

Haematological malignancies in England Cancers Diagnosed 2001-2008

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Haematological Malignancies



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FIND OUT MORE:

Northern and Yorkshire Cancer Registry and Information Service (NYCRIS)
NYCRIS is the NCIN lead cancer registry for haematological cancers
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**Northern and Yorkshire
Cancer Registry and Information Service**

The National Cancer Intelligence Network (NCIN) is a UK-wide initiative, working to drive improvements in standards of cancer care and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research. Sitting within the National Cancer Research Institute (NCRI), the NCIN works closely with cancer services in England, Scotland, Wales and Northern Ireland. In England, the NCIN is part of the National Cancer Programme.

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This is the first report to present national haematological cancer analyses at individual disease group level. Many haematological malignancies are rare and as such are difficult to analyse in a meaningful way at a sub-national level. This report provides an opportunity to look at incidence, mortality and survival for these and other haematological malignancies. The incidence and mortality data reported cover the period 2001 to 2008. The survival analyses cover a range of different time periods commencing in 1995 in order to allow survival trends to be identified. These data have been quality assured against a number of existing data sources as far as is possible. However, as there are no other national analyses available for many of these disease groups, the nearest equivalents have been used. Further details of the quality assurance exercise are reported in Appendix 1.

Haematological malignancies are diseases originating in the bone marrow and lymph nodes and include leukaemias, lymphomas and myeloma. They are a very diverse group of diseases affecting people across the whole life course, but with their greatest incidence amongst the elderly. The prognosis and responsiveness to treatment of these conditions also varies very widely, and over the period covered in this report the positive impact of several new forms of treatment is apparent.

The aetiology of most haematological malignancies is not yet known. Ionising radiation, exposure to chemicals and dusts, industrial exposures including benzene, viral infections, genetic predisposition and Down's syndrome are associated with an increased risk for one or more of these diseases, but for most patients there is as yet no identifiable cause for their disease.

Haematological malignancies accounted for 8.3% of all malignant disease (excluding non-melanoma skin cancer) diagnosed in the years 2001 to 2008.

The diversity of haematological malignancies presents problems for the classification of these diseases for cancer registries. The categories available for these diseases within the 10th edition of the International Classification of Disease (ICD-10) are not a good fit to the current biological and clinical understanding of these cancers, and as a consequence reports have often grouped dissimilar disease together (for example presenting outcomes for 'leukaemia'). Continuing improvements to cancer registration in the UK will allow refinement of these categories, but for this report, haematological malignancies have been described in disease groups by combining ICD-10 codes where relevant (appendix 1). Information has not been presented in this report on some conditions which have historically been considered as having 'borderline malignant' behaviour: myelodysplastic syndromes, myeloproliferative disorders or pre-malignant conditions such as monoclonal gammopathy of undetermined significance (MGUS); although these are recorded by cancer registries ascertainment is known to be incomplete.

Key messages

- Population-based incidence rates (as estimated by cancer registrations) rose over the period 2001-2008 for some haematological cancers: Hodgkin lymphoma (females), non-Hodgkin lymphoma, myeloma. There are no haematological cancers for which incidence rates were in decline.
- Registration rates for haematological cancers are potentially subject to changes as a consequence of improvements in the ascertainment of cases and developments in diagnosis and classification of disease, therefore not all observed changes may represent true differences in underlying incidence.
- Population-based mortality rates fell over the period 2001-2008 for some haematological cancers: acute lymphoblastic leukaemia, chronic myeloid leukaemia, non-Hodgkin lymphoma, myeloma.
- Relative survival improved for individuals diagnosed between 1995 and 2007 for a number of haematological cancers: acute lymphoblastic leukaemia (0-14years), chronic myeloid leukaemia, non-Hodgkin lymphoma, myeloma.
- For the most commonly encountered forms of leukaemia, acute myeloid leukaemia and chronic lymphocytic leukaemia, there was no evidence of significant change in the outcome for patients diagnosed and registered over this time period.
- Effective treatment options for patients with some haematological cancers have increased considerably for patients diagnosed since 2008. It is likely that the outcomes reported here underestimate contemporary survival patterns for chronic myeloid leukaemia, myeloma and some forms of non-Hodgkin lymphoma.

All Haematological Malignancies

Trends in incidence and mortality (2001-2008)

When considered overall, age-standardised rates of incidence for haematological malignancies have risen from 2001-2008 in both men and women. Conversely age-standardised mortality rates have fallen over this period, largely as a consequence of improvements in the management of some of the individual contributing haematological cancers.

Figure 1:1 Age-standardised incidence and mortality rates for haematological malignancies in the period 2001-2008 for England for males

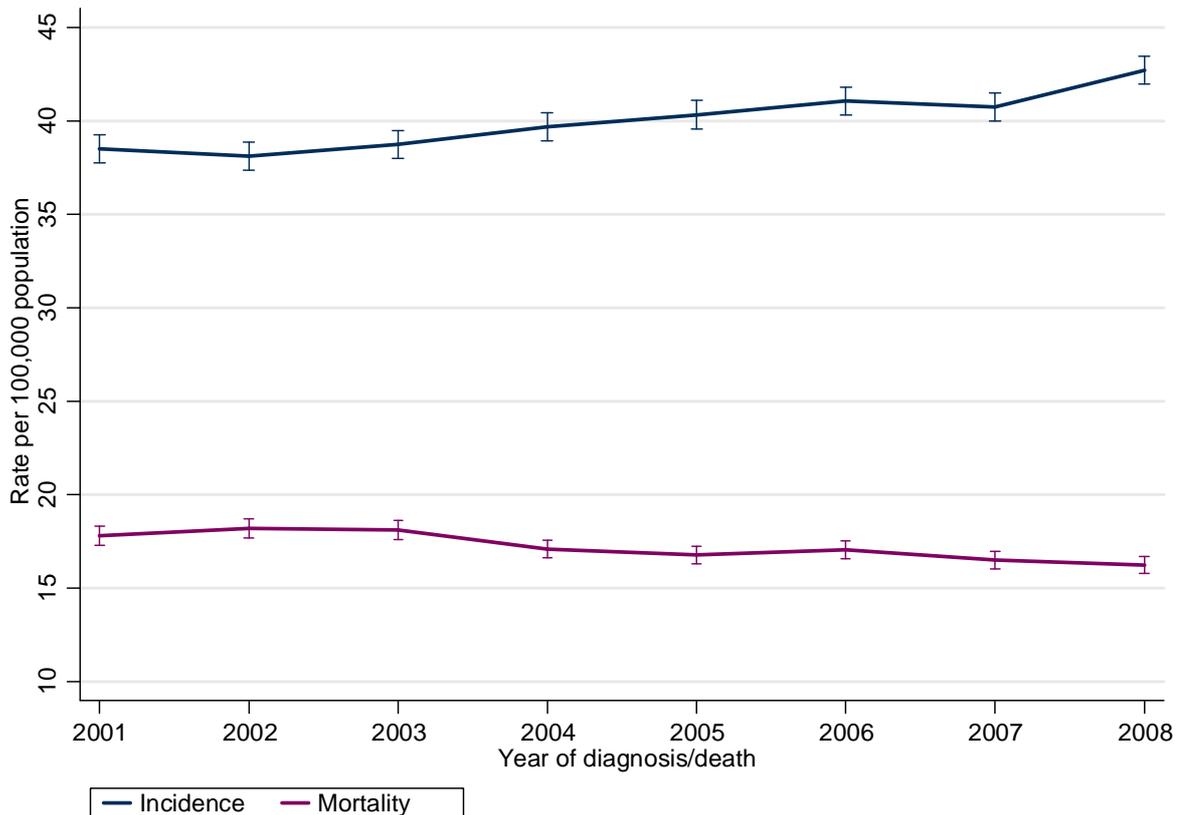


Table 1:2 Age-standardised incidence and mortality rates for haematological malignancies in the period 2001-2008 for England for males

| Year | Incidence (males) | | | Mortality (males) | | |
|-------|-------------------|------|-----------|-------------------|------|-----------|
| | Cases | ASR | 95% CI | Deaths | ASR | 95% CI |
| 2001 | 10,431 | 38.5 | 37.8 39.3 | 5,043 | 17.8 | 17.3 18.3 |
| 2002 | 10,477 | 38.1 | 37.4 38.9 | 5,245 | 18.2 | 17.7 18.7 |
| 2003 | 10,824 | 38.8 | 38.0 39.5 | 5,315 | 18.1 | 17.6 18.6 |
| 2004 | 11,228 | 39.7 | 38.9 40.4 | 5,093 | 17.1 | 16.6 17.6 |
| 2005 | 11,576 | 40.3 | 39.6 41.1 | 5,120 | 16.8 | 16.3 17.2 |
| 2006 | 11,935 | 41.1 | 40.3 41.8 | 5,272 | 17.1 | 16.6 17.5 |
| 2007 | 12,013 | 40.7 | 40.0 41.5 | 5,266 | 16.5 | 16.0 17.0 |
| 2008* | 12,884 | 42.7 | 42.0 43.5 | 5,319 | 16.2 | 15.8 16.7 |

*The increased incidence observed in 2008 for males and females is largely due to changes in coding. Please see note in Appendix One for full description of changes.

Figure 1:3 Age-standardised incidence and mortality rates for haematological malignancies in the period 2001-2008 for England for females

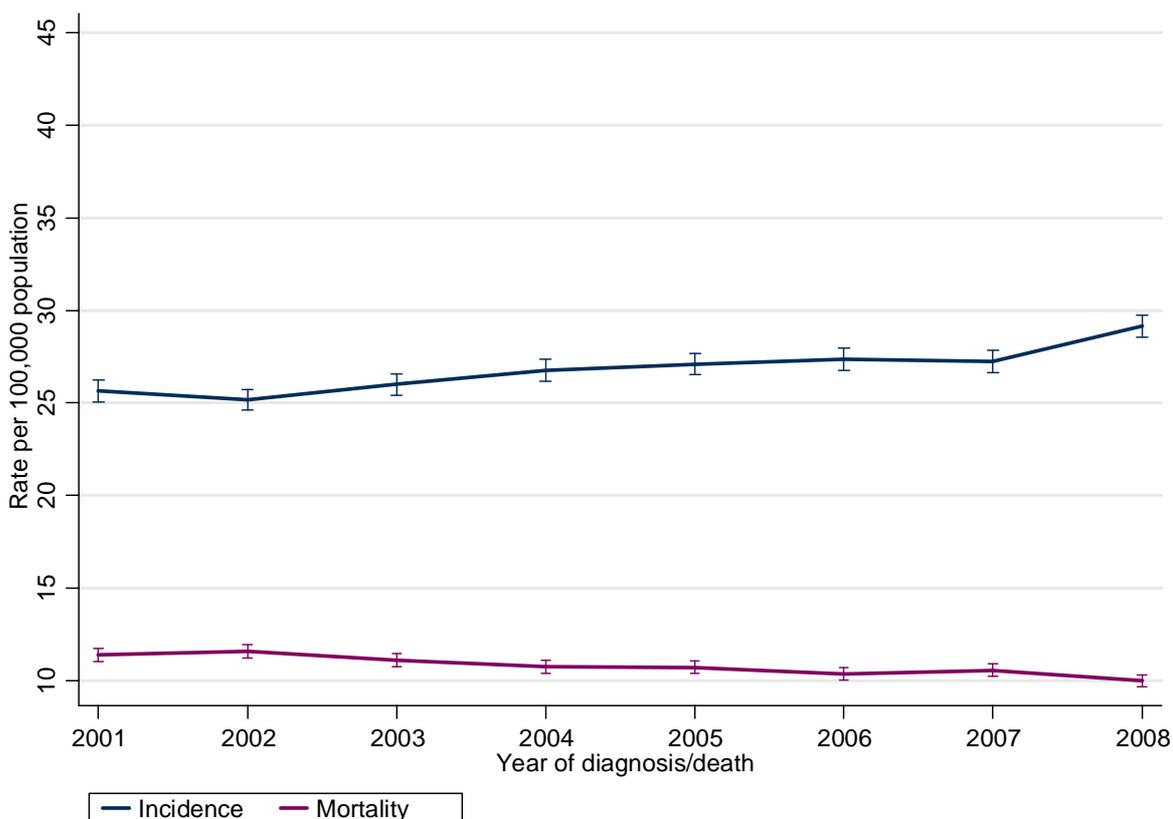


Table 1:4 Age-standardised incidence and mortality rates for haematological malignancies in the period 2001-2008 for England for females

| Year | Incidence (females) | | | | Mortality (females) | | | |
|-------|---------------------|-------------|--------|------|---------------------|-------------|--------|------|
| | Cases | ASR | 95% CI | | Deaths | ASR | 95% CI | |
| 2001 | 8,727 | 25.6 | 25.1 | 26.2 | 4,421 | 11.4 | 11.0 | 11.8 |
| 2002 | 8,600 | 25.2 | 24.6 | 25.8 | 4,537 | 11.6 | 11.2 | 12.0 |
| 2003 | 8,892 | 26.0 | 25.4 | 26.6 | 4,468 | 11.1 | 10.7 | 11.4 |
| 2004 | 9,211 | 26.8 | 26.2 | 27.4 | 4,342 | 10.8 | 10.4 | 11.1 |
| 2005 | 9,419 | 27.1 | 26.5 | 27.7 | 4,346 | 10.7 | 10.4 | 11.1 |
| 2006 | 9,563 | 27.4 | 26.8 | 28.0 | 4,331 | 10.4 | 10.0 | 10.7 |
| 2007 | 9,582 | 27.2 | 26.7 | 27.8 | 4,482 | 10.6 | 10.2 | 10.9 |
| 2008* | 10,476 | 29.2 | 28.6 | 29.8 | 4,319 | 10.0 | 9.67 | 10.3 |

*The increased incidence observed in 2008 for males and females is largely due to changes in coding. Please see note in Appendix One for full description of changes.

Proportion of incident cases by disease group

Non-Hodgkin lymphoma is the largest disease group in terms of number of new cases, accounting for over 40% of all haematological malignancies in both men and women. Myeloma is the second most commonly registered haematological cancer, accounting for 17% of all new haematological malignancies annually. Acute myeloid leukaemia and chronic lymphocytic leukaemia each account for about 10% of all haematological malignancies in both sexes, with acute lymphocytic leukaemia and chronic myeloid leukaemia together contributing a further 5% of the total.

Figure 1:5 Proportion of new cases of haematological malignancy by disease group in males (2006-2008)

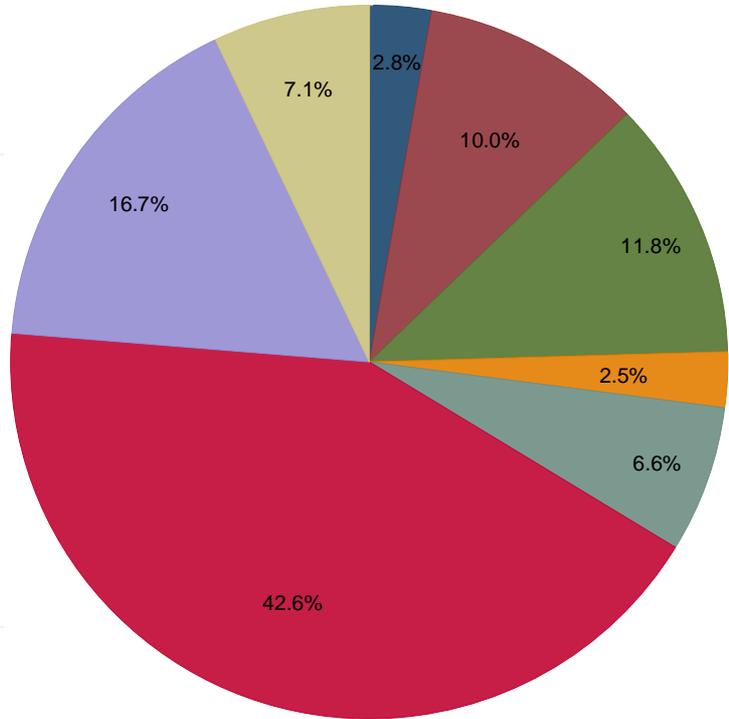
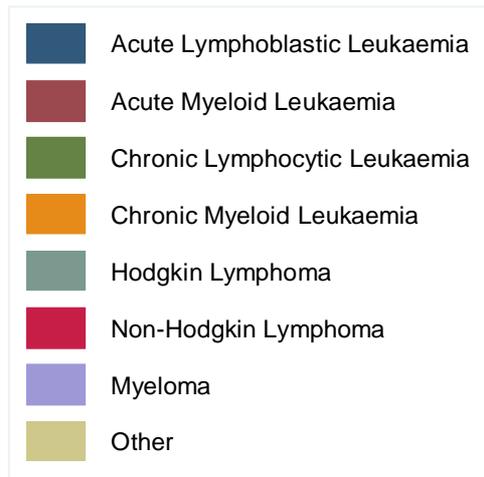
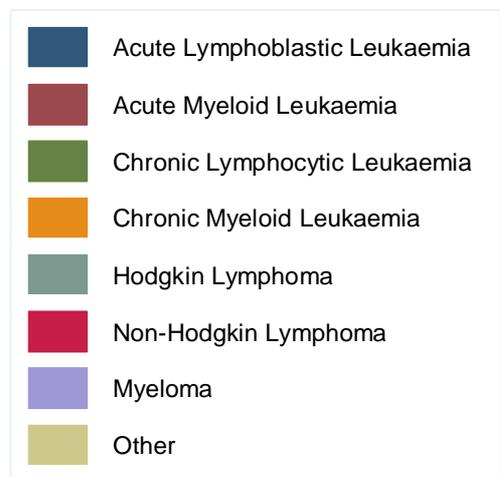


Figure 1:6 Proportion of new cases of haematological malignancies by disease group in females (2006-2008)



Proportion of deaths from haematological cancers by disease group

The contribution of individual haematological cancers to the overall numbers of deaths varies slightly from that seen for disease incidence as a consequence of differences in the prognosis for these cancers. Around 40% of deaths are attributed to non-Hodgkin lymphoma, making up the largest proportion of deaths. Disease groups with a poorer overall outcome such as acute myeloid leukaemia and myeloma make up a larger proportion of all deaths than they do of incidence. Hodgkin lymphoma, which has a much better prognosis, makes up only 3% of deaths in this time period.

Figure 1:7 Proportion of deaths from haematological malignancy by disease group in males (2006-2008)

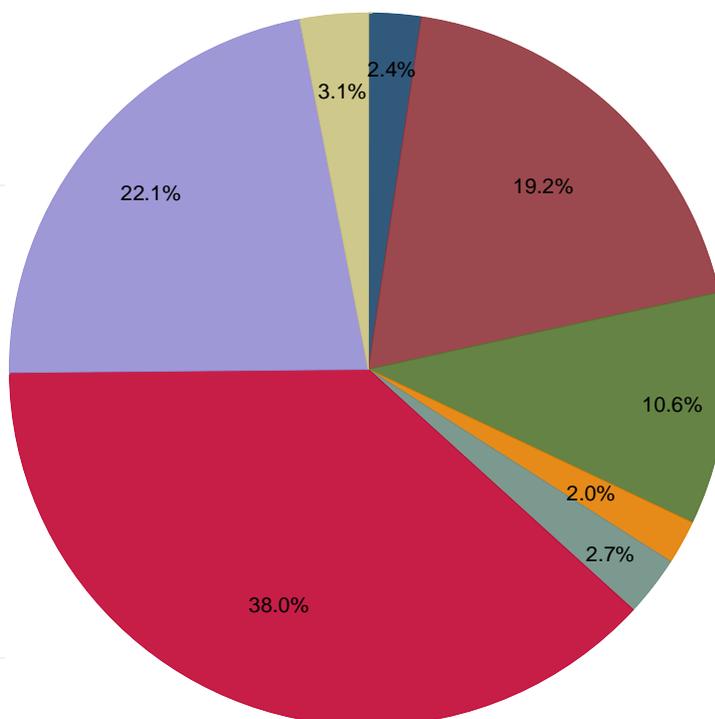
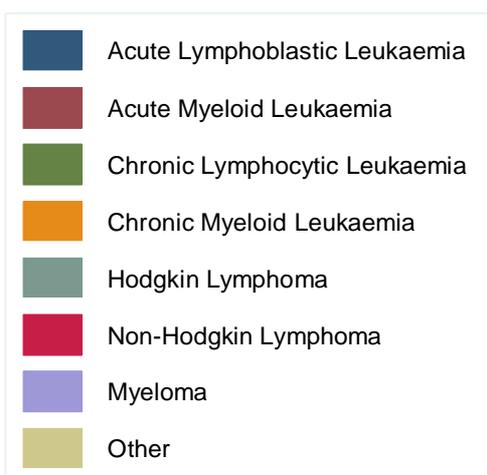
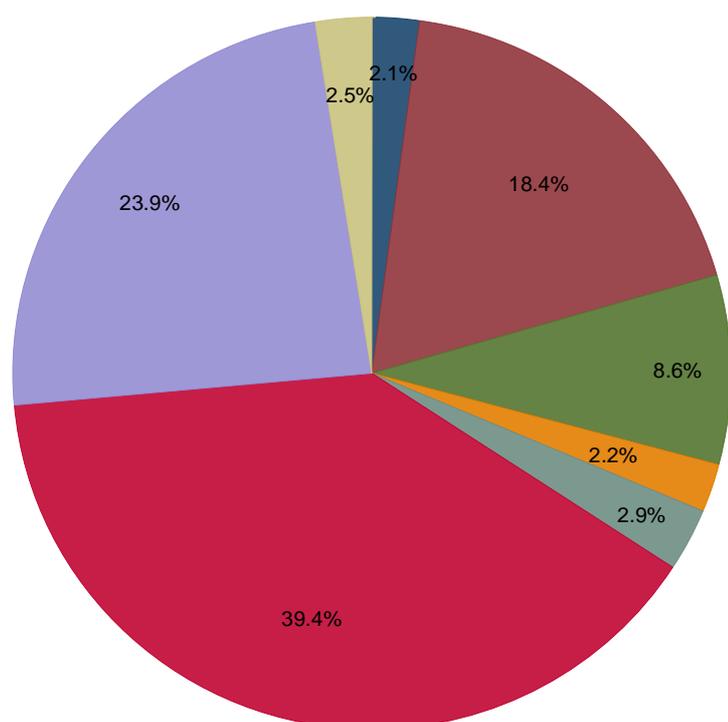
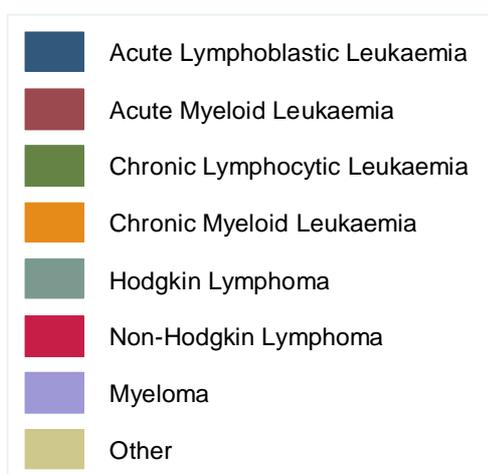


