SECTION C   SURVIVAL

C1   Survival analyses

C1.1	Proportion of patients starting RRT 1992-2011 surviving at 1 year, 2 years, 5 years and 10 years by age and primary renal diagnosis group										
Age group	Diagnosis group	Number starting RRT	1 year survival		2 year survival		5 year survival		10 year survival	
			n	%	n	%	n	%	n	%
≥75 years	Unknown	673	416	62	273	41	68	10	5	1
	Diabetes	236	143	61	92	39	19	8	0	0
	Multisystem	718	406	57	277	39	69	10	5	1
	Interstitial	272	187	69	125	46	43	16	3	1
	Glomerulo-nephritis	189	117	62	71	38	22	12	4	2
65-74 years	Unknown	667	481	72	380	57	154	23	27	4
	Diabetes	566	395	70	261	46	76	13	5	1
	Multisystem	1019	617	61	421	41	148	15	21	2
	Interstitial	489	390	80	312	64	144	29	24	5
	Glomerulo-nephritis	360	298	83	223	62	106	29	21	6
45-64 years	Unknown	515	424	82	362	70	235	46	87	17
	Diabetes	914	748	82	569	62	199	22	39	4
	Multisystem	839	615	73	490	58	264	31	105	13
	Interstitial	971	886	91	786	81	550	57	240	25
	Glomerulo-nephritis	685	621	91	548	80	368	54	186	27
20-44 years	Unknown	276	260	94	238	86	189	68	123	45
	Diabetes	456	409	90	344	75	227	50	98	21
	Multisystem	258	240	93	222	86	172	67	108	42
	Interstitial	675	661	98	632	94	514	76	334	49
	Glomerulo-nephritis	494	485	98	454	92	385	78	261	53
<20 years	Unknown	58	56	97	51	88	44	76	36	62
	Diabetes	1	0	0	0	0	0	0	0	0
	Multisystem	49	48	98	46	94	41	84	32	65
	Interstitial	190	184	97	176	93	140	74	102	54
	Glomerulo-nephritis	45	44	98	43	96	39	87	31	69
All ages	All diagnoses	11615	9131	79	7396	64	4177	36	1897	16

Information on the inclusions and exclusions that are applied to survival analysis are detailed in the Summary of Data section of the report.

C1.2 Life expectancy for the general population of Scotland 2009-2011

Life expectancy in years for the general population of Scotland in 2009-2011 by sex, at the exact age given, is shown in this table. This allows comparison with patients receiving RRT.

Age	Life expectancy males	Life expectancy females
85	5.7	6.5
75	10.3	12.1
65	16.8	19.5
55	24.7	27.9
45	33.5	37.0

Source: GROS life expectancy tables

C1.3 Survival of patients by year of start of RRT 2003-2012

Patients with insufficient follow-up and those who recovered within 90 days or who were lost to follow-up within the relevant period have been excluded.

Date starting RRT	% surviving 90 days	% surviving 1 year	% surviving 1 year + 90 days	% surviving 2 years	% surviving 2 years + 90 days
2003	91.0	76.5	72.8	62.9	60.5
2004	90.2	75.4	72.0	64.0	61.1
2005	91.5	76.6	72.7	62.6	60.1
2006	91.9	78.8	74.6	66.7	63.9
2007	92.8	81.1	77.7	70.8	68.8
2008	93.1	81.9	78.9	71.2	67.7
2009	90.9	78.0	76.5	68.5	65.9
2010	94.4	83.8	80.2	72.7	69.7
2011	94.2	85.7	83.5		
2012	95.5				

Note: Censored patients are excluded from this table.

