

SECTION C SURVIVAL

C1 Survival analyses

A total of 14034 patients who have started RRT in Scotland since 1960 are available for the survival analysis (no patient has a date of birth missing). Patients who started RRT outside of Scotland are excluded. Those who moved from Scotland, or are lost to follow-up are censored at the date at which this occurred, even if death at a later date is reported to the Registry.

C1.1 Proportion of patients surviving at 1 year, 2 years, 5 years and 10 years from starting RRT 1987-2010 by age and 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 | 643 | 395 | 61 | 245 | 38 | 57 | 9 | 3 | <0.5 |
| | Diabetes | 217 | 130 | 60 | 80 | 37 | 17 | 8 | 0 | 0 |
| | Multisystem | 678 | 382 | 56 | 256 | 38 | 65 | 10 | 3 | <0.5 |
| | Interstitial | 261 | 177 | 68 | 117 | 45 | 40 | 15 | 2 | 1 |
| | Glomerulo-nephritis | 175 | 107 | 61 | 66 | 38 | 21 | 12 | 5 | 3 |
| 65-74 years | Unknown | 649 | 465 | 72 | 362 | 56 | 149 | 23 | 22 | 3 |
| | Diabetes | 533 | 368 | 69 | 236 | 44 | 73 | 14 | 5 | 1 |
| | Multisystem | 984 | 590 | 60 | 406 | 41 | 139 | 14 | 18 | 2 |
| | Interstitial | 486 | 388 | 80 | 317 | 65 | 136 | 28 | 24 | 5 |
| | Glomerulo-nephritis | 353 | 292 | 83 | 221 | 63 | 106 | 30 | 19 | 5 |
| 45-64 years | Unknown | 504 | 417 | 83 | 350 | 69 | 213 | 42 | 79 | 16 |
| | Diabetes | 874 | 718 | 82 | 546 | 62 | 181 | 21 | 35 | 4 |
| | Multisystem | 837 | 612 | 73 | 487 | 58 | 259 | 31 | 106 | 13 |
| | Interstitial | 958 | 872 | 91 | 779 | 81 | 516 | 54 | 228 | 24 |
| | Glomerulo-nephritis | 674 | 611 | 91 | 543 | 81 | 360 | 53 | 179 | 27 |
| 20-44 years | Unknown | 267 | 250 | 94 | 229 | 86 | 175 | 66 | 104 | 39 |
| | Diabetes | 449 | 401 | 89 | 338 | 75 | 209 | 47 | 90 | 20 |
| | Multisystem | 262 | 245 | 94 | 223 | 85 | 172 | 66 | 108 | 41 |
| | Interstitial | 692 | 677 | 98 | 637 | 92 | 510 | 74 | 339 | 49 |
| | Glomerulo-nephritis | 505 | 495 | 98 | 465 | 92 | 398 | 79 | 271 | 54 |

| Age group | Diagnosis group | Number starting RRT | 1 year survival | | 2 year survival | | 5 year survival | | 10 year survival | |
|-----------------|----------------------|---------------------|-----------------|----|-----------------|----|-----------------|----|------------------|----|
| | | | n | % | n | % | n | % | n | % |
| <20 years | Unknown | 60 | 58 | 97 | 55 | 92 | 47 | 78 | 39 | 65 |
| | Diabetes | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Multisystem | 46 | 45 | 98 | 43 | 93 | 37 | 80 | 31 | 67 |
| | Interstitial | 188 | 181 | 96 | 176 | 94 | 131 | 70 | 102 | 54 |
| | Glomerulo-nephritis | 48 | 47 | 98 | 47 | 98 | 42 | 88 | 34 | 71 |
| All ages | All diagnoses | 11344 | 8923 | 79 | 7224 | 64 | 4053 | 36 | 1846 | 16 |