Figure 1:8 Proportion of deaths from haematological malignancy by disease group in females (2006-2008)



Age-standardised incidence by disease group and sex

Table 1:9 Age-standardised incidence rates for males for haematological malignancies diagnosed in the period 2006-2008 by diagnostic group

| Site | Incidence | | | | Mortality | | | |
|--|---------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
| | Cases | ASR | 95% CI | | Deaths | ASR | 95% CI | |
| Acute Lymphoblastic Leukaemia | 342 | 1.5 | 1.4 | 1.6 | 124 | 0.5 | 0.4 | 0.5 |
| Acute Myeloid Leukaemia | 1,226 | 4.1 | 3.9 | 4.2 | 1,013 | 3.2 | 3.1 | 3.3 |
| Chronic Lymphocytic Leukaemia | 1,446 | 4.1 | 4.5 | 4.8 | 560 | 1.7 | 1.6 | 1.8 |
| Chronic Myeloid Leukaemia | 310 | 1.1 | 1.0 | 1.2 | 105 | 0.3 | 0.3 | 0.4 |
| Hodgkin Disease | 816 | 3.1 | 3.0 | 3.3 | 144 | 0.5 | 0.4 | 0.5 |
| Non-Hodgkin Lymphoma | 5,225 | 17.7 | 17.4 | 18.0 | 2,011 | 6.3 | 6.2 | 6.5 |
| Myeloma | 2,047 | 6.6 | 6.4 | 6.8 | 1,167 | 3.6 | 3.5 | 3.7 |
| Other | 866 | 2.8 | 2.7 | 2.9 | 162 | 0.5 | 0.4 | 0.5 |
| All Haematological Malignancies | 12,277 | 41.5 | 41.1 | 42.0 | 5,286 | 16.6 | 16.3 | 16.9 |

Table 1:10 Age-standardised incidence rates for females for haematological malignancies diagnosed in the period 2006-2008 by diagnostic group

| Site | Incidence | | | | Mortality | | | |
|--|--------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
| | Cases | ASR | 95% CI | | Deaths | ASR | 95% CI | |
| Acute Lymphoblastic Leukaemia | 248 | 1.1 | 1.0 | 1.2 | 93 | 0.3 | 0.3 | 0.4 |
| Acute Myeloid Leukaemia | 1,005 | 2.8 | 2.7 | 2.9 | 805 | 2.0 | 1.9 | 2.1 |
| Chronic Lymphocytic Leukaemia | 935 | 2.3 | 2.2 | 2.4 | 378 | 0.7 | 0.7 | 0.8 |
| Chronic Myeloid Leukaemia | 234 | 0.7 | 0.6 | 0.7 | 96 | 0.2 | 0.2 | 0.2 |
| Hodgkin Disease | 641 | 2.3 | 2.2 | 2.4 | 125 | 0.4 | 0.3 | 0.4 |
| Non-Hodgkin Lymphoma | 4,466 | 12.7 | 12.4 | 12.9 | 1,724 | 4.0 | 3.9 | 4.2 |
| Myeloma | 1,689 | 4.4 | 4.2 | 4.5 | 1,045 | 2.4 | 2.3 | 2.5 |
| Other | 655 | 1.1 | 1.0 | 1.2 | 111 | 0.2 | 0.2 | 0.3 |
| All haematological Malignancies | 9,873 | 27.9 | 27.6 | 28.3 | 4,377 | 10.3 | 10.1 | 10.5 |

Table 1:11 Age-standardised incidence rates for persons for haematological malignancies diagnosed in the period 2006-2008 by diagnostic group

| Site | Incidence | | | | Mortality | | | |
|--|---------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
| | Cases | ASR | 95% CI | | Deaths | ASR | 95% CI | |
| Acute Lymphoblastic Leukaemia | 590 | 1.3 | 1.2 | 1.4 | 217 | 0.4 | 0.4 | 0.4 |
| Acute Myeloid Leukaemia | 2,231 | 3.4 | 3.3 | 3.5 | 1,818 | 2.6 | 2.5 | 2.7 |
| Chronic Lymphocytic Leukaemia | 2,381 | 3.5 | 3.4 | 3.6 | 938 | 1.2 | 1.2 | 1.2 |
| Chronic Myeloid Leukaemia | 544 | 0.9 | 0.8 | 0.9 | 201 | 0.3 | 0.3 | 0.3 |
| Hodgkin Disease | 1,457 | 2.7 | 2.6 | 2.8 | 269 | 0.4 | 0.4 | 0.5 |
| Non-Hodgkin Lymphoma | 9,691 | 15.2 | 15.0 | 15.4 | 3,735 | 5.2 | 5.1 | 5.3 |
| Myeloma | 3,736 | 5.5 | 5.4 | 5.6 | 2,212 | 3.0 | 2.9 | 3.1 |
| Other | 1,521 | 2.3 | 2.2 | 2.3 | 273 | 0.4 | 0.3 | 0.4 |
| All Haematological Malignancies | 22,151 | 34.7 | 34.4 | 35.0 | 9,663 | 13.4 | 13.3 | 13.6 |

Leukaemias are a group of malignant diseases in which the bone marrow and other blood forming organs produce increased numbers of immature or abnormal white blood cells. This leads to an increased risk of infection, anaemia and bleeding.

Leukaemias are classified into acute or chronic depending on the rate of progression of the disease. Acute leukaemias are usually rapidly progressive and if untreated will be fatal within weeks or a few months. Chronic leukaemias progress more slowly; some patients may never require any treatment and may die of some other cause.

The cell type of origin, myeloid or lymphoid, distinguishes different types of leukaemia. Myeloid relates to the blood forming tissue of the bone marrow, and lymphoid to the tissues responsible for the formation of lymphocytes and antibodies.

Suspected risk factors include:

- ionising radiation
- benzene
- industrial exposures
- viral infections
- genetic conditions

Epidemiological characteristics differ with the type of leukaemia. The following subgroups of leukaemia are discussed in this report:

- **Acute lymphoblastic leukaemia (ALL)**
This affects mainly children. With intensive chemotherapy most of them are cured. Results of treatment in adults are not so good.
- **Acute myeloid leukaemia (AML)**
This affects patients of all ages. About 40% of young and middle aged patients may be cured by intensive chemotherapy, but this is much less effective in older patients.
- **Chronic lymphocytic leukaemia (CLL)**
This disease is rare in patients aged less than fifty years. Many patients never need treatment if the pace of the disease is slow. Treatment is usually as an outpatient.
- **Chronic myeloid leukaemia (CML)**
This is a disease of adults. Treatment is mainly with outpatient chemotherapy and average survival has been about five years. However, a new treatment option (imatinib) has improved the prognosis.

Acute Lymphoblastic Leukaemia

Acute lymphoblastic leukaemia (ALL) is most common in young people, with a higher incidence in males than females. Over the period of this report the age-standardised incidence has not changed whilst there has been a small decline in the mortality rate in both sexes.

Outcomes for ALL in children improved greatly over the second half of the 20th century. Over the time period reported here continued improvements in survival are apparent in patients aged 0-14, but not in older patients. The outcome from ALL is strongly influenced by the age at diagnosis, with poorer survival in older teenagers and adults.

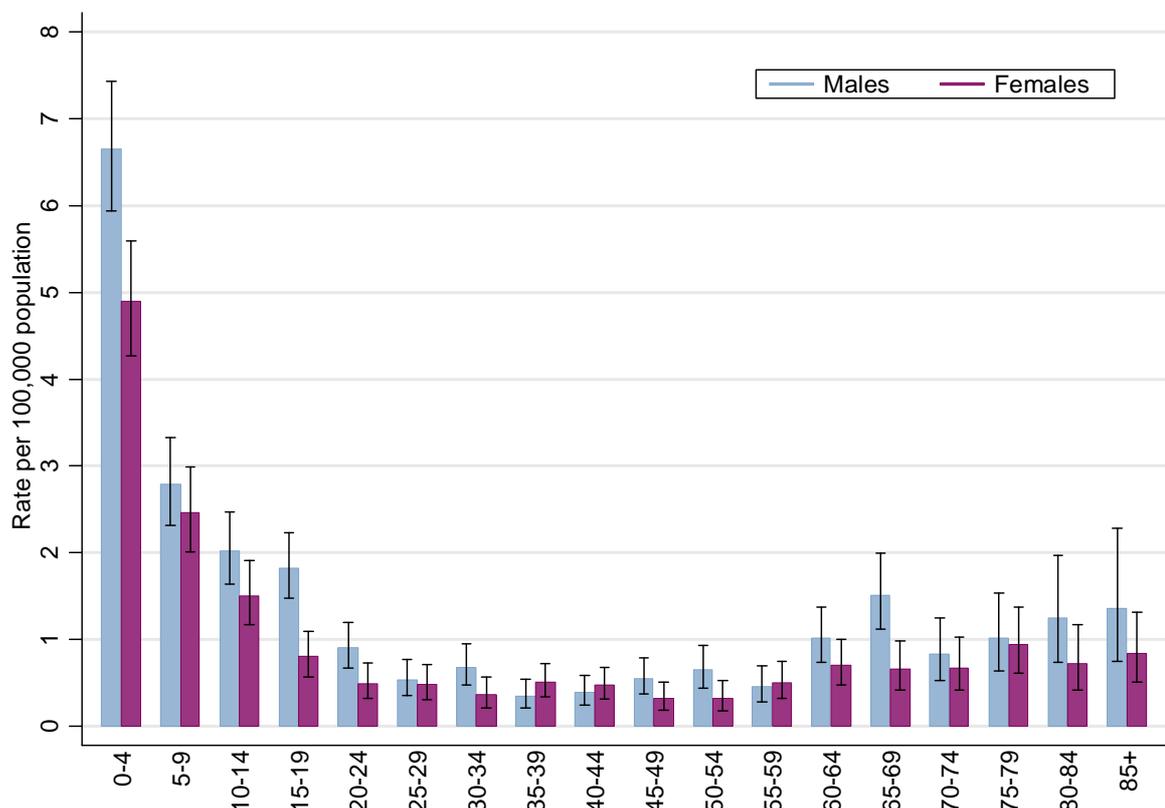
Treatment for ALL takes 2-3 years, and involves several drugs and extended stays in hospital. There were several changes in treatment protocols for children during the period 2001-2008. The changes in management included: increasing the length of treatment for boys from two years (standard for girls throughout) to three years; replacing prednisolone with dexamethasone; universal use of mercaptopurine; the phasing out of thioguanine and intensification of treatment both to children with high risk at diagnosis and those slow to respond to initial therapy.

The limited change in survival in adults with ALL over the reported period reflects limited therapeutic advance over this time. During this period allogeneic transplant (cells transplanted from a donor) was increasingly used in selected patients, with some evidence from trials that this was a better treatment option for selected patients. In contrast, autologous transplant (patient's own cells transplanted) was not shown to be beneficial and possibly less successful than conventional treatment, and was used less often in the later years reported.

Chemotherapy for the age group 15+ did not change significantly over this time, though patients aged 15-18 began to be treated with children's management protocols in the hope that this would improve survival. More recent evidence has since accumulated that this is an improvement in treatment, and indeed most patients aged up to 23 years are now treated with the current children's protocol.

Age distribution

Figure 2:1 Age-specific incidence rates by age group for acute lymphoblastic leukaemia in males and females between 2006-2008 in England



Trends in incidence and mortality (males)

Figure 2:2 Age-standardised incidence and mortality rates for acute lymphoblastic leukaemia in males in the period 2001-2008 in England (3 year moving average)

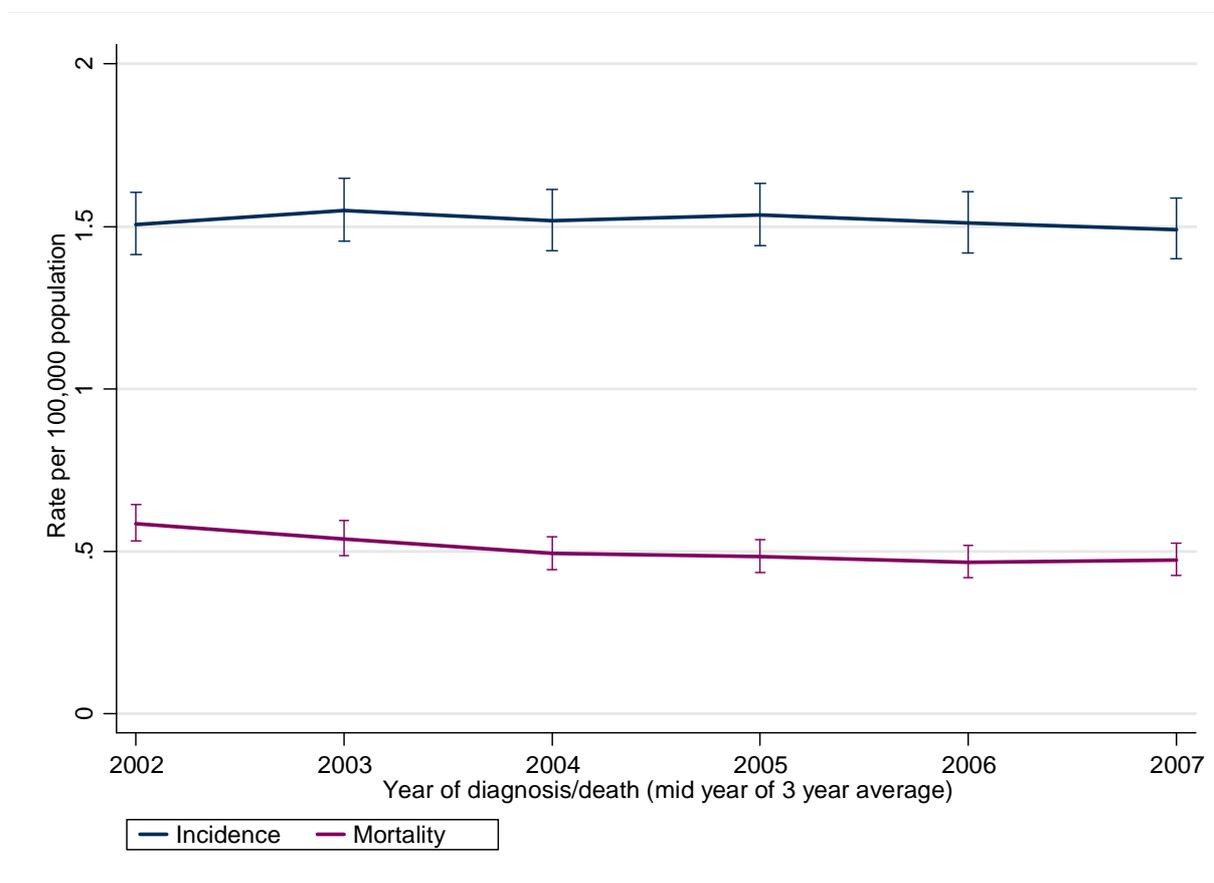


Table 2:3 Age-standardised incidence and mortality rates for acute lymphoblastic leukaemia in males in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | Mortality | | |
|-----------|-----------|-----|---------|-----------|-----|---------|
| | Cases* | ASR | 95% CI | Deaths* | ASR | 95% CI |
| 2001-2003 | 339 | 1.5 | 1.4 1.6 | 148 | 0.6 | 0.5 0.6 |
| 2002-2004 | 346 | 1.6 | 1.5 1.7 | 139 | 0.5 | 0.5 0.6 |
| 2003-2005 | 343 | 1.5 | 1.4 1.6 | 129 | 0.5 | 0.4 0.6 |
| 2004-2006 | 349 | 1.5 | 1.4 1.6 | 126 | 0.5 | 0.4 0.5 |
| 2005-2007 | 345 | 1.5 | 1.4 1.6 | 122 | 0.5 | 0.4 0.5 |
| 2006-2008 | 342 | 1.5 | 1.4 1.6 | 124 | 0.5 | 0.4 0.5 |

*3 year moving average

Trends in incidence and mortality (females)

Figure 2:4 Age-standardised incidence and mortality rates for acute lymphoblastic leukaemia in females in the period 2001-2008 in England (3 year moving average)

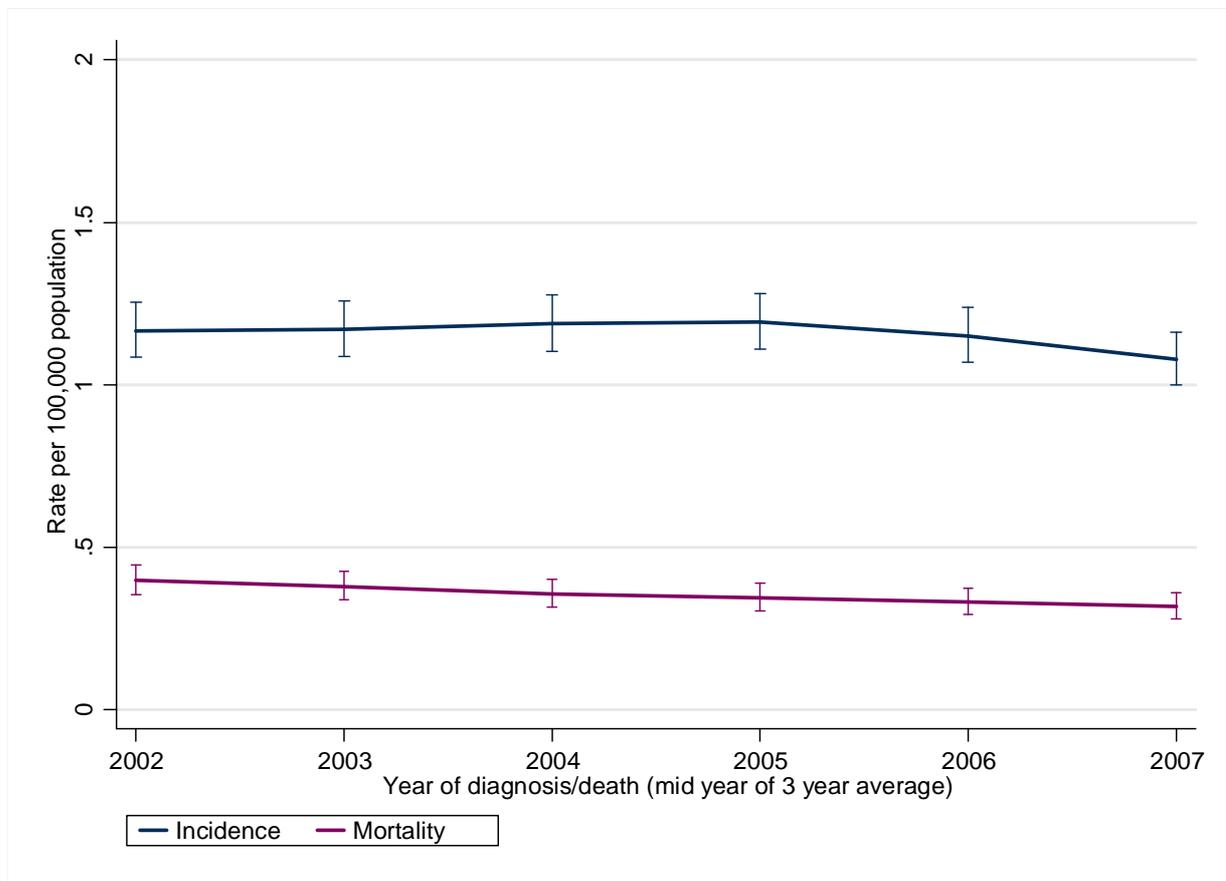


Table 2:5 Age-standardised incidence and mortality rates for acute lymphoblastic leukaemia in females in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | Mortality | | |
|-----------|-----------|-----|---------|-----------|-----|---------|
| | Cases* | ASR | 95% CI | Deaths* | ASR | 95% CI |
| 2001-2003 | 265 | 1.2 | 1.1 1.3 | 110 | 0.4 | 0.4 0.5 |
| 2002-2004 | 264 | 1.2 | 1.1 1.3 | 108 | 0.4 | 0.3 0.4 |
| 2003-2005 | 269 | 1.2 | 1.1 1.3 | 103 | 0.4 | 0.3 0.4 |
| 2004-2006 | 270 | 1.2 | 1.1 1.3 | 100 | 0.3 | 0.3 0.4 |
| 2005-2007 | 262 | 1.2 | 1.1 1.2 | 97 | 0.3 | 0.3 0.4 |
| 2006-2008 | 248 | 1.1 | 1.0 1.2 | 93 | 0.3 | 0.3 0.4 |

*3 year moving average

Trends in survival (males)

Figure 2:6 Trends in relative survival rates for acute lymphoblastic leukaemia in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

