SECTION C   SURVIVAL

C1   Survival analyses

C1.1 Proportion of patients starting RRT 1993 - 2012 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	667	417	**63**	273	**41**	75	**11**	5	**1**
	Diabetes	249	156	**63**	99	**40**	22	**9**	1	-
	Multisystem	713	405	**57**	279	**39**	73	**10**	5	**1**
	Interstitial	267	187	**70**	132	**49**	43	**16**	4	**1**
	Glomerulo-nephritis	196	124	**63**	82	**42**	25	**13**	7	**4**
65-74 years	Unknown	608	446	**73**	348	**57**	152	**25**	27	**4**
	Diabetes	573	410	**72**	275	**48**	78	**14**	5	**1**
	Multisystem	959	587	**61**	410	**43**	153	**16**	20	**2**
	Interstitial	430	346	**80**	276	**64**	133	**31**	24	**6**
	Glomerulo-nephritis	324	269	**83**	208	**64**	97	**30**	21	**6**
45-64 years	Unknown	439	363	**83**	300	**68**	195	**44**	72	**16**
	Diabetes	869	719	**83**	539	**62**	192	**22**	39	**4**
	Multisystem	701	515	**73**	411	**59**	221	**32**	77	**11**
	Interstitial	873	806	**92**	713	**82**	488	**56**	210	**24**
	Glomerulo-nephritis	609	556	**91**	486	**80**	319	**52**	157	**26**
20-44 years	Unknown	239	225	**94**	209	**87**	163	**68**	103	**43**
	Diabetes	417	378	**91**	316	**76**	208	**50**	91	**22**
	Multisystem	206	191	**93**	177	**86**	139	**67**	71	**34**
	Interstitial	560	548	**98**	518	**93**	411	**73**	243	**43**
	Glomerulo-nephritis	406	398	**98**	372	**92**	306	**75**	198	**49**
<20 years	Unknown	31	30	**97**	30	**97**	25	**81**	17	**55**
	Diabetes	1	0	-	0	-	0	-	0	-
	Multisystem	41	40	**98**	39	**95**	33	**80**	26	**63**
	Interstitial	153	149	**97**	144	**94**	115	**75**	69	**45**
	Glomerulo-nephritis	31	31	**100**	31	**100**	27	**87**	19	**61**
All ages	All diagnoses	10562	8296	79	6667	63	3666	35	1511	14

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 2011-2013

Age	Life expectancy males	Life expectancy females
85	5.5	6.35
75	10.46	12.07
65	17.14	19.51
55	25.15	28.03
45	33.99	37.16

Source: GROS life expectancy tables

Life expectancy in years for the general population of Scotland in 2011-2013 by sex, at the exact age given, is shown in this table. This allows comparison with patients receiving RRT.

C1.3 Survival of patients by year of start of RRT 2004-2013

Date starting RRT	% surviving 90 days	% surviving 1 year	% surviving 1 year + 90 days	% surviving 2 years	% surviving 2 years + 90 days
2004	90.2	75.4	71.9	63.9	61.1
2005	91.5	76.6	72.7	62.6	60.1
2006	91.9	78.8	74.8	66.7	63.9
2007	92.9	81.5	78.1	71.2	69.2
2008	93.4	81.8	78.8	71.2	67.8
2009	90.8	77.9	76.4	68.5	65.8
2010	94.4	83.7	80.2	72.8	69.8
2011	94.4	86.1	83.9	77.1	73.9
2012	95.3	86.0	83.5		
2013	96.0				

Note: Censored patients are excluded from this table.

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.