C1.4   Trends in survival of patients starting RRT 2003-2012
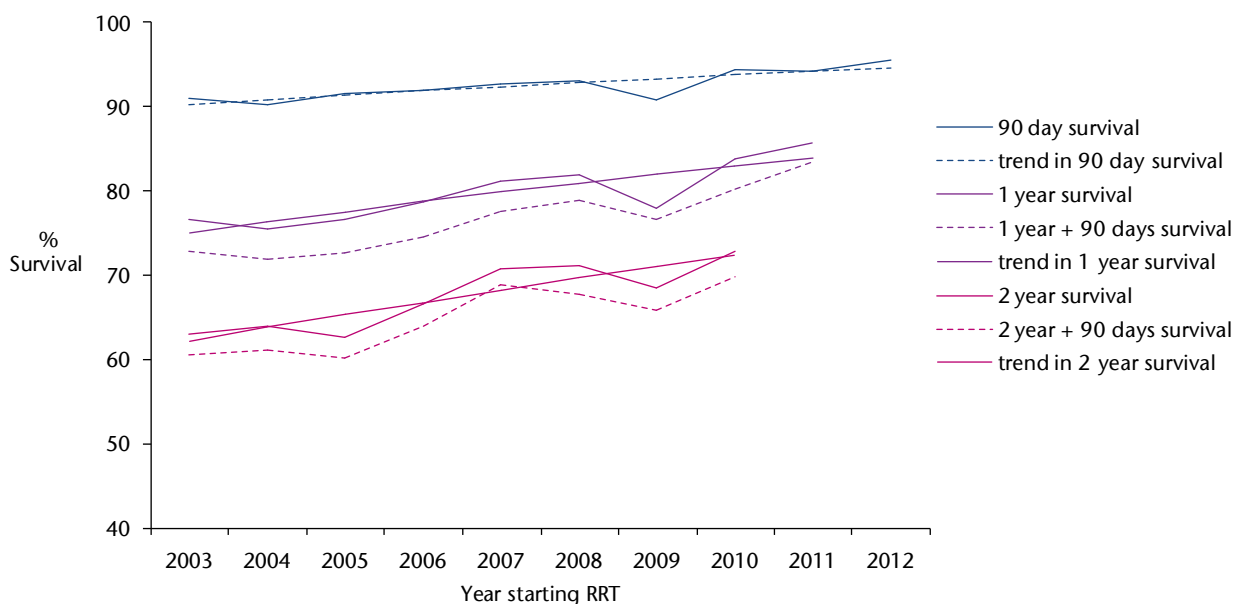
Trend in 90 days survival: year to year OR is 1.07 (95%CI 1.04 -1.11)
Trend in 1 year survival: year to year OR is 1.07 (95%CI is 1.04 - 1.10).
Trend in 2 years survival: year to year OR is 1.07 (95%CI is 1.04 -1.10).

There is a statistically significant trend of improving survival in 90 day, 1 year and 2 year survival.

C2   Survival of patients aged 45-64 when starting RRT over time

In order to investigate whether survival has improved for patients starting RRT in more recent years, logistic regression was employed to determine if the survival of patients in a single diagnosis group, glomerulonephritis, and a single age group, 45-64 years, has changed over time. The number of incident patients in these groups has not changed significantly for the past 20 years - see A3.2 and A4.2.

Data relating to patients starting RRT 2008-2012 are excluded to ensure a minimum available follow up period of 5 years.

This analysis was repeated for patients of the same age group with a diagnosis of diabetic nephropathy, these patients have only been treated in appreciable numbers since the middle of the 1980s.

C2.1 Proportion of patients surviving at 1, 2, 5 and 10 years from starting RRT 1960-2007 when aged 45-64 in the glomerulonephritis PRD group

936 patients in the glomerulonephritis PRD group were aged between 45-64 when starting RRT. Of these 164 started RRT between 2008 and 2012 and were excluded to ensure a minimum of 5 years of follow-up RRT. A further 24 patients were excluded because of censoring. Of the 748 remaining patients, 315 died within 5 years of beginning RRT.