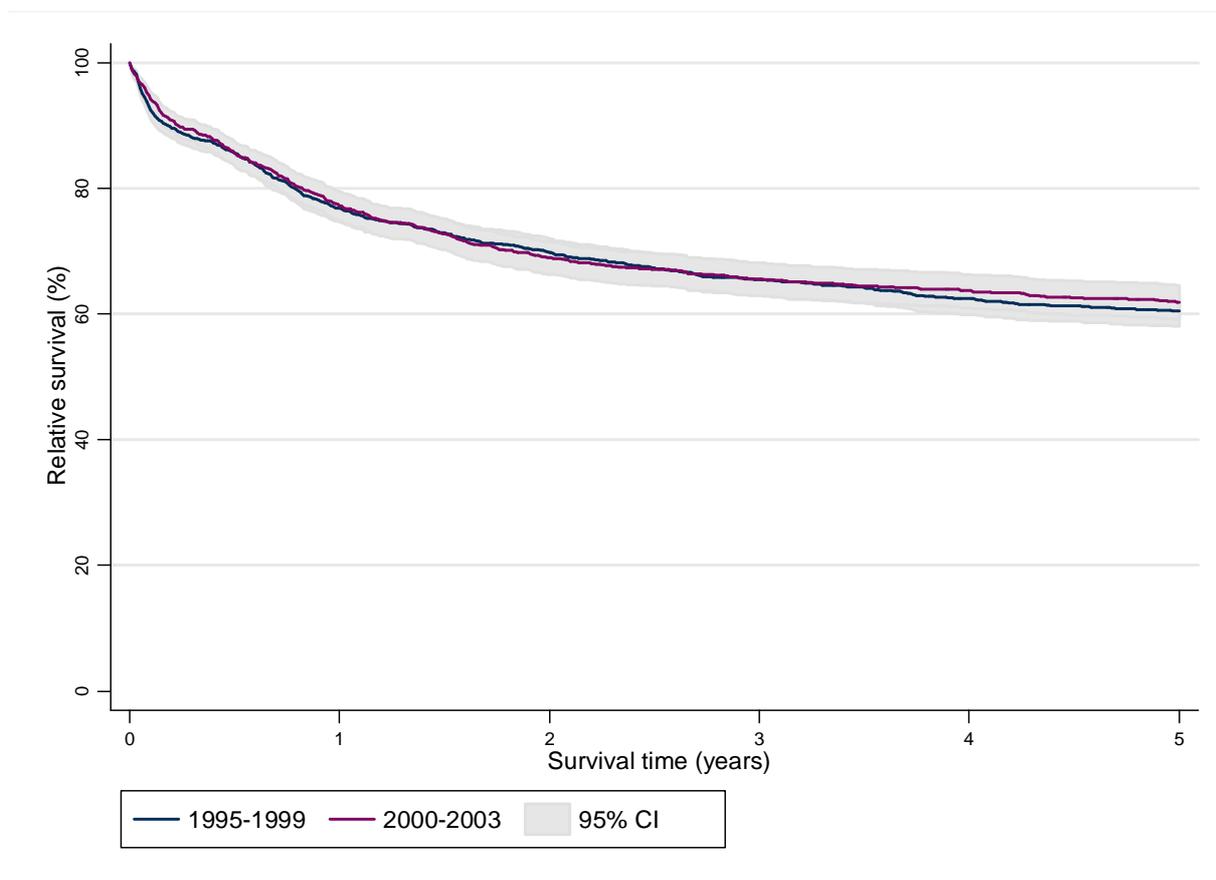


Table 2:7 Trends in relative survival rates for acute lymphoblastic leukaemia in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-----------|-------------|--------|--------|------|-------------|--------|--------|--|--|
| | RS | 95% CI | Cohort | Deaths | RS | 95% CI | Cohort | Deaths | | |
| 1 | 76.9 | 74.7 - 78.9 | 1,635 | 396 | 77.3 | 74.9 - 79.5 | 1,344 | 325 | | |
| 2 | 69.8 | 67.4 - 72.0 | 1,635 | 517 | 69.2 | 66.5 - 71.7 | 1,344 | 439 | | |
| 3 | 65.6 | 63.1 - 67.9 | 1,635 | 588 | 65.8 | 63.1 - 68.4 | 1,344 | 489 | | |
| 4 | 62.5 | 60.1 - 64.9 | 1,635 | 640 | 64.1 | 61.3 - 66.7 | 1,344 | 515 | | |
| 5 | 60.6 | 58.2 - 63.0 | 1,635 | 672 | 62.4 | 59.6 - 65.0 | 1,344 | 540 | | |

Figure 2:8 Trends for males (all ages) in relative survival rates for acute lymphoblastic leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

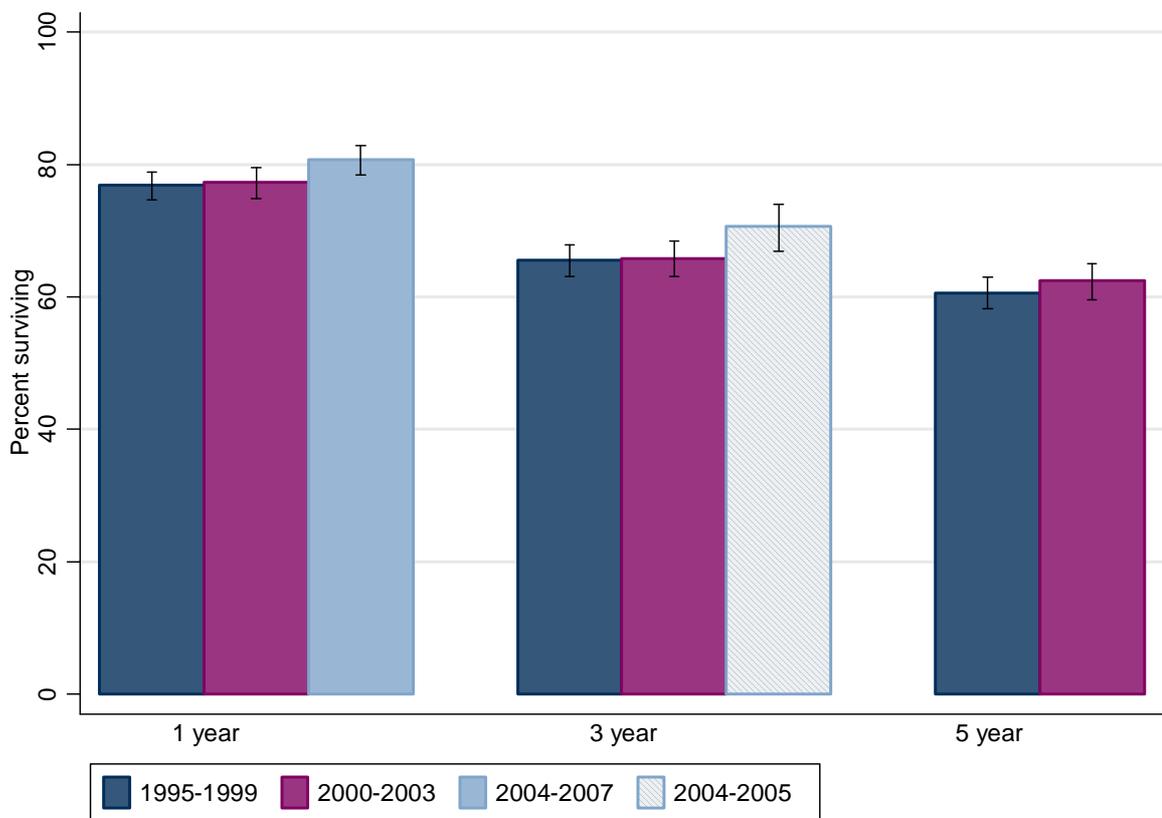


Table 2:9 Trends for males (all ages) in relative survival rates for acute lymphoblastic leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | | 95% CI | | Cohort | Deaths |
|-------------------------------|------------------|------|--------|--------|--------|--------|--------|
| | | RS | 95% CI | 95% CI | 95% CI | | |
| 1 year | 1995-1999 | 76.9 | 74.7 | 78.9 | 1,635 | 396 | |
| | 2000-2003 | 77.3 | 74.9 | 79.5 | 1,344 | 325 | |
| | 2004-2007 | 80.7 | 78.4 | 82.8 | 1,355 | 281 | |
| 3 year | 1995-1999 | 65.6 | 63.1 | 67.9 | 1,635 | 588 | |
| | 2000-2003 | 65.8 | 63.1 | 68.4 | 1,344 | 489 | |
| | 2004-2005 | 70.6 | 66.9 | 74 | 678 | 213 | |
| 5 year | 1995-1999 | 60.6 | 58.2 | 63 | 1,635 | 672 | |
| | 2000-2003 | 62.4 | 59.6 | 65 | 1,344 | 540 | |

Trends in survival (females)

Figure 2:10 Trends in relative survival rates for acute lymphoblastic leukaemia in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

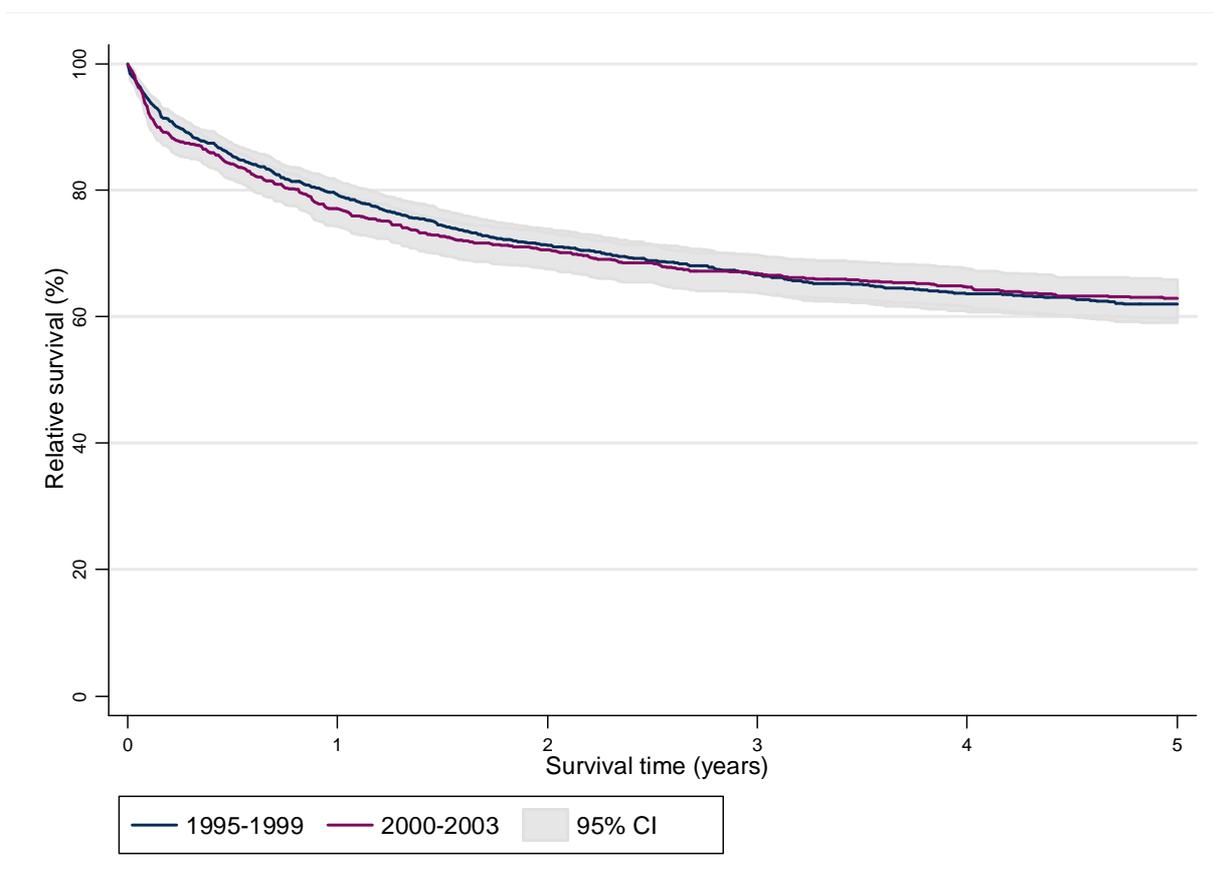


Table 2:11 Trends in relative survival rates for acute lymphoblastic leukaemia in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 79.3 | 76.9 | 81.6 | 1,221 | 268 | 77.2 | 74.4 | 79.7 | 1,018 | 245 |
| 2 | 71.4 | 68.7 | 73.9 | 1,221 | 369 | 70.9 | 67.9 | 73.7 | 1,018 | 313 |
| 3 | 66.9 | 64.1 | 69.6 | 1,221 | 426 | 67.4 | 64.3 | 70.3 | 1,018 | 351 |
| 4 | 64.0 | 61.1 | 66.7 | 1,221 | 463 | 65.3 | 62.2 | 68.2 | 1,018 | 374 |
| 5 | 62.4 | 59.5 | 65.1 | 1,221 | 485 | 63.7 | 60.6 | 66.7 | 1,018 | 393 |

Figure 2:12 Trends for females (all ages) in relative survival rates for acute lymphoblastic leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

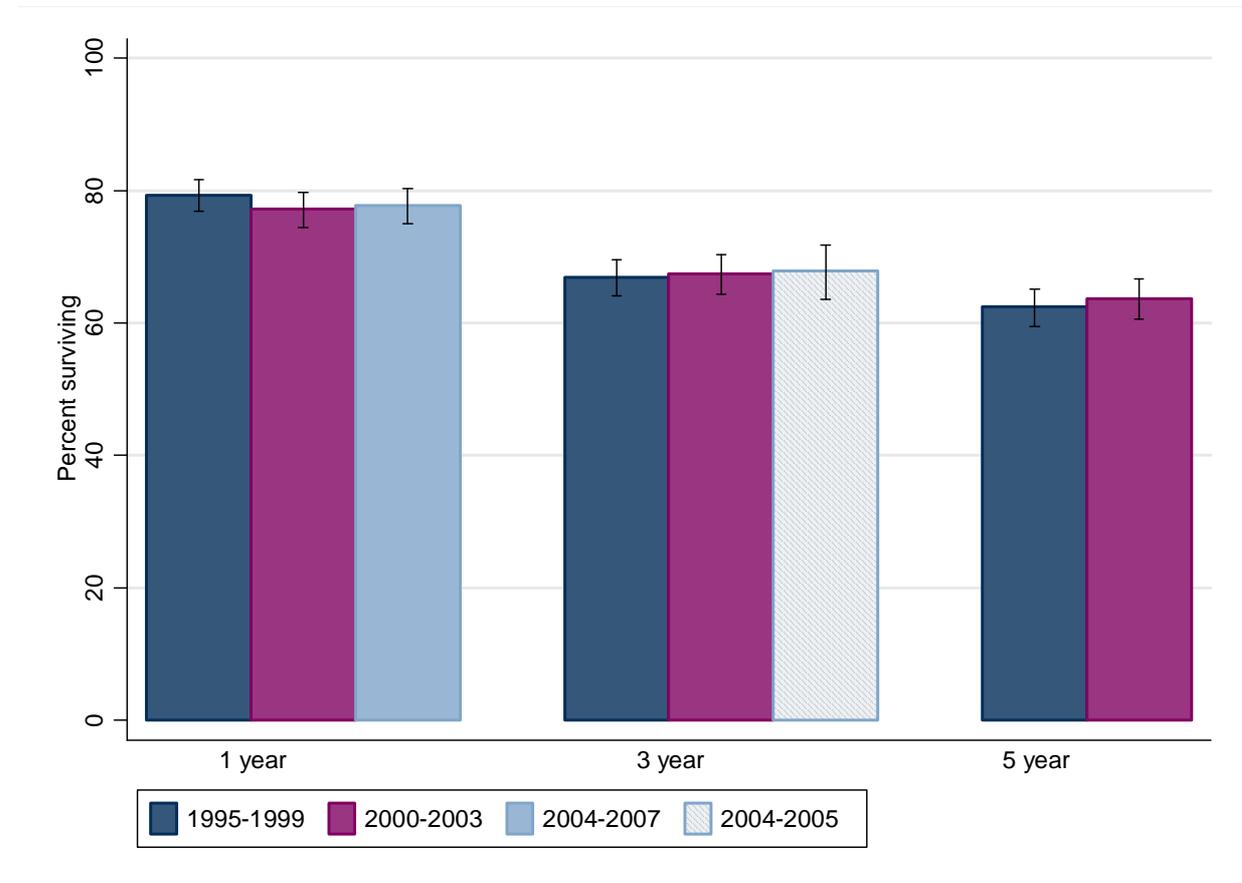


Table 2:13 Trends for females (all ages) in relative survival rates for acute lymphoblastic leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|----------------------------------|------------------|-------------|--------|-------|--------|--------|
| | | | Lower | Upper | | |
| 1 year | 1995-1999 | 79.3 | 76.9 | 81.6 | 1,221 | 268 |
| | 2000-2003 | 77.2 | 74.4 | 79.7 | 1,018 | 245 |
| | 2004-2007 | 77.8 | 75.0 | 80.3 | 1,017 | 238 |
| 3 year | 1995-1999 | 66.9 | 64.1 | 69.6 | 1,221 | 426 |
| | 2000-2003 | 67.4 | 64.3 | 70.3 | 1,018 | 351 |
| | 2004-2005 | 67.9 | 63.6 | 71.8 | 535 | 181 |
| 5 year | 1995-1999 | 62.4 | 59.5 | 65.1 | 1,221 | 485 |
| | 2000-2003 | 63.7 | 60.6 | 66.7 | 1,018 | 393 |

Trends in survival by age (males)

Figure 2:14 Trends in relative survival rates for acute lymphoblastic leukaemia diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

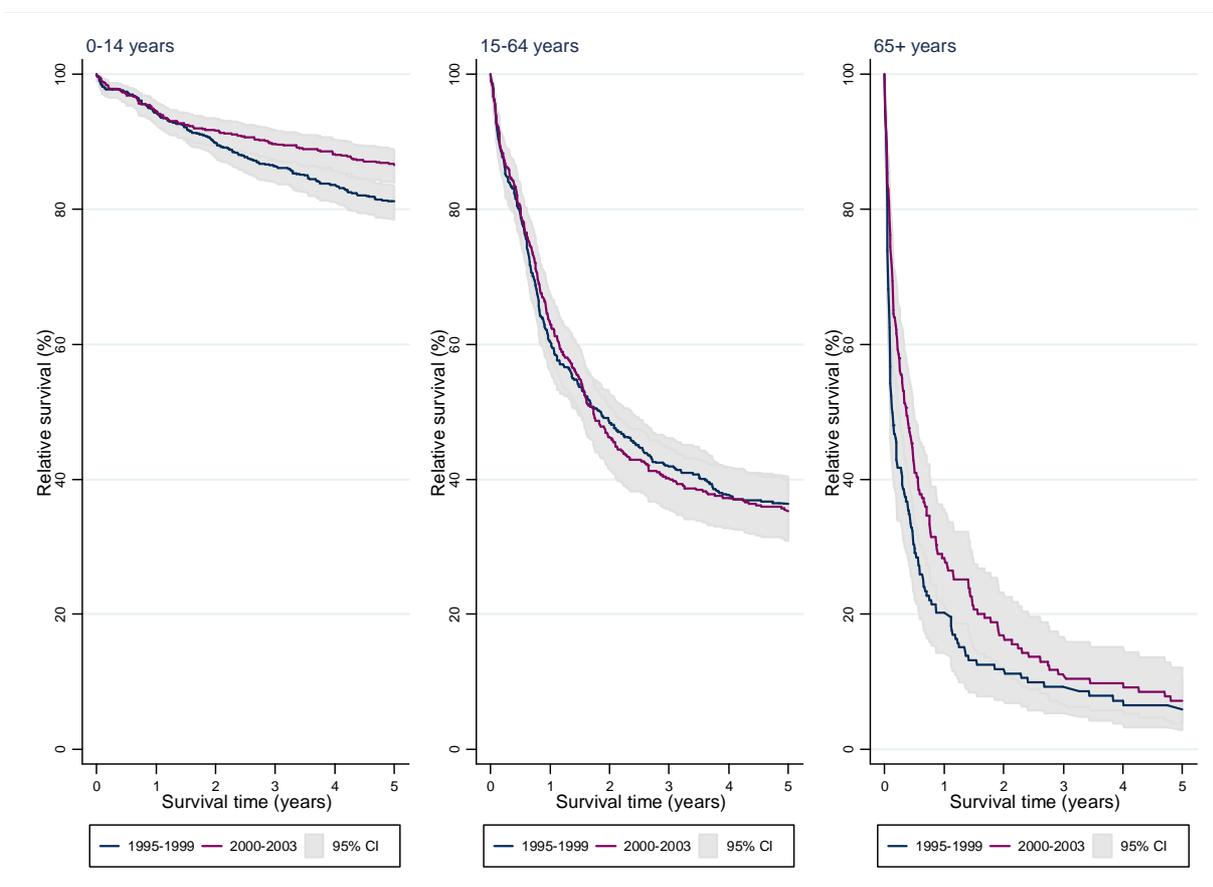


Table 2:15 Trends in relative survival rates for acute lymphoblastic leukaemia diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-------------|---------|-------|--------|--------|-------------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 0-14 years | 1 | 94.4 | 92.7 | 95.7 | 936 | 53 | 94.5 | 92.5 | 95.9 | 735 | 41 |
| | 2 | 89.9 | 87.7 | 91.6 | 936 | 96 | 91.6 | 89.3 | 93.4 | 735 | 62 |
| | 3 | 86.4 | 84.1 | 88.5 | 936 | 128 | 89.7 | 87.3 | 91.7 | 735 | 76 |
| | 4 | 83.7 | 81.1 | 85.9 | 936 | 154 | 88.2 | 85.7 | 90.4 | 735 | 87 |
| | 5 | 81.2 | 78.5 | 83.6 | 936 | 177 | 86.6 | 83.9 | 88.9 | 735 | 99 |
| 15-64 years | 1 | 60.3 | 56.0 | 64.3 | 541 | 216 | 63.0 | 58.3 | 67.3 | 448 | 167 |
| | 2 | 48.3 | 44.0 | 52.5 | 541 | 281 | 46.3 | 41.6 | 50.9 | 448 | 242 |
| | 3 | 41.9 | 37.7 | 46.1 | 541 | 316 | 40.3 | 35.7 | 44.8 | 448 | 269 |
| | 4 | 37.8 | 33.7 | 41.9 | 541 | 339 | 37.5 | 32.9 | 42.0 | 448 | 282 |
| | 5 | 36.6 | 32.5 | 40.7 | 541 | 346 | 35.5 | 31.1 | 40.0 | 448 | 291 |
| 65+ years | 1 | 20.9 | 14.8 | 27.7 | 158 | 127 | 28.9 | 21.9 | 36.3 | 161 | 117 |
| | 2 | 12.2 | 7.36 | 18.2 | 158 | 140 | 18.0 | 12.2 | 24.7 | 161 | 135 |
| | 3 | 10.2 | 5.73 | 16.2 | 158 | 144 | 12.7 | 7.72 | 19.0 | 161 | 144 |
| | 4 | 8.89 | 4.61 | 14.91 | 158 | 147 | 11.7 | 6.84 | 18.0 | 161 | 146 |
| | 5 | 7.86 | 3.77 | 13.92 | 158 | 149 | 9.02 | 4.76 | 15.0 | 161 | 150 |

Trends in survival by age (females)

Figure 2:16 Trends in relative survival rates for acute lymphoblastic leukaemia diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

