Chapter 4: New Adult Patients Starting Renal Replacement Therapy

Summary

- The annual acceptance rate of new patients in the UK has not risen over the past 4 years. At 93.2 per million population (pmp) for adults and 1.7 pmp for children, it is lower than that of most other Western European countries.

- The annual acceptance rates in Wales, Scotland and England are converging, the higher rates seen in Wales and Scotland in the late 1990s appearing not to have been maintained.

- The annual acceptance rates in the old health authorities varied from 51 pmp to 154 pmp. This variation cannot be fully explained by the age distribution and ethnic mix of the communities served.

- An analysis of acceptance rates by age shows that crude rates can be misleading and demonstrates the importance of the age distribution of the population served.

- Diabetic nephropathy, seen in 18% of new patients, is not increasing and remains less prevalent than in the USA and much of Europe.

- Haemodialysis is the mode of dialysis on day 90 in 53% of new patients in England, 56% in Wales, 64% in Scotland and 82% in Northern Ireland. Higher rates are seen in those over age 65 than in those younger than this.

- Survival rates show consistency in the cohorts of patients starting renal replacement therapy from 1997 to 2000. One-year survival is 79% (89% for those below age 65, 68% for those above). Four-year survival is 48% (67% below age 65, 24% above this age).

Introduction

Earlier Registry reports demonstrated wide variations between renal units in both the incidence and prevalence of renal replacement therapy (RRT). The precision of these data was limited by difficulties encountered in determining the catchment populations of individual renal units. By mapping patient postcodes to health authorities in those areas with complete or near-complete coverage by the Registry, a start was made in the last report to relate these data to local populations rather than to the perceived catchment area of each unit. This showed that some of the apparent variation between units was the result of an inaccurate estimate of catchment areas. This work has been extended in 2002 to take account of population age differences. The preliminary data were circulated to the provider units in an attempt to improve accuracy, several corrections being made as a result.

In this year's report, there is complete coverage of 51 health authorities in England and all five in Wales, comprising a total population of 28.6 million. The data for Wales were made complete by the addition of some information from the 2002 Annual Report of the Welsh Association of Renal Physicians and Surgeons, provided by Dr Peter Drew.

Methodology

To facilitate the comparison of acceptance rate between units, an acceptance ratio has been calculated thus: (Unit acceptance rate / Registry mean acceptance rate)*100

A result higher than 100 indicates the percentage increase over the mean, one of less than 100 a decrease. The Registry mean is the total for the 28.6 million population thought to have complete coverage.

Because the incidence and prevalence of established renal failure increase markedly with increasing age, and there is a significant variation in age structure across the UK (the proportion aged over 65 rising from 12% to 21% across the 56 health authorities), it is intended in future to calculate indirect age-standardised ratios for both the incidence and prevalence of RRT to facilitate comparisons of care provision. Although this has not been possible in 2002, acceptance rates have been calculated for the age groups 18–65 and over 65 found in the whole population represented by the 56 health authorities (see Table 4.2 below). Other factors known to determine the extent of renal disease in a community, but not taken into account, are ethnicity and socio-economic status. The number treated may also depend on the distance from a main renal unit as this may affect the referral pattern. There may also be a variation in the local criteria for referral and acceptance. The effect of satellite units on treatment rate needs to be explored further.

It will in future be possible to use the 2001 national census data to explore the effects of ethnicity and socio-economic status on take-on rate and to undertake more complete age and gender standardisation. To improve precision, several years' data per health authority will be combined.

Acceptance rates

	England	**Wales**	**N Ireland**	**Scotland**	**Total UK**
No. of units	31	5	4	10	70
No. of new patients	2847 (4500**)	308	194	513	5515*
Population (millions)	49.5	2.93	1.7	5.1	59.2
New patients pmp	90.8	105	115	101	93.2*
95% CI	90.5–91.0	102.7–108.3	110–120	99.4–102.6	
New patients per unit	83***	72	49	51	79

Table 4.1: Summary of new adult patients accepted during 2001

*Includes estimated number for England.

**Estimated number for England derived from Registry catchment population.

***Calculated for all England. For Registry participants only, the figure is 92.

The acceptance rate this year for England has been calculated from those parts of the country known to have complete health authority coverage by the Registry, the result being a minimum annual incidence for adults of 90.8 pmp total population. This could underestimate the incidence if any patients from those areas were treated in non-Registry units. If calculated from the total incident patients recorded using the estimated catchment populations from renal units, the annual incidence is 93.5 pmp. The paediatric annual incidence rate adds an additional 1.7 pmp total population.

The 'Registry' population of England appears to be representative of England as a whole, as the percentage of Registry health authority population aged 65 and over is 15.8%, compared with 15.9% in the 2001 UK Census.

Changes in acceptance patterns in the UK over 20 years are shown in Figure 4.1. This clearly demonstrates the overall rise in acceptance rates in the UK during the 1980s and early 90s. This rise was most striking in the older age groups and in diabetics. It is, however, important to note that although the prevalence of people receiving RRT continues to rise, as more people are started on RRT each year than die (see Chapter 5), the acceptance rate in the UK has not risen for 4 years. There does not appear to have been an increase in the incidence figure for England since 1998. Although the populations of both Wales and Scotland are relatively small, giving wide confidence limits, the rise in incidence rates seen during the 1990s has stopped, both countries showing a recent fall in incidence, and the acceptance rates of the three countries are converging (Figure 4.2). These acceptance rates are well below those seen in many other European countries (see Table 4.29 below).

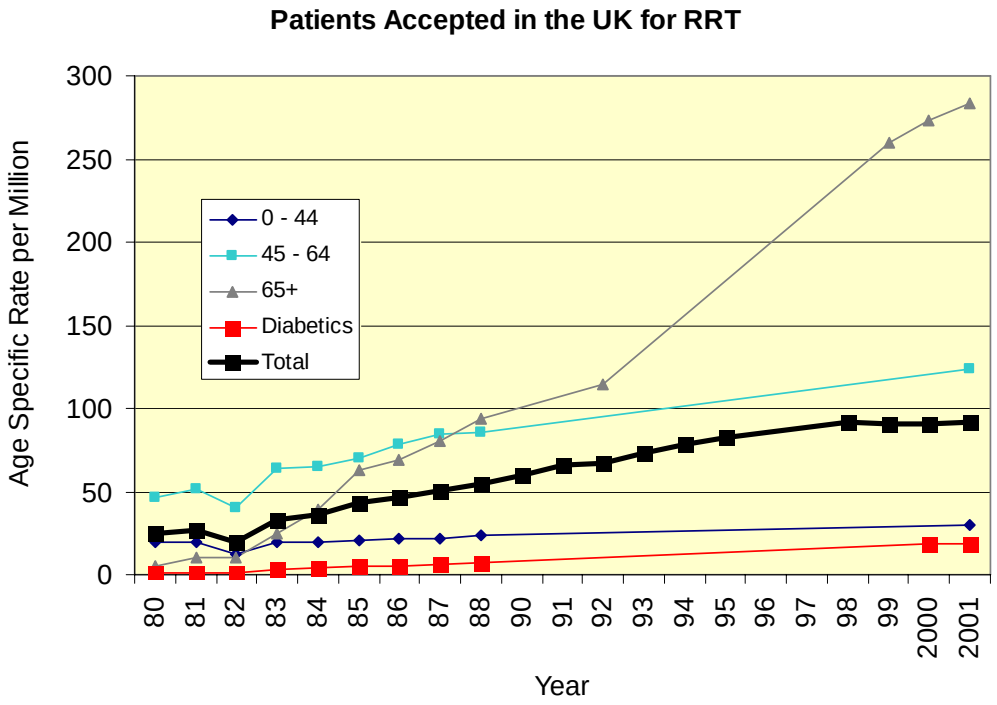

Figure 4.1: Trends in acceptance rates for RRT in the UK, 1980–2001
Sources: EDTA Registry, National Renal Reviews, UK Renal Registry.
For the age groups, the incidence rates are annual pmp alive in that age group.