C1.4   Trends in survival of patients starting RRT 2004-2013
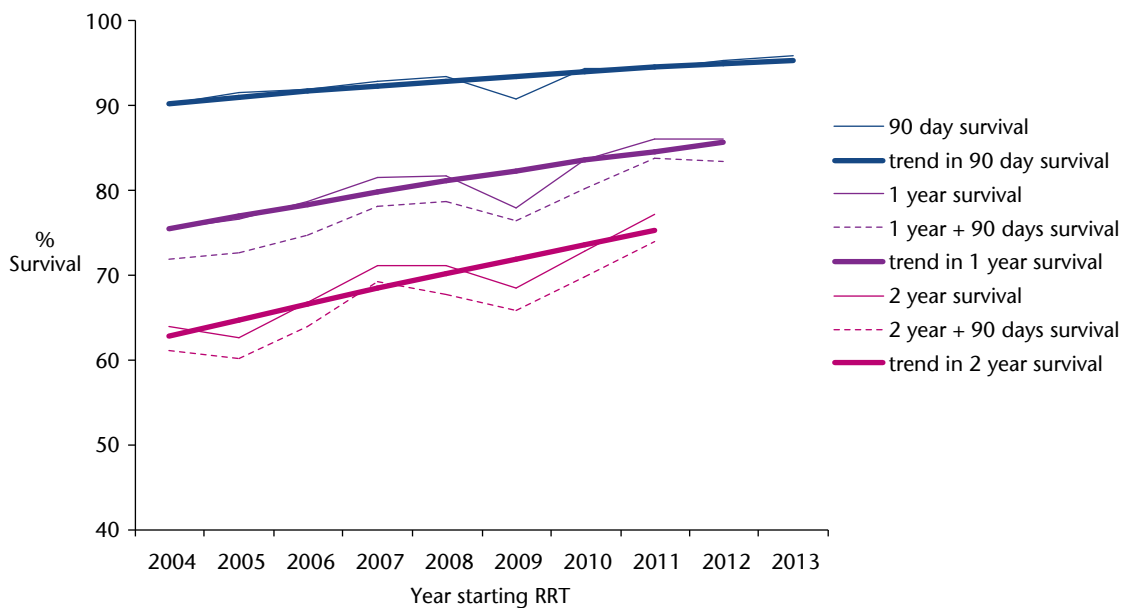
Trend in 90 days survival: year to year OR is 1.07 (95% CI 1.02-1.13).

Trend in 1 year survival: year to year OR is 1.09 (95% CI 1.05-1.12).

Trend in 2 years survival: year to year OR is 1.09 (95% CI 1.06-1.12).

There is a statistically significant trend of improving survival at 90 days, 1 year and 2 years after starting RRT.

NHS Board	Number of patients	90 day survival		1 year survival	
C1.5 Proportion of patients starting RRT 2003-2012 surviving at 90 days and 1 year, by NHS Board area of residence					
		n	%	n	%
A&A	434	406	94	359	83
BORD	118	112	95	103	87
D&G	190	170	89	150	79
FIFE	446	416	93	361	81
FV	299	283	95	248	83
GG&C	1377	1258	91	1100	80
GRAM	555	524	94	463	83
HIGH	332	309	93	272	82
LAN	558	533	96	464	83
LOTH	739	684	93	574	78
ORKN	25	23	92	21	84
SHET	14	12	86	10	71
TAY	531	477	90	404	76
WI	30	28	93	24	80
Scotland	**5648**	**5235**	**93**	**4553**	**81**

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

In order to investigate whether survival has improved for patients starting RRT the trend of the survival of patients in a single diagnosis group, glomerulonephritis, and a single age group, 45-64 years is shown. The number of incident patients in these groups has not changed significantly for the past 20 years - see A3.1 and A4.2.

Data relating to patients starting RRT 2012 onwards are excluded to ensure a minimum available follow up period of 2 years.

This analysis was repeated for patients of the same age group with a diagnosis of diabetic nephropathy.