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

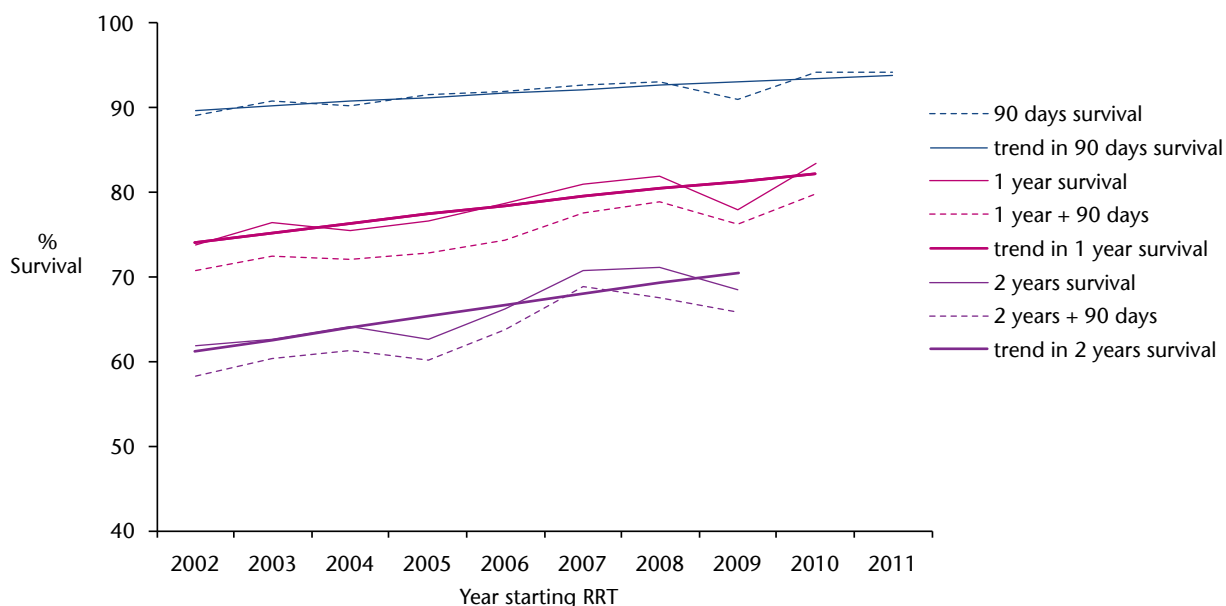
C1.3 Survival of patients by year of start of RRT 2002-2011

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 |
|-------------------|---------------------|--------------------|------------------------------|---------------------|-------------------------------|
| 2002 | 89.20 | 73.7 | 70.8 | 61.8 | 58.3 |
| 2003 | 90.82 | 76.4 | 72.4 | 62.6 | 60.4 |
| 2004 | 90.29 | 75.5 | 72.1 | 64.2 | 61.3 |
| 2005 | 91.49 | 76.6 | 72.8 | 62.7 | 60.2 |
| 2006 | 91.91 | 78.7 | 74.4 | 66.3 | 63.7 |
| 2007 | 92.78 | 81.0 | 77.6 | 70.8 | 68.8 |
| 2008 | 93.07 | 81.8 | 78.8 | 71.2 | 67.6 |
| 2009 | 90.94 | 78.0 | 76.2 | 68.4 | 65.8 |
| 2010 | 94.25 | 83.5 | 79.8 | | |
| 2011 | 94.20 | | | | |

Note: Censored patients are excluded from this table.

C1.4 Trends in survival of all patients when starting RRT 2002-2011



Trend in 90 days survival: year to year OR is 1.07 (95%CI 1.03 - 1.10).

Trend in 1 year survival: year to year OR is 1.06 (95%CI is 1.03 - 1.10).

Trend in 2 years survival: year to year OR is 1.06 (95%CI is 1.03 - 1.10).

There is a statistically significant trend 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, the survival of patients in a single diagnosis group, glomerulonephritis, and a single age group, 45-64 years, was analysed over time. The number of incident patients in these groups has not changed significantly for the past 20 years - see A4.2 and A4.3.

Data relating to patients starting RRT 2007-2011 are excluded to ensure a minimum available follow up period of 5 years.