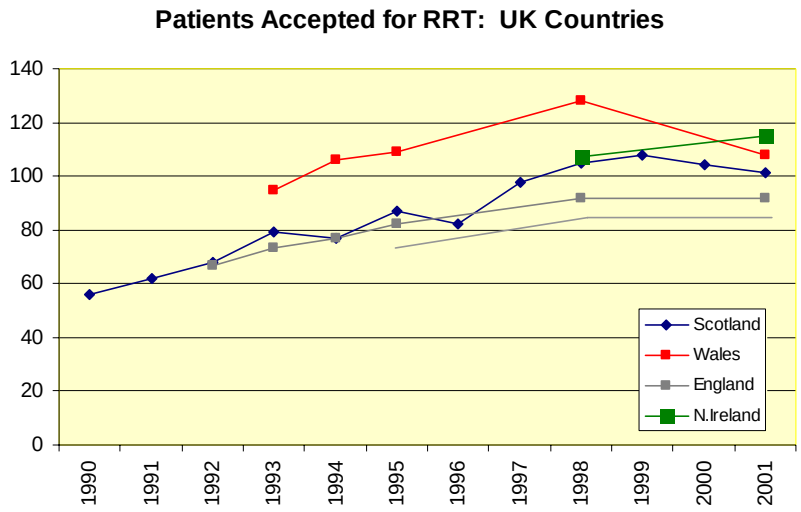

Figure 4.2: Trends in acceptance rate for RRT in the countries of the UK, 1990–2001
Sources: National Renal Reviews, UK Renal Registry, Scottish Renal Registry

Acceptance rates of health authorities

These data have been calculated by mapping patient postcodes (after using a postcode correction package) to health authorities, using the NHS organisational postcode mapping supplied by the Department of Health. Figures for England and Wales population denominators by age for each health authority were obtained from the Office for National Statistics.

Tables 4.2 and 4.3 include only those health authorities with, as far as can be ascertained, complete coverage by the Registry. For these, the annual incident rate in adults was 90.8 pmp.

Region	Health authority	All patients							
		Population	Pat. count	All pmp	AR	95% CI	pmp 18–64	pmp >65	% new pats from ethnic minority
Y01	Bradford	483,300	58	120	133	114–152	94	448	
Y01	Calderdale and Kirklees	583,800	55	94	104	89–120	78	310	
Y01	County Durham and Darlington	607,800	35	58	64	50–78	48	174	
Y01	East Riding and Hull	574,500	49	85	94	79–110	81	222	
Y01	Leeds	727,400	67	92	102	89–114	67	335	
Y01	North Cumbria	319,300	25	78	87	59–114	46	288	
Y01	North Yorkshire	742,400	63	85	94	82–106	53	293	
Y01	Sunderland	292,300	15	51	57	28– 85	28	226	0
Y01	Tees	556,300	47	84	93	77–110	77	255	
Y01	Wakefield	318,800	23	72	80	52–107	60	237	
Y02	Barnsley	228,100	15	66	73	35–111	28	304	0
Y02	Doncaster	290,500	27	93	103	72–134	68	329	
Y02	Leicestershire	928,700	100	108	119	109–129	81	390	29
Y02	Lincolnshire	623,100	48	77	85	71–99	61	211	
Y02	North Derbyshire	370,200	32	86	96	71–120	48	329	3
Y02	North Nottinghamshire	388,900	35	90	100	76–123	62	316	
Y02	Nottingham	642,700	72	112	124	110–138	81	401	15
Y02	Rotherham	254,400	38	149	165	128–202	152	362	9
Y02	Sheffield	531,100	48	90	100	83–117	92	209	15
Y02	South Humber	308,600	17	55	61	34–88	48	157	
Y07	Coventry	304,300	47	154	171	140–202	116	552	
Y07	Solihull	205,600	23	112	124	79–168	86	366	
Y07	South Staffordshire	592,100	44	74	82	67–97	45	314	

Region	Health authority	Population	All patients Pat. count	All pmp	AR	95% CI	pmp 18–64	pmp >65	% new pats from ethnic minority
Y07	Walsall	261,200	29	111	123	88–158	50	509	31
Y07	Warwickshire	506,700	51	101	111	93–129	66	375	
Y07	Wolverhampton	241,600	28	116	128	90 –166	92	376	43
Y08	East Lancashire	511,200	44	86	95	78–113	97	184	13
Y08	Liverpool	461,500	69	150	165	145–186	121	519	
Y08	Morecambe Bay	310,300	22	71	78	50–107	70	158	0
Y08	North Cheshire	311,900	29	93	103	74–132	76	332	
Y08	NW Lancashire	466,300	45	97	107	87–126	101	192	14
Y08	Sefton	287,700	27	94	104	72–135	99	184	
Y08	South Lancashire	312,700	21	67	74	47–102	51	238	0
Y08	St Helens and Knowsley	333,000	27	81	90	63–116	78	229	
Y09	Bedfordshire	556,600	49	88	97	81–114	74	320	
Y09	Cambridgeshire	468,000	47	100	111	92–131	104	251	
Y09	Hertfordshire	1,033,600	83	80	89	80–97	73	233	
Y11	Berkshire	800,200	75	94	104	92–115	82	330	29%
Y11	Buckinghamshire	681,900	59	87	96	83–109	67	348	
Y11	IOWight, Portsmouth & SE Hampshire	671,700	48	71	79	66–92	56	228	
Y11	North & Mid Hampshire	556,900	34	61	68	52–83	48	229	
Y11	Northamptonshire	615,800	52	84	93	79–108	71	286	
Y11	Oxfordshire	616,700	51	83	91	77–106	62	317	
Y11	Southampton & SW Hampshire	542,300	36	66	73	57–89	51	207	
Y12	Avon	999,300	109	109	121	111–130	84	353	9
Y12	Cornwall and Isles of Scilly	490,400	51	104	115	96–134	83	274	
Y12	Gloucestershire	557,300	46	83	91	75–107	74	218	
Y12	North and East Devon	479,300	44	92	102	83–120	46	312	
Y12	Somerset	489,300	43	88	97	79–116	62	264	
Y12	South and West Devon	589,100	75	127	141	125–157	89	387	
Y12	Wiltshire	605,500	40	66	73	59–87	53	215	
	England	**25,632,200**	**2317**	**90**	**100**	**90.5–91.1**	**72**	**292**	

Table 4.2: Incident rates, by age, for health authorities in England, with acceptance ratio

W00	Bro Taf	739600	63	85	94	82–106	67	288	
W00	North Wales	657500	68	103	114	101–128			
W00	Dyfed Powys	479400	51	106	118	99–137	77	312	
W00	Gwent	557200	63	113	125	109–142	104	312	
W00	Morgannwg	499700	63	126	139	121–158	100	372	
	Wales	**2,933,400**	**240**	**105**	**117**	**103-108**	**86**	**318**	
	Total E&W	**28,565,600**	**2317**	**90**		**100**	**72**	**292**	

Table 4.3: Incident rate, by age, for health authorities in Wales, with acceptance ratio

There is considerable variation in the acceptance ratios. Several health authorities (e.g. Bradford, Leicester and Nottingham) have ratios significantly higher than 100 with a lower CI of over 100; in others (e.g. County Durham, Sunderland, North & Mid Hampshire and Wiltshire), the converse applies. Local knowledge will be required to understand the reasons for such variation.

The age-specific acceptance rates show a huge variation. In younger patients, the rate varies from 28 pmp in Sunderland to 152 pmp in Rotherham; for the elderly, the range extends from 157 pmp in South Humber to 552 pmp in Coventry. Whereas some units have relatively similar rates for both age groups, others have a high rate in one age group and a low one in the other (Table 4.2 and Figure 4.3).

These data illustrate how crude acceptance rates can be misleading with regard to practice. Thus, Cornwall and Warwickshire have a similar acceptance rate pmp per year (104 and 101 respectively). With the higher proportion of elderly people in Cornwall, one would expect a higher overall take-on rate than Warwickshire. Cornwall is, however, accepting fewer patients from its high-elderly population (274 pmp) than Warwickshire is from its smaller elderly population (375 pmp).

Trends in acceptance for those health authorities with reliable data over 3 or 4 years are shown in Table 4.4.