C2.1 Proportion of patients surviving at 1, 2, 5 and 10 years from starting RRT 1960-2011 when aged 45-64 in the glomerulonephritis PRD group
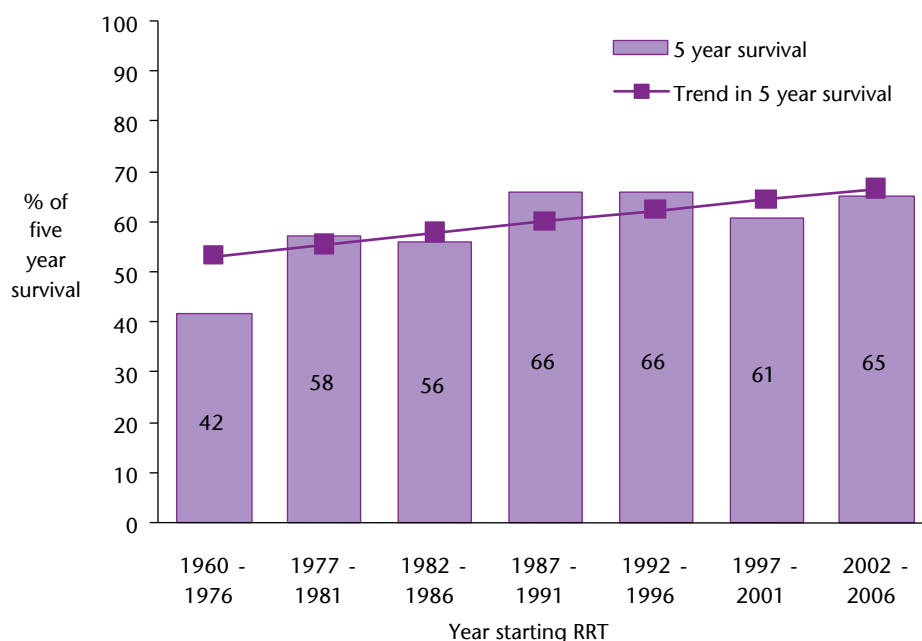
Year starting RRT	Number of Patients	1 year survival		2 year survival		5 year survival		10 year survival	
		n	%	n	%	n	%	n	%
1960-1976	36	27	75	21	58	15	42	8	22
1977-1981	73	62	85	56	77	42	58	25	34
1982-1986	80	73	91	66	83	45	56	26	33
1987-1991	106	95	90	89	84	70	66	36	34
1992-1996	156	140	90	129	83	103	66	61	39
1997-2001	148	132	89	119	80	90	61	66	45
2002-2006	121	109	90	101	83	79	65	/	/
2007-2011	152	143	94	139	91	/	/	/	/

937 patients in the glomerulonephritis PRD group were aged between 45-64 when starting RRT.

Of these 65 started RRT between 2012 and 2013 and were excluded to ensure a minimum of 5 years of follow-up RRT.

Of the 872 remaining patients, 444 died within 5 years of beginning RRT.

C2.2 Trend in 5 year survival from starting RRT 1960-2006 for patients aged 45-64 in the glomerulonephritis PRD group

There is an increasing trend in survival which is statistically significant (OR 1.09, 95% CI 1.01-1.19, p= 0.03).

C2.3 Proportion of patients surviving at 1, 2, 5 and 10 years from starting RRT 1987-2011 when aged 45-64 in the diabetic nephropathy PRD group

Year starting RRT	Number of Patients	1 year survival		2 year survival		5 year survival		10 year survival	
		n	%	n	%	n	%	n	%
1987-1991	100	80	**80**	62	**62**	23	**23**	6	**6**
1992-1996	149	113	**76**	80	**54**	31	**21**	12	**8**
1997-2001	197	151	**77**	117	**59**	44	**22**	16	**8**
2002-2006	229	197	**86**	159	**69**	80	**35**	9	**4**
2007-2011	235	204	**87**	181	**77**	/	/	/	/

916 patients in the diabetic nephropathy PRD group were aged 45-64 years when starting RRT. Of these 6 patients were excluded by censoring.

Of the remaining 910 patients, 732 died within 5 years of starting RRT.