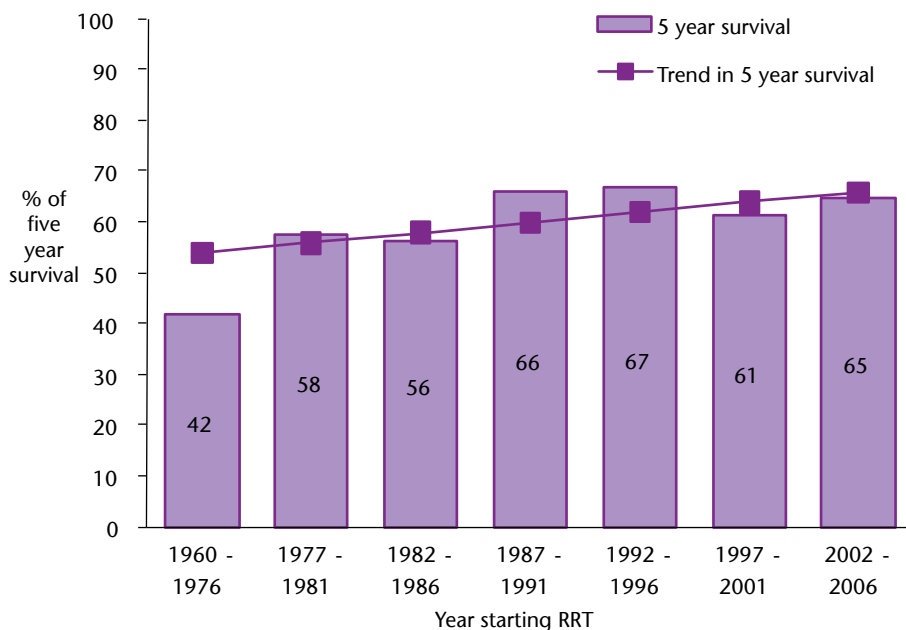
This analysis was repeated for patients of the same age group with a diagnosis of diabetic nephropathy, these patients have only been treated in appreciable numbers since the middle of the 1980s.

C2.1 Proportion of patients surviving at 1 year, 2 years, 5 years and 10 years of patients aged 45-64 years in the glomerulonephritis PRD group

900 patients in the glomerulonephritis PRD group were of age 45-64 years when starting RRT. Of these 156 started RRT between 2007 and 2011 and were excluded to ensure a minimum of 5 years of follow-up RRT. A further 28 patients were excluded because of censoring. Of the 772 remaining patients, 276 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 | % |
| 1960-1976 | 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 | 159 | 143 | 90 | 132 | 83 | 106 | 67 | 64 | 40 |
| 1997-2001 | 149 | 133 | 89 | 120 | 81 | 91 | 61 | 67 | 45 |
| 2002-2006 | 119 | 107 | 90 | 99 | 83 | 77 | 65 | | |

C2.2 Trend in survival by 5 years of RRT for patients aged 45-64 in the glomerulonephritis PRD group