Region	Health authority	Population	1998 pmp	1999 pmp	2000 pmp	2001 pmp	Patient count
Y01	Calderdale and Kirklees	583,800			80.5	94.2	55
Y01	County Durham and Darlington	607,800	100.4	74.0	72.4	57.6	35
Y01	East Riding and Hull	574,500	71.4	71.4	88.8	85.3	49
Y01	North Cumbria	319,300	125.3	72.0	68.9	78.3	25
Y01	Sunderland	292,300	51.3	85.5	82.1	51.3	15
Y01	Tees	556,300	107.9	91.7	82.7	84.5	47
Y02	Barnsley	228,100	70.1	83.3	61.4	65.8	15
Y02	Doncaster	290,500	75.7	82.6	79.2	92.9	27
Y02	Leicestershire	928,700	107.7	89.4	91.5	107.7	100
Y02	Lincolnshire	623,100	81.8	91.5	88.3	77.0	48
Y02	North Derbyshire	370,200	51.3	62.1	59.4	86.4	32
Y02	North Nottinghamshire	388,900	115.7	95.1	108.0	90.0	35
Y02	Nottingham	642,700	119.8	110.5	96.5	112.0	72
Y02	Rotherham	254,400	51.1	62.9	102.2	149.4	38
Y02	Sheffield	531,100	88.5	90.4	81.0	90.4	48
Y02	South Humber	308,600	103.7	64.8	74.5	55.0	17
Y07	Coventry	304,300	111.7	115.0	118.3	154.5	47
Y07	Solihull	205,600	82.7	73.0	87.5	111.9	23
Y07	South Staffordshire	592,100		45.6	55.7	74.3	44
Y07	Walsall	261,200	11.5	114.9	76.6	111.0	29
Y07	Warwickshire	506,700	96.7	116.4	100.7	100.7	51
Y07	Wolverhampton	241,600		99.3	157.3	115.9	28
Y08	East Lancashire	511,200		68.5	74.3	86.1	44
Y08	Morecambe Bay	310,300		70.9	99.9	70.9	22
Y08	North-West Lancashire	466,300	75.1	68.63	79.3	96.5	45
Y11	Northamptonshire	615,800	71.5	73.1	89.3	84.4	52
Y11	Oxfordshire	616,700	76.2	64.9	61.6	82.7	51
Y12	Avon	999,300	82.1	84.1	109.1	109.1	109
Y12	Gloucestershire	557,300	89.7	95.1	87.9	82.5	46
Y12	North and East Devon	479,300	81.4	87.6	91.8	91.8	44
Y12	Somerset	489,300	67.4	83.8	69.5	87.9	43
Y12	South and West Devon	589,100	118.8	106.9	96.8	127.3	75
W00	Gwent	557,200	102.3	75.4	93.3	113.1	63
W00	Bro Taf	739,600	87.9	110.9	97.3	85.2	63

Table 4.4: Changes in incident rate of health authorities

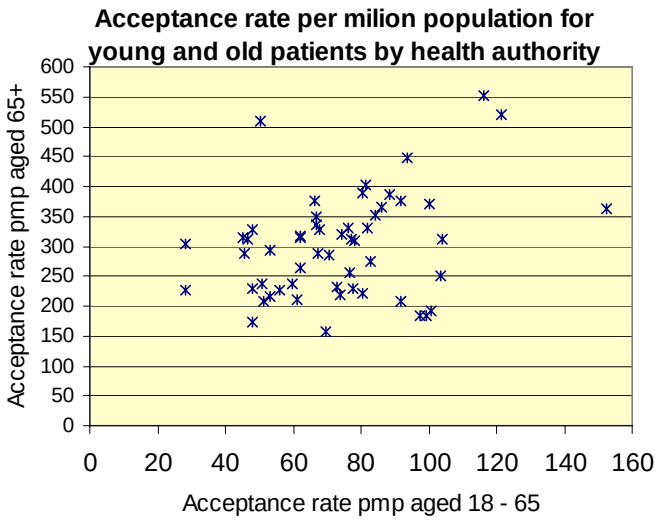

Figure 4.3: Scatter plot of acceptance rate by health authority in young and elderly patients

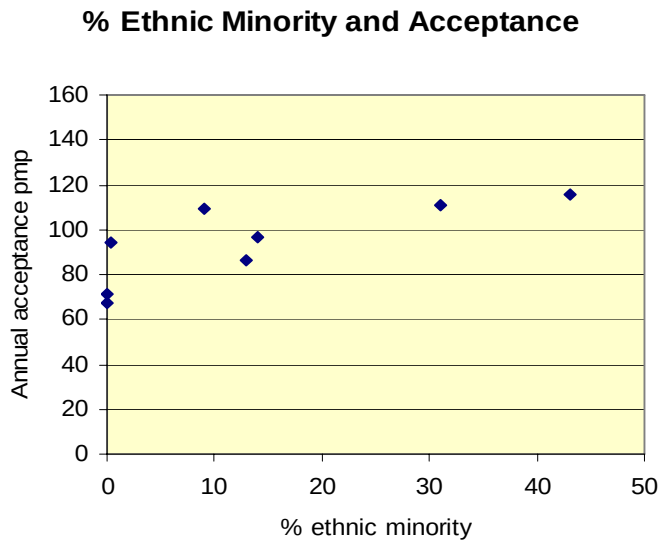

Figure 4.4: Percentage from ethnic minorities and acceptance rates in health authorities

Complete or near-complete ethnicity data are available for very few health authorities (Table 4.2). The variation of acceptance with ethnicity is illustrated in Figure 4.4.

Acceptance of new patients by individual renal units

The number of patients accepted by each renal unit is shown in Table 4.5.

		No. of new patients			
Centre	**Estimated catchment population**	**1998**	**1999**	**2000**	**2001**
Bradford	0.60				61
Bristol	1.50	122	119	151	151
Cambridge	1.42				84
Cardiff	1.30	137	138	137	142
Carlisle	0.36	40	26	27	25
Carshalton	1.67	141	108	117	120
Coventry	0.85	87	92	89	103
Exeter	0.75	74	82	71	99
Gloucester	0.55	49	59	46	49
Guys	1.73			122	109
Heartlands	0.60	71	71	77	85
Hull	0.84	73	65	81	75
Leeds GI	0.90			68	74
Leicester	1.73	181	161	177	182
Liverpool	1.35				182
Nottingham	1.16	129	128	113	121
Oxford	1.80	146	139	144	168
Plymouth	0.55	71	67	63	63
Portsmouth	2.00				144
Preston	1.56	79	105	118	135
Reading	0.60			54	71
S Cleveland	1.00	109	92	90	82

Centre	Estimated catchment population	No. of new patients 1998	1999	2000	2001
Sheffield	1.75	129	134	136	152
Stevenage	1.25	116	105		125
Southend	0.35		43	39	35
St James, Leeds	1.30	71	79	89	87
Sunderland	0.34	41	45	46	35
Swansea	0.70		23	61	110
Truro	0.36				35
Wolverhampton	0.49		75	77	76
Wordsley	0.42	46	43	40	34
Wrexham	0.42		51	58	36
York	0.34			40	36
Total E&W	**33.01**	–	–	–	3086

Table 4.5: Number of new patients accepted by individual renal units

The total number of patients shown in Table 4.5 is higher than that in Table 4.2 as the latter excludes health authorities where the coverage is incomplete.

Ethnicity

There is still considerable variation in the provision of ethnicity data (Table 4.6). There are no data from Scotland or Wales, and in England, only 10 units returned ethnicity data for over 90% of patients, and 11 units provided little or no data at all. The Registry needs to work over the next year to assist other units in improving on this as ethnicity is an important variable for determining equity of provision, outcomes and emerging trends as ethnic minority populations age. Overall, about 12% of new acceptances to participating units with over 85% completeness came from Indo-Asian or African-Caribbeans population. Some units serving large ethnic minority populations have over 15% Indo-Asian and Black populations, and this proportion is likely to grow as these populations age.

Treatment centre	%	White	Black	Asian	Chinese	Other
Words	100.0	97.1	0.0	2.9		0
Sheff	100.0	92.1	1.3	5.3		1
Notts	100.0	90.9	5.0	3.3		1
Heart	100.0	74.1	8.2	15.3		1
Leic	98.9	81.7	1.1	15.0		2
Redng	98.6	81.4	5.7	11.4		0
Plym	98.4	91.9	6.5	1.6		0
Prstn	97.0	91.6	0.8	7.6		0
Wolve	95.9	78.9	5.6	15.5		0
Bristl	91.4	92.8	5.8	1.4		0
Covnt	85.4	86.4	2.3	11.4		0
Guys	84.8	79.8	14.6	4.5		0
Carsh	77.5	*73.1*	*5.4*	*8.6*		*13*
Hull	70.7	*100.0*	*0.0*	*0.0*		*0*
Sthend	65.7	*100.0*	*0.0*	*0.0*		*0*
Sund	65.7	*100.0*	*0.0*	*0.0*		*0*
Derby	61.2	*93.3*	*6.7*	*0.0*		*0*
Extr	57.6	*100.0*	*0.0*	*0.0*		*0*
StJms	52.9	*84.8*	*8.7*	*4.3*		*2*
Scleve	42.7	*82.9*	*0.0*	*14.3*		
Carls	12.0					

Treatment centre	%	White	Black	Asian	Chinese	Other
Livrpl	9.3					
Camb	6.0					
Stevn	1.6					
Oxfrd	0.6					
Bradf	0.0					
Glouc	0.0					
LGI	0.0					
Ports	0.0					
Truro	0.0					
York	0.0					
Total England		82.9	4.2	7.7	0.4	0.5

Table 4.6: Ethnicity, by centre

The italicised results for units with low (<85%) returns for ethnicity have less validity, so the results for England were calculated only from those units with an 85% or more return on ethnicity data.