Year starting RRT	Number of Patients	1 year survival		2 year survival		5 year survival		10 year survival	
		n	%	n	%	n	%	n	%
1960-1977	50	40	**80**	33	**66**	23	**46**	13	**26**
1978-1982	74	64	**86**	59	**80**	46	**62**	26	**35**
1983-1987	85	76	**89**	69	**81**	47	**55**	27	**32**
1988-1992	109	99	**91**	88	**81**	67	**61**	35	**32**
1993-1997	172	151	**88**	142	**83**	112	**65**	68	**40**
1998-2002	141	127	**90**	115	**82**	93	**66**	70	**50**
2003-2007	117	107	**91**	100	**85**	78	**67**		

C2.2 Trend in 5 year survival from starting RRT 1960-2007 for patients aged 45-64 in the glomerulonephritis PRD group
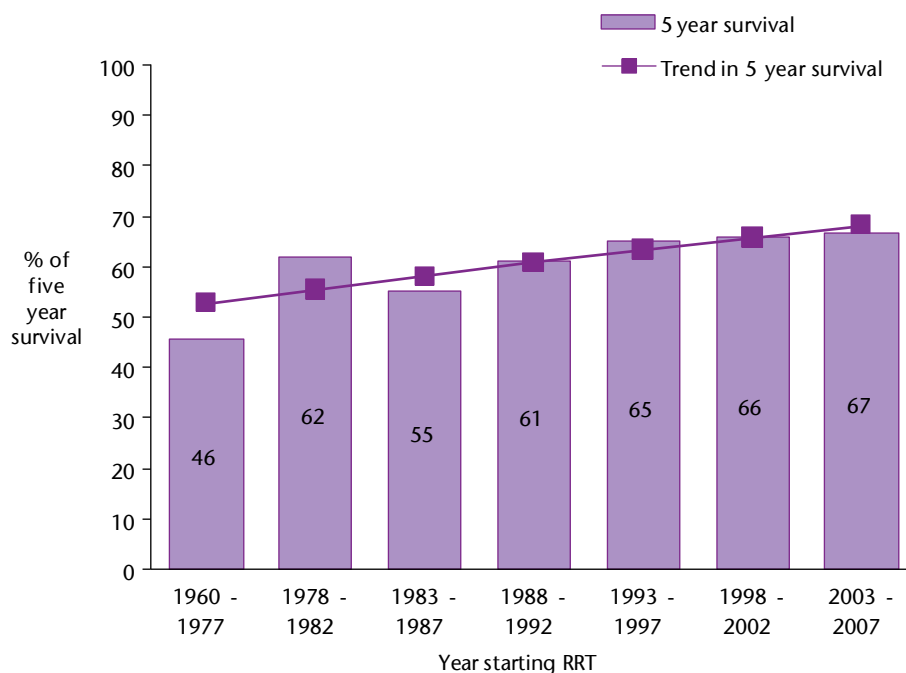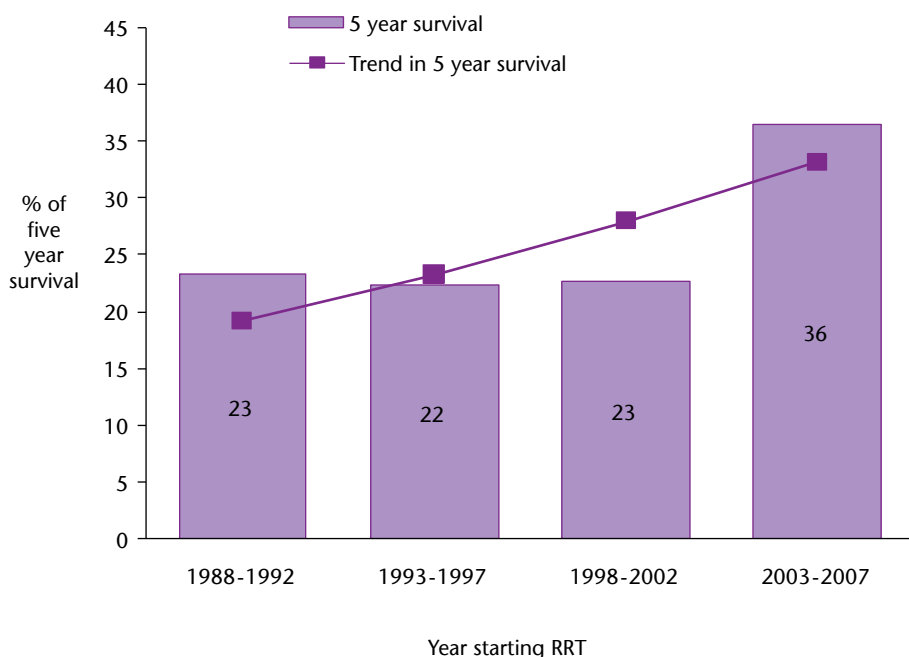

There is an increasing trend in survival which is statistically significant (OR 1.12, 95% CI 1.03 to 1.21, p= 0.01).