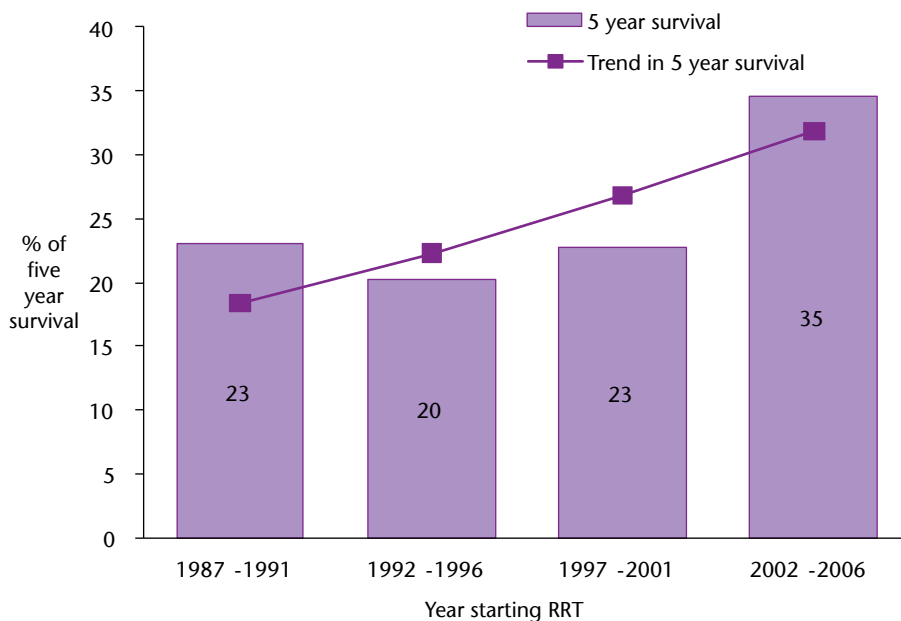
There is an increasing trend in survival which is statistically significant (OR 1.10, 95% CI 1.00 to 1.20, p= 0.03).

C2.3 Proportion of patients surviving at 1 year, 2 years, 5 years and 10 year survival of patients aged 45-64 in the diabetic nephropathy PRD group

986 patients in the diabetic nephropathy PRD group were aged 45-64 years when starting RRT. Of these 247 started RRT between 2006 and 2010 and were excluded, a further 4 patients were excluded by censoring. Of the remaining 674 patients, 497 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 | % |
| 1987-1991 | 100 | 80 | 80 | 62 | 62 | 23 | 23 | 6 | 6 |
| 1992-1996 | 148 | 112 | 76 | 79 | 53 | 30 | 20 | 11 | 7 |
| 1997-2001 | 198 | 152 | 77 | 118 | 60 | 45 | 23 | 16 | 8 |
| 2002-2006 | 228 | 196 | 86 | 158 | 69 | 79 | 35 | | 0 |

C2.4 Trend in survival by 5 years of RRT for patients aged 45-64 in the diabetes PRD group

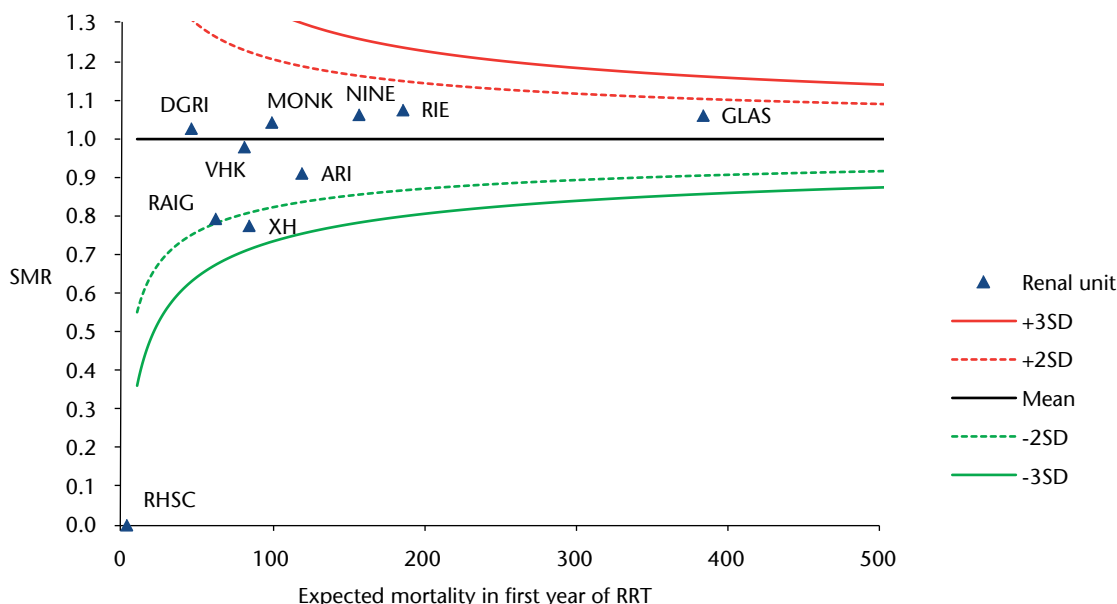


There is an increasing trend in survival which is statistically significant (OR 1.28, 95% CI 1.08 to 1.5, $p < 0.005$).

