	0	0	0	100
H&CX	41	11	20	1	27	100
Heartlands	71	6	20	1	2	100
Stevenage	82	4	13	0	1	100
QEH	70	10	19	1	1	100
Wolverhampton	78	6	15	1	0	100
Reading	76	7	14	1	3	99
Basildon	92	1	4	1	1	99
Newcastle	97	0	2	1	0	99
Bristol	93	3	2	0	1	99
Sheffield	93	2	3	1	1	98
Leicester	81	2	16	0	1	97
Portsmouth	97	0	2	0	0	97
Carlisle	99	0	1	0	0	96
Nottingham	89	5	5	0	1	96
Preston	85	1	13	0	1	96
Sunderland	99	0	0	0	0	94
Liverpool	97	1	1	1	1	93
Middlesbrough	96	0	3	1	0	92
Plymouth	96	2	1	1	1	92
Shrewsbury	94	2	3	0	0	92
ManWst	86	1	11	0	1	91
York	99	0	1	0	1	89
Coventry	82	3	14	1	0	88
Guys	73	22	4	1	0	86
Derby	88	3	7	1	2	85
Barts	50	12	21	2	16	83
Dorset	97	1	1	1	0	80
Bradford	62	3	34	0	1	77
Hull	98	0	0	0	1	73
Exeter	99	1	0	0	0	69
Leeds	83	4	12	0	1	69
Wirral	98	1	0	0	2	68

Table 4.7: (continued)

Treatment centre	% White	% Black	% South Asian	% Chinese	% Other	% return
Carshalton	71	10	10	1	9	67
Southend	92	4	4	0	0	56
Truro	99	1	0	0	0	50
Norwich						44
Oxford						39
Cambridge						38
Chelmsford						31
Brighton						22
Kings						6
Ipswich						6
England	83	5	9	1	3	81
Dundee	100	0	0	0	0	97
Airdrie	99	0	1	0	0	92
Aberdeen	99	0	0	1	0	90
Inverness	100	0	0	0	0	83
Dunfermline	97	0	1	1	0	51
Dumfries & Galloway						20
Glasgow RI						12
Stobhill*						11
Glasgow WI						10
Edinburgh						9
Kilmarnock						4
Scotland						n/a
Swansea	99	0	1	0	0	98
Bangor	100	0	0	0	0	63
Wrexham	99	0	0	1	0	53
Clwyd						36
Cardiff						28
Wales						48

*Stobhill renal unit is part of the Glasgow Royal Infirmary renal unit

the transplant cohort (88%) than in the HD (83%: $p=0.001$) and PD (83%: $p=0.009$) cohorts. Presumably, this was due to differences in blood group and HLA antigen profiles in donors and potential recipient populations, associated with differences in ethnic composition. For most centres, the proportion of Whites in the transplant and dialysis cohorts is similar. In two centres (Guy's/St Thomas' and Barts/The London), the proportion of Whites in the transplant cohort was markedly higher than the proportion in the HD and PD cohorts and in a third centre (Bradford) than in the PD cohort only. All these centres have a high proportion of non-White prevalent patients.

Primary renal disease

There has been no major difference in the pattern of diagnoses compared with last year, though there were slightly fewer patients in the aetiology uncertain/Glomerulonephritis – not biopsy proven category (19.1% vs 23.1%) and a corresponding increase (19.5% vs 15.5%) in the Glomerulonephritis – biopsy proven category (Table 4.8). The most common identifiable diagnosis remains glomerulonephritis (22.3%) for those under 65 and diabetes (13.4%) in those over 65. Overall 12.1% of the prevalent patients had a primary diagnosis of diabetic nephropathy in contrast to the 21.4% of the incident patients, although a significant proportion of patients also

Table 4.8: Primary renal disease in prevalent RRT patients by age and gender in 2004

Primary diagnosis	% all patients	Inter unit range %	% age <65	% age >65	M:F ratio
Aetiology unc./Glomer. NP*	19.1	2.2–76.3	16.4	24.8	1.5
Glomerulonephritis**	19.5	1.8–27.0	22.3	13.4	2.2
Pyelonephritis	12.8	1.7–19.4	14.5	9.1	1.0
Diabetes	12.1	1.0–24.6	11.6	13.2	1.6
Polycystic kidney	9.1	1.0–15.5	9.6	8.1	1.1
Hypertension	5.8	0.3–15.5	5.1	7.4	2.4
Reno-vascular disease	3.7	0.5–10.8	1.4	8.7	1.9
Other	13.9	2.2–25.0	15.5	10.3	1.3
Not sent	4.0	0.1–87.7	3.5	5.0	1.6

*Glomerulonephritis not proven.

**Glomerulonephritis biopsy proven.

Table 4.9: Primary renal disease in prevalent dialysis and transplant patients

Primary diagnosis	% transplant	% dialysis
Aetiology unc./Glomer. NP*	39	61
Glomerulonephritis**	57	43
Pyelonephritis	56	44
Diabetes	27	73
Polycystic Kidney	58	42
Hypertension	40	60
Reno-vascular disease	14	86
Other	48	52
Not sent	35	65

*Glomerulonephritis not proven.

**Glomerulonephritis biopsy proven.

have diabetes mellitus as a co-morbid disease. The male:female ratio was 1.6 overall, and was greater than unity for all primary renal diseases, though only marginally for polycystic kidney disease and pyelonephritis.

The transplant cohort contained a greater proportion of patients with glomerulonephritis,

pyelonephritis, and polycystic kidney disease than the dialysis cohort whilst diabetes and reno-vascular disease were markedly less frequent (Table 4.9).

Diabetes

The median age of all prevalent diabetic RRT patients (58 years) is similar to that of non-diabetics (56 years), though those with Type 1 disease are considerably younger (52 years) and those with Type 2 disease considerably older at 66 years (Table 4.10). The RRT vintage of prevalent diabetics (2.7 years) is significantly less than that of non-diabetics (5.6 years), particularly Type 2 diabetics (2.2 years). Fewer diabetics have a functioning transplant (26%) compared with non-diabetics (48%). Of prevalent patients with Type 1 diabetes, 35% have a functioning transplant, rising to 42% in those under 65 years of age. Only 11% of prevalent Type 2 have a functioning transplant, falling to only 7% in those over 65 (Table 4.11).