The results from units recording 100% White patients have been checked and are correct.

With regard to data relating to health authorities, in Birmingham, where there is part coverage (this therefore not being listed in the health authority data above), 50% of patients recorded as starting RRT were from the ethnic minority groups, and in Lambeth, Southwark and Lewisham 37% came from ethnic minority groups.

	Median age of incident patients	
Centre	**Ethnic minority**	**All**
Bristl	57.5	65
Covnt	64	66
Guys	60	57
Heart	60	65
Leic	59	64
Notts	61	65
Plym	51	67
Prstn	55	57
Redng	54	62
Sheff	47	64
Wolve	69	68
Words	67	63
Total England	**57**	**64**

Table 4.7: Median age of ethnic groups accepted for RRT
Data included only from units with 85% or more returns.

Patients from ethnic minority populations are usually younger, reflecting the age distribution of such populations, although this finding is not universal in each area. The number of patients from ethnic minorities is very small in many units, so there are large error margins on these figures for individual units.

Age

There is a slow shift with time to an older median age (Figure 4.5). The median age in England & Wales is 64, being marginally higher in Wales than England. The proportion of patients over 75 was 23.5% in Wales and 20.9% in England, the overall figure being 21%.

The median age for each unit is shown in Figure 4.6. These data may be misleading with regard to unit policies as the median age will in part reflect the population served. The acceptance rates in the younger and older age groups (Table 4.2) provide a much better indication of referral and acceptance policies. Comparing Table 4.2 with Figure 4.6, it becomes apparent that some of the units with the highest median age do not have as liberal an acceptance practice for accepting the elderly as do some other units; they simply have a high proportion of elderly people in their population. Thus, York, with the highest median age, has an exactly average acceptance rate for older people, and many units with a lower median age accept relatively more patients from the elderly population they serve.