C2.3 Proportion of patients surviving at 1, 2, 5 and 10 years from starting RRT 1988-2007 when aged 45-64 in the diabetic nephropathy PRD group

1053 patients in the diabetic nephropathy PRD group were aged 45-64 years when starting RRT. Of these 266 started RRT between 2008 and 2012 and were excluded, and 73 started RRT before 1988 and were also excluded, a further 12 patients were excluded by censoring. Of the remaining 702 patients, 512 died within 5 years of starting RRT.

Year starting RRT	Number of Patients	1 year survival		2 year survival		5 year survival		10 year survival	
		n	%	n	%	n	%	n	%
1988-1992	112	88	**79**	68	**61**	26	**23**	7	**6**
1993-1997	166	126	**76**	93	**56**	37	**22**	13	**8**
1998-2002	199	157	**79**	121	**61**	45	**23**	17	**9**
2003-2007	225	194	**86**	159	**71**	82	**36**		

C2.4 Trend in 5 year survival from starting RRT 1988-2007 for patients aged 45-64 in the diabetes PRD group


There is an increasing trend in survival which is statistically significant (OR 1.28, 95% CI 1.09 to 1.50, p=< 0.003).

C3   Comparison of survival by renal unit providing first RRT using Cox regression

C3.1   One year standardised mortality ratio by renal unit providing first RRT for patients starting RRT 2002-2011

The standardised mortality ratio (SMR) is the number of deaths in every unit divided by the expected number of deaths in that unit. This makes the SMR a measure of case-mix adjusted mortality (hence the label 'standardised'). The expected number of deaths is based on a logistic regression comprising patient's age, sex, and primary renal diagnosis. A SMR close to one means that the observed number of deaths is close to the expected number. A SMR higher than one means that the observed number of deaths is higher than the expected number. The units within the outer control limits (-3SD, +3SD) are considered equivalent and different only by chance. The control limits are calculated via the Poisson probability distribution.
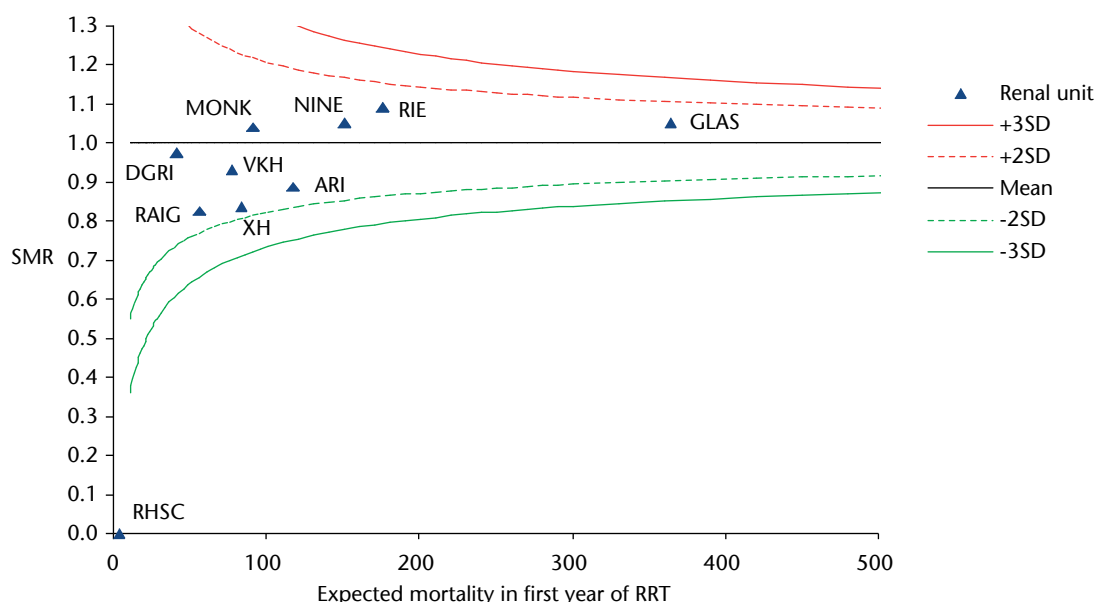
All units fall within three standard deviations of the mean.
Expected mortality is based on sex, age group and primary renal diagnosis group.