C2.4 Trend in 5 year survival from starting RRT 1987-2006 for patients aged 45-64 in the diabetes PRD group
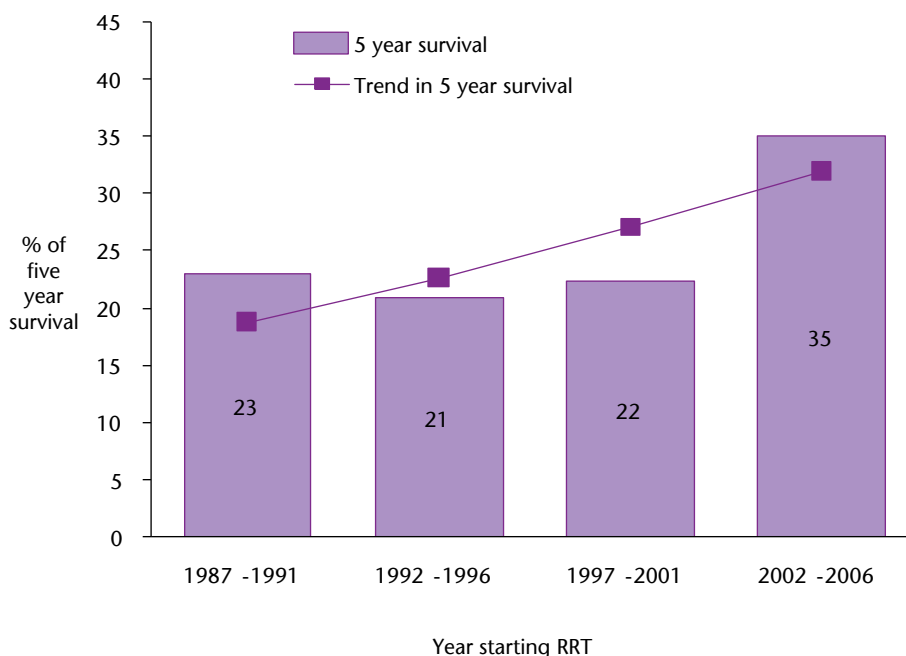

There is an increasing trend in survival which is statistically significant (OR 1.26, 95% CI 1.09-1.47, p= 0.02).

C3 Comparison of survival by NHS Board area of residence providing first RRT using Cox regression