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

C3.1 Standardised Mortality Ratio for 1 year mortality by renal unit providing first RRT for patients starting RRT in 2001-2010

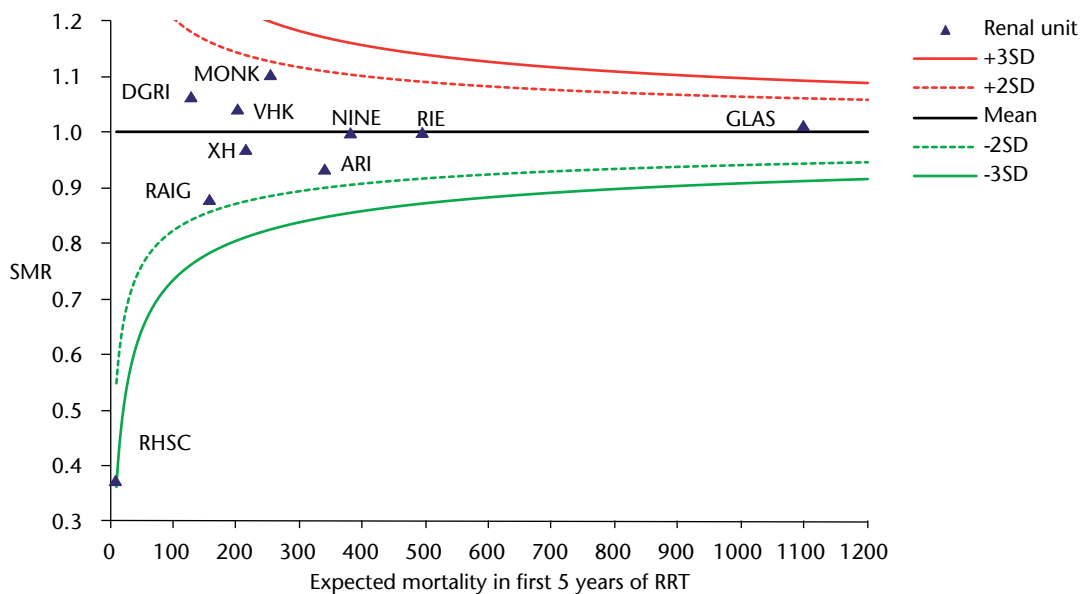
The standardised mortality ratio (SMR) is the number of deaths in every unit divided by the expected number of deaths in that unit. This makes the SMR a measure of case-mix adjusted mortality (hence the label 'standardised'). The expected number of deaths is based on a logistic regression comprising patient's age, sex, and 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 adult units fall within three standard deviations of the mean.
 Expected mortality based on sex, age groups and groups of diagnoses.

The mortality in first year of RRT for patients starting RRT 2001 - 2010 was 22%.

C3.2 Standardised Mortality Ratio for 5 year mortality by renal unit providing first RRT for patients starting RRT in 1997-2006