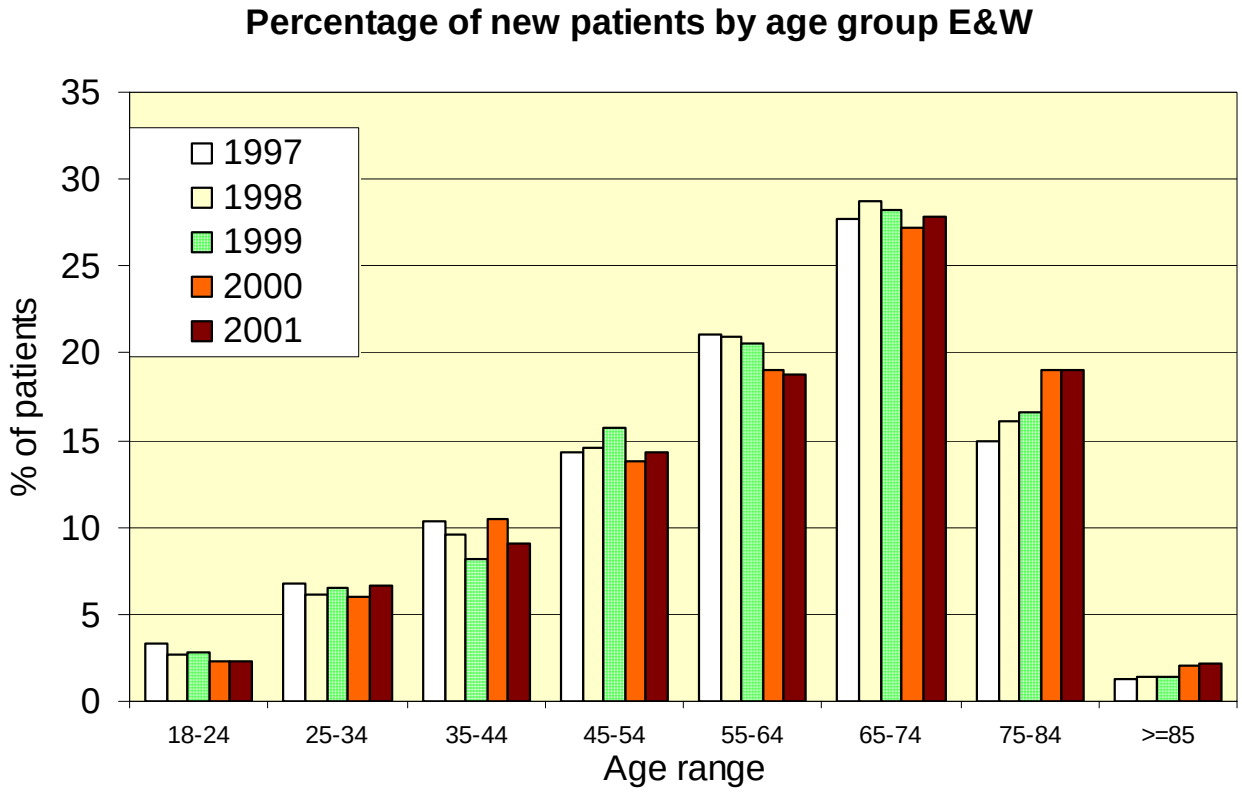

Figure 4.5: New patients, by age group, 1997–2001

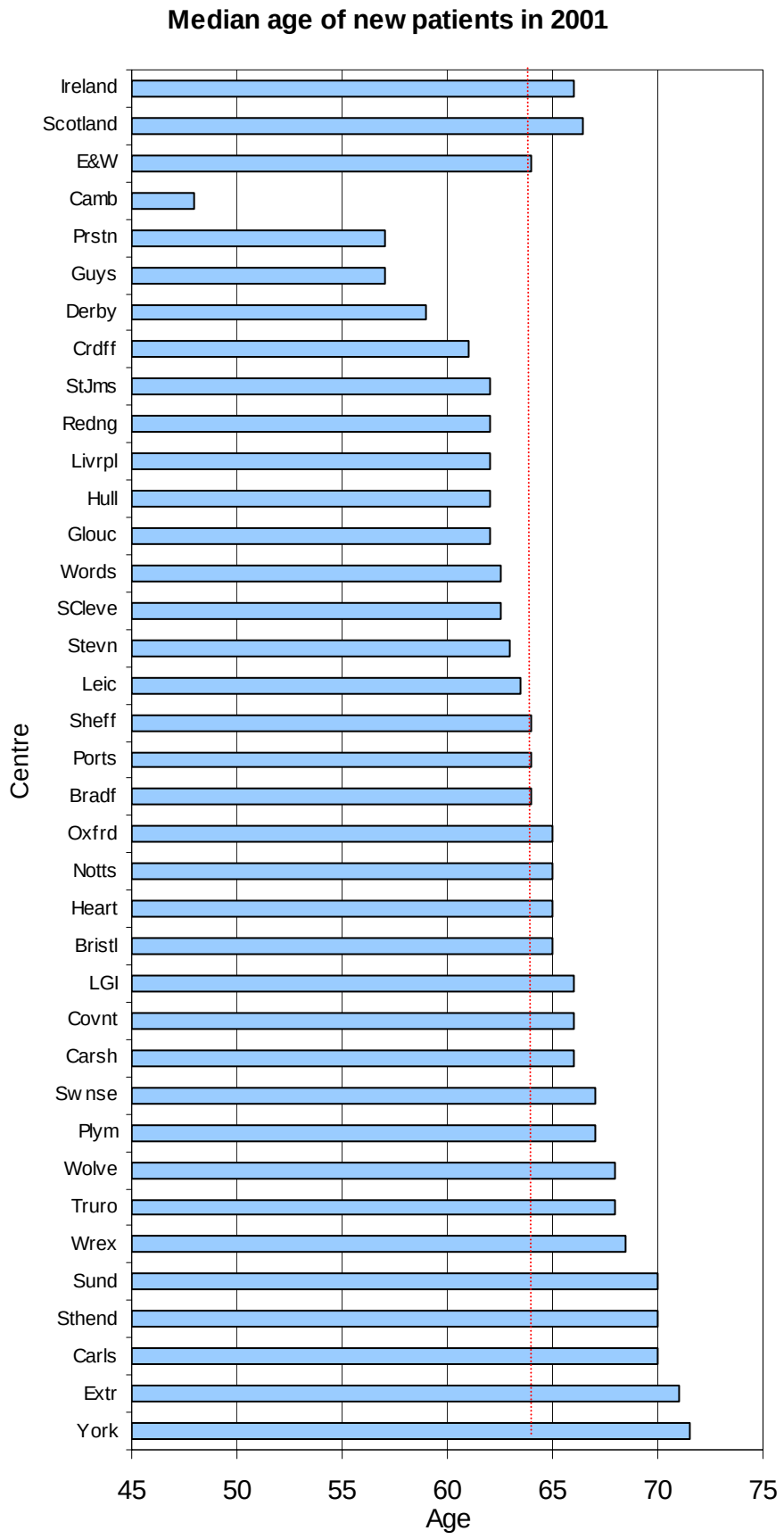

Figure 4.6: Median age of new patients in 2001

Gender

	1998	1999	2000	2001
England & Wales	62.8	62.2	59.3	63.2

Table 4.8: Percentage of males, by age, 1998–2001

As anticipated, there is a male excess of about 1.5:1 (Table 4.8). Gender ratios within specific age groups are ideally needed; these will be available as national coverage is achieved and when the 2001 Census data can be used. In 2001, there appeared to be a trend towards a reduction in the percentage of males, but this has not been confirmed by the latest figures.

Primary renal diagnosis

The distribution of new patients by age, gender and centre is shown in Tables 4.9 and 4.10.

Diagnosis	E&W <65	E&W > 65	M:F
Aetiology uncertain/GN NP	15.8	22.8	1.6
Glomerulonephritis	13.6	6.1	2.5
Pyelonephritis	9.2	8.7	1.5
Diabetes	20.2	11.8	1.6
Renal vascular disease	2.4	11.9	2.4
Hypertension	6.1	7.3	2.2
Polycystic kidney	8.9	3.3	1.4
Not sent	10.5	15.2	1.8
Other	13.3	13.0	1.4

Table 4.9: Percentage primary renal diagnosis, by age, and gender ratio
GN NP, glomerulonephritis not proven

Unit	Not sent	Aetiology uncertain/ GN NP	Diabetes	GN	Polycystic kidney	Hypertens.	Renal vascular	Pyelo-nephritis	Other
Heart	0.0	35.3	25.9	5.9	3.5	4.7	7.1	5.9	11.8
Livrpl	0.0	30.8	17.6	4.9	4.4	15.9	1.1	9.9	15.4
Notts	0.0	26.4	19.8	7.4	5.0	5.0	6.6	7.4	22.3
Redng	0.0	25.4	16.9	14.1	5.6	5.6	5.6	12.7	14.1
SCleve	0.0	13.4	23.2	9.8	7.3	11.0	3.7	8.5	23.2
Sheff	0.0	15.8	17.8	16.4	5.9	16.4	7.9	7.9	11.8
Wolve	0.0	14.5	22.4	7.9	5.3	21.1	6.6	10.5	11.8
Words	0.0	11.8	23.5	11.8	11.8	20.6	2.9	5.9	11.8
Covnt	1.9	18.4	15.5	2.0	5.8	8.7	16.5	16.5	14.6
Bradf	3.3	14.8	27.8	8.2	8.2	4.9	6.6	9.9	16.3
Guys	3.7	19.3	23.9	11.9	8.3	2.8	7.3	10.1	12.8
Bristl	4.0	17.9	14.6	11.2	8.0	6.0	8.0	15.3	15.3
Prstn	5.2	12.6	19.2	15.5	7.4	6.6	6.6	11.1	15.5
Sund	5.7	5.8	8.6	8.6	8.6	22.8	8.6	22.8	8.6
Swnse	6.4	8.1	14.5	15.4	4.6	18.2	13.7	6.4	12.7
Stevn	8.0	36.0	10.4	9.6	5.6	2.4	5.6	2.4	20.0
Plym	9.5	9.5	15.8	12.7	9.5	4.8	15.8	9.5	12.7
Ports	9.7	16.0	13.2	11.1	11.1	4.2	9.0	11.8	13.9
Leic	9.9	26.9	14.9	11.5	5.5	1.6	13.2	7.1	9.4

Unit	Not sent	Aetiology uncertain/ GN NP	Diabetes	GN	Polycystic kidney	Hypertens.	Renal vascular	Pyelo-nephritis	Other
Derby	10.2	12.2	30.6	14.3	10.2	2.1	0.0	14.3	6.1
Oxfrd	10.7	22.1	16.7	9.6	4.7	2.4	6.5	11.9	15.4
Glouc	12.2	22.5	10.2	10.2	6.1	2.0	2.0	6.1	28.6
Sthend	17.1	17.2	14.3	11.4	2.8	5.7	11.4	8.5	11.4
StJms	17.2	11.5	17.2	9.2	8.0	9.2	12.7	5.7	9.2
Carls	20.0	16.0	16.0	0.0	8.0	0.0	4.0	8.0	28.0
Hull	20.0	20.0	17.4	8.0	6.6	4.0	2.6	12.0	9.4
York	22.2	*27.8*	*8.3*	*2.8*	*0.0*	*11.1*	*13.9*	*2.8*	*11.1*
Camb	23.8	*17.8*	*15.5*	*14.3*	*7.2*	*1.2*	*1.2*	*8.3*	*10.7*
Truro	25.7	*14.3*	*8.5*	*17.2*	*5.7*	*0.0*	*0.0*	*20.0*	*8.5*
Crdff	28.2	*37.3*	*10.6*	*9.8*	*7.0*	*0.7*	*0.0*	*3.5*	*2.8*
LGI	31.1	*10.8*	*12.1*	*10.8*	*2.7*	*5.4*	*8.1*	*9.4*	*9.4*
Carsh	50.0	*5.9*	*10.9*	*4.2*	*3.4*	*3.4*	*8.4*	*4.2*	*10.0*
Extr	66.7	*2.0*	*5.1*	*6.1*	*5.1*	*0.0*	*6.1*	*1.0*	*8.1*
Wrex	75.0	*2.8*	*8.3*	*5.6*	*2.8*	*0.0*	*0.0*	*5.6*	*0.0*
E&W	**5.3**	**18.6**	**17.6**	**11.8**	**6.5**	**6.6**	**7.1**	**9.7**	**18.1**

Table 4.10: Percentage distribution of diagnoses for new RRT patients, by centre
The E&W total is calculated from those units with 80% or more returns.

The italicised results in Table 4.10 for units with a low (<80%) return for diagnosis have less validity and should be ignored. They have not been included in the calculation for the total for England & Wales.

Patients with no diagnostic information have been included in the total percentages. If these were assumed to be randomly distributed, the percentage contribution of each diagnosis to the total would be slightly increased, with results as shown in Table 4.11.

Unit	Aetiology uncertain/ GN NP	Diabetes	GN	Polycystic kidney	Hypertens.	Renal vascular	Pyelo-nephritis	Other
E&W	19.4	18.6	12.5	6.7	6.8	6.9	10.2	19.1

Table 4.11: Percentage diagnoses, excluding 'not sent'

In older patients, the proportion with an unknown diagnosis is much higher, primary renal diseases such as polycystic kidney disease and glomerulonephritis being much more common in younger patients. Diabetic nephropathy is still more common in younger individuals. The UK is not treating the increasing proportion of patients with diabetic nephropathy seen in the USA and much of Europe, where diabetic nephropathy may be the cause of ERF in over 40% of patients.

Treatment modality

The proportion of patients in each unit established on haemodialysis by day 90, and the variations with age, are shown in Figures 4.7 and 4.8. The proportions are higher in Northern Ireland and Scotland than in England and Wales. Elderly patients are much more likely to start on haemodialysis (HD) than are younger patients. Only two units showed a higher proportion of elderly patients starting on peritoneal dialysis (PD) rather than HD.