The mortality in first year of RRT for patients starting RRT in the ten years 2002-2011 was 21%.

C3.2   Five year standardised mortality ratio by renal unit providing first RRT for patients starting RRT 1998-2007
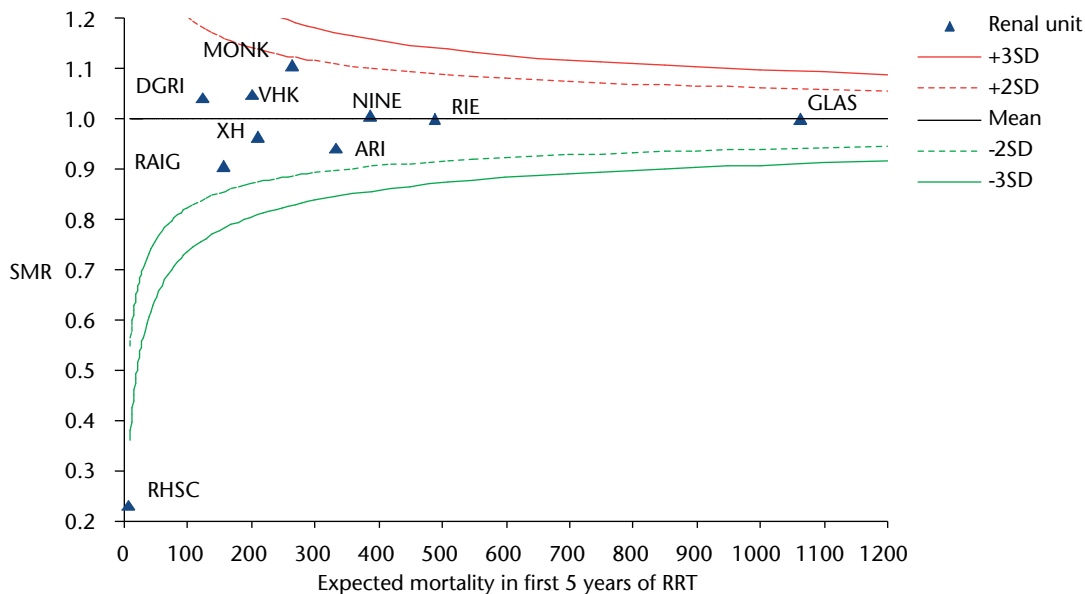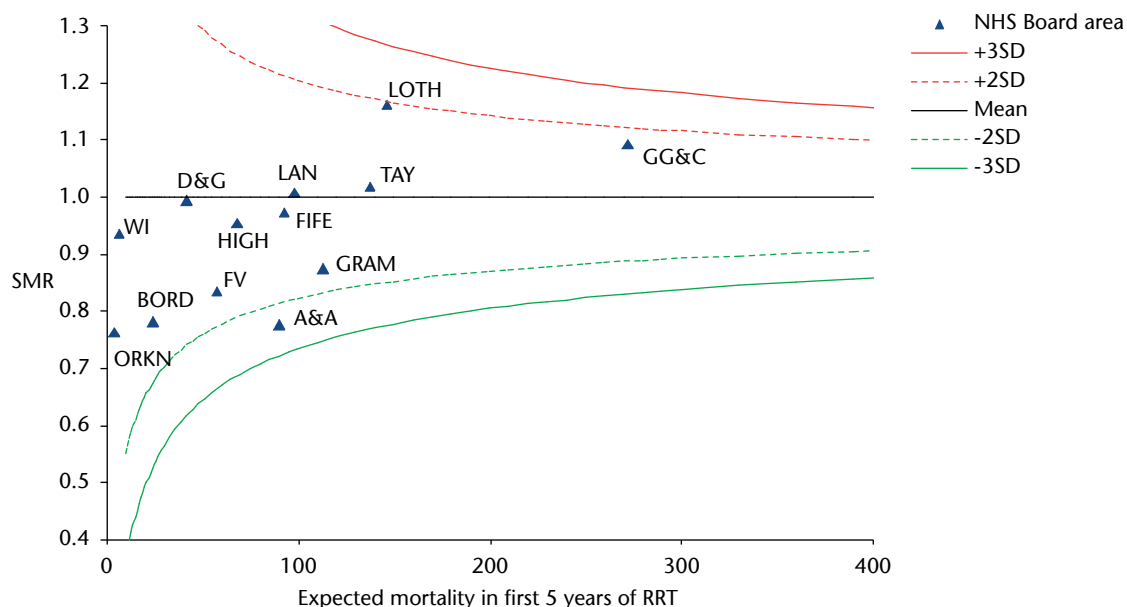