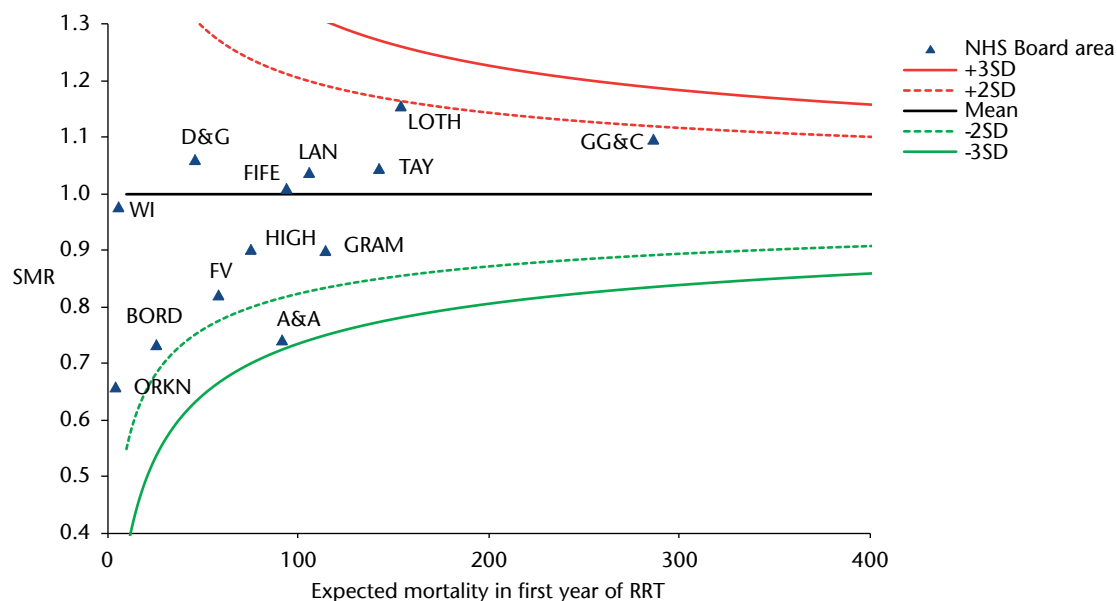


All units fall within 3 standard deviations of the mean.
 Expected mortality based on sex, age groups and groups of diagnoses.

The mortality in first five years of RRT for patients starting RRT 1997 - 2006 was 59%.

C4 Survival by NHS Board area of residence

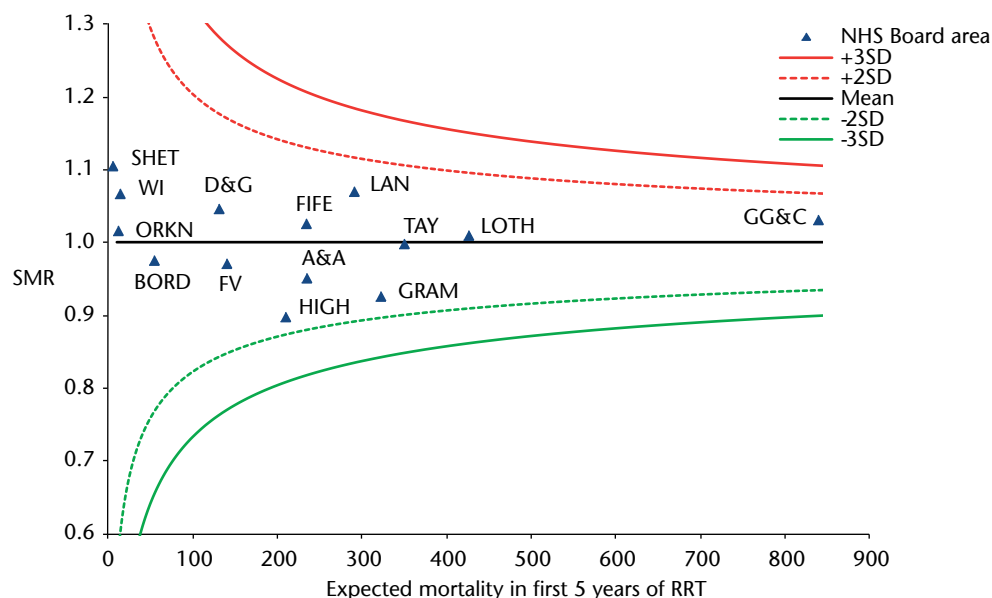
C4.1 Standardised Mortality Ratio for 1 year mortality for patients starting RRT 2001-2010 by NHS Board area of residence



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 2001-2010 was 22%.

C4.2 Standardised Mortality Ratio for 5 year mortality for patients starting RRT 1996-2005 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 1997 - 2006 was 59%.