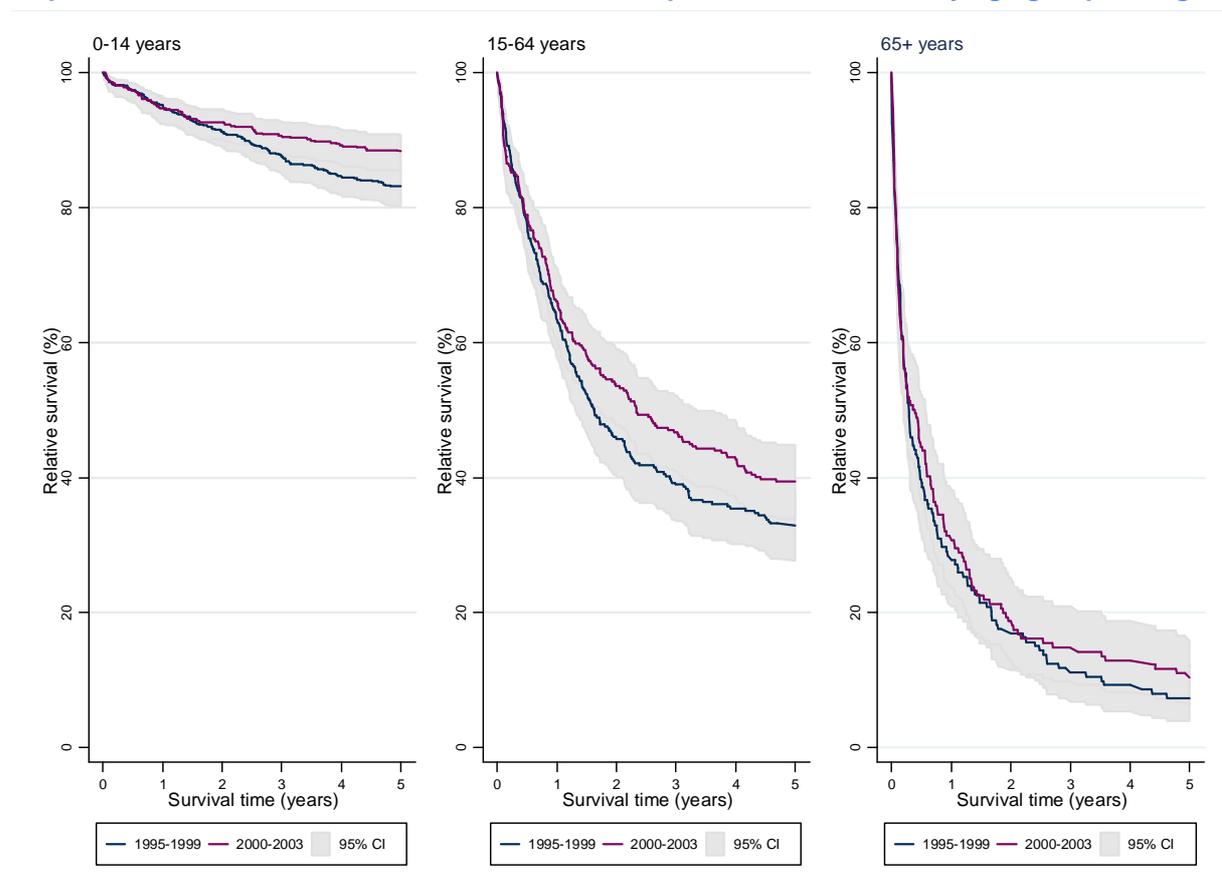


Table 2:17 Trends in relative survival rates for acute lymphoblastic leukaemia diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-----------|---------|------|--------|--------|-----------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 0-14 years | 1 | 95.2 | 93.3 | 96.5 | 750 | 37 | 94.7 | 92.4 | 96.3 | 555 | 30 |
| | 2 | 91.3 | 89.0 | 93.1 | 750 | 66 | 92.7 | 90.2 | 94.6 | 555 | 41 |
| | 3 | 87.7 | 85.1 | 89.9 | 750 | 93 | 90.7 | 88.0 | 92.9 | 555 | 52 |
| | 4 | 84.7 | 81.9 | 87.1 | 750 | 116 | 89.3 | 86.4 | 91.6 | 555 | 60 |
| | 5 | 83.2 | 80.3 | 85.7 | 750 | 127 | 88.4 | 85.4 | 90.8 | 555 | 65 |
| 15-64 years | 1 | 63.3 | 57.7 | 68.4 | 312 | 115 | 66.2 | 60.5 | 71.2 | 303 | 103 |
| | 2 | 45.5 | 39.8 | 50.9 | 312 | 170 | 53.5 | 47.7 | 59.0 | 303 | 141 |
| | 3 | 38.8 | 33.4 | 44.2 | 312 | 191 | 46.6 | 40.8 | 52.1 | 303 | 162 |
| | 4 | 35.3 | 30.0 | 40.7 | 312 | 202 | 42.7 | 37.0 | 48.2 | 303 | 174 |
| | 5 | 32.9 | 27.7 | 38.2 | 312 | 210 | 39.4 | 33.8 | 44.9 | 303 | 184 |
| 65+ years | 1 | 28.1 | 21.1 | 35.4 | 159 | 116 | 31.4 | 24.1 | 38.8 | 160 | 112 |
| | 2 | 17.6 | 11.9 | 24.2 | 159 | 133 | 19.2 | 13.3 | 25.9 | 160 | 131 |
| | 3 | 12.2 | 7.47 | 18.2 | 159 | 142 | 15.6 | 10.2 | 22.1 | 160 | 137 |
| | 4 | 10.6 | 6.16 | 16.5 | 159 | 145 | 14.0 | 8.83 | 20.3 | 160 | 140 |
| | 5 | 9.06 | 4.84 | 14.9 | 159 | 148 | 11.8 | 7.05 | 17.9 | 160 | 144 |

Trends in survival by age (persons)

Figure 2:18 Trends in relative survival rates for acute lymphoblastic leukaemia diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

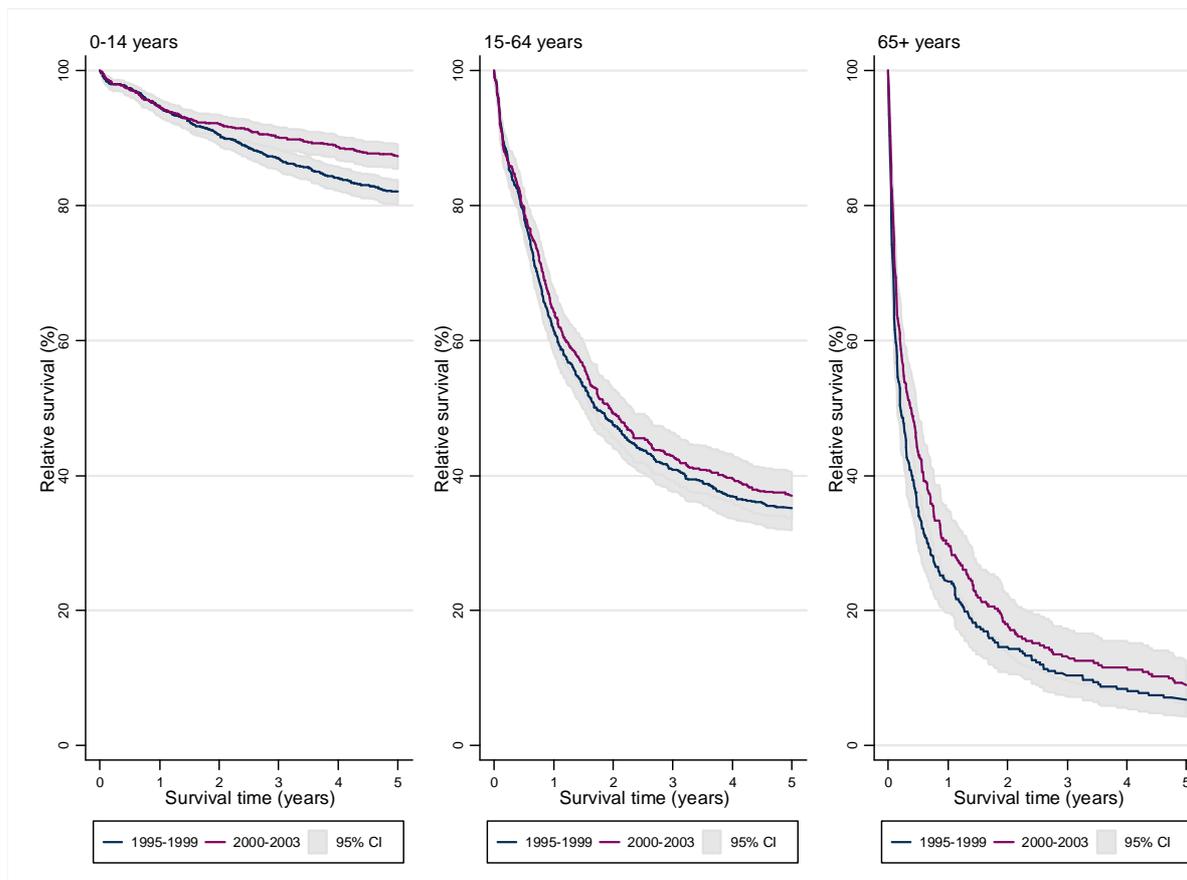


Table 2:19 Trends in relative survival rates for acute lymphoblastic leukaemia diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-----------|---------|------|--------|--------|-----------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 0-14 years | 1 | 94.8 | 93.6 | 95.8 | 1,686 | 90 | 94.5 | 93.2 | 95.7 | 1,290 | 71 |
| | 2 | 90.5 | 89.0 | 91.8 | 1,686 | 162 | 92.1 | 90.5 | 93.4 | 1,290 | 103 |
| | 3 | 87.0 | 85.3 | 88.6 | 1,686 | 221 | 90.1 | 88.4 | 91.7 | 1,290 | 128 |
| | 4 | 84.1 | 82.3 | 85.8 | 1,686 | 270 | 88.7 | 86.8 | 90.3 | 1,290 | 147 |
| | 5 | 82.1 | 80.2 | 83.9 | 1,686 | 304 | 87.4 | 85.4 | 89.1 | 1,290 | 164 |
| 15-64 years | 1 | 61.4 | 58.0 | 64.6 | 853 | 331 | 64.3 | 60.7 | 67.6 | 751 | 270 |
| | 2 | 47.3 | 43.9 | 50.6 | 853 | 451 | 49.2 | 45.5 | 52.7 | 751 | 383 |
| | 3 | 40.8 | 37.5 | 44.1 | 853 | 507 | 42.8 | 39.2 | 46.3 | 751 | 431 |
| | 4 | 36.9 | 33.6 | 40.1 | 853 | 541 | 39.5 | 36.0 | 43.1 | 751 | 456 |
| | 5 | 35.3 | 32.0 | 38.5 | 853 | 556 | 37.1 | 33.6 | 40.6 | 751 | 475 |
| 65+ years | 1 | 24.5 | 19.8 | 29.5 | 317 | 243 | 30.2 | 25.1 | 35.4 | 321 | 229 |
| | 2 | 15.0 | 11.1 | 19.4 | 317 | 273 | 18.6 | 14.4 | 23.3 | 321 | 266 |
| | 3 | 11.2 | 7.77 | 15.2 | 317 | 286 | 14.2 | 10.4 | 18.6 | 321 | 281 |
| | 4 | 9.72 | 6.48 | 13.7 | 317 | 292 | 12.9 | 9.19 | 17.3 | 321 | 286 |
| | 5 | 8.42 | 5.32 | 12.4 | 317 | 297 | 10.5 | 7.11 | 14.6 | 321 | 294 |

Acute Myeloid Leukaemia

Acute myeloid leukaemia is most common in people over the age of 60 and age-standardised incidence is higher in men. Over the period 2001-2008 there was little or no change in the incidence, mortality or relative survival amongst adults diagnosed with AML and the outcome from this leukaemia remains generally poor.

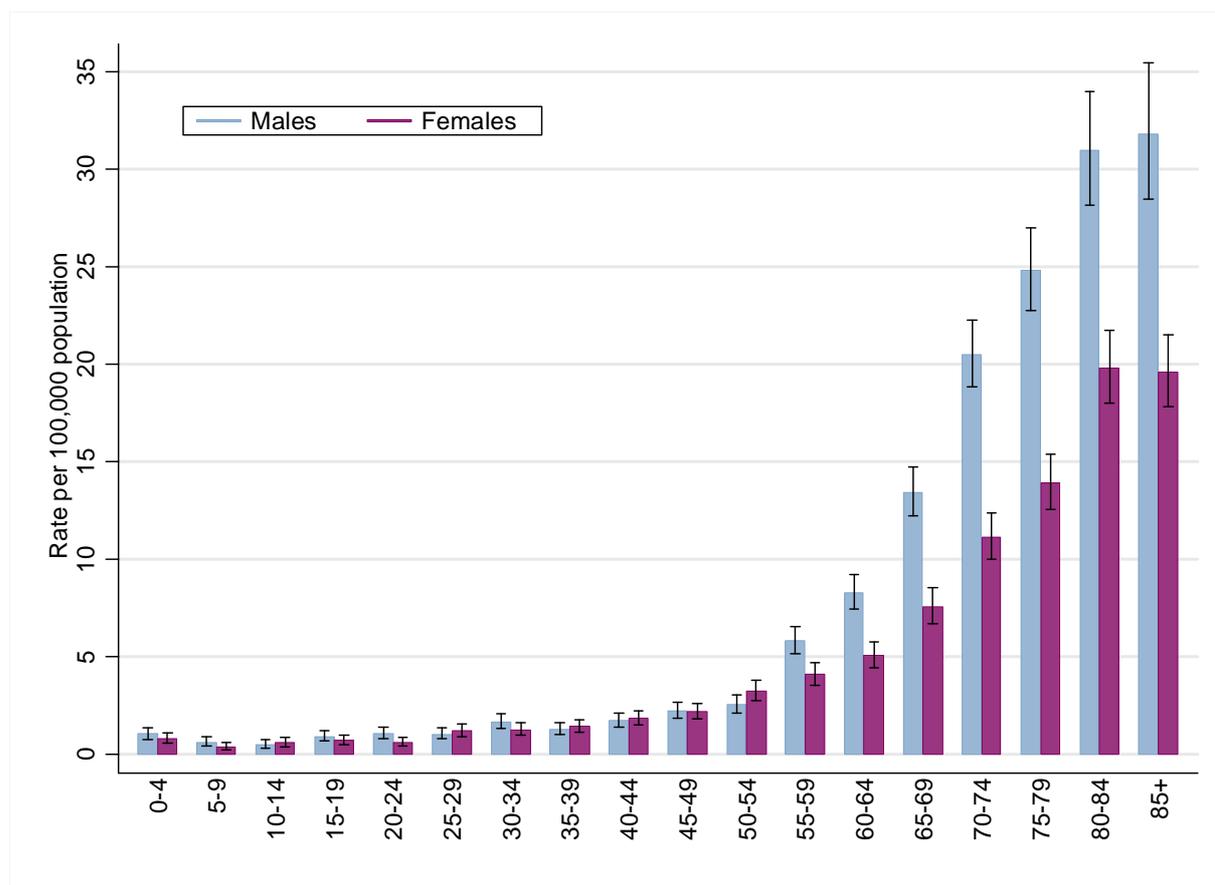
Treatment for AML takes several months, and involves several drugs and many days in hospital. There were some alterations to the standard treatment for adults over this time and many of the patients, especially younger patients, participated in clinical trials.

Some progress was made in identifying patients more likely to benefit from intensive chemotherapy – and those in whom this approach was likely to do more harm than good. Using this approach, decisions can be made at diagnosis about which patients have a reasonable chance of good response to standard chemotherapy, and which are unlikely to benefit.

New, more experimental approaches are being used in the younger patients. In older patients less toxic chemotherapy which offers a fair chance of prolonged survival with less toxicity may be selected, knowing that it will not produce “cure”.

Age distribution

Figure 3:1 Age-specific incidence rates by age group for acute myeloid leukaemia in males and females in the period 2006-2008 in England



Trends in incidence and mortality (males)

Figure 3:2 Age-standardised incidence and mortality rates for acute myeloid leukaemia in males in the period 2001-2008 in England (3 year moving average)

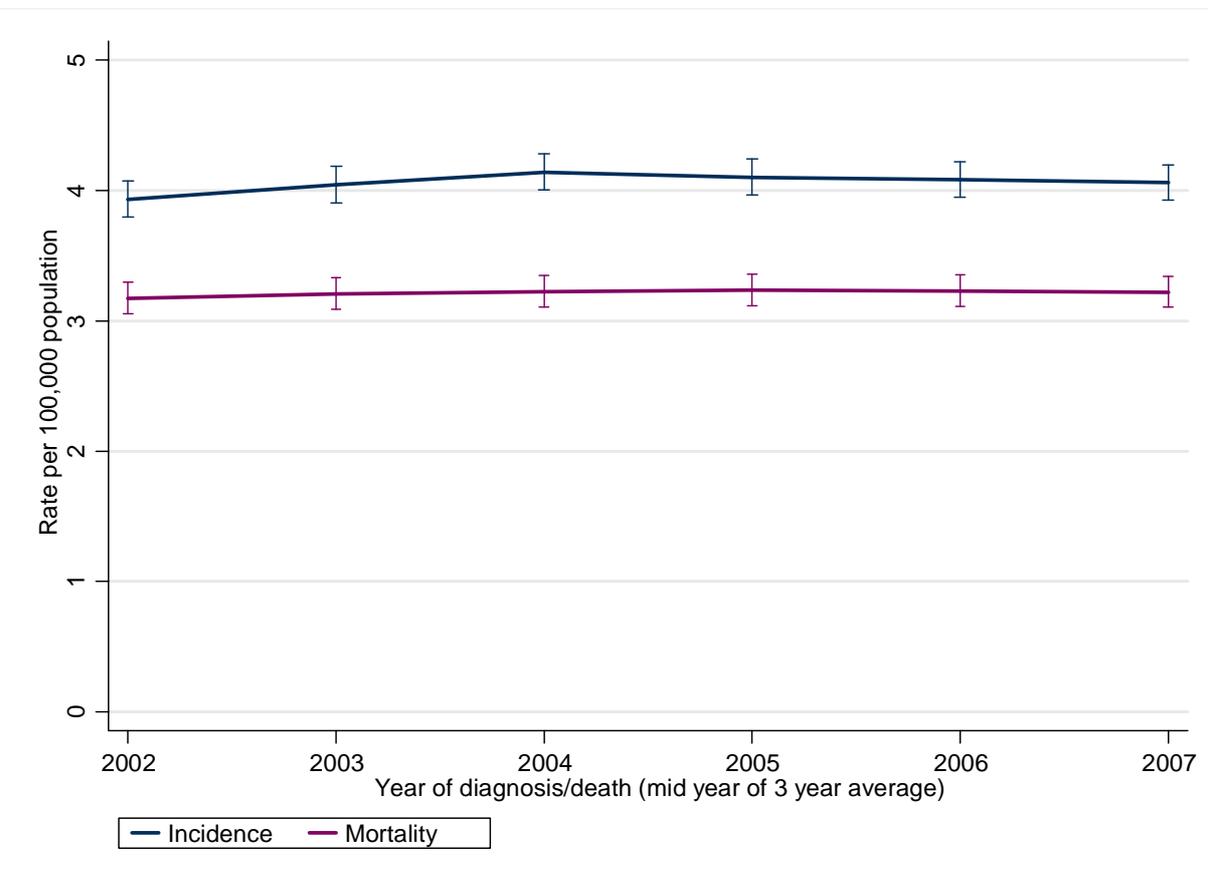


Table 3:3 Age-standardised incidence and mortality rates for acute myeloid leukaemia in males in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | | Mortality | | | |
|-----------|-----------|------------|--------|-----|-----------|------------|--------|-----|
| | Cases* | ASR | 95% CI | | Cases* | ASR | 95% CI | |
| 2001-2003 | 1,100 | 3.9 | 3.8 | 4.1 | 914 | 3.2 | 3.1 | 3.3 |
| 2002-2004 | 1,146 | 4.0 | 3.9 | 4.2 | 941 | 3.2 | 3.1 | 3.3 |
| 2003-2005 | 1,192 | 4.1 | 4.0 | 4.3 | 962 | 3.2 | 3.1 | 3.4 |
| 2004-2006 | 1,198 | 4.1 | 4.0 | 4.2 | 980 | 3.2 | 3.1 | 3.4 |
| 2005-2007 | 1,214 | 4.1 | 4.0 | 4.2 | 999 | 3.2 | 3.1 | 3.4 |
| 2006-2008 | 1,226 | 4.1 | 3.9 | 4.2 | 1,013 | 3.2 | 3.1 | 3.3 |

*3 year moving average

Trends in incidence and mortality (females)

Figure 3:4 Age-standardised incidence and mortality rates for acute myeloid leukaemia in females in the period 2001-2008 in England (3 year moving average)