All units fall within 3 standard deviations of the mean.
Expected mortality is based on sex, age group and primary renal diagnosis group.

The mortality in the first five years of RRT for patients starting RRT in the ten years 1998 - 2007 was 58%.

## C4   Survival by NHS Board area of residence

C4.1   One year standardised mortality ratio at 1 year for patients starting RRT 2002-2011 by NHS Board area of residence

All NHS Boards areas fall within 3 standard deviations of the mean.

The mortality in first year of RRT for patients starting RRT in the ten years 2002-2011 was 21%.

C4.2   Five year standardised mortality ratio for patients starting RRT 1998-2007 by NHS Board area of residence
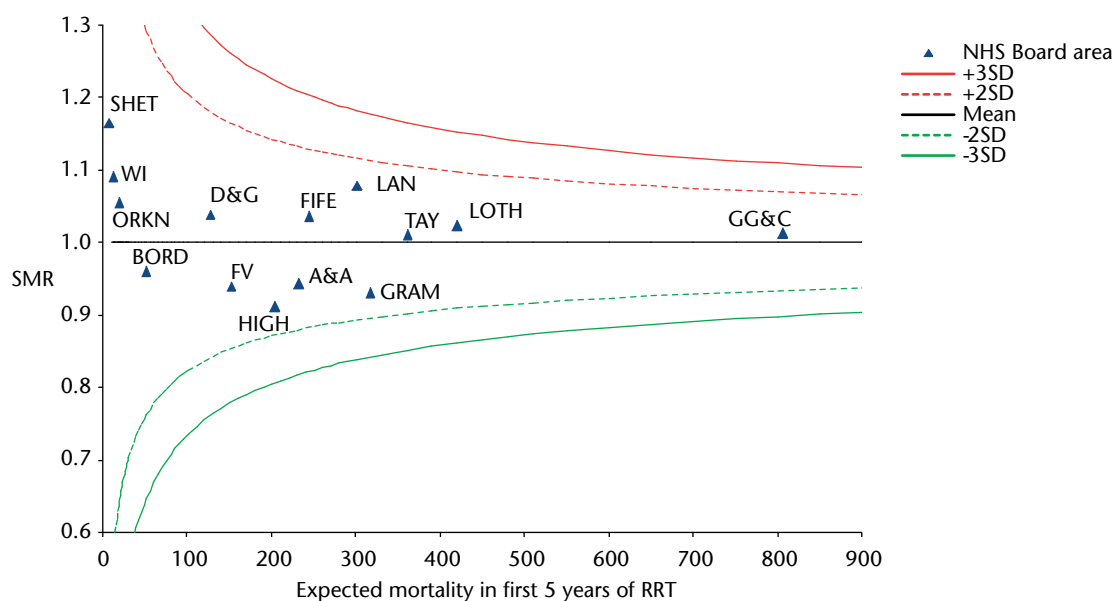
All NHS Boards areas fall within 3 standard deviations of the mean.

The mortality in first five years of RRT for patients starting RRT in the ten years 1998 - 2007 was 58%.