Table 4.10: Type of diabetes, median age, gender ratio, and treatment modality in prevalent RRT patients 31/12/2004

	Type 1	Type 2	All diabetes	Non-diabetics
Number of patients	2,566	1,492	4,058	28,045
M:F Ratio	1.50	1.72	1.58	1.53
Median age on 31.12.04	52	66	58	56
Median age started RRT	47	63	54	47
Median years on RRT	3.2	2.2	2.7	5.7
Percentage HD	47	69	55	40
Percentage PD	17	20	18	12
Percentage Tx	36	11	27	48

Table 4.11: Age relationships of type of diabetes and modality in prevalent RRT patients 31/12/2004

	Age less than 65			Age 65 or more		
	Type 1	Type 2	Non-diabetics	Type 1	Type 2	Non-diabetics
Total	1,990	662	19,340	576	830	8,703
Percentage HD	38	62	29	76	75	63
Percentage PD	18	22	11	15	18	14
Percentage TX	44	16	59	8	7	24

Modalities of treatment

The most common treatment modality overall is transplantation (44.9%), closely followed by HD (42.1%) (Figure 4.9). The proportion of patients on home HD remains very small in spite of the recent NICE guidelines¹. Analysing the use of home HD by individual renal unit shows that the overall fall in patient numbers on this modality has stopped and numbers were

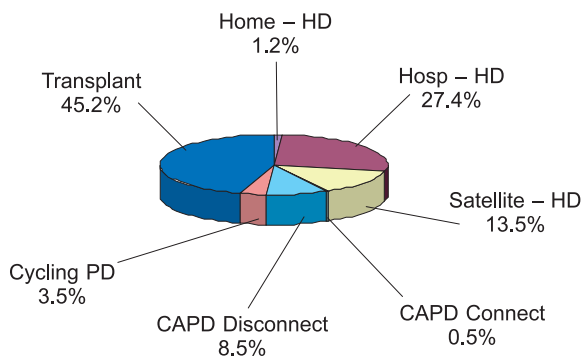


Figure 4.9: Treatment modality in prevalent RRT patients 2004

stable. Preston is the only renal unit showing an increase in the size of its home HD programme. No new home HD programmes appear to have been started by renal units.

Transplantation is the predominant treatment modality in patients less than 65 years old, whilst haemodialysis is in those 65 or older (Table 4.12). The proportion of RRT patients on PD (12.5%) continues to fall. The proportion of patients on PD remains fairly stable across the whole age spectrum with respect to the whole RRT population (Figure 4.10) but diminishes with increasing age when analysed as a proportion of the dialysis population.

In some centres local coding of renal replacement therapy modality is such that the Registry could not differentiate between CAPD and cycling PD. In these centres all PD patients are included as CAPD Disconnect. Thus the proportion of PD patients on Cycling PD is a slight underestimate. These centres are: Reading, Sheffield, Stevenage, Southend, Dudley and Coventry.

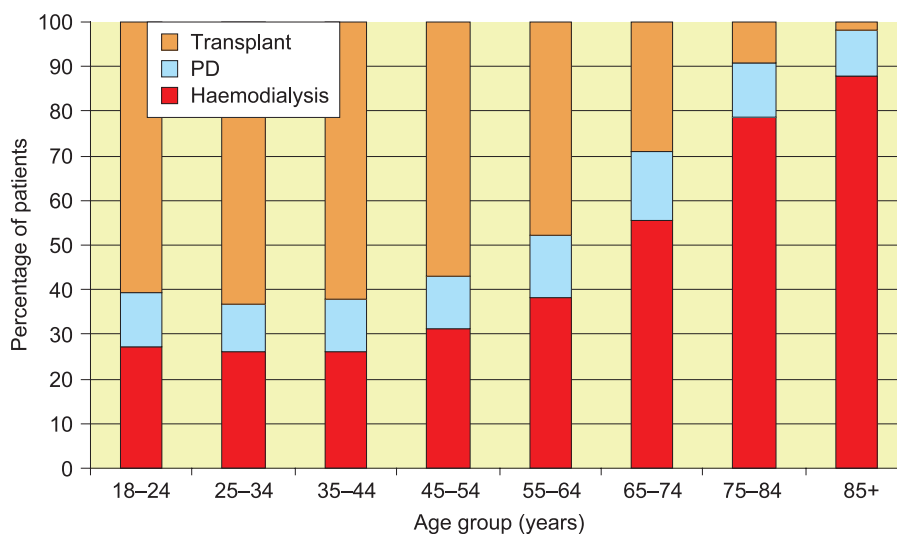


Figure 4.10: Treatment modality distribution by age in prevalent RRT patients

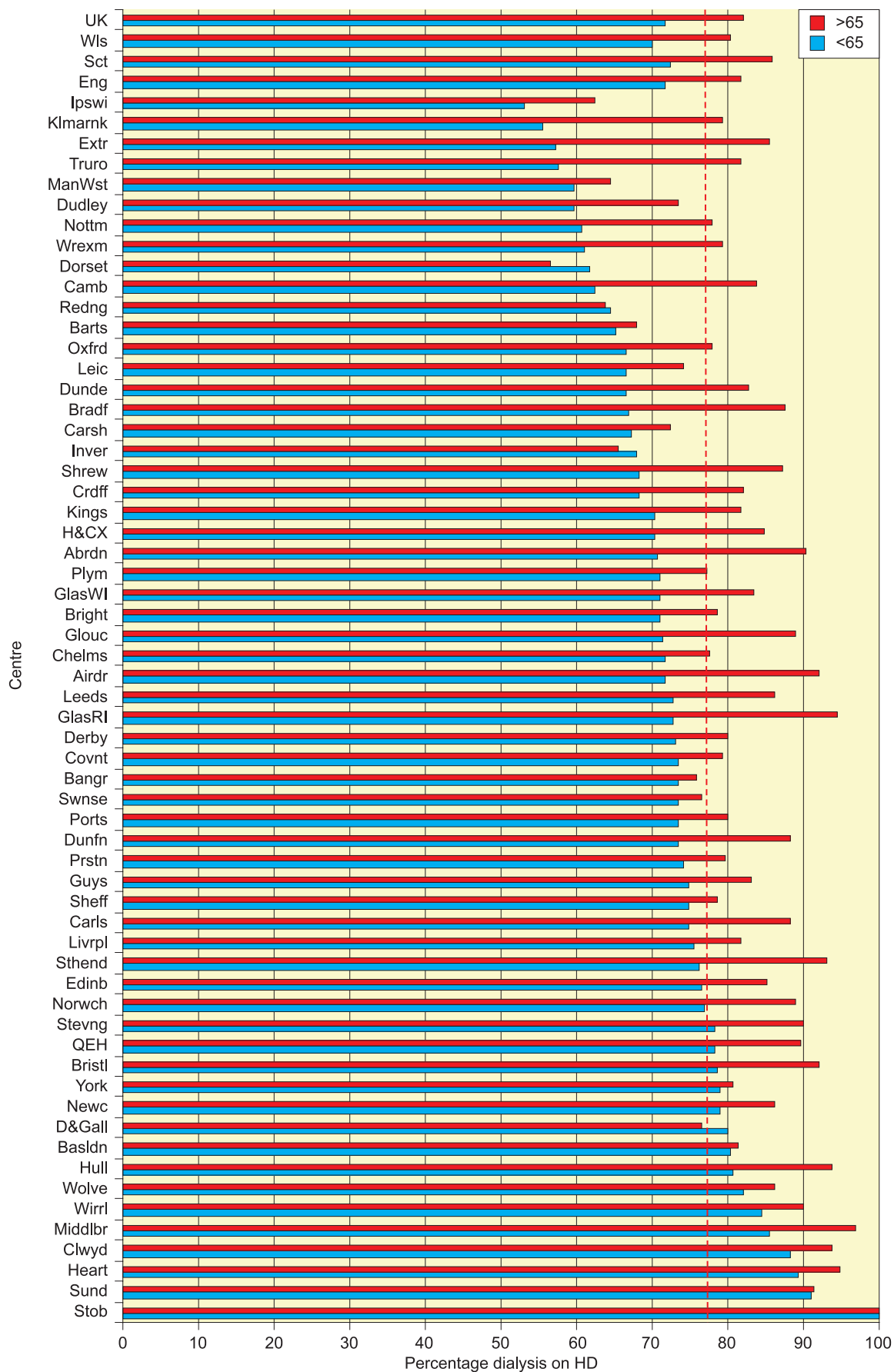


Figure 4.11: Proportion of older and younger prevalent dialysis patients on haemodialysis in each centre in 2004