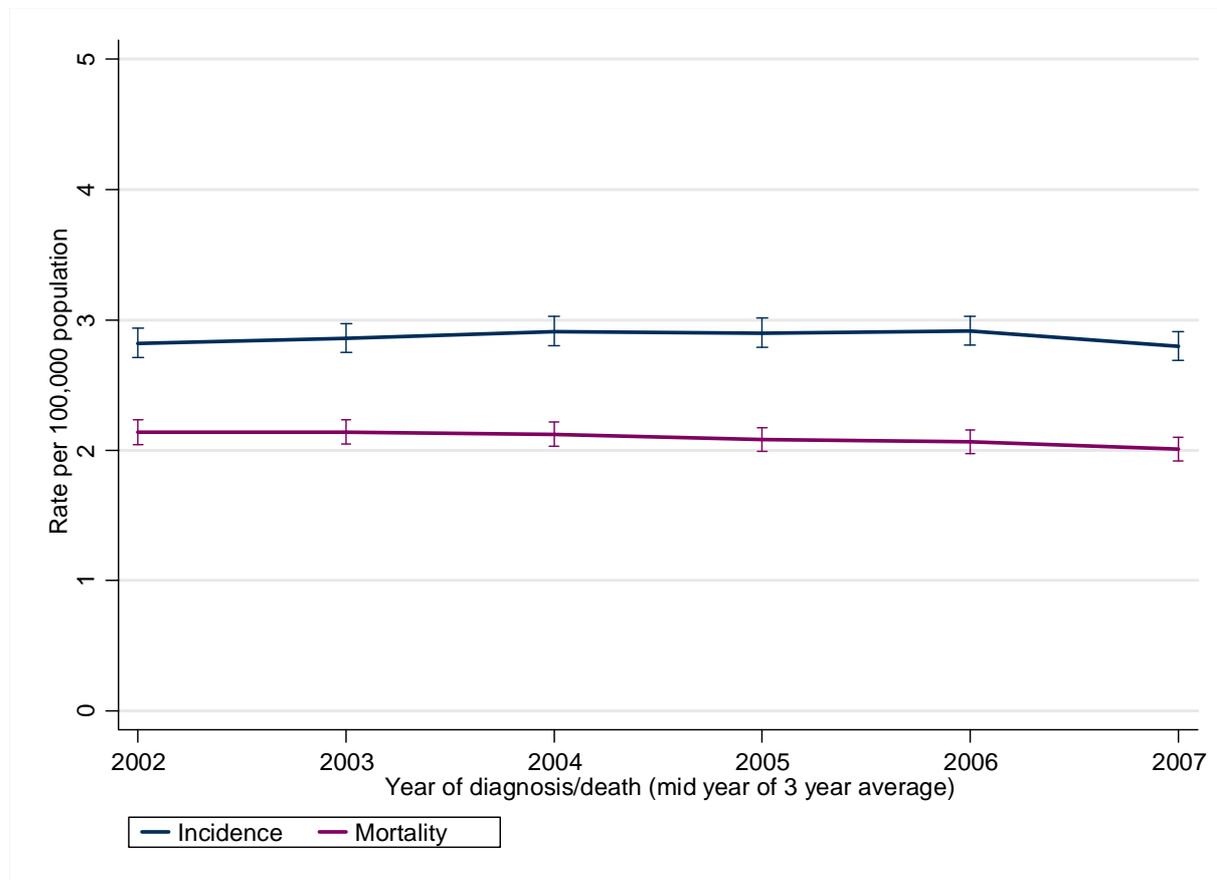


Table 3:5 Age-standardised incidence and mortality rates for acute myeloid leukaemia in females in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | | Mortality | | | |
|-----------|-----------|------------|--------|-----|-----------|------------|--------|-----|
| | Cases* | ASR | 95% CI | | Cases* | ASR | 95% CI | |
| 2001-2003 | 952 | 2.8 | 2.7 | 2.9 | 778 | 2.1 | 2.0 | 2.2 |
| 2002-2004 | 980 | 2.9 | 2.8 | 3.0 | 792 | 2.1 | 2.1 | 2.2 |
| 2003-2005 | 1,004 | 2.9 | 2.8 | 3.0 | 799 | 2.1 | 2.0 | 2.2 |
| 2004-2006 | 1,017 | 2.9 | 2.8 | 3.0 | 800 | 2.1 | 2.0 | 2.2 |
| 2005-2007 | 1,027 | 2.9 | 2.8 | 3.0 | 807 | 2.1 | 2.0 | 2.2 |
| 2006-2008 | 1,005 | 2.8 | 2.7 | 2.9 | 805 | 2.0 | 1.9 | 2.1 |

*3 year moving average

Trends in survival (males)

Figure 3:6 Trends in relative survival rates for acute myeloid leukaemia in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

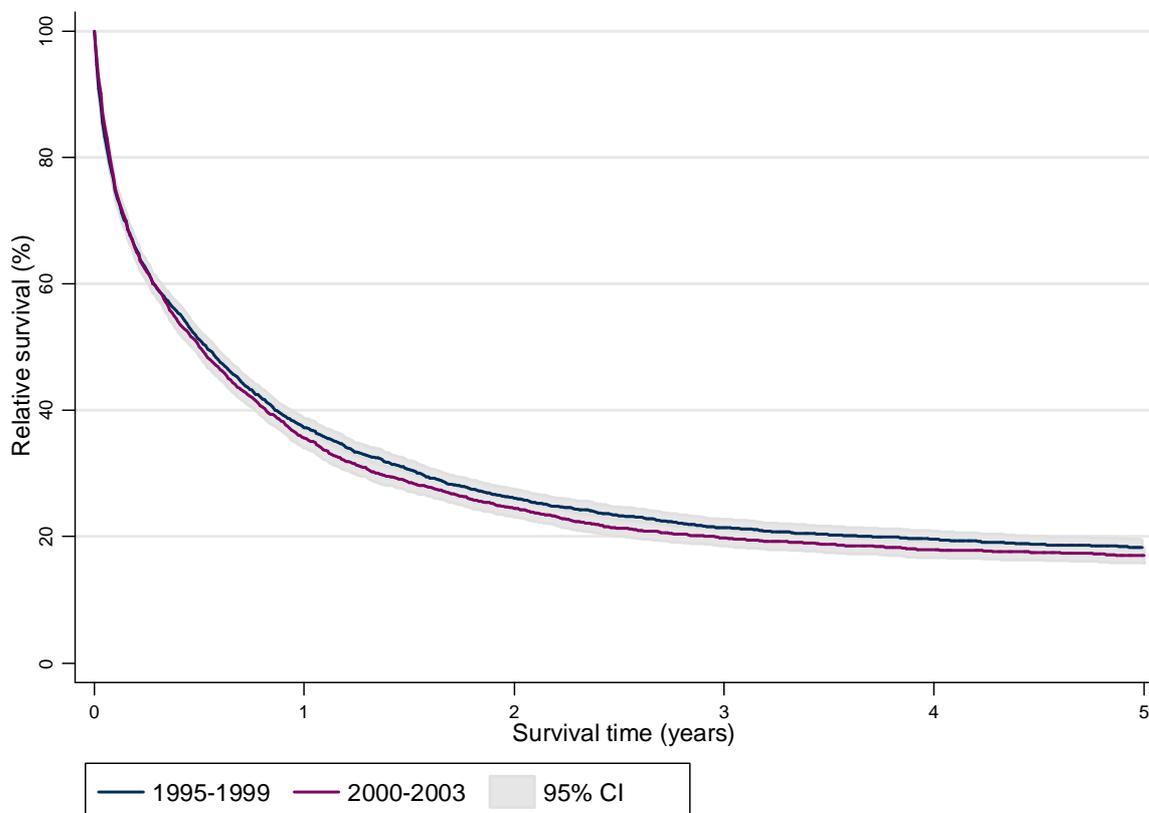


Table 3:7 Trends in relative survival rates for acute myeloid leukaemia in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-----------|-------------|--------|--------|--|-----------|-------------|--------|--------|--|
| | RS | 95% CI | Cohort | Deaths | | RS | 95% CI | Cohort | Deaths | |
| 1 | 37.0 | 35.5 - 38.5 | 4,268 | 2,746 | | 35.4 | 33.9 - 36.9 | 3,999 | 2,638 | |
| 2 | 25.9 | 24.6 - 27.3 | 4,268 | 3,230 | | 24.4 | 23.0 - 25.8 | 3,999 | 3,086 | |
| 3 | 21.3 | 20.0 - 22.6 | 4,268 | 3,434 | | 19.8 | 18.5 - 21.1 | 3,999 | 3,275 | |
| 4 | 19.6 | 18.4 - 20.9 | 4,268 | 3,517 | | 18.1 | 16.8 - 19.3 | 3,999 | 3,352 | |
| 5 | 18.5 | 17.2 - 19.7 | 4,268 | 3,577 | | 17.2 | 16.0 - 18.5 | 3,999 | 3,391 | |

Figure 3:8 Trends for males (all ages) in relative survival rates for acute myeloid leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

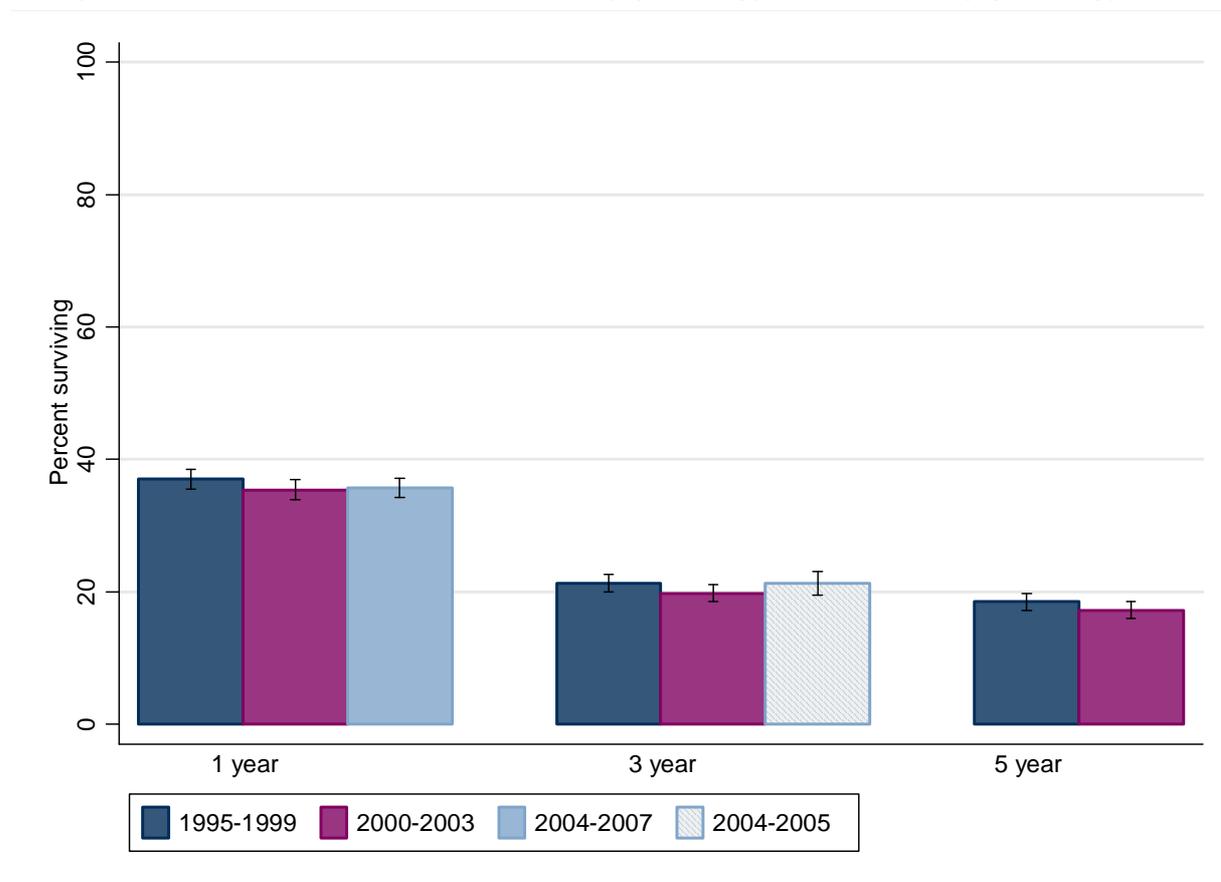


Table 3:9 Trends for males in relative survival rates for acute myeloid leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | | 95% CI | | Cohort | Deaths |
|----------------------------------|------------------|------|--------|--------|--------|--------|--------|
| | | RS | 95% CI | 95% CI | 95% CI | | |
| 1 year | 1995-1999 | 37.0 | 35.5 | 38.5 | | 4,268 | 2,746 |
| | 2000-2003 | 35.4 | 33.9 | 36.9 | | 3,999 | 2,638 |
| | 2004-2007 | 35.7 | 34.3 | 37.2 | | 4,470 | 2,930 |
| 3 year | 1995-1999 | 21.3 | 20.0 | 22.6 | | 4,268 | 3,434 |
| | 2000-2003 | 19.8 | 18.5 | 21.1 | | 3,999 | 3,275 |
| | 2004-2005 | 21.3 | 19.5 | 23.1 | | 2,182 | 1,755 |
| 5 year | 1995-1999 | 18.5 | 17.2 | 19.7 | | 4,268 | 3,577 |
| | 2000-2003 | 17.2 | 16.0 | 18.5 | | 3,999 | 3,391 |

Trends in survival (females)

Figure 3:10 Trends in relative survival rates for acute myeloid leukaemia in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

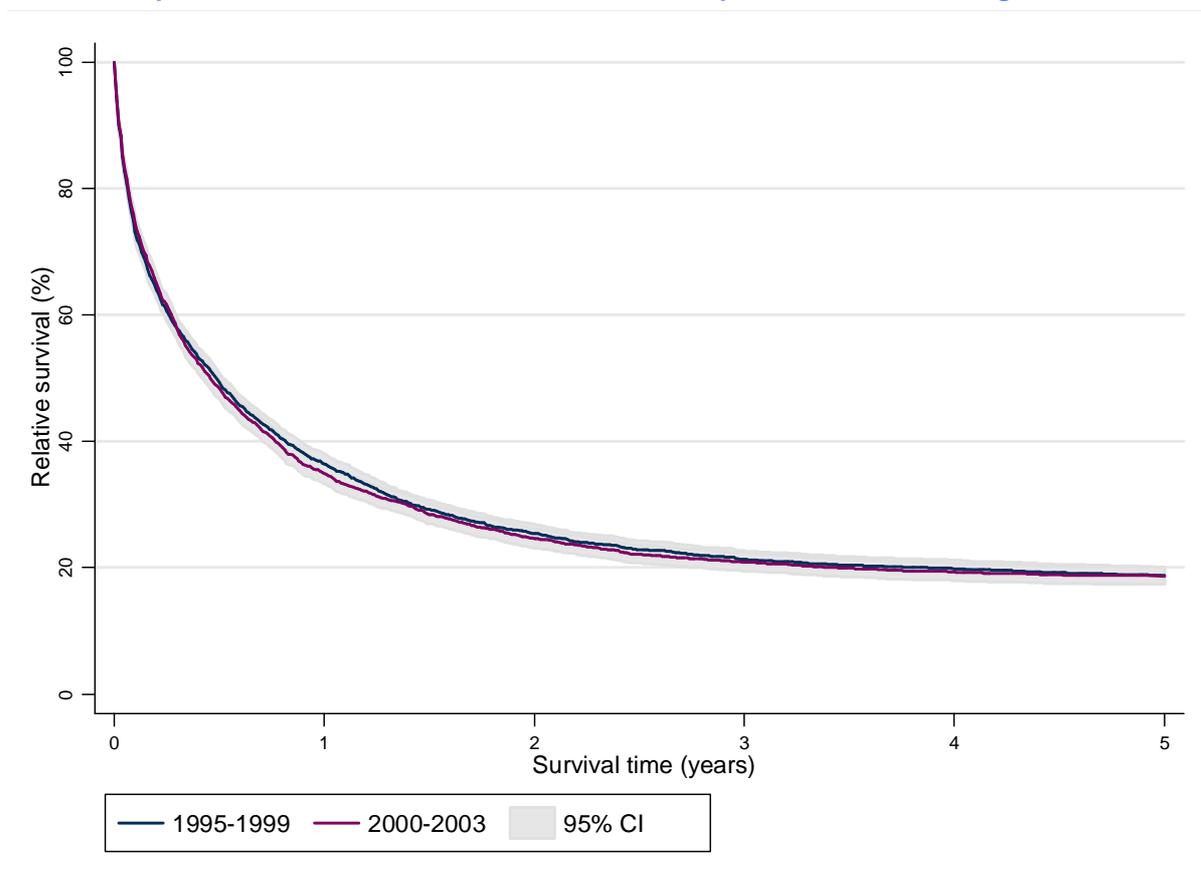


Table 3:11 Trends in relative survival rates for acute myeloid leukaemia in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-----------|-------------|--------|--------|--|-----------|-------------|--------|--------|--|
| | RS | 95% CI | Cohort | Deaths | | RS | 95% CI | Cohort | Deaths | |
| 1 | 36.2 | 34.6 - 37.7 | 3,827 | 2,477 | | 34.7 | 33.1 - 36.3 | 3,438 | 2,279 | |
| 2 | 25.3 | 23.8 - 26.7 | 3,827 | 2,902 | | 24.4 | 22.9 - 25.9 | 3,438 | 2,639 | |
| 3 | 21.2 | 19.9 - 22.6 | 3,827 | 3,064 | | 20.8 | 19.4 - 22.3 | 3,438 | 2,768 | |
| 4 | 19.9 | 18.6 - 21.2 | 3,827 | 3,121 | | 19.4 | 18.0 - 20.8 | 3,438 | 2,825 | |
| 5 | 18.9 | 17.6 - 20.2 | 3,827 | 3,166 | | 18.9 | 17.5 - 20.3 | 3,438 | 2,846 | |

Figure 3:12 Trends for females (all ages) in relative survival rates for acute myeloid leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

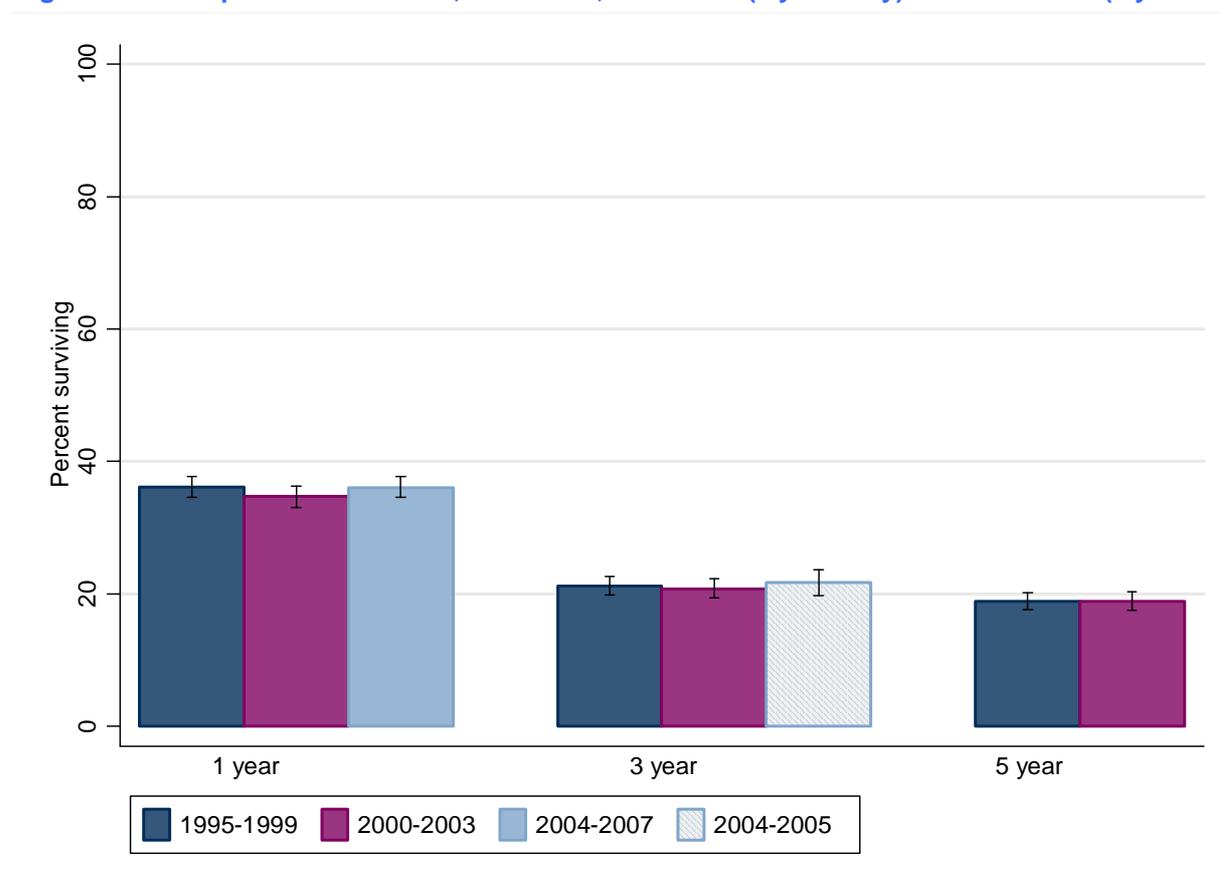


Table 3:13 Trends for females (all ages) in relative survival rates for acute myeloid leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|-------------------------------|------------------|-------------|--------|------|--------|--------|
| 1 year | 1995-1999 | 36.2 | 34.6 | 37.7 | 3,827 | 2,477 |
| | 2000-2003 | 34.7 | 33.1 | 36.3 | 3,438 | 2,279 |
| | 2004-2007 | 36.1 | 34.6 | 37.7 | 3,776 | 2,450 |
| 3 year | 1995-1999 | 21.2 | 19.9 | 22.6 | 3,827 | 3,064 |
| | 2000-2003 | 20.8 | 19.4 | 22.3 | 3,438 | 2,768 |
| | 2004-2005 | 21.7 | 19.8 | 23.6 | 1,883 | 1,501 |
| 5 year | 1995-1999 | 18.9 | 17.6 | 20.2 | 3,827 | 3,166 |
| | 2000-2003 | 18.9 | 17.5 | 20.3 | 3,438 | 2,846 |

Trends in survival by age (males)

Figure 3:14 Trends in relative survival rates for acute myeloid leukaemia diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