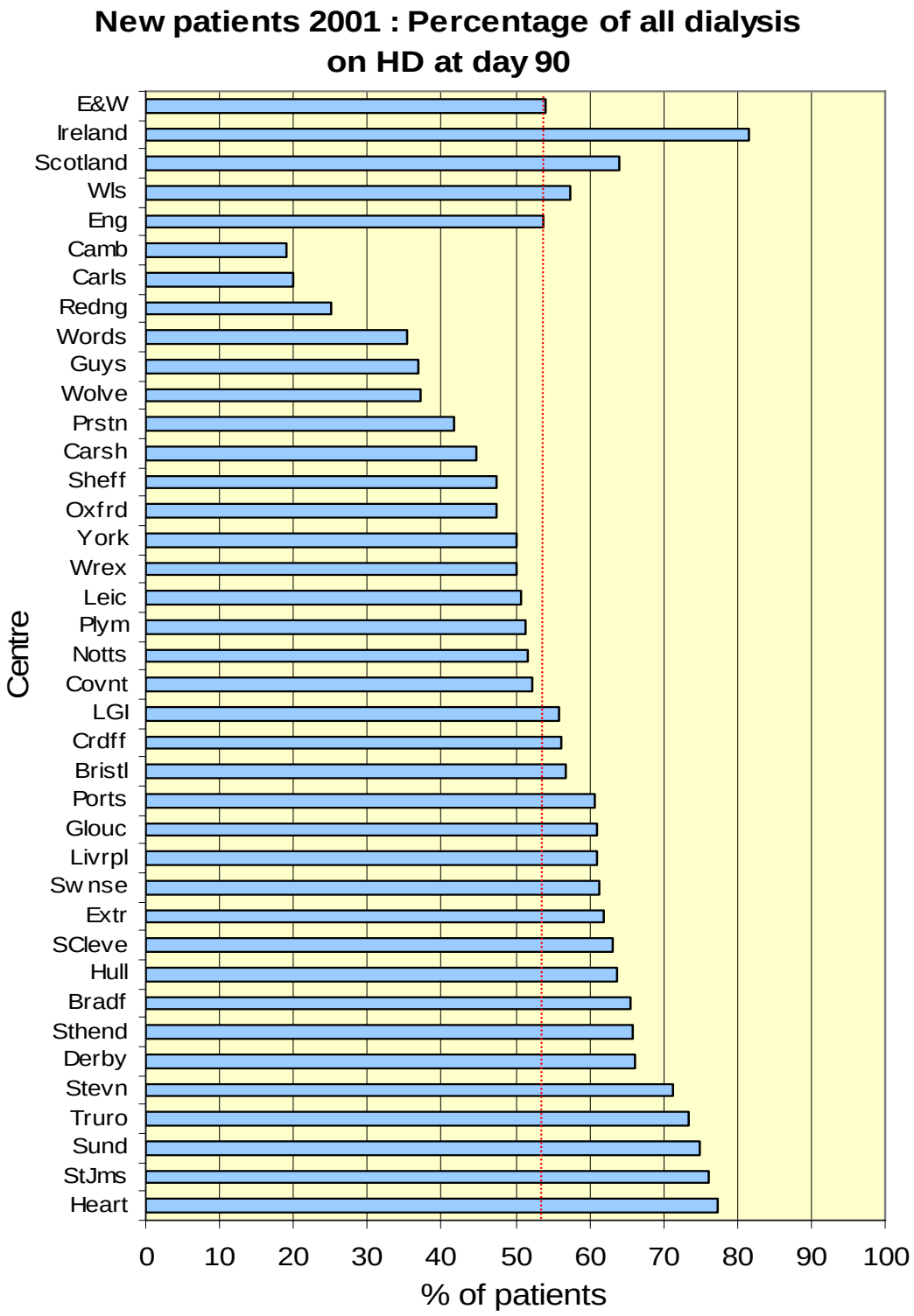

Figure 4.7: New patients, 2001 – percentage of all dialysis patients on HD at day 90

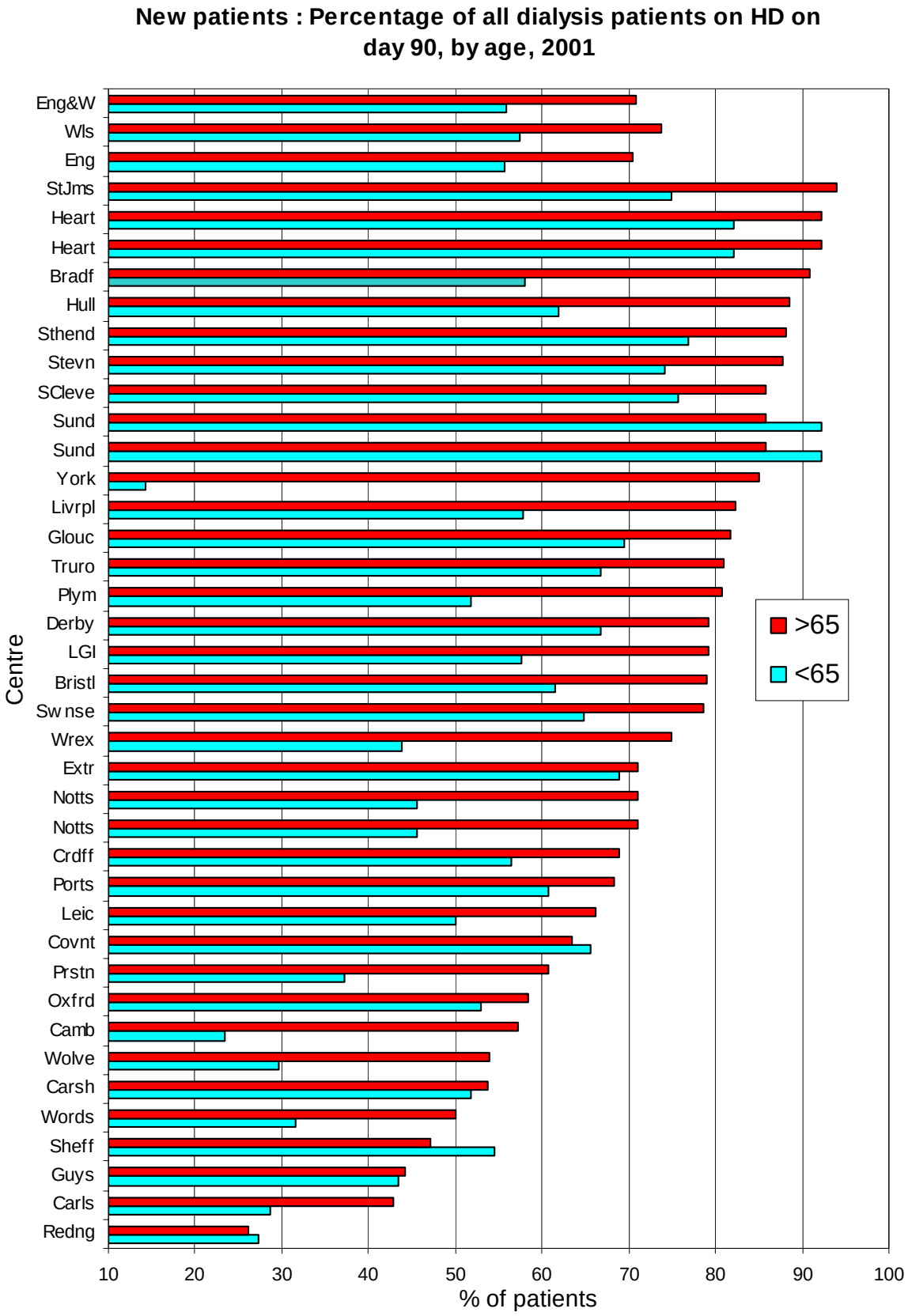

Figure 4.8: New patients – percentage of all dialysis patients on HD at day 90, by age

The first change of treatment modality

Change of treatment modality within the first year

Established on HD (n=1256)		
Modality	**No. of patients**	**Percentage**
Remains on HD	883	71.2
Changed to PD	65	5.2
Transplanted	37	3
Transferred out elsewhere	6	0.5
Recovered	14	1.3
Stopped treatment (died)	19	1.5
Died (no change in modality)	232	18.7

Table 4.12: HD patients at 90 days – changes in modality in the subsequent year

The results in Table 4.12 are almost identical to those contained in the 2000 and 2001 reports. The reported change to PD was 5% for 2002 and 4% respectively for the previous 2 years. The data from those previous years included Scotland, which has a lower use of PD.