Haemodialysis

The proportion of dialysis patients on HD varied widely between renal units and in all but four (Dorset, Reading, Inverness, Dumfries & Galloway) was higher in those over 65 years than in younger patients (Figure 4.11). Of the male dialysis population, 77.5% were on HD compared with 75.7% of the female dialysis population ($p=0.005$).

In England and Wales hospital based HD accounted for 47% of the whole dialysis program. (Scottish centres were excluded from this analysis as there is no information from Scotland on whether HD patients are dialysed in main centres or satellite units.)

The proportion receiving HD in satellite units was 27% (Figure 4.12) with wide variations between centres. Only 2% were on home HD. Only 4 renal units (Brighton, Bristol, Heartlands and Sheffield) had home HD programmes amounting to more than 5% of total dialysis activity (Figure 4.12).

Peritoneal dialysis

The proportion of prevalent dialysis patients on PD varies widely ranging from 8% at Heartlands to over 40% in Ipswich and Dorset (Figure 4.13). Stobhill has no patients on PD although this centre is now incorporated with Glasgow Royal Infirmary which does have 17% of patients on PD.

Overall 23.7% of the female dialysis population were on PD compared with 22.0% of the male dialysis population ($p=0.013$). However the Male:Female ratio varied widely between renal units from over 2 in Basildon and Sunderland to 0.66 and 0.64 in Bristol and Stevenage respectively (Figure 4.14).

Automated PD now comprises 29% of all PD, but there are huge variations between renal units from 0% of all PD patients to 98% of PD patients in Wrexham (Figure 4.15). Use of connect systems now seems to have disappeared.

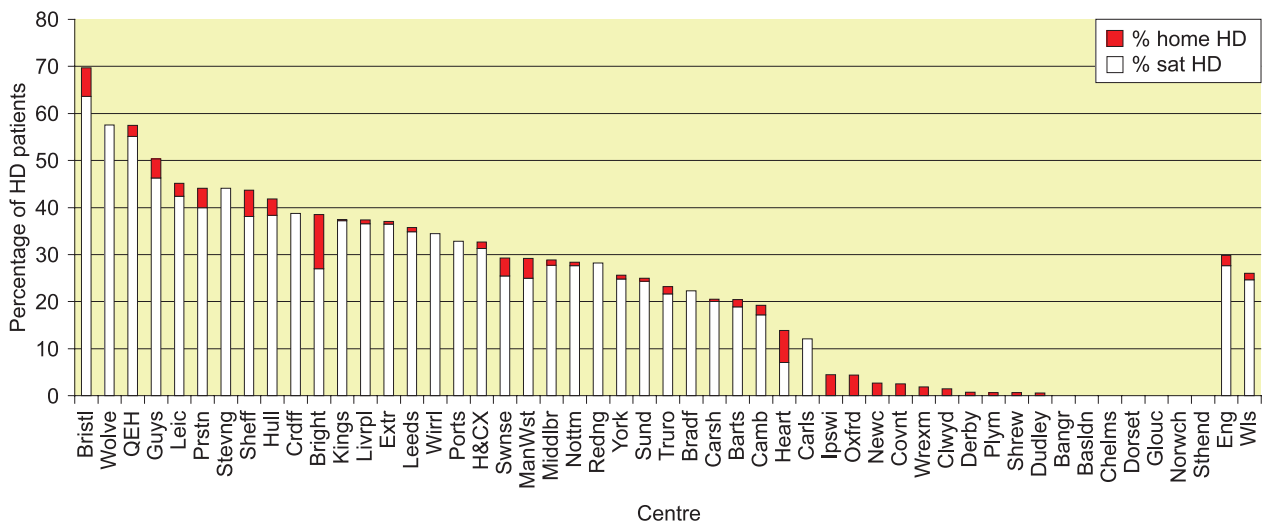


Figure 4.12: Percentage of prevalent HD patients treated at home and in satellite units in 2004

Scottish centres are excluded from analysis as there is no information on whether HD patients are dialysed in main centres or satellite units