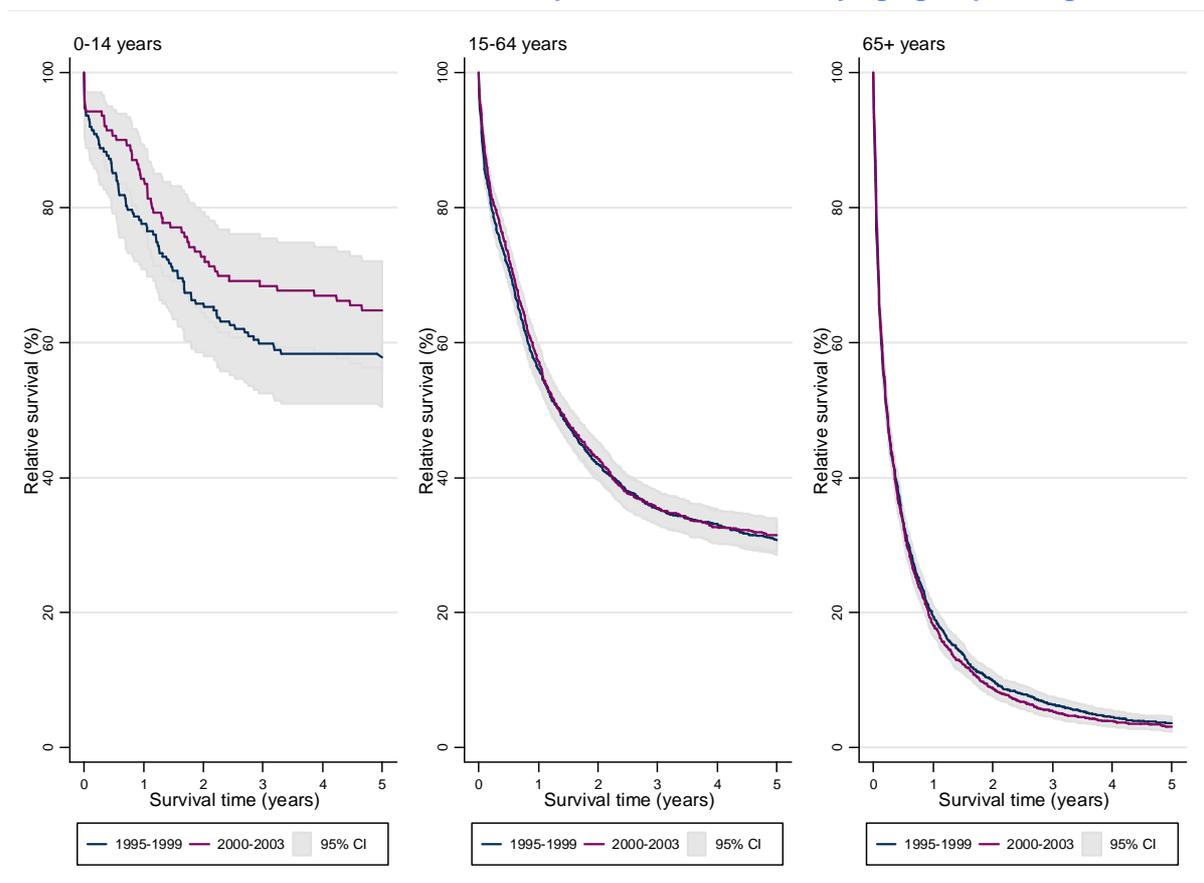


Table 3:15 Trends in relative survival rates for acute myeloid leukaemia diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-------------|---------|------|--------|--------|-------------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 0-14 years | 1 | 77.5 | 70.8 | 82.9 | 187 | 42 | 84.1 | 76.8 | 89.2 | 139 | 22 |
| | 2 | 65.7 | 58.4 | 72.0 | 187 | 64 | 72.4 | 64.2 | 79.1 | 139 | 38 |
| | 3 | 59.8 | 52.4 | 66.5 | 187 | 75 | 68.1 | 59.6 | 75.2 | 139 | 44 |
| | 4 | 58.2 | 50.8 | 64.9 | 187 | 78 | 66.7 | 58.1 | 73.9 | 139 | 46 |
| | 5 | 57.7 | 50.3 | 64.4 | 187 | 79 | 64.5 | 55.9 | 71.9 | 139 | 49 |
| 15-64 years | 1 | 55.8 | 53.4 | 58.2 | 1,706 | 759 | 57.0 | 54.4 | 59.5 | 1,480 | 641 |
| | 2 | 41.8 | 39.4 | 44.2 | 1,706 | 1,000 | 42.5 | 39.9 | 45.0 | 1,480 | 855 |
| | 3 | 35.2 | 32.9 | 37.5 | 1,706 | 1,115 | 35.2 | 32.7 | 37.7 | 1,480 | 964 |
| | 4 | 33.1 | 30.8 | 35.4 | 1,706 | 1,155 | 32.6 | 30.2 | 35.0 | 1,480 | 1,006 |
| | 5 | 30.9 | 28.7 | 33.2 | 1,706 | 1,195 | 31.5 | 29.1 | 34.0 | 1,480 | 1,024 |
| 65+ years | 1 | 19.0 | 17.4 | 20.7 | 2,375 | 1,945 | 18.0 | 16.4 | 19.6 | 2,380 | 1,975 |
| | 2 | 9.65 | 8.45 | 10.9 | 2,375 | 2,166 | 8.78 | 7.50 | 9.86 | 2,380 | 2,193 |
| | 3 | 6.36 | 5.36 | 7.47 | 2,375 | 2,244 | 5.44 | 4.52 | 6.48 | 2,380 | 2,267 |
| | 4 | 4.64 | 3.77 | 5.64 | 2,375 | 2,284 | 4.01 | 3.20 | 4.94 | 2,380 | 2,300 |
| | 5 | 3.91 | 3.09 | 4.87 | 2,375 | 2,303 | 3.26 | 2.53 | 4.14 | 2,380 | 2,318 |

Trends in survival by age (females)

Figure 3:16 Trends in relative survival rates for acute myeloid leukaemia diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

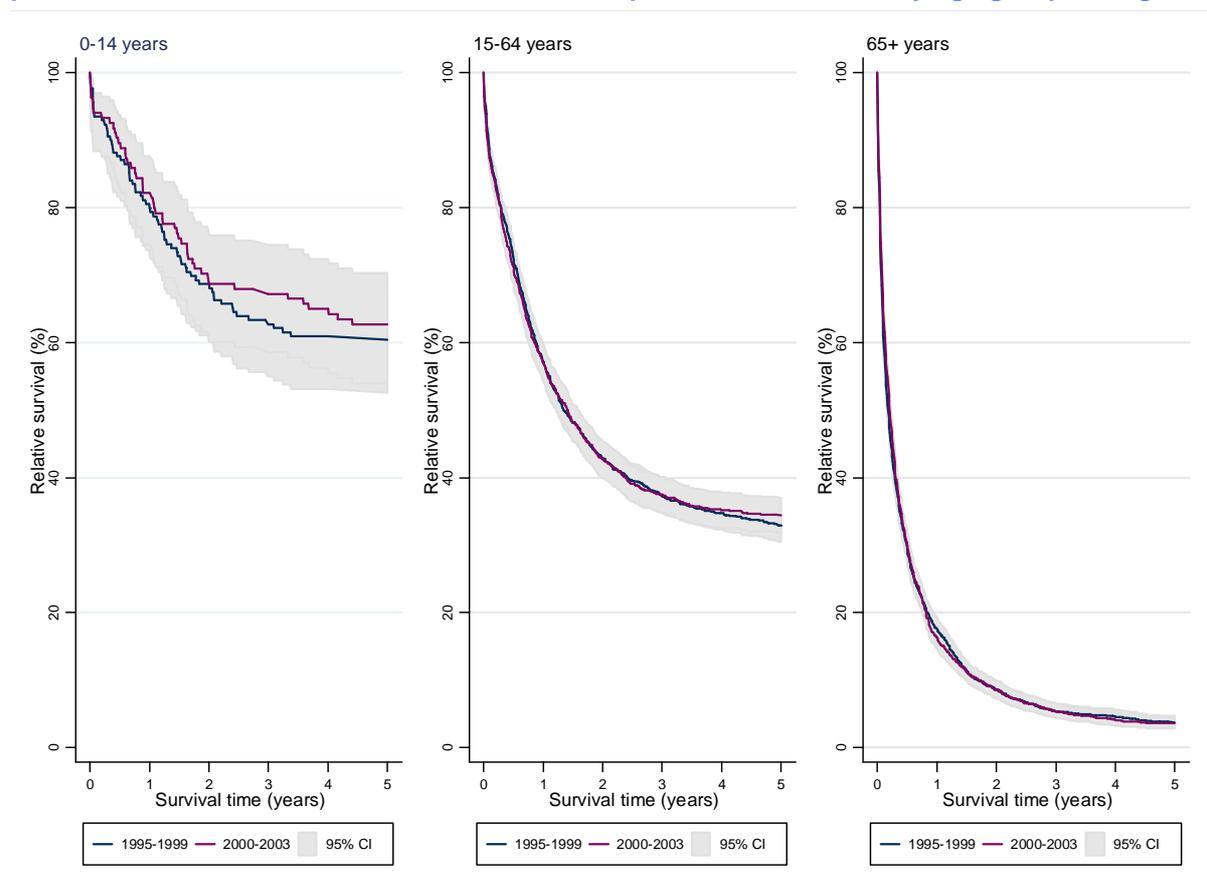


Table 3:17 Trends in relative survival rates for acute myeloid leukaemia diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | 2000-2003 | | | | | |
|--------------|------------------|-----------|---------|------|--------|-----------|------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 0-14 years | 1 | 79.9 | 73.0 | 85.2 | 169 | 34 | 82.1 | 74.4 | 87.6 | 134 | 24 |
| | 2 | 68.5 | 60.9 | 75.0 | 169 | 53 | 68.6 | 60.1 | 75.8 | 134 | 42 |
| | 3 | 62.5 | 54.7 | 69.4 | 169 | 63 | 67.2 | 58.5 | 74.4 | 134 | 44 |
| | 4 | 60.8 | 52.9 | 67.7 | 169 | 66 | 64.9 | 56.2 | 72.4 | 134 | 47 |
| | 5 | 60.2 | 52.3 | 67.1 | 169 | 67 | 62.7 | 53.9 | 70.3 | 134 | 50 |
| 15-64 years | 1 | 57.1 | 54.6 | 59.6 | 1,502 | 647 | 56.8 | 54.0 | 59.4 | 1,306 | 566 |
| | 2 | 42.6 | 40.1 | 45.2 | 1,502 | 863 | 42.4 | 39.7 | 45.1 | 1,306 | 754 |
| | 3 | 37.1 | 34.6 | 39.6 | 1,502 | 948 | 37.3 | 34.6 | 39.9 | 1,306 | 822 |
| | 4 | 34.6 | 32.2 | 37.1 | 1,502 | 987 | 35.1 | 32.5 | 37.7 | 1,306 | 852 |
| | 5 | 32.9 | 30.5 | 35.3 | 1,502 | 1,015 | 34.4 | 31.8 | 37.1 | 1,306 | 862 |
| 65+ years | 1 | 17.2 | 15.6 | 18.9 | 2,156 | 1,796 | 16.1 | 14.5 | 17.8 | 1,998 | 1,689 |
| | 2 | 8.23 | 7.08 | 9.48 | 2,156 | 1,986 | 8.27 | 7.07 | 9.59 | 1,998 | 1,843 |
| | 3 | 5.18 | 4.26 | 6.22 | 2,156 | 2,053 | 5.31 | 4.34 | 6.42 | 1,998 | 1,902 |
| | 4 | 4.62 | 3.74 | 5.63 | 2,156 | 2,068 | 4.17 | 3.30 | 5.18 | 1,998 | 1,926 |
| | 5 | 3.94 | 3.11 | 4.91 | 2,156 | 2,084 | 3.83 | 2.98 | 4.83 | 1,998 | 1,934 |

Trends in survival by age (persons)

Figure 3:18 Trends in relative survival rates for acute myeloid leukaemia diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

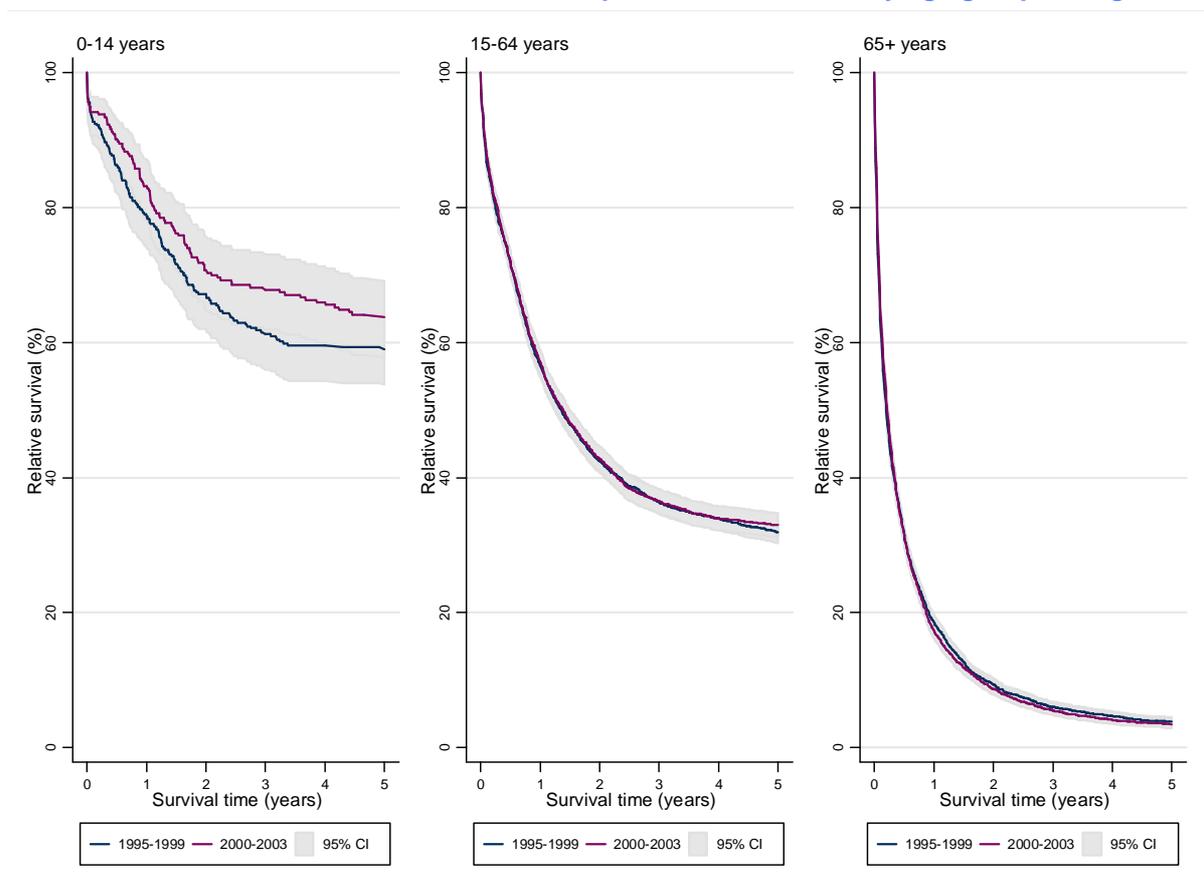


Figure 3:19 Trends in Relative survival rates for acute myeloid leukaemia diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-----------|-----------|--------|--------|------|-----------|--------|--------|--|--|
| | | RS | 95 % CI | Cohort | Deaths | RS | 95 % CI | Cohort | Deaths | | |
| 0-14 years | 1 | 78.7 | 74.0 82.6 | 356 | 76 | 83.1 | 78.1 87.1 | 273 | 46 | | |
| | 2 | 67.0 | 61.9 71.7 | 356 | 117 | 70.6 | 64.8 75.6 | 273 | 80 | | |
| | 3 | 61.1 | 55.8 66.0 | 356 | 138 | 67.6 | 61.7 72.9 | 273 | 88 | | |
| | 4 | 59.4 | 54.1 64.3 | 356 | 144 | 65.8 | 59.9 71.1 | 273 | 93 | | |
| | 5 | 58.9 | 53.6 63.8 | 356 | 146 | 63.6 | 57.6 69.0 | 273 | 99 | | |
| 15-64 years | 1 | 56.4 | 54.7 58.2 | 3,208 | 1,406 | 56.9 | 55.0 58.7 | 2,786 | 1,207 | | |
| | 2 | 42.2 | 40.5 43.9 | 3,208 | 1,863 | 42.4 | 40.6 44.3 | 2,786 | 1,609 | | |
| | 3 | 36.1 | 34.4 37.8 | 3,208 | 2,063 | 36.2 | 34.4 38.0 | 2,786 | 1,786 | | |
| | 4 | 33.8 | 32.2 35.5 | 3,208 | 2,142 | 33.8 | 32.0 35.6 | 2,786 | 1,858 | | |
| | 5 | 31.9 | 30.2 33.5 | 3,208 | 2,210 | 32.9 | 31.1 34.7 | 2,786 | 1,886 | | |
| 65+ years | 1 | 18.2 | 17.0 19.3 | 4,531 | 3,741 | 17.1 | 16.0 18.3 | 4,378 | 3,664 | | |
| | 2 | 8.97 | 8.12 9.86 | 4,531 | 4,152 | 8.47 | 7.63 9.36 | 4,378 | 4,036 | | |
| | 3 | 5.79 | 5.09 6.54 | 4,531 | 4,297 | 5.39 | 4.70 6.13 | 4,378 | 4,169 | | |
| | 4 | 4.65 | 4.01 5.35 | 4,531 | 4,352 | 4.09 | 3.48 4.76 | 4,378 | 4,226 | | |
| | 5 | 3.94 | 3.34 4.61 | 4,531 | 4,387 | 3.54 | 2.96 4.18 | 4,378 | 4,252 | | |

Chronic Lymphocytic Leukaemia

Chronic lymphocytic leukaemia (CLL) is predominantly a disease of the elderly, with higher age-standardised incidence in males. There were no marked changes across the period reported in the age-standardised incidence or mortality of CLL and no statistically significant improvement in survival.

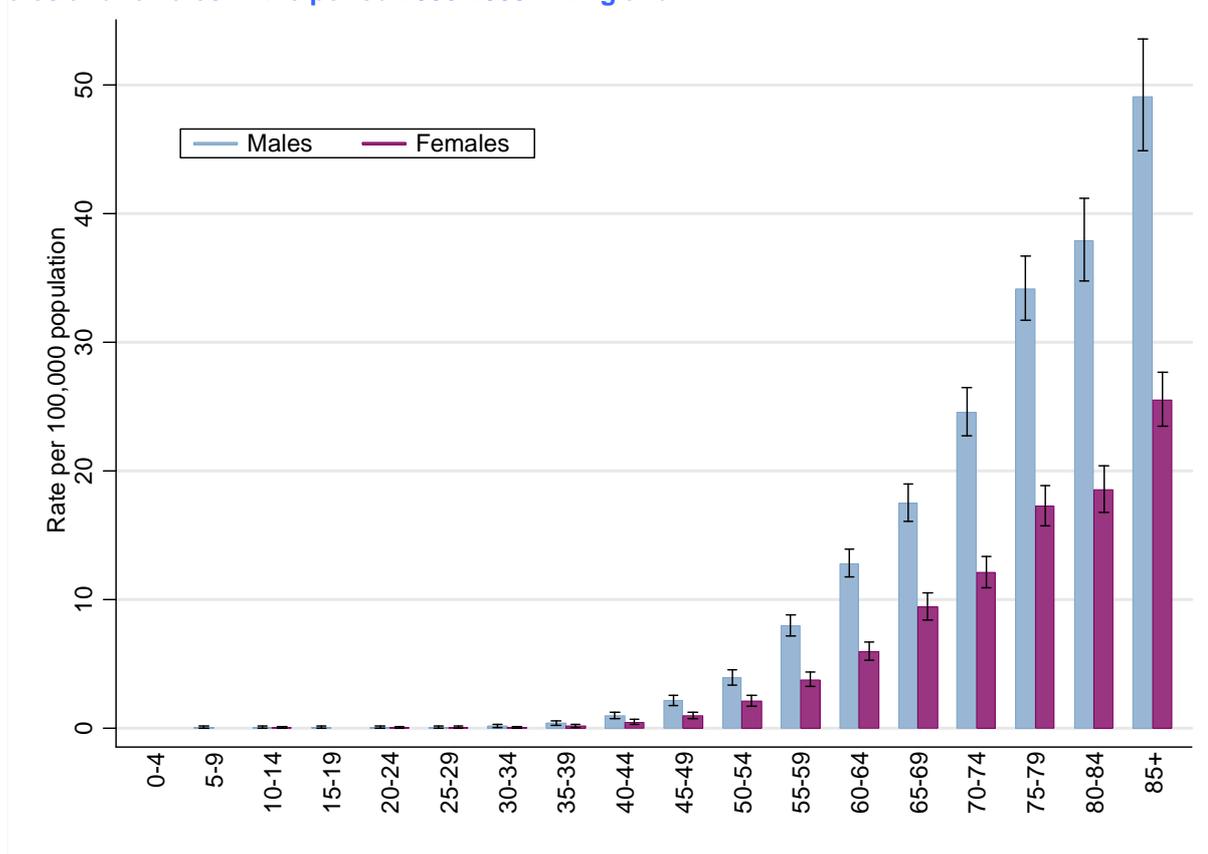
CLL is a relatively indolent cancer for which histopathology laboratories will not necessarily be involved in diagnosis and where treatment can be delivered in an outpatient setting, factors which combine to reduce the likelihood of notification to cancer registries. There is evidence of wide variation in registration rates at a sub-national level for CLL,¹ so both absolute levels of incidence and trends in incidence should be treated with caution. In addition, as variable levels of ascertainment of CLL may be related to the stage of disease at presentation (with the most indolent cancers probably those least likely to be registered), changes in survival may also be subject to artefact.

The time period covered by the analysis produced great advances in our understanding of this disease, but no overall improvement in survival is shown in the data in this report.

In more recent years clinical management has been changing for patients with CLL. Two important new drugs have been introduced into the treatment of CLL, Fludarabine and Rituximab. Fludarabine was being used in some patients in the period reported, sometimes for disease progression after first line therapy, and sometimes as initial treatment. Both treatments (usually given with cyclophosphamide) have now been shown to improve survival in randomised clinical trials and it is likely that patients diagnosed since 2008 will experience further improvements in long term survival. The use of autologous and allogenic transplantation as part of treatment gradually increased during the period reported, and their place in clinical practice is now clearer. Other drugs: alemtuzumab, bendamustine and ofatumumab have also now been introduced into clinical practice in the UK.