Established on PD (n=850)		
Modality	**No. of patients**	**Percentage**
Remains on PD	559	65.8
Change to HD	131	15.4
Transplanted	71	8.4
Transferred out elsewhere	11	1.3
Recovered	7	.8
Stopped treatment (died)	0	
Died (no change in modality)	71	8.4

Table 4.13: PD patients at 90 days – changes in modality in 1 year

The PD modality change results in Table 4.13 are also identical to those in the 2000 and 2001 reports, with a 15% change to HD.

The consistency of these data covering more varied regions of the country strongly suggests that this practice reflects that of the UK as a whole.

First modality change over 2 years

Only centres on the Registry in 1999 that had a full annual cohort of patients available for a 2 year follow-up period were included. This analysis includes 1962 patients.

Patients who were on HD after the first 90 days

The 2 year modality change is consistent with the data seen in last year's report. By the end of 2 years, only 10% of patients on HD had received a transplant, compared with 18% of those on PD (Tables 4.14 and 4.15).

Established on HD First change in modality	At end of 1 year % of patients	At end of 2 years % within 2nd year	 % of all patients
Remains on HD	68.6	74.9	51.4
Changed to PD	4.4	1.1	5.2
Transplanted	5.0	7.0	9.8
Transferred out elsewhere	0.5	0.8	1.0
Recovered	1.3	0.4	1.5
Died (with no change in modality)	20.2	15.9	31.1
Total patients	**1104**	**757**	

Table 4.14: Changes in modality over the first 2 years for patients on HD

Patients who were on PD after the first 90 days

Established on HD First change in modality	At end of 1 year % of patients	At end of 2 years % within 2nd year	 % of all patients
Remains on PD	67.2	62.2	41.8
Changed to HD	11.4	12.0	19.5
Transplanted	9.9	12.5	18.3
Transferred out elsewhere	1.2	0.0	1.2
Recovered	0.7	0.3	0.9
Died (with no change in modality)	9.6	13.0	18.3
Total patients	**858**	**577**	

Table 4.15: Changes in modality over the first 2 years for patients on PD

As seen in earlier years, there is little transition from HD to PD in the first year and virtually none thereafter. A transition from PD to HD is much more frequent and continues after the first year. PD patients are of a younger group than HD patients, explaining the higher transition to transplantation from PD and the higher death rate from HD. There is a high use of PD in the UK compared with other European countries, so haemodialysis patients in the UK comprise a different group from those in the rest of Europe. This may explain the apparent differences between the UK and other European countries shown by the International Dialysis Outcomes and Practice Patterns (IDOPPS) HD study in the modality transition rate from HD to transplant and in the death rate as IDOPPS studies only HD patients.

Comparison between renal units of PD modality technique survival for incident patients

Aims

To investigate whether there is a difference in PD modality technique survival between those renal units which start a high proportion of patients on PD and those which start a low proportion.

Inclusion criteria

All new patients starting RRT between 1 October 1999 and 30 September 2000 who were on PD on their 90th day of RRT. They were followed for 1 year from the start of RRT.

Analysis

Centres were allocated to low, medium and high use of PD by dividing the centres into three equal groups (Table 4.16).

Groups	% of patients on PD technique	Median % started on PD	Mean age at start
Low	<26%	24%	54.7
Medium	26–34.9%	36%	54.9
High	≥35%	46%	55.7

Table 4.16: Use of PD across groups

These data were analysed first including all patients starting, and then excluding those patients who died during the study period. The second analysis was to take into account those patients who were more sick and might have been more likely to transfer to HD prior to death.

Results

The results are shown in Tables 4.17–4.20.

	High PD	Medium PD	Low PD
Remains on PD	68.9% (n=264)	63.4% (n=184)	62.7% (n=111)
Changed to HD	13.8% (n=53)	14.8% (n=43)	19.7% (n=35)
Transplanted	7.3% (n=28)	10.6% (n=31)	6.78% (n=12)
Transferred out	1.8% (n=7)	1% (n=3)	0.5% (n=1)
Recovered	0.5% (n=2)	1.7% (n=5)	0% (n=0)
Died	7.5% (n=29)	8.2% (n=24)	10.1% (n=18)

Table 4.17: Modality changes from PD – all patients

	High PD	Medium PD	Low PD
Remains on PD	57.3	57.5	55.6
Changed to HD	57.9	52.4	56.8
Transplanted	37.7	40.1	42.9
Transferred out			
Recovered			
Died	66.6	59.4	63.2

Table 4.18: Mean age of patients for each modality change

	High PD	Medium PD	Low PD
Remains on PD	76.5% (n=293)	71.4% (n=207)	72.9% (n=129)
Changed to HD	13.8% (n=53)	14.8% (n=43)	19.8% (n=35)
Transplanted	7.3% (n=28)	10.7% (n=31)	6.9% (n=12)
Transferred out	1.8%(n=7)	1% (n=3)	0.6% (n=1)
Recovered	0.5% (n=2)	1.7% (n=5)	0% (n=0)

Table 4.19: Modality changes from PD, excluding those who died in the first year

	High PD	Medium PD	Low PD
Remains on HD	87.3% (n=303)	86.8% (n=364)	91.1% (n=432)
Changed to PD	6.9% (n=24)	6.4% (n=27)	2.9% (n=14)
Transplanted	2.5% (n=9)	2.8% (n=12)	3.3% (n=16)
Stopped treatment	1.4% (n=5)	1.4% (n=6)	1.6% (n=8)
Recovered	0.5% (n=2)	1.9% (n=8)	0.8% (n=4)

Table 4.20: Modality changes from HD

Discussion

There is some indication from Tables 4.17–4.20 that centres with a low use of PD are more willing to transfer patients to HD and transfer fewer patients from HD to PD, perhaps because the option of HD is more easily available. PD may also be used as a temporary measure until a fistula matures, rather than using a line. Overall, the high users of PD transfer 10.8% of patients between the two modalities in the first year, the medium users 9.99% of patients and the low users of PD 7.5%, although these differences are not statistically significant (chi squared 4.40, p=0.11). This is not support for the concept that units short of HD facilities are starting a lot of unsuitable people on PD who then have a high early failure rate on the technique. Longer-term follow-up analysis is indicated.

In the centres making greatest use of PD, the mean age of patients starting PD was 1 year older than in the two other groups, but this is not of statistical significance.

It is important to understand the reasons for any change of dialysis modality, but most units record these poorly and there are insufficient data for analysis. It is hoped that the recording of this information will improve.

Survival of new patients starting RRT

Comparison with the 2nd edition standards recommendation

The second edition standards document recommended that patient groups aged 18–55 years, excluding patients with diabetic nephropathy, should have a greater than 90% 1 year survival rate. The figures for England & Wales in 2000 are shown in Table 4.21.

First treatment	Standard primary renal disease 2000	All diseases except diabetes 2000
Recommended standard	**>90%**	**>90%**
All	93.0	95.1
	91.3–94.7	93.5–96.7
HD	90.3	92.3
	87.8–93.0	98.7–94.9
PD	96.3	98.6
	94.4–98.2	97.2–99.9