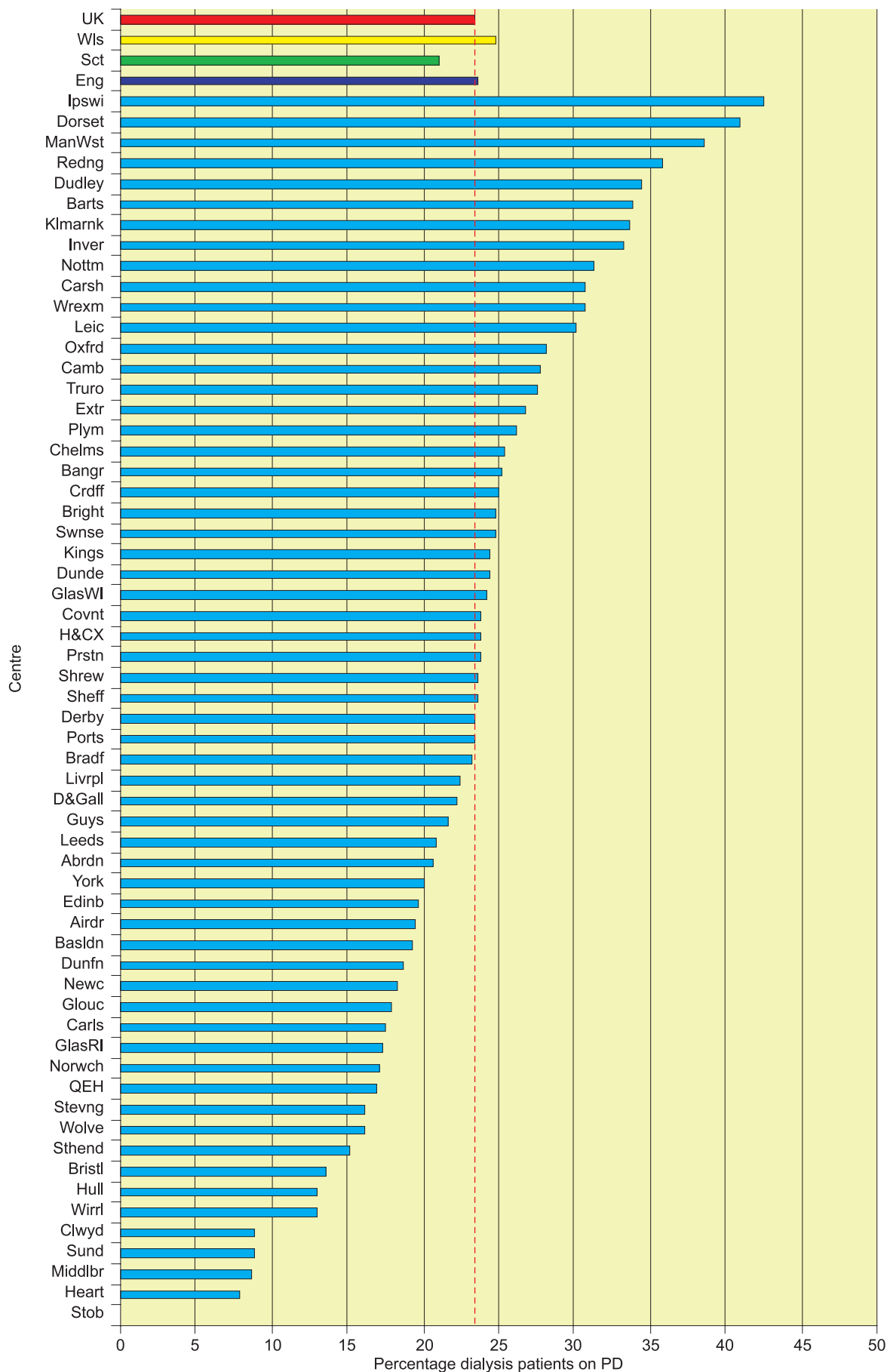


Figure 4.13: Proportion of prevalent dialysis patients on PD at each centre 2004

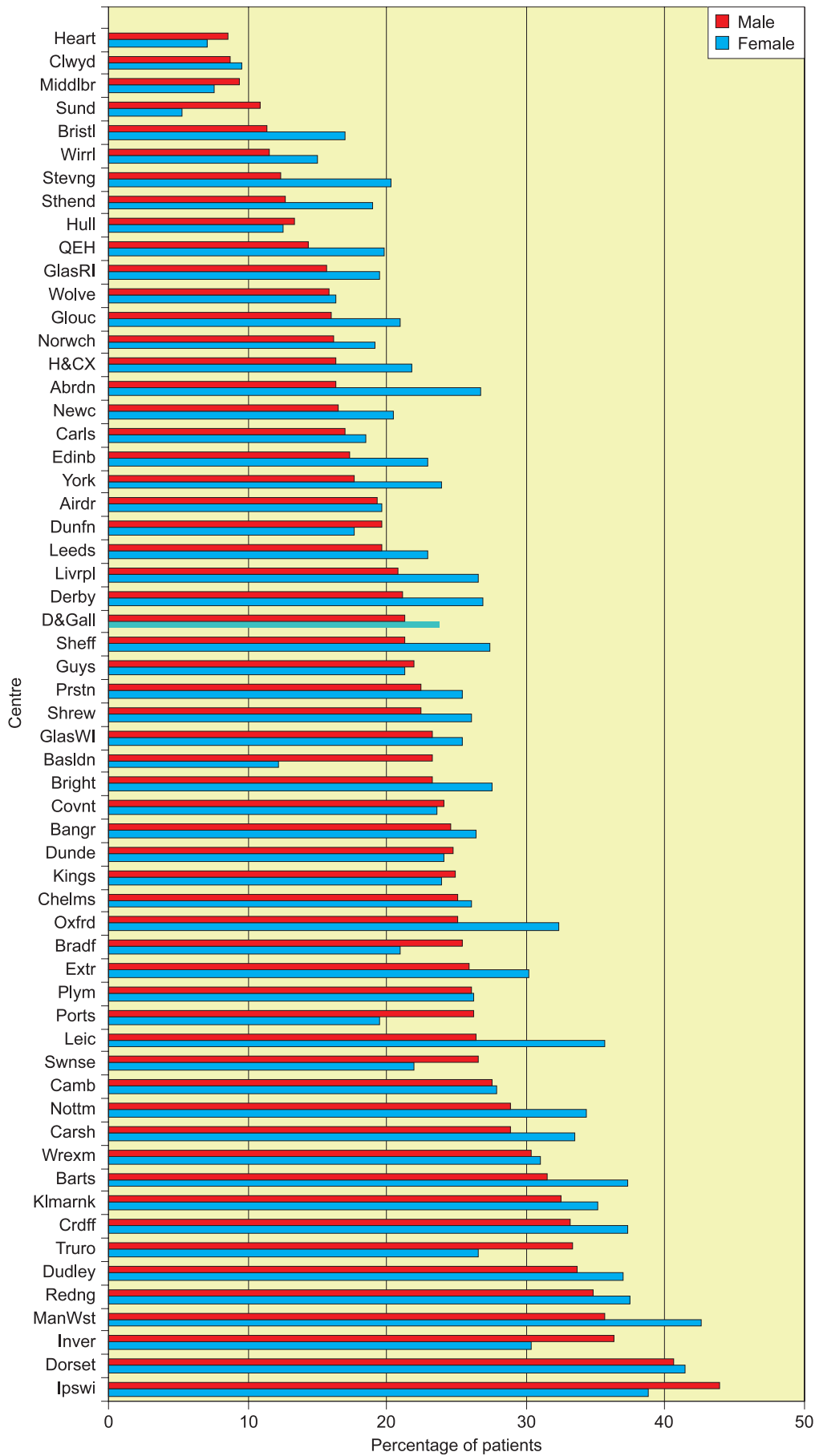


Figure 4.14: Proportion of dialysis patients on PD by gender

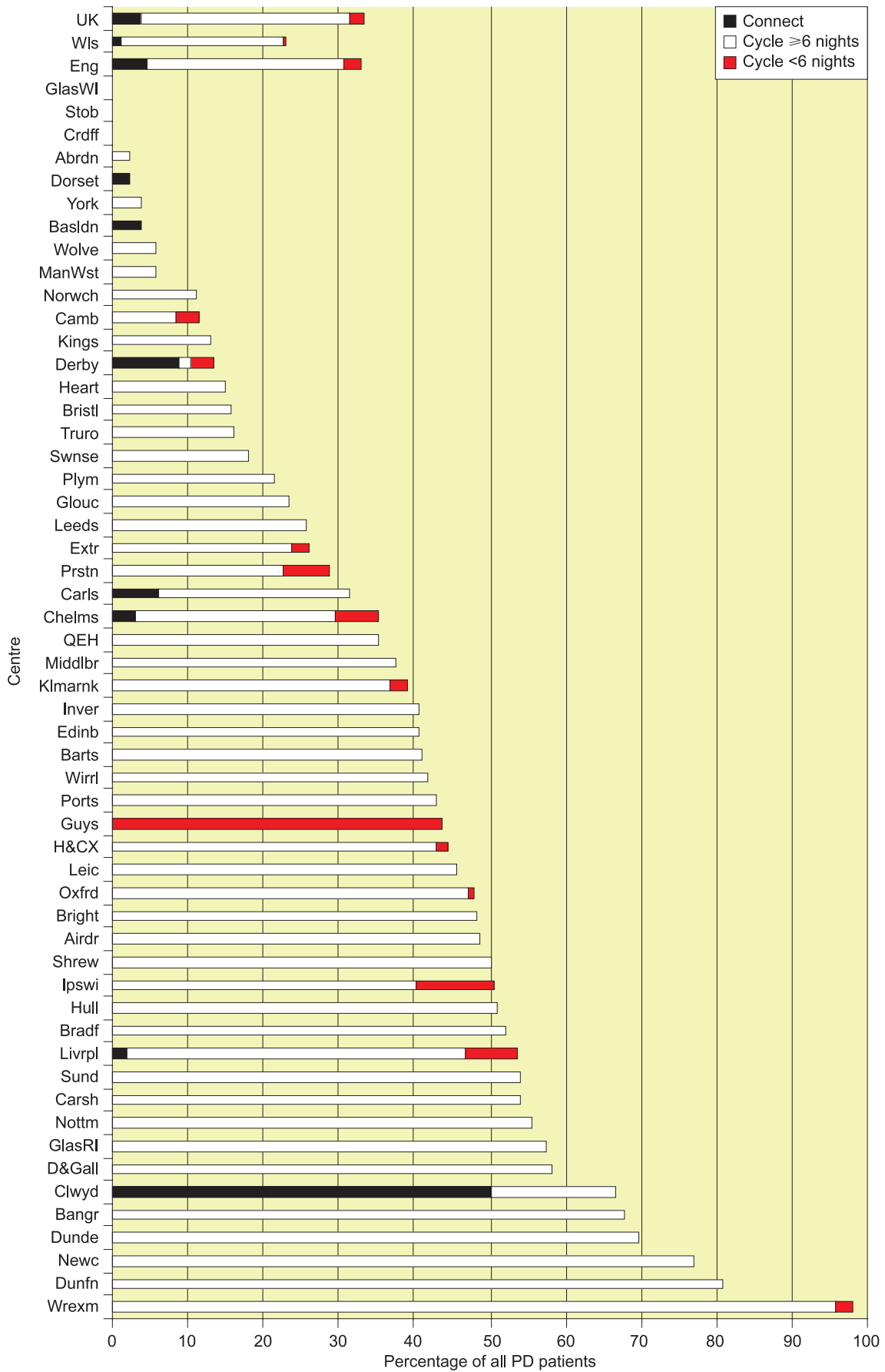


Figure 4.15: Use of connect and automated PD as a percentage of total PD

Reading, Sheffield, Stevenage, Southend, Dudley and Coventry were not able to give the number of patients on cyclical PD

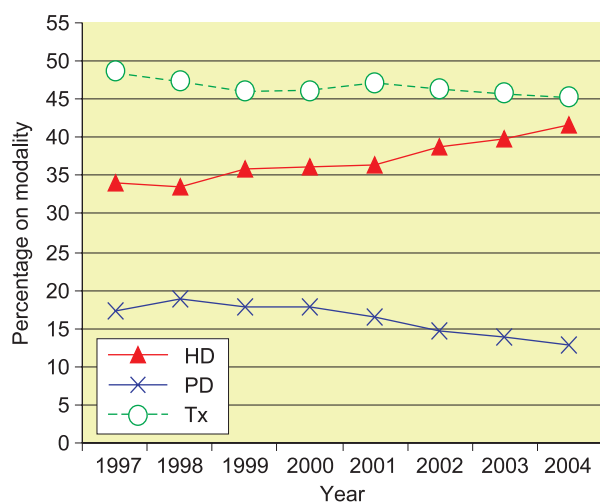


Figure 4.16: Modality changes in prevalent RRT patients 1997–2004

Change in treatment modality 1997–2004

Although the figures from each year are not strictly comparable as the number of renal units contributing to the Registry have increased successively, Figure 4.16 suggests that the proportion of prevalent RRT patients on haemodialysis is increasing. There is a decreasing proportion of peritoneal dialysis and transplant patients.

The proportion of patients using home haemodialysis remains very low despite the NICE guidance (Table 4.12), whilst the proportion on satellite HD continues to rise. The proportion on automated PD is rising very slowly.

Survival of patients established on RRT

This section analyses the one year survival of all patients who had been established on RRT for at least 90 days on 1 January 2004. The patients in the transplant cohort have all been established with a transplant for at least 6 months.

As discussed in previous Reports, comparison of survival of prevalent dialysis patients between centres is complex. Survival of prevalent dialysis patients can be studied with or without censoring at transplant. When a patient is censored at transplantation, the patient is