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 regressions comprising patients' age, sex, SIMD 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 data points 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.
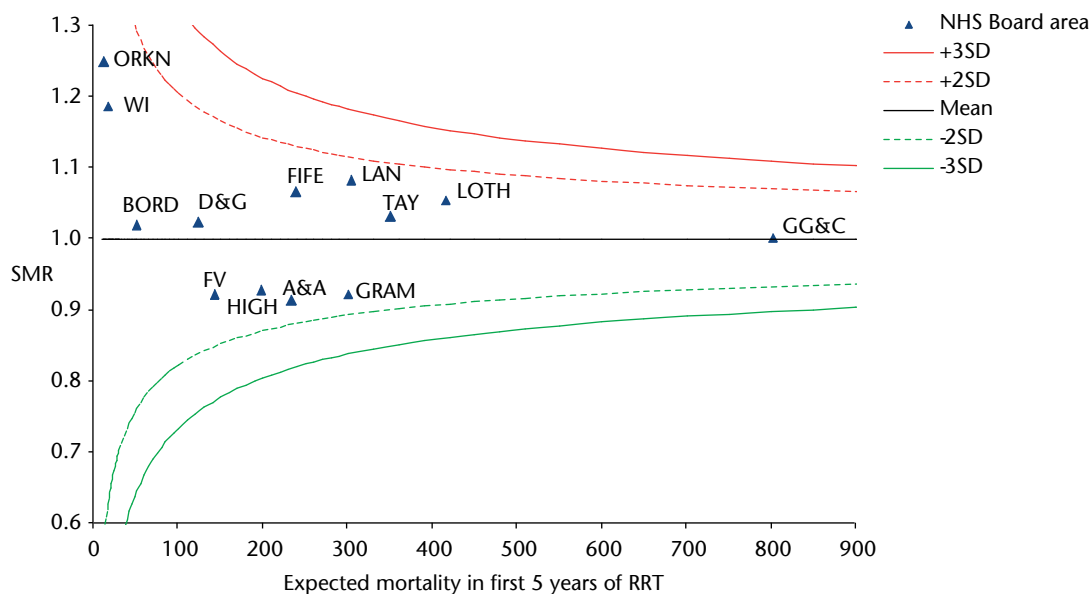
C3.1 One year standardised mortality ratio at 1 year for patients starting RRT 2003-2012 by NHS Board area of residence
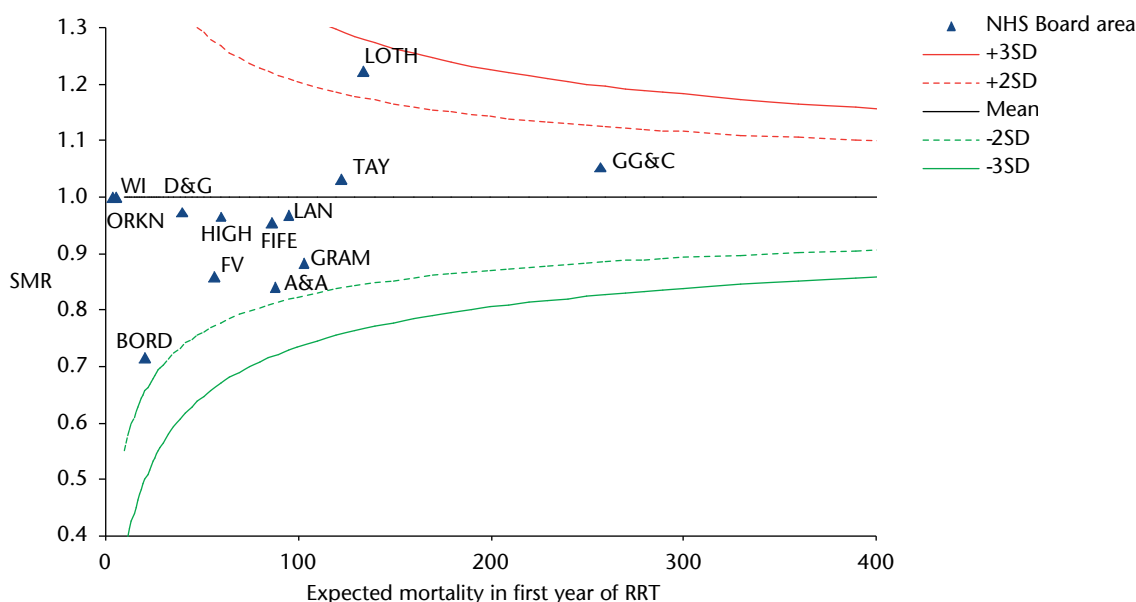
All NHS Board areas fall within 3 standard deviations of the mean.

The mortality in first year of RRT for patients starting RRT in the ten years 2003-2012 was 19%.