Table 4.21: One-year patient survival – patients aged 18–55, 2000 cohort

Survival of new patients by age

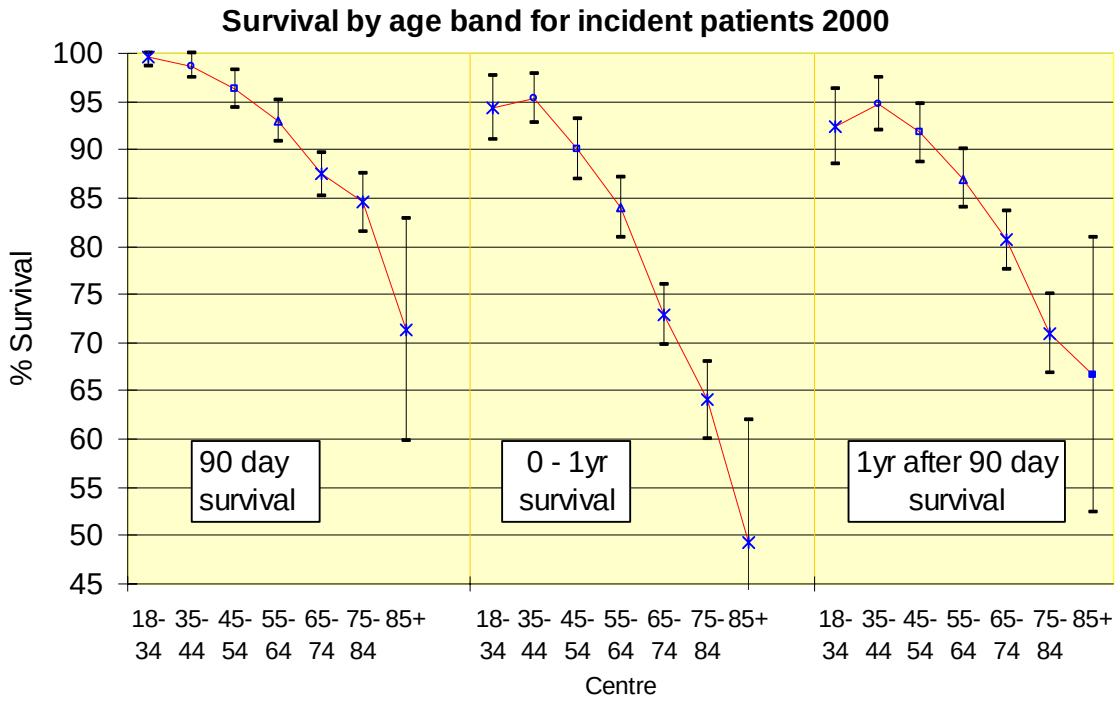

Figure 4.9: Unadjusted survival of incident patients, by age band
95% CI are shown.

In Figure 4.9, unadjusted survival has been shown for the first 90 days, the first year survival from day 0 of RRT and also the 1 year survival after day 90. The last figure allows comparison with other registries that record only data from day 90 onwards and excludes the errors introduced by the uncertain definition of acute patients who die.

Survival of all new patients by country

Patient survival for England and Wales are shown in Table 4.22.

	England	Wales	England & Wales
Adjusted 90 day	93.4 92.3–94.5	94.0 91.6–96.4	93.4 92.4–94.5
Adjusted 1 year after 90 days	86.2 84.6–87.7	87.5 83.6–91.6	86.3 84.8–87.8

Table 4.22: Patient survival across England and Wales

The 1 year unadjusted survival rate for England & Wales is 83.4%.

Survival by modality

The survival by first treatment modality is shown in Table 4.23.

	HD	PD
Adjusted 1 year after 90 days	80.8 78.9–82.8	89.5 87.4–91.5

Table 4.23: One-year survival by first treatment modality

As also shown by the US and Canadian Registries, there is an apparent difference in survival between patients started on HD and those started on PD even after adjusting for age. This is partly related to patient selection bias (diabetics and patients with high comorbidity scores being more likely to go on to HD). The data from the US Registry do, however, indicate a 1 year survival advantage for PD patients even after attempting to adjust for these factors.

As shown before, a high proportion (43%) of deaths within the first year occur within the first 90 days (Tables 4.24 and 4.25), a period excluded from the USA Registry report.

Age	KM survival analysis (%)	KM 95% CI	No.
18–64	96.0	94.9–97.1	1182
≥65	85.1	83.0–87.1	1155
All	90.6	89.4–91.8	2337

Table 4.24: Unadjusted 90 day survival of new patients, 2000 cohort
KM = Kaplan–Meier.

Age	KM survival analysis (%)	KM 95% CI	No.
18–64	89.4	87.7–91.2	1182
≥65	68.4	65.7–71.1	1155
All	78.9	77.2–80.6	2337

Table 4.25: Unadjusted 1 year survival of new patients, 2000 cohort

Age	KM survival analysis (%)		KM 95% CI	No.
	1 year	2 year	2 year survival	
<65	88	**82**	80–84	1058
≥65	68	**53**	50–56	952
All	79	**70**	66–70	2010

Table 4.26: Unadjusted 2 year survival of new patients, 1999 cohort

Age	KM survival analysis (%)			KM 95% CI	No.
	1 year	2 year	3 year	3 year survival	
<65	87	79	**72**	69–75	825
≥65	65	50	**39**	36–43	767
All	76	64	**56**	54–59	1592

Table 4.27: Unadjusted 3 year survival of new patients, 1998 cohort

Age	KM survival analysis (%)				KM 85% CI	
	1 year	2 year	3 year	4 year	4 year survival	No.
<65	87	78	74	**67**	62–71	444
≥ 65	66	45	34	**24**	19–28	344
All	78	64	56	**48**	44–51	788

Table 4.28: Unadjusted 4 year survival of new patients, 1997 cohort

These results show the expected marked difference in survival with age, which increases with time. The 1, 2 and 3 year survivals are consistent for the four different cohorts.

International comparisons

The incidence rates for RRT in the USA, Canada, Australasia and several European countries are listed in Table 4.29. Despite the increases seen in the UK over the past 20 years, patients' acceptance for RRT is still lower than it is in most comparable countries (Figure 4.10).

Annual Incidence of ERF, pmp				
Country	**1998**	**1999**	**2000**	**2001**
Australia	86	92	90	
Austria	129	135	133	132
Canada	138	146	143	
Catalonia	135	150	143	
Czech Republic	133	128	151	
Finland	90	90	94	
Germany	148	148	175	
Greece	114	124	157	
Hungary	127	123	129	
Italy	104	130		
Japan	234	249	252	

Annual Incidence of ERF, pmp				
Country	**1998**	**1999**	**2000**	**2001**
Netherlands	94	98	93	
New Zealand	98	98	107	
Norway	90	89	89	94
Sweden	127	125	126	
Taiwan	288	315	311	
UK	**94.6***	**90***	**89***	**94.9**
USA	313	325	337	
Uruguay	137	145	126	

Table 4.29: Incidence rates for RRT in developed countries
*Adults only. The figure for 2001 includes 1.7 pmp paediatric patients.

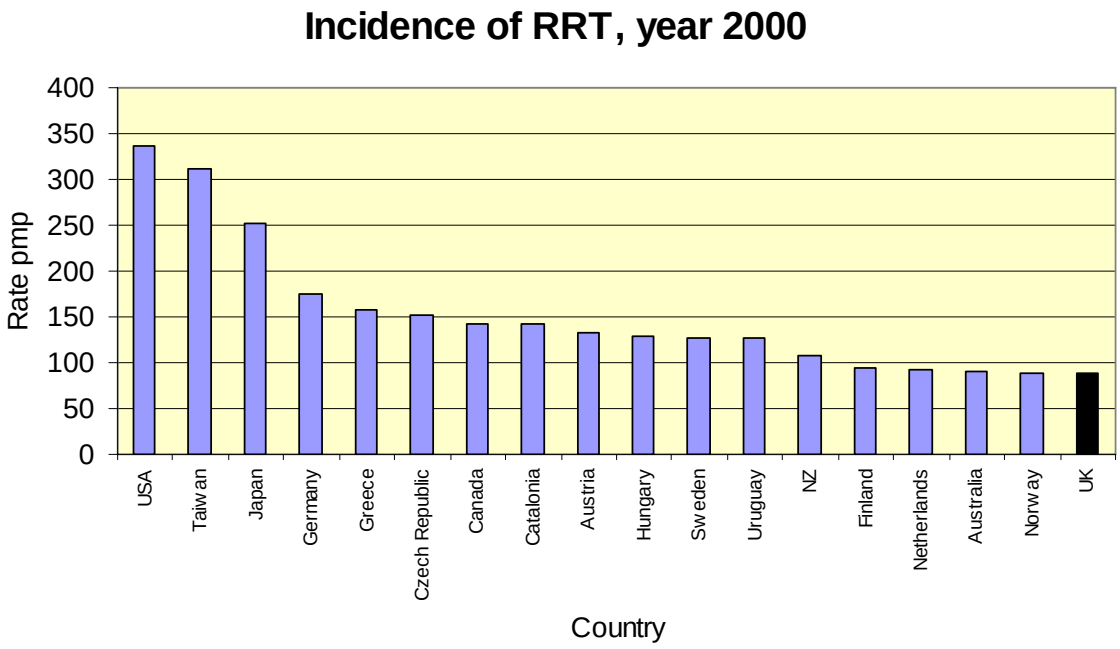

Figure 4.10: Incidence rates for RRT in developed countries, 2000