considered as alive up to the point of transplantation, but the patient's status post-transplant is not considered. Therefore a death following transplantation is not taken into account in calculating the survival figure. It could induce differences between those renal units with a high transplant rate and those with a low transplant rate, especially in younger patients where the transplant rate is highest. The differences are likely to be small due to the low post-transplantation mortality rate and the relatively small proportion of patients being transplanted in a given year compared to the whole dialysis population (usually less than 15% of the total dialysis population). To estimate the potential differences the results for individual renal units were compared with or without censoring at transplant. The results are shown in Table 4.13. There is never more than a 0.6% difference in one year survival and overall there is a 0.2% higher survival in the censored data. With such small differences only

Table 4.12: Proportion of prevalent patients on different modalities of RRT 1998–2004, England and Wales

	% home HD	% hosp HD	% satellite HD	% CAPD connect	% CAPD disconnect	% cycling PD ≥6 nights/wk	% cycling PD <6 nights/wk	% transplant
1998	2.59	24.02	6.97	0.70	16.83	1.26	0.16	47.46
1999	2.23	22.55	11.11	0.33	15.70	1.78	0.13	46.17
2000	1.81	25.08	9.25	0.14	15.03	2.01	0.64	46.03
2001	1.42	24.37	10.54	0.02	13.79	2.20	0.42	47.25
2002	1.23	25.32	12.17	0.03	10.99	3.37	0.35	46.52
2003	1.12	25.72	13.10	0.00	10.26	3.37	0.37	46.04
2004	1.21	25.44	15.11	0.61	8.65	3.34	0.30	45.32

This table does not contain data from Scotland as main unit and satellite unit patients in Scotland could not be differentiated.