Age distribution

Figure 4:1 Age-specific incidence rates by age group for chronic Lymphocytic leukaemia in males and females in the period 2006-2008 in England



¹ http://www.ncin.org.uk/publications/data_briefings/understanding_outcomes_in_leukaemia.aspx

Trends in incidence and mortality (males)

Figure 4:2 Age-standardised incidence and mortality rates for chronic lymphocytic leukaemia in males (all ages) in the period 2001-2008 in England (3 year moving average)

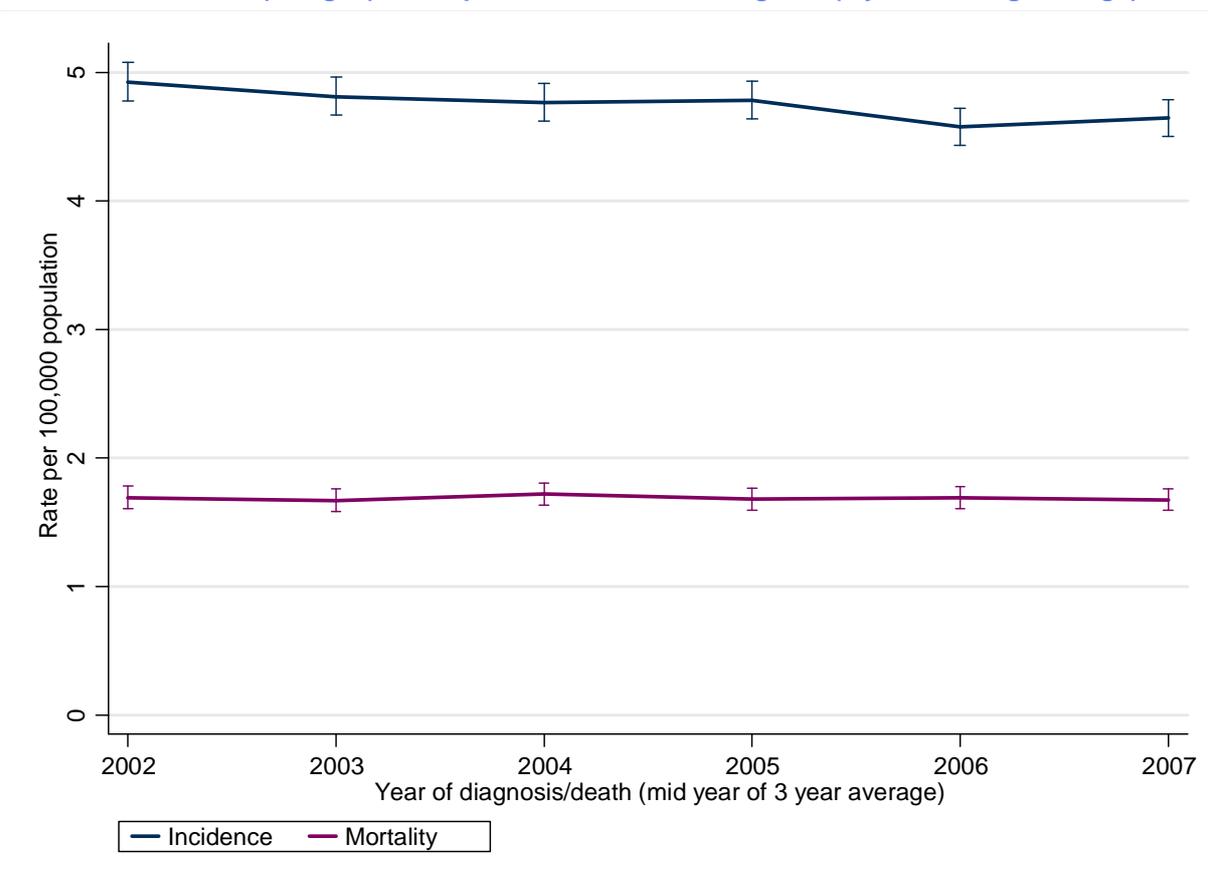


Table 4:3 Age-standardised incidence and mortality rates for chronic lymphocytic leukaemia in males (all ages) in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | Mortality | | |
|-----------|-----------|-----|---------|-----------|-----|---------|
| | Cases* | ASR | 95% CI | Deaths* | ASR | 95% CI |
| 2001-2003 | 1,408 | 4.9 | 4.8 5.1 | 509 | 1.7 | 1.6 1.8 |
| 2002-2004 | 1,401 | 4.8 | 4.7 5.0 | 508 | 1.7 | 1.6 1.8 |
| 2003-2005 | 1,408 | 4.8 | 4.6 4.9 | 534 | 1.7 | 1.6 1.8 |
| 2004-2006 | 1,435 | 4.8 | 4.6 4.9 | 535 | 1.7 | 1.6 1.8 |
| 2005-2007 | 1,394 | 4.6 | 4.4 4.7 | 552 | 1.7 | 1.6 1.8 |
| 2006-2008 | 1,446 | 4.7 | 4.5 4.8 | 560 | 1.7 | 1.6 1.8 |

*3 year moving average

Trends in incidence and mortality (females)

Figure 4:4 Age-standardised incidence and mortality rates for chronic lymphocytic leukaemia in females (all ages) in the period 2001-2008 in England (3 year moving average)

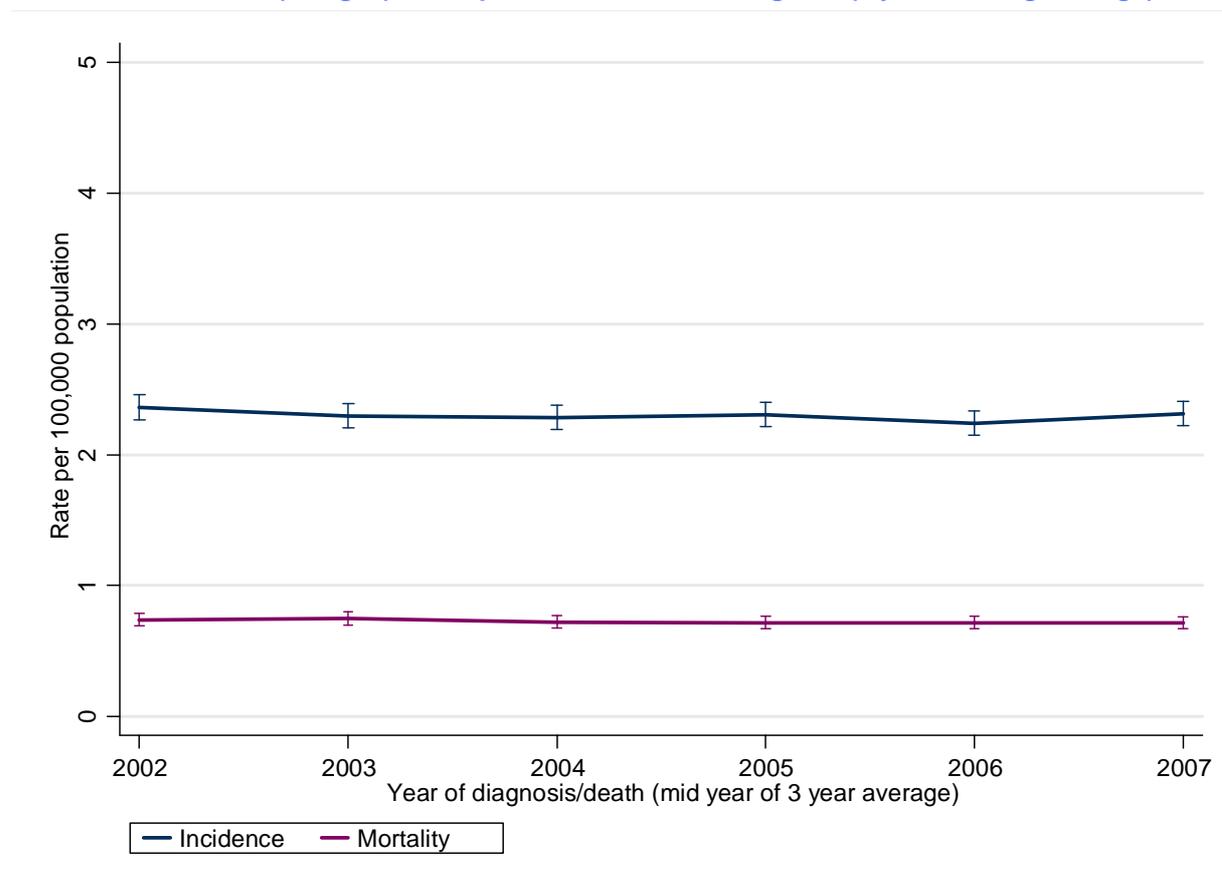


Table 4:5 Age-standardised incidence and mortality rates for chronic lymphocytic leukaemia in females (all ages) in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | Mortality | | |
|-----------|-----------|------------|---------|-----------|------------|---------|
| | Cases* | ASR | 95% CI | Deaths* | ASR | 95% CI |
| 2001-2003 | 942 | 2.4 | 2.3 2.5 | 371 | 0.7 | 0.7 0.8 |
| 2002-2004 | 913 | 2.3 | 2.2 2.4 | 374 | 0.8 | 0.7 0.8 |
| 2003-2005 | 916 | 2.3 | 2.2 2.4 | 366 | 0.7 | 0.7 0.8 |
| 2004-2006 | 933 | 2.3 | 2.2 2.4 | 366 | 0.7 | 0.7 0.8 |
| 2005-2007 | 905 | 2.2 | 2.2 2.3 | 378 | 0.7 | 0.7 0.8 |
| 2006-2008 | 935 | 2.3 | 2.2 2.4 | 378 | 0.7 | 0.7 0.8 |

*3 year moving average

Trends in survival (males)

Figure 4:6 Trends in relative survival rates for chronic lymphocytic leukaemia in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

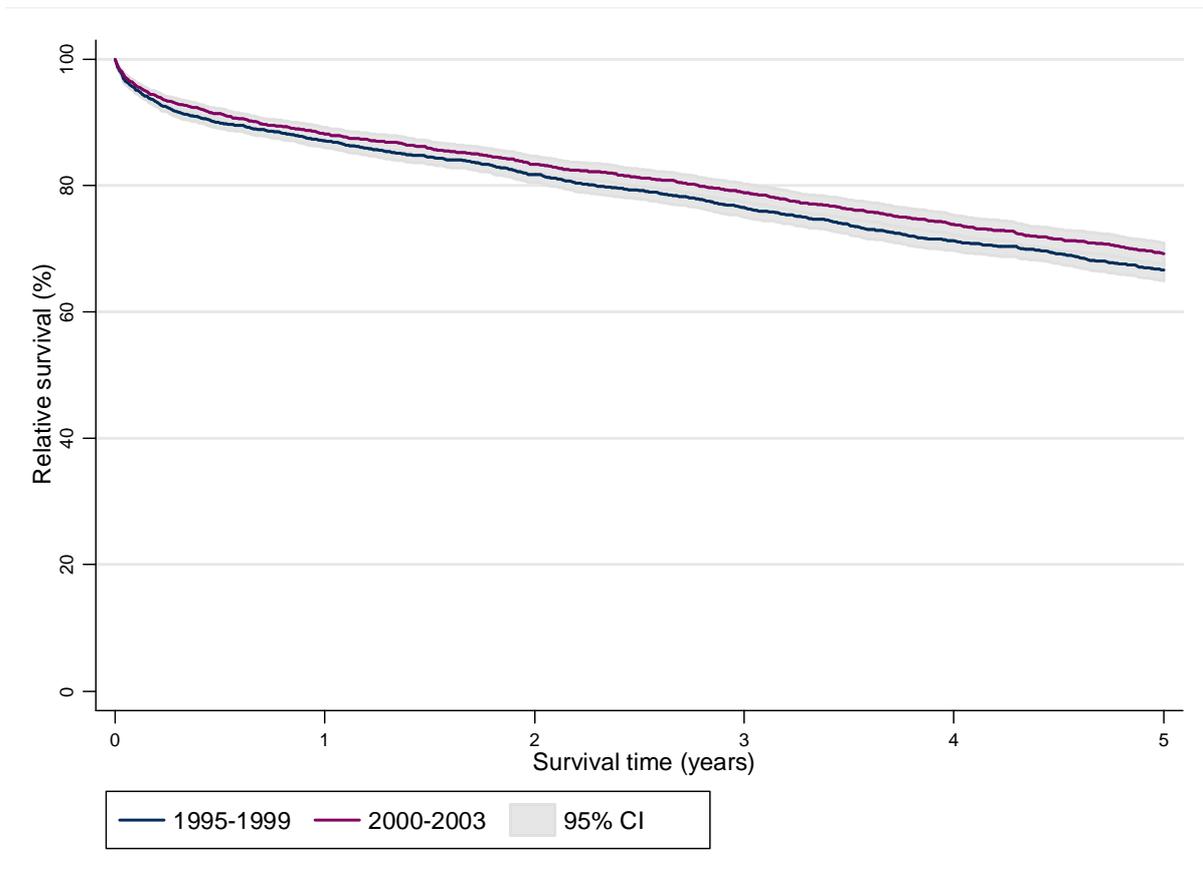


Table 4:7 Trends in relative survival rates for chronic lymphocytic leukaemia in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 87.1 | 86.1 | 88.1 | 5,893 | 1,091 | 88.2 | 87.1 | 89.2 | 5,360 | 925 |
| 2 | 82.0 | 80.7 | 83.2 | 5,893 | 1,622 | 83.5 | 82.2 | 84.7 | 5,360 | 1,383 |
| 3 | 76.9 | 75.4 | 78.2 | 5,893 | 2,101 | 79.2 | 77.7 | 80.6 | 5,360 | 1,792 |
| 4 | 71.7 | 70.1 | 73.2 | 5,893 | 2,545 | 74.3 | 72.7 | 75.8 | 5,360 | 2,177 |
| 5 | 67.1 | 65.5 | 68.7 | 5,893 | 2,921 | 69.9 | 68.2 | 71.5 | 5,360 | 2,520 |

Figure 4:8 Trends for males (all ages) in relative survival rates for chronic lymphocytic leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

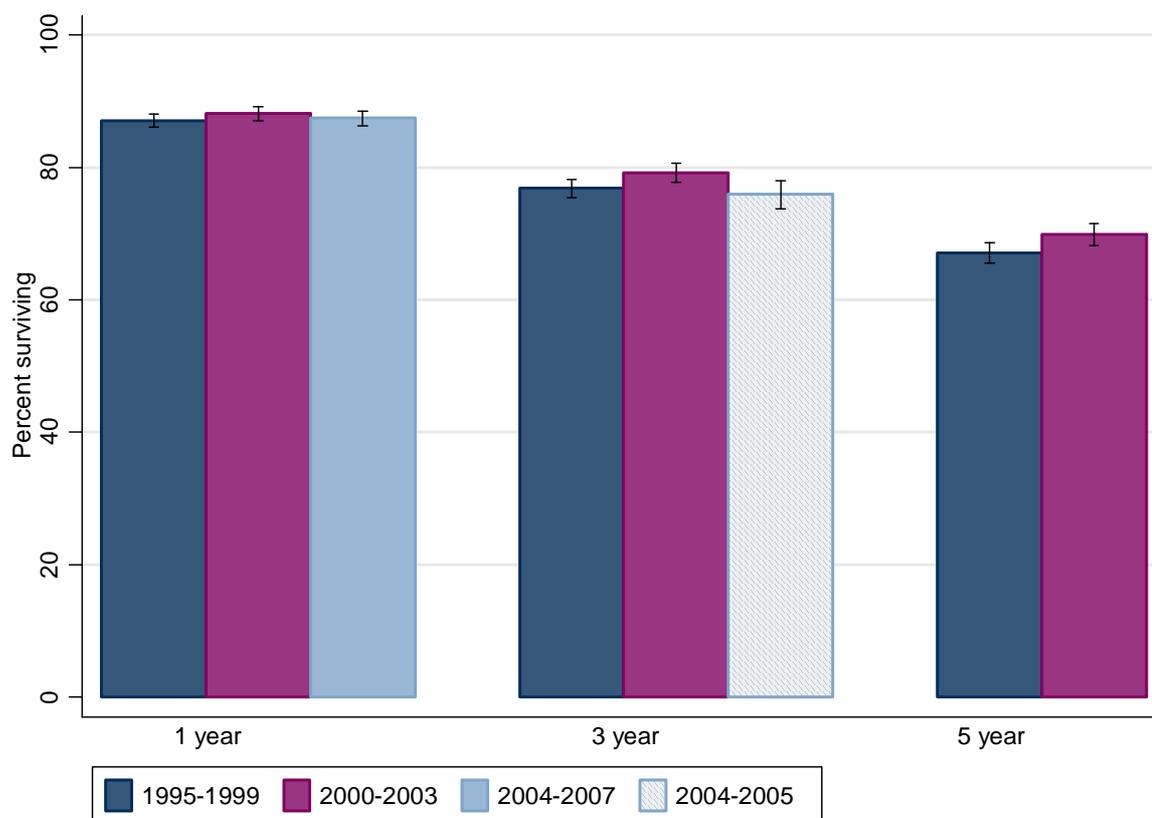


Table 4:9 Trends for males (all ages) in relative survival rates for chronic lymphocytic leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | Cohort | Deaths |
|-------------------------------|------------------|-------------|-----------|--------|--------|
| 1 year | 1995-1999 | 87.1 | 86.1 88.1 | 5,893 | 1,091 |
| | 2000-2003 | 88.2 | 87.1 89.2 | 5,360 | 925 |
| | 2004-2007 | 87.5 | 86.3 88.5 | 5,210 | 940 |
| 3 year | 1995-1999 | 76.9 | 75.4 78.2 | 5,893 | 2,101 |
| | 2000-2003 | 79.2 | 77.7 80.6 | 5,360 | 1,792 |
| | 2004-2005 | 76.0 | 73.8 78.0 | 2,610 | 931 |
| 5 year | 1995-1999 | 67.1 | 65.5 68.7 | 5,893 | 2,921 |
| | 2000-2003 | 69.9 | 68.2 71.5 | 5,360 | 2,520 |

Trends in survival (females)

Figure 4:10 Trends in relative survival rates for chronic lymphocytic leukaemia in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

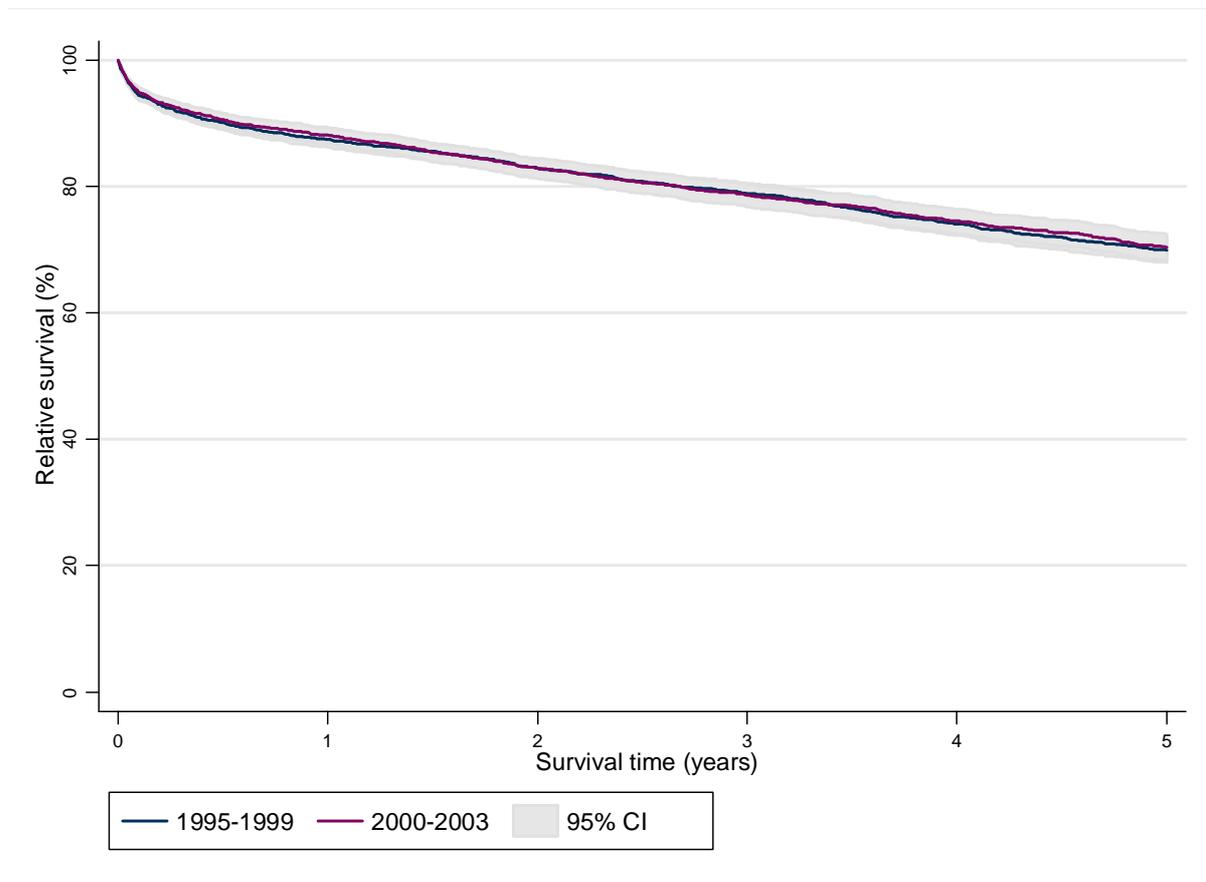


Figure 4:11 Trends in relative survival rates for chronic lymphocytic leukaemia in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 87.5 | 86.2 | 88.7 | 4,101 | 733 | 88.3 | 87.0 | 89.5 | 3,530 | 623 |
| 2 | 83.2 | 81.7 | 84.5 | 4,101 | 1,082 | 83.4 | 81.7 | 84.9 | 3,530 | 941 |
| 3 | 79.3 | 77.6 | 80.8 | 4,101 | 1,387 | 79.3 | 77.5 | 81.0 | 3,530 | 1,196 |
| 4 | 74.5 | 72.7 | 76.2 | 4,101 | 1,686 | 75.6 | 73.6 | 77.4 | 3,530 | 1,426 |
| 5 | 70.7 | 68.7 | 72.5 | 4,101 | 1,931 | 71.8 | 69.7 | 73.8 | 3,530 | 1,641 |

Figure 4:12 Trends for females (all ages) in relative survival rates for chronic lymphocytic leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

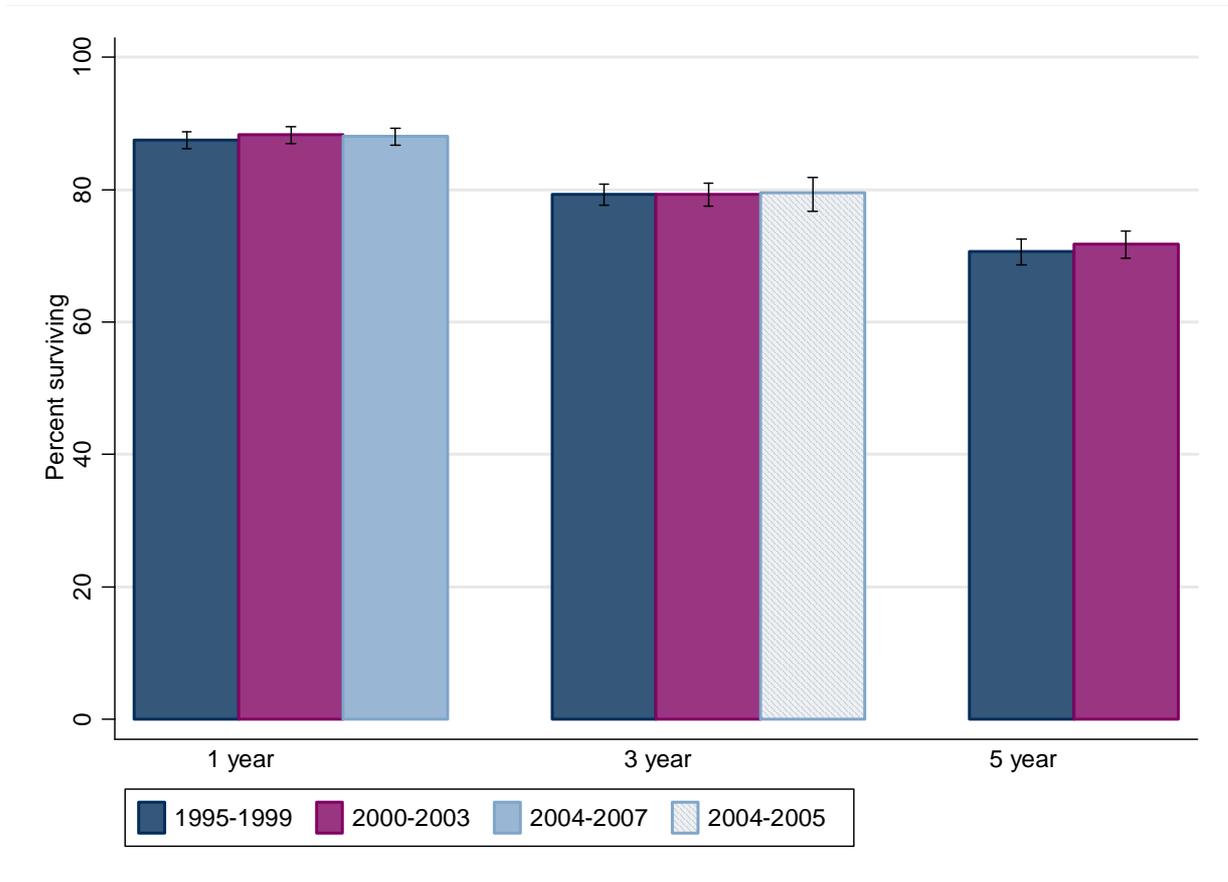


Table 4:13 Trends for females (all ages) in relative survival rates for chronic lymphocytic leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|-------------------------------|------------------|-------------|--------|------|--------|--------|
| 1 year | 1995-1999 | 87.5 | 86.2 | 88.7 | 4,101 | 733 |
| | 2000-2003 | 88.3 | 87.0 | 89.5 | 3,530 | 623 |
| | 2004-2007 | 88.1 | 86.7 | 89.3 | 3,364 | 596 |
| 3 year | 1995-1999 | 79.3 | 77.6 | 80.8 | 4,101 | 1,387 |
| | 2000-2003 | 79.3 | 77.5 | 81.0 | 3,530 | 1,196 |
| | 2004-2005 | 79.5 | 76.8 | 81.9 | 1,714 | 576 |
| 5 year | 1995-1999 | 70.7 | 68.7 | 72.5 | 4,101 | 1,931 |
| | 2000-2003 | 71.8 | 69.7 | 73.8 | 3,530 | 1,641 |