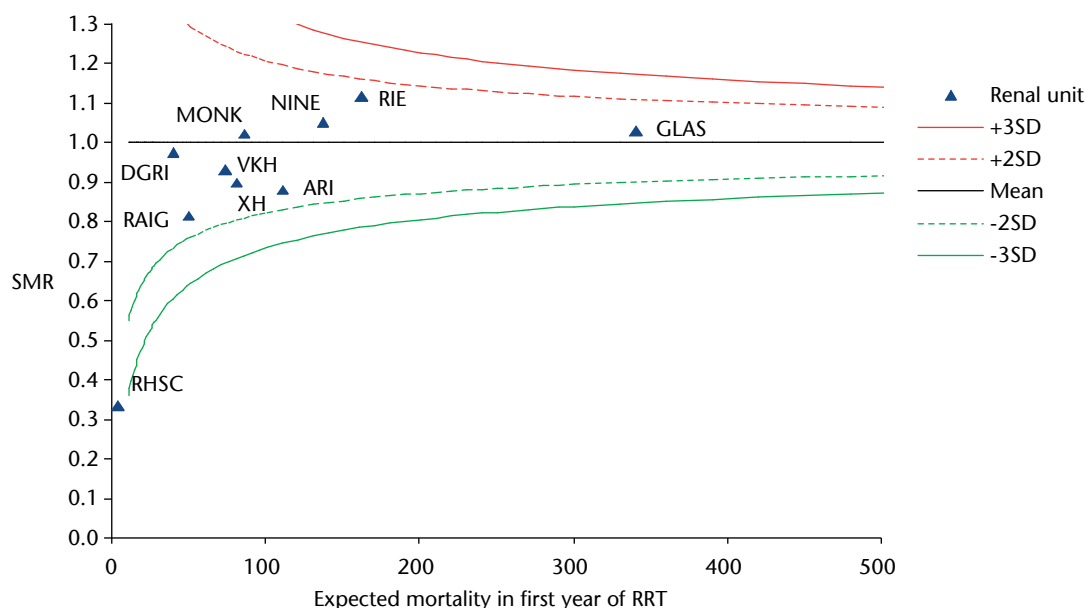## C3.2   Five year standardised mortality ratio for patients starting RRT 1999-2008 by NHS Board area of residence

All NHS Board 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 1999 - 2008 was 58%.

C4   Survival by renal unit providing first RRT

C4.1   One year standardised mortality ratio by renal unit providing first RRT for patients starting RRT 2003-2012

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

The mortality in first year of RRT for patients starting RRT in the ten years 2003-2012 was 19%.

C4.2   Five year standardised mortality ratio by renal unit providing first RRT for patients starting RRT 1999-2008
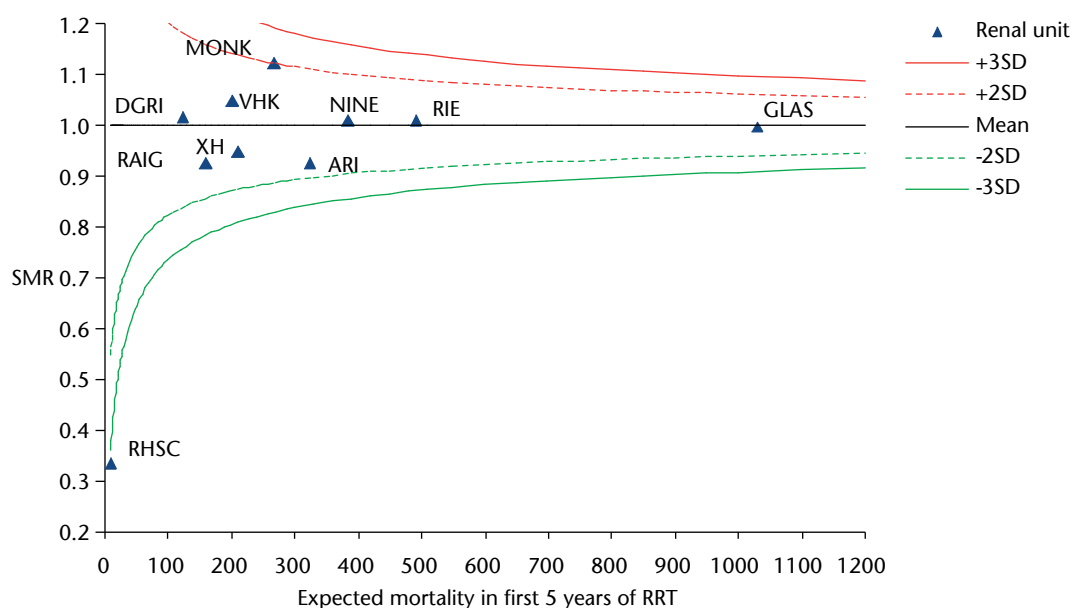
All units fall within 3 standard deviations of the mean.
Expected mortality is based on sex, age group, SIMD and primary renal diagnosis group.

The mortality in the first five years of RRT for patients starting RRT in the ten years 1999 - 2008 was 58%.