Table 4.13: One year Kaplan-Meier survival of dialysis patients with and without censoring at transplantation (adjusted for age = 60)

Centre	Censoring transplant			Not censoring transplant		
	Adjusted 1 year survival	Lower 95% CI	Upper 95% CI	Adjusted 1 year survival	Lower 95% CI	Upper 95% CI
SA	86.1	81.3	91.2	86.4	81.7	91.4
SB	84.3	79.1	89.8	84.6	79.6	90.0
SC	82.8	75.1	91.4	83.6	76.1	91.8
SD	83.1	79.2	87.3	83.5	79.6	87.6
SE	85.4	80.4	90.7	85.9	81.0	91.1
SF	88.6	83.5	94.0	88.8	83.8	94.1
SG	91.4	87.1	96.0	91.6	87.3	96.0
SH	85.7	81.7	89.9	85.6	81.6	89.8
SI	88.9	83.7	94.6	89.0	83.8	94.6
SJ	84.9	80.1	89.8	85.1	80.5	90.0
SK	87.5	81.8	93.6	87.7	82.1	93.7
T0	86.0	83.1	88.9	86.1	83.2	89.0
T1	87.2	84.4	90.0	87.8	85.2	90.4
T2	90.1	86.8	93.6	90.3	87.0	93.7
T3	82.0	77.4	86.8	82.5	78.0	87.2
T4	87.2	84.7	89.7	87.3	84.9	89.8
T5	89.2	87.1	91.4	89.4	87.3	91.6
T6	87.1	82.2	92.3	87.4	82.7	92.5
T7	86.0	82.7	89.5	86.1	82.8	89.5
T8	88.8	86.0	91.6	89.1	86.4	91.8
U0	82.0	78.0	86.2	82.4	78.5	86.5
U1	86.2	83.2	89.4	86.2	83.2	89.3
U2	86.5	83.4	89.6	86.7	83.7	89.8
U3	91.1	85.9	96.5	91.1	86.1	96.5
U4	88.5	84.2	93.0	88.7	84.4	93.1
U5	90.3	87.6	93.2	90.5	87.8	93.3
U6	86.2	82.2	90.4	86.4	82.5	90.5
U7	90.8	88.7	93.0	91.0	88.9	93.1
U8	90.2	86.3	94.4	90.3	86.4	94.5
U9	84.6	79.4	90.1	84.3	79.1	89.8
V0	89.1	86.1	92.2	88.9	85.9	91.9
V1	83.6	80.7	86.7	83.7	80.8	86.8
V2	90.4	86.1	94.8	90.4	86.2	94.9
V3	85.8	83.2	88.5	86.0	83.5	88.7
V4	86.7	83.4	90.2	86.8	83.5	90.3
V5	81.7	73.8	90.5	81.8	74.0	90.5
V6	92.1	89.9	94.3	92.1	90.0	94.2
V7	85.3	82.5	88.2	85.6	82.9	88.5
V8	86.2	82.6	90.0	86.4	82.9	90.1
V9	88.0	85.6	90.5	88.1	85.7	90.5
W0	84.2	77.9	90.9	84.4	78.2	91.1
W1	87.4	82.6	92.5	87.7	83.1	92.7
W2	90.3	86.4	94.3	90.5	86.7	94.4
W3	91.4	88.4	94.4	91.2	88.3	94.2
W4	86.5	83.0	90.1	86.8	83.4	90.3
W6	88.0	83.0	93.4	88.2	83.2	93.4
W7	82.5	75.5	90.2	82.9	76.1	90.4

Table 4.13: (continued)

Centre	Censoring transplant			Not censoring transplant		
	Adjusted 1 year survival	Lower 95% CI	Upper 95% CI	Adjusted 1 year survival	Lower 95% CI	Upper 95% CI
W8	88.7	85.5	92.0	88.6	85.5	91.9
W9	87.1	82.2	92.3	87.5	82.8	92.5
X0	89.1	84.4	94.1	89.3	84.6	94.2
X1	87.0	82.0	92.4	87.1	82.1	92.4
X2	87.4	83.5	91.5	87.5	83.6	91.5
X3	87.1	81.0	93.6	87.2	81.3	93.7
X4	82.1	76.5	88.2	82.3	76.7	88.3
X5	83.6	79.8	87.7	83.7	79.9	87.7
X6	90.1	86.1	94.3	89.8	85.8	94.0
X8	86.5	83.6	89.5	87.0	84.2	89.9
X9	88.0	83.6	92.6	88.2	83.9	92.7
Y0	85.1	81.2	89.3	85.6	81.8	89.5
Y1	87.4	84.0	90.9	87.1	83.8	90.6
England	87.2	86.6	87.8	87.4	86.8	88.0
Scotland	85.8	84.3	87.4	86.1	84.5	87.6
Wales	87.6	85.8	89.4	87.8	86.0	89.5
UK	87.1	86.5	87.7	87.3	86.7	87.8

the censored results have been quoted throughout the rest of this chapter.

Another potential source of error in comparing survival in different renal centres of dialysis patients, especially younger patients is the differing transplant rates between centres. Those with a high transplant rate have removed more of the fitter patients from dialysis and are left with a higher risk population on dialysis.

The one year death rate for prevalent UK dialysis patients is 17.1 per 100 patient years

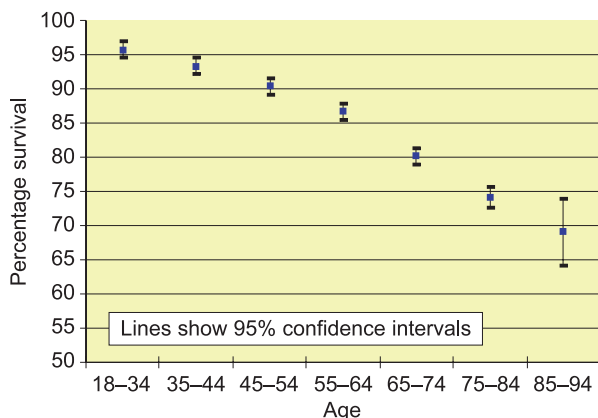


Figure 4.17: 1 year survival of prevalent dialysis patients in different age groups – 2004

(95% CI 16.5–17.8) and 16.9, 19.1, 17.6 per 100 patient years in England, Scotland and Wales respectively. In Figure 4.17 the survival of prevalent dialysis patients for each age band is shown.

The one year survival of prevalent dialysis patients in each centre

The one year survival of dialysis patients in each centre is shown in Table 4.13 and is illustrated in Figures 4.18 and 4.19. There appeared to be a significant difference in the survival rate between the centres ($p=0.0003$), after adjusting for the difference in median age of patients at each centre (Figure 4.20). The Registry has published a paper on neural network analysis of survival in UK prevalent patients² which indicates that the difference in survival between centres is related to differences in patient characteristics, rather than a true centre effect. There was no significant difference in survival between England, Scotland and Wales ($p=0.40$).

Further survival analysis is presented in Table 4.14.

Table 4.14: One-year survival of established prevalent RRT patients in England, Scotland and Wales (unadjusted unless stated otherwise)

Patient group	Patients	Deaths	KM survival	KM 95% CI
Transplant patients 2004				
Censored at dialysis	13,256	286	97.8	97.6–98.1
Not censored at dialysis	13,263	314	97.6	97.4–97.9
Dialysis patients 2004				
All 2004	14,583	2,144	85.1	84.5–85.7
All 2004 adjusted age = 60	14,583	2,144	87.4	86.8–88.0
2 year survival – dialysis patients 2003				
All 1/1/2002 (2 year)	13,359	3,182	74.7	74.0–75.5
Dialysis patients 2004				
All age <65	9,087	797	90.3	89.7–91.0
All age 65+	7,341	1,646	77.2	76.3–78.2
Non-diabetic <55	4,345	253	94.1	93.4–94.8
Non-diabetic 55–64	2,403	282	88.2	86.9–89.5
Non-diabetic 65–74	3,225	585	81.8	80.5–83.1
Non-diabetic 75+	2,896	752	73.9	72.3–75.5
Non-diabetic <65	6,748	535	92.0	91.3–92.6
Diabetic <65	1,480	242	83.5	81.6–85.4
Non-diabetic 65+	6,121	1,337	78.1	77.0–79.1
Diabetic 65+	1,137	301	73.4	70.9–76.0

KM = Kaplan-Meier survival.

Cohorts of patients alive 1/1/2004 unless indicated otherwise.

The one year survival of prevalent dialysis patients in England, Wales and Scotland from 1997–2004

The one-year survival of prevalent dialysis patients (Table 4.15, Figure 4.21) increased significantly from 1998 to 2004 in England (84.2%

to 87.5% $p=0.0001$ for linear trend), Scotland (84.0% to 86.1% $p=0.023$ for linear trend), and Wales (78.2% to 87.8% $p=0.027$ for linear trend). The test for non-linearity in this trend (indicating that there has been a large increase which is now tailing off) was significant for England and Wales.

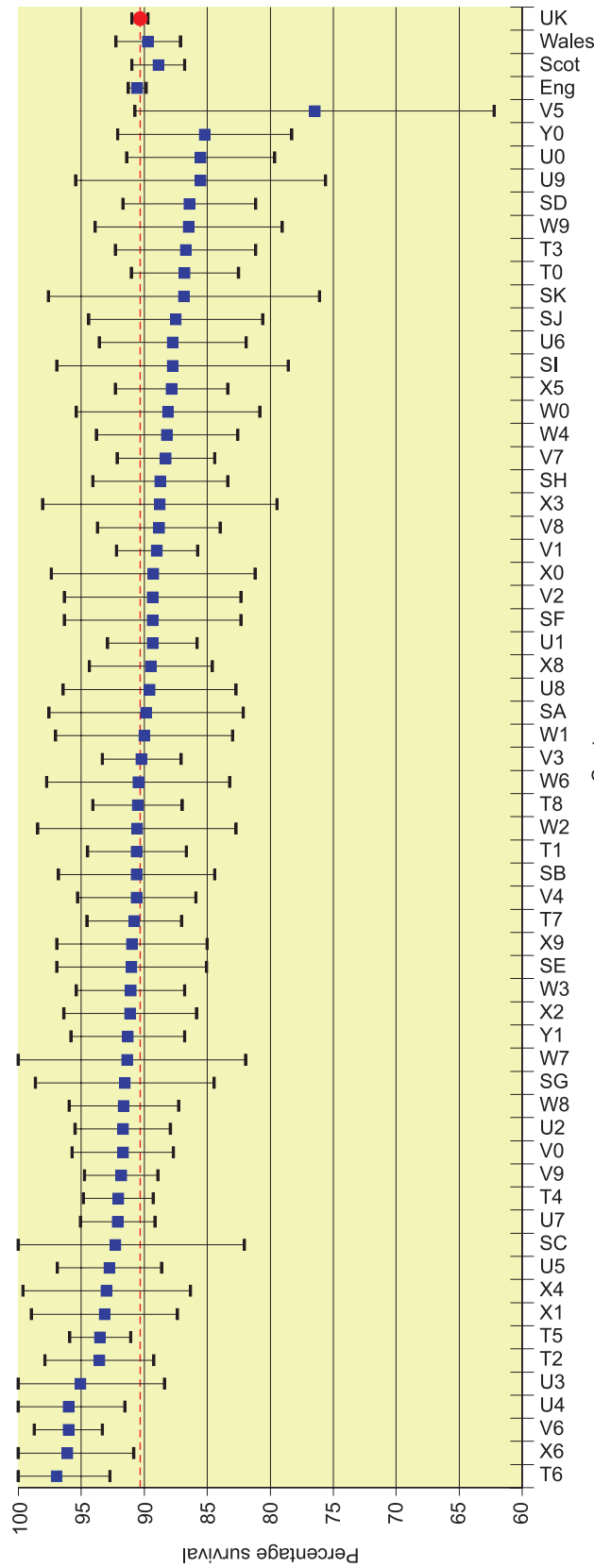


Figure 4.18: One year survival of prevalent dialysis patients aged under 65 in each centre

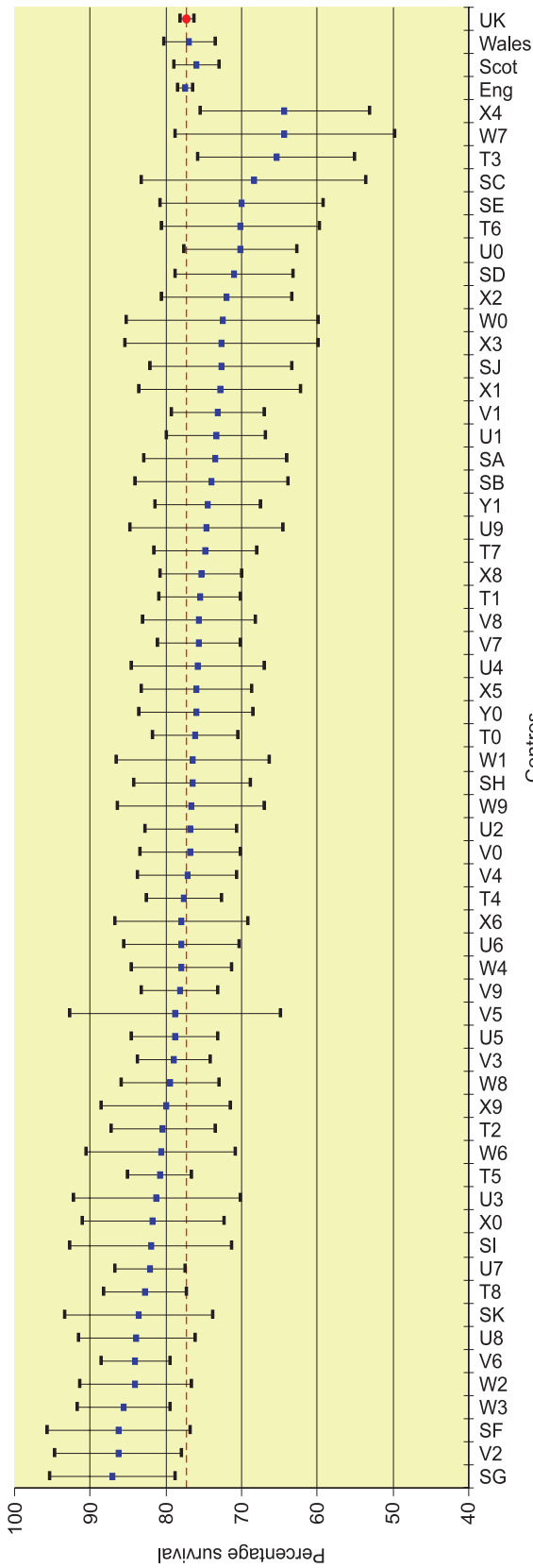


Figure 4.19: One year survival of prevalent dialysis patients aged 65 and over in each centre

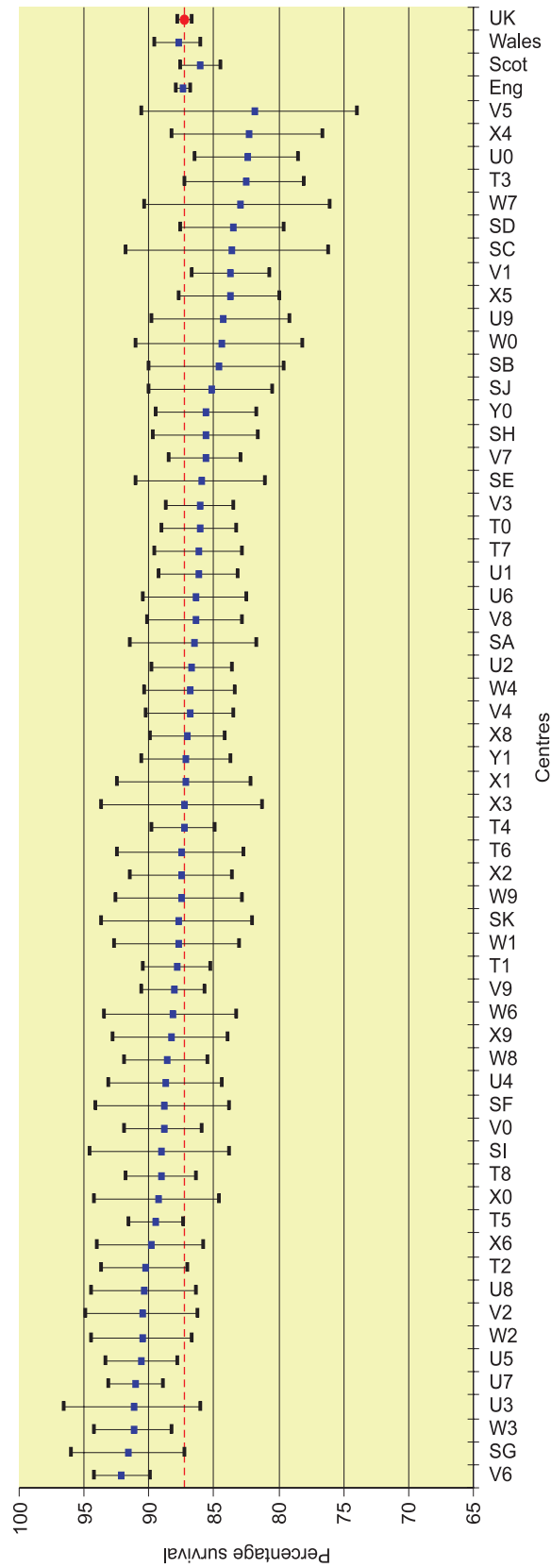


Figure 4.20: One year survival of prevalent dialysis patients in each centre adjusted to age 60

Table 4.15: Serial one year survival for dialysis patients in England, Wales and Scotland from 1997–2004 adjusted to age 60

Year	England		Wales		Scotland	
	1 year survival %	95% CI	1 year survival %	95% CI	1 year survival %	95% CI
1997	83.3	81.7–84.8	n/a		n/a	
1998	84.2	83.0–85.5	78.2	73.4–83.2	84.0	81.9–86.1
1999	84.1	83.0–85.2	83.4	80.5–86.3	82.3	80.3–84.3
2000	85.3	84.4–86.3	85.4	82.9–88.0	83.4	81.6–85.3
2001	86.1	85.3–86.9	88.0	85.9–90.2	83.6	81.8–85.4
2002	87.5	86.9–88.1	87.4	85.5–89.3	85.0	83.3–86.7
2003	86.1	85.4–86.8	84.2	82.1–86.3	83.7	82.0–85.4
2004	87.5	86.9–88.2	87.8	86.0–89.5	86.1	84.5–87.6

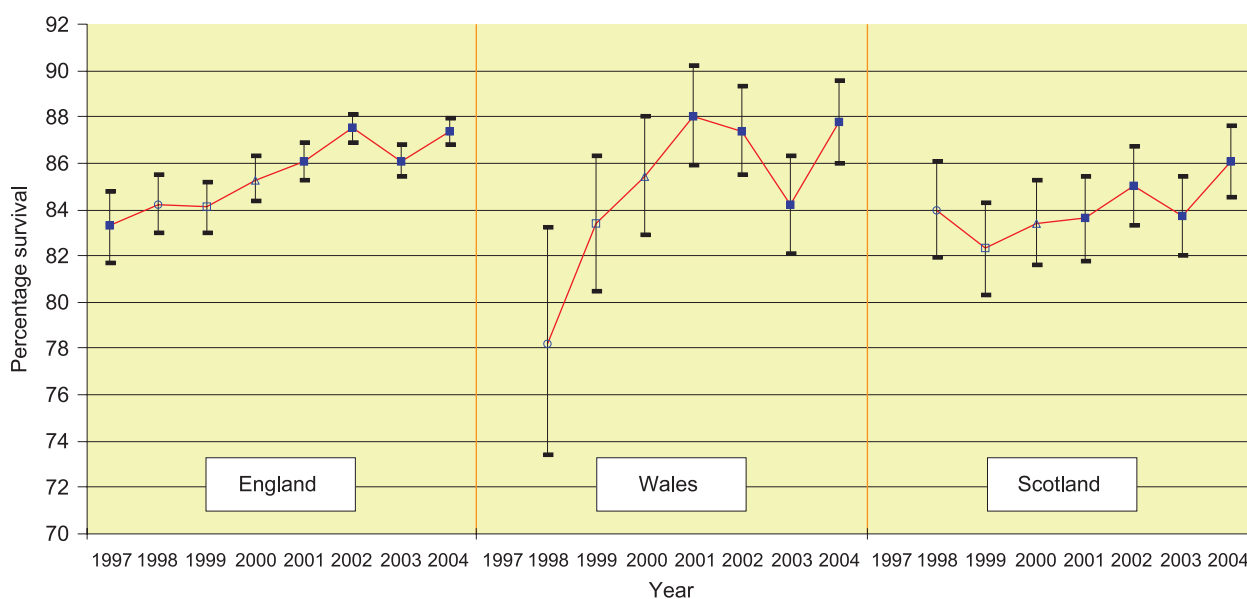


Figure 4.21: Serial one year survival for dialysis patients in the UK from 1997–2004 adjusted to age 60

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2. Tangri N, Ansell D, Naimark D. Lack of a centre effect in UK renal units: application of an artificial neural network model. *Nephrol Dial Transplant*. 2006 Mar;21(3):743–8