Trends in survival by age (males)

Figure 4:14 Trends in relative survival rates for chronic lymphocytic leukaemia diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

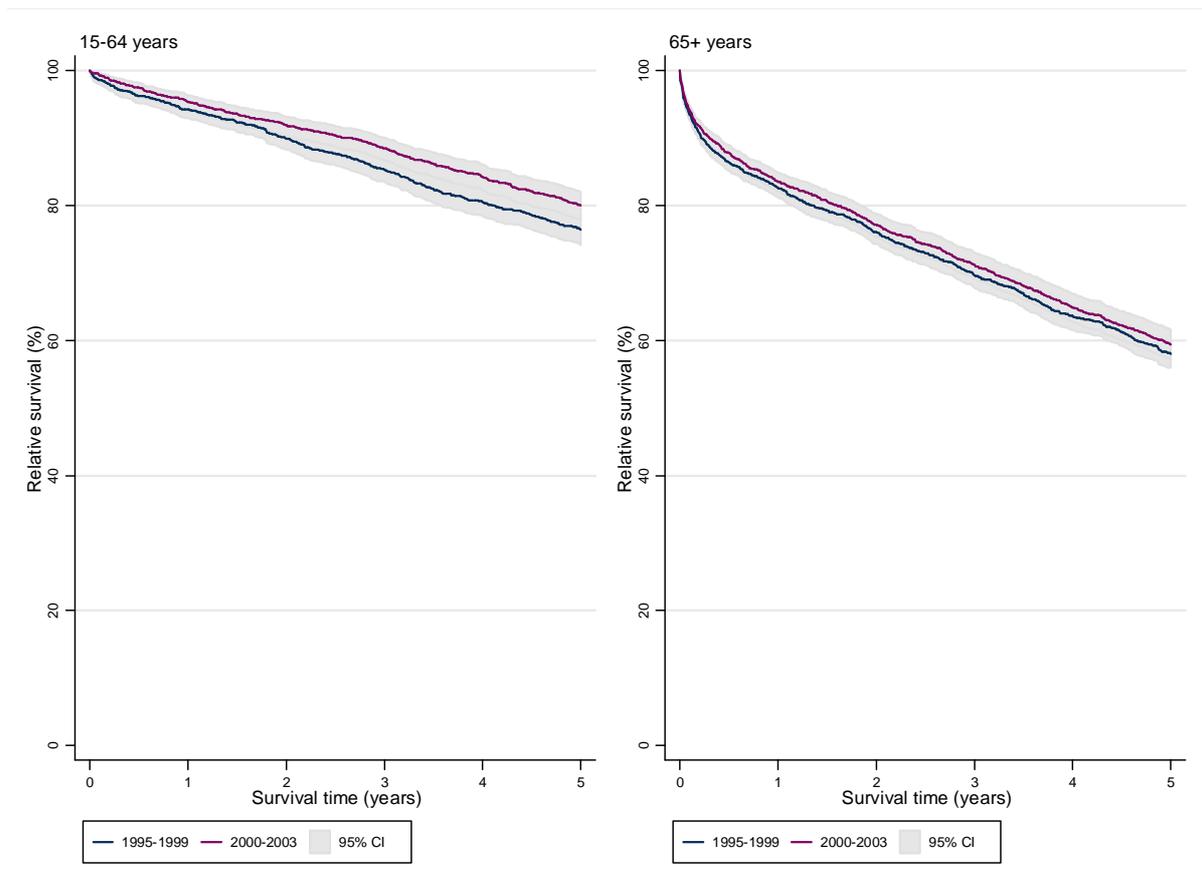


Table 4:15 Trends in relative survival rates for chronic lymphocytic leukaemia diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-------------|---------|------|--------|--------|-------------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 94.6 | 93.3 | 95.6 | 1,786 | 117 | 95.7 | 94.5 | 96.6 | 1,646 | 86 |
| | 2 | 90.7 | 89.1 | 92.1 | 1,786 | 205 | 92.6 | 91.1 | 93.9 | 1,646 | 151 |
| | 3 | 86.5 | 84.6 | 88.2 | 1,786 | 297 | 89.7 | 87.9 | 91.2 | 1,646 | 214 |
| | 4 | 82.1 | 79.9 | 84.0 | 1,786 | 392 | 85.8 | 83.8 | 87.6 | 1,646 | 291 |
| | 5 | 78.2 | 75.9 | 80.2 | 1,786 | 477 | 81.9 | 79.6 | 83.9 | 1,646 | 370 |
| 65+ years | 1 | 82.6 | 81.2 | 84.0 | 4,105 | 974 | 83.5 | 82.0 | 84.9 | 3,713 | 839 |
| | 2 | 76.4 | 74.7 | 78.0 | 4,105 | 1,417 | 77.4 | 75.7 | 79.1 | 3,713 | 1,232 |
| | 3 | 70.4 | 68.5 | 72.2 | 4,105 | 1,804 | 71.8 | 69.8 | 73.6 | 3,713 | 1,578 |
| | 4 | 64.4 | 62.4 | 66.4 | 4,105 | 2,152 | 65.8 | 63.7 | 67.8 | 3,713 | 1,886 |
| | 5 | 59.2 | 57.0 | 61.3 | 4,105 | 2,443 | 60.7 | 58.4 | 62.8 | 3,713 | 2,150 |

Trends in survival by age (females)

Figure 4:16 Trends in relative survival rates for chronic lymphocytic leukaemia diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

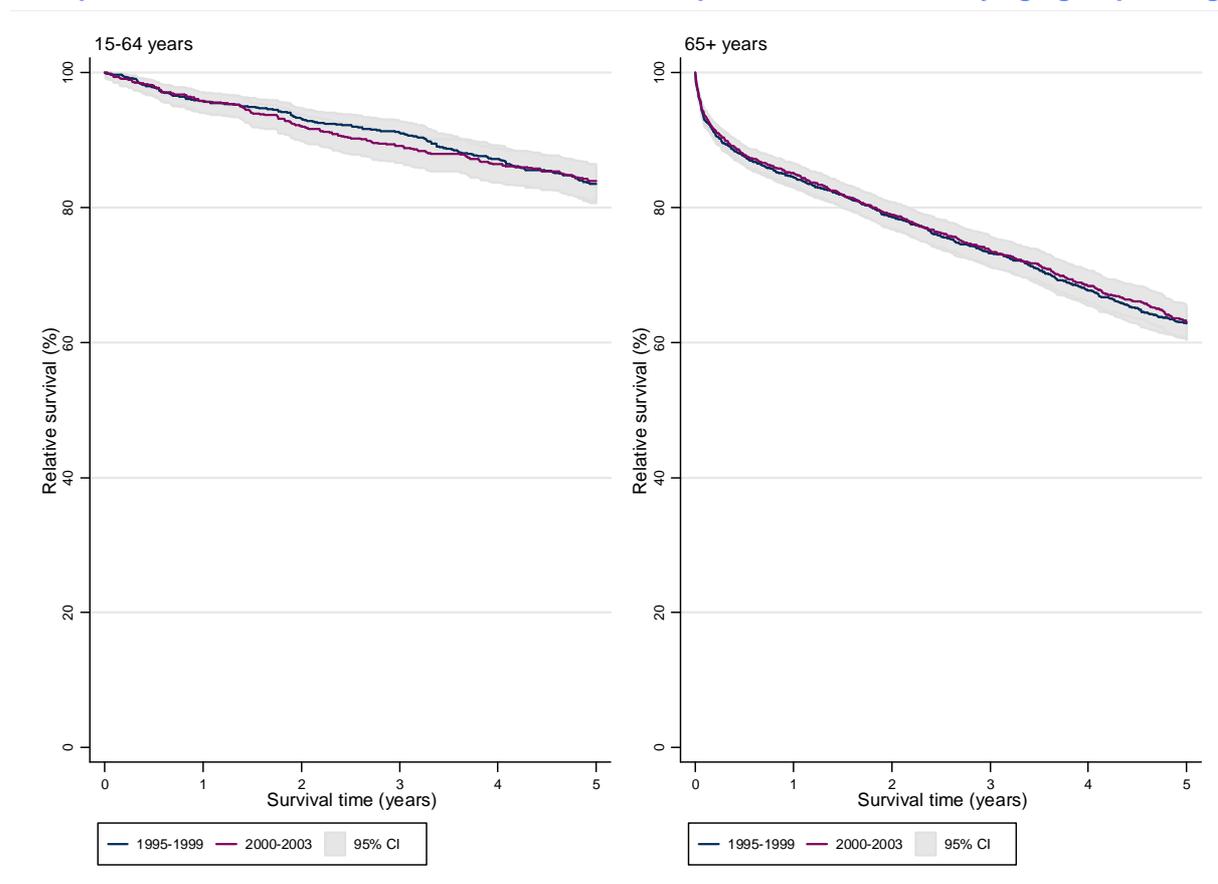


Table 4:17 Trends in relative survival rates for chronic lymphocytic leukaemia diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-----------|---------|------|--------|--------|-----------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 96.3 | 94.6 | 97.5 | 848 | 38 | 96.2 | 94.5 | 97.5 | 753 | 33 |
| | 2 | 94.2 | 92.1 | 95.7 | 848 | 61 | 93.0 | 90.7 | 94.7 | 753 | 62 |
| | 3 | 92.7 | 90.4 | 94.4 | 848 | 80 | 90.5 | 87.9 | 92.6 | 753 | 85 |
| | 4 | 89.1 | 86.5 | 91.3 | 848 | 115 | 88.1 | 85.3 | 90.5 | 753 | 107 |
| | 5 | 85.9 | 83.0 | 88.3 | 848 | 148 | 86.3 | 83.3 | 88.8 | 753 | 126 |
| 65+ years | 1 | 84.5 | 83.0 | 85.9 | 3,252 | 694 | 85.3 | 83.7 | 86.8 | 2,777 | 590 |
| | 2 | 79.0 | 77.2 | 80.7 | 3,252 | 1,020 | 79.4 | 77.4 | 81.3 | 2,777 | 879 |
| | 3 | 73.8 | 71.8 | 75.7 | 3,252 | 1,306 | 74.4 | 72.2 | 76.5 | 2,777 | 1,111 |
| | 4 | 68.3 | 66.1 | 70.4 | 3,252 | 1,570 | 69.7 | 67.3 | 72.0 | 2,777 | 1,319 |
| | 5 | 64.0 | 61.6 | 66.2 | 3,252 | 1,782 | 64.8 | 62.2 | 67.2 | 2,777 | 1,515 |

Trends in survival by age (persons)

Figure 4:18 Trends in relative survival rates for chronic lymphocytic leukaemia diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

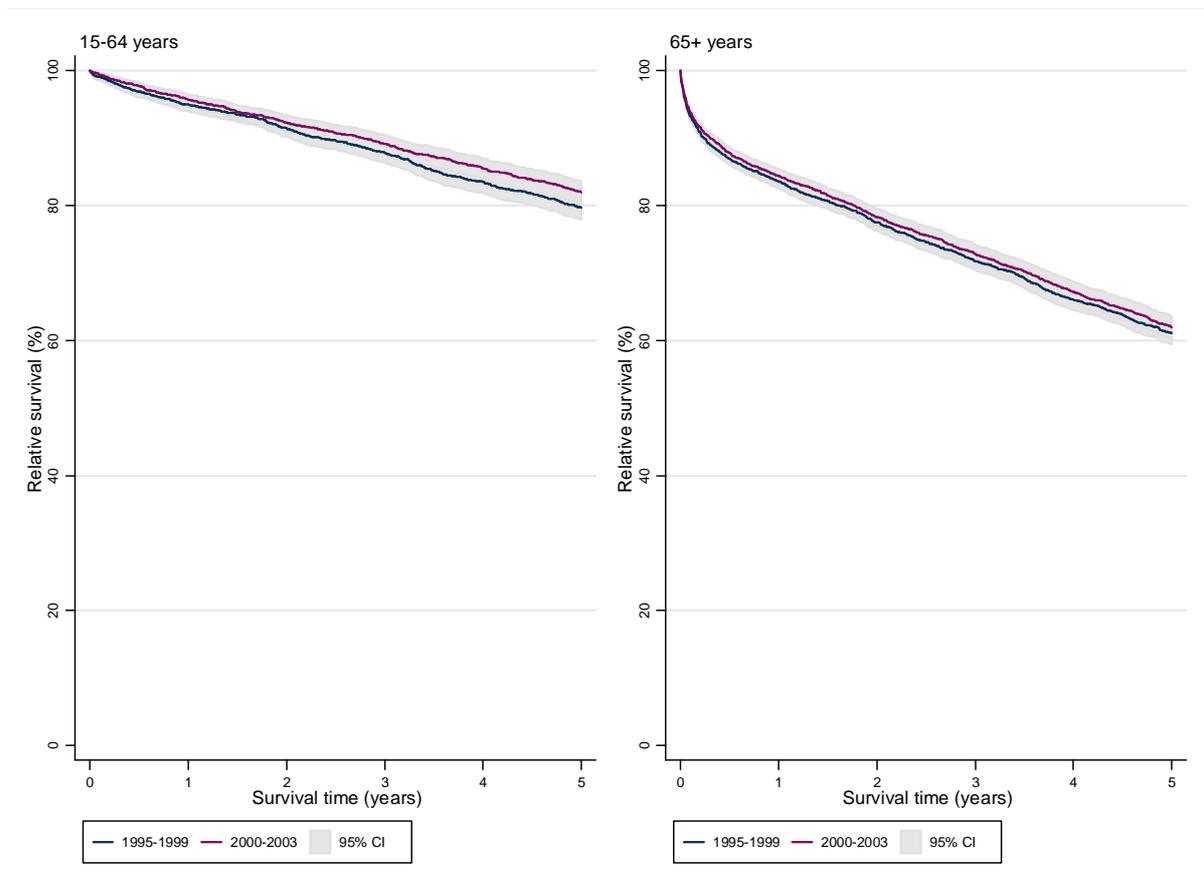


Table 4:19 Trends in relative survival rates for chronic lymphocytic leukaemia diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-------------|---------|------|--------|--------|-------------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 95.1 | 94.1 | 96.0 | 2,634 | 155 | 95.9 | 94.9 | 96.7 | 2,399 | 119 |
| | 2 | 91.9 | 90.6 | 93.0 | 2,634 | 266 | 92.7 | 91.5 | 93.8 | 2,399 | 213 |
| | 3 | 88.6 | 87.1 | 89.9 | 2,634 | 377 | 89.9 | 88.5 | 91.2 | 2,399 | 299 |
| | 4 | 84.5 | 82.8 | 86.0 | 2,634 | 507 | 86.6 | 85.0 | 88.0 | 2,399 | 398 |
| | 5 | 80.8 | 79.0 | 82.4 | 2,634 | 625 | 83.4 | 81.6 | 85.0 | 2,399 | 496 |
| 65+ years | 1 | 83.5 | 82.5 | 84.5 | 7,357 | 1,668 | 84.3 | 83.2 | 85.3 | 6,490 | 1,429 |
| | 2 | 77.6 | 76.3 | 78.8 | 7,357 | 2,437 | 78.3 | 77.0 | 79.5 | 6,490 | 2,111 |
| | 3 | 71.9 | 70.6 | 73.3 | 7,357 | 3,110 | 72.9 | 71.4 | 74.3 | 6,490 | 2,689 |
| | 4 | 66.2 | 64.7 | 67.7 | 7,357 | 3,722 | 67.5 | 65.9 | 69.0 | 6,490 | 3,205 |
| | 5 | 61.4 | 59.8 | 62.9 | 7,357 | 4,225 | 62.5 | 60.8 | 64.1 | 6,490 | 3,665 |

Chronic Myeloid Leukaemia

Chronic myeloid leukaemia (CML) is a relatively rare cancer, predominantly affecting people over the age of 60, with higher age-standardised incidence in males. There were no changes in the incidence of CML between 2001 and 2008; but there have been marked changes in mortality and survival over this time.

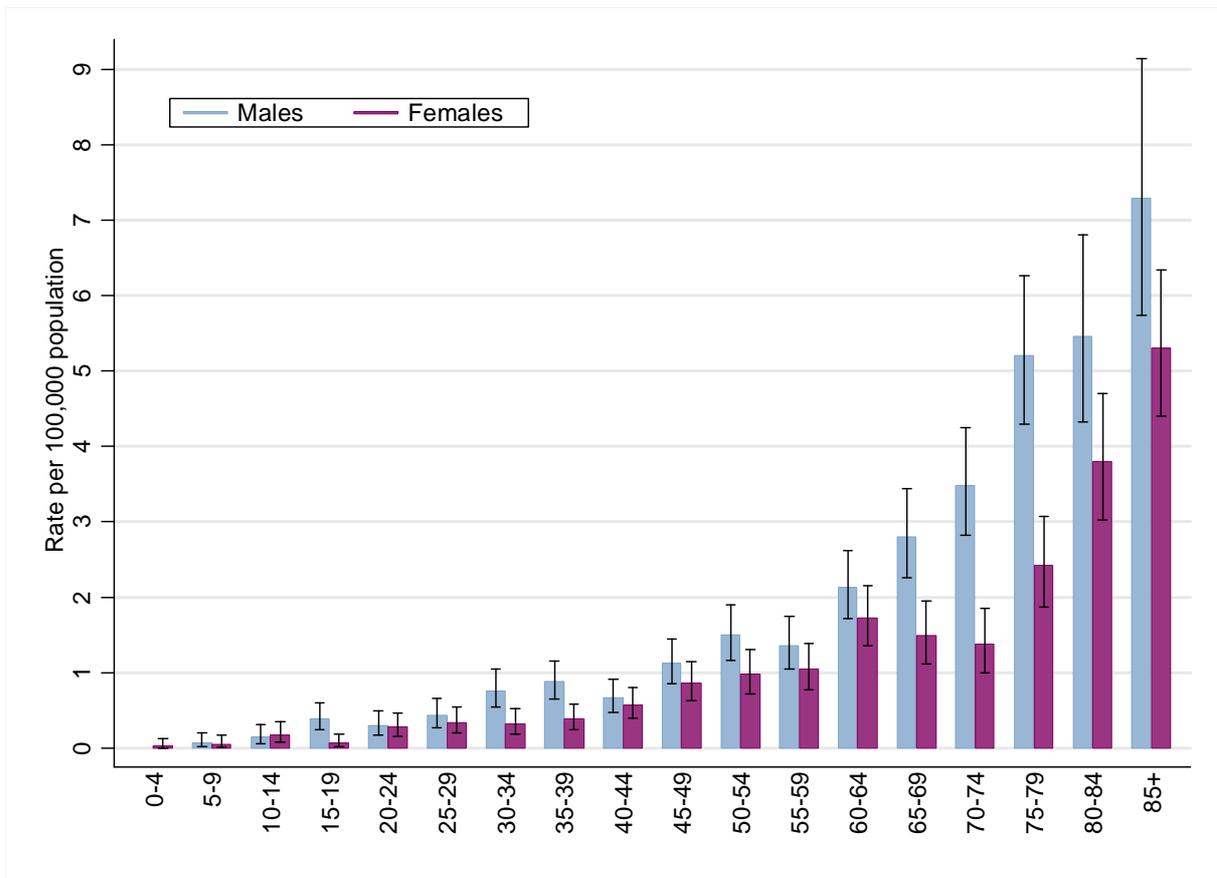
Relative survival curves comparing the two consecutive diagnostic cohorts (1995-1999) and (2000-2003) show a substantial improvement, in both males and females.

The improvement in prognosis seen is due to the introduction of a new drug – Imatinib which was being used increasingly to treat patients with CML over the period 2001-08. The drug received a license for use in the UK in November 2001, with NICE Technology appraisals in October 2002 and 2003 extending its use so that from 2003 onwards most newly diagnosed patients with CML were treated with imatinib, and most patients already on other drugs were switched to the new drug.

Until the 1990's cancer registrations for CML were not distinguished from chronic myelomonocytic leukaemia (CMML), Whilst CMML is now registered separately from CML there is a possibility, particularly in the elderly, that registrations for CML may include some cases of CMML. This may contribute to the high rates of incidence reported in the elderly, and, as CMML has a poorer prognosis than CML, may result in an under-estimate of relative survival in older patients following a diagnosis of CML.

Age distribution

Figure 5:1 Age-specific incidence rates by age group for chronic myeloid leukaemia in males and females between 2006-2008 in England



Trends in incidence and mortality (males)

Figure 5:2 Age-standardised incidence and mortality rates for chronic myeloid leukaemia in males in the period 2001-2008 in England (3 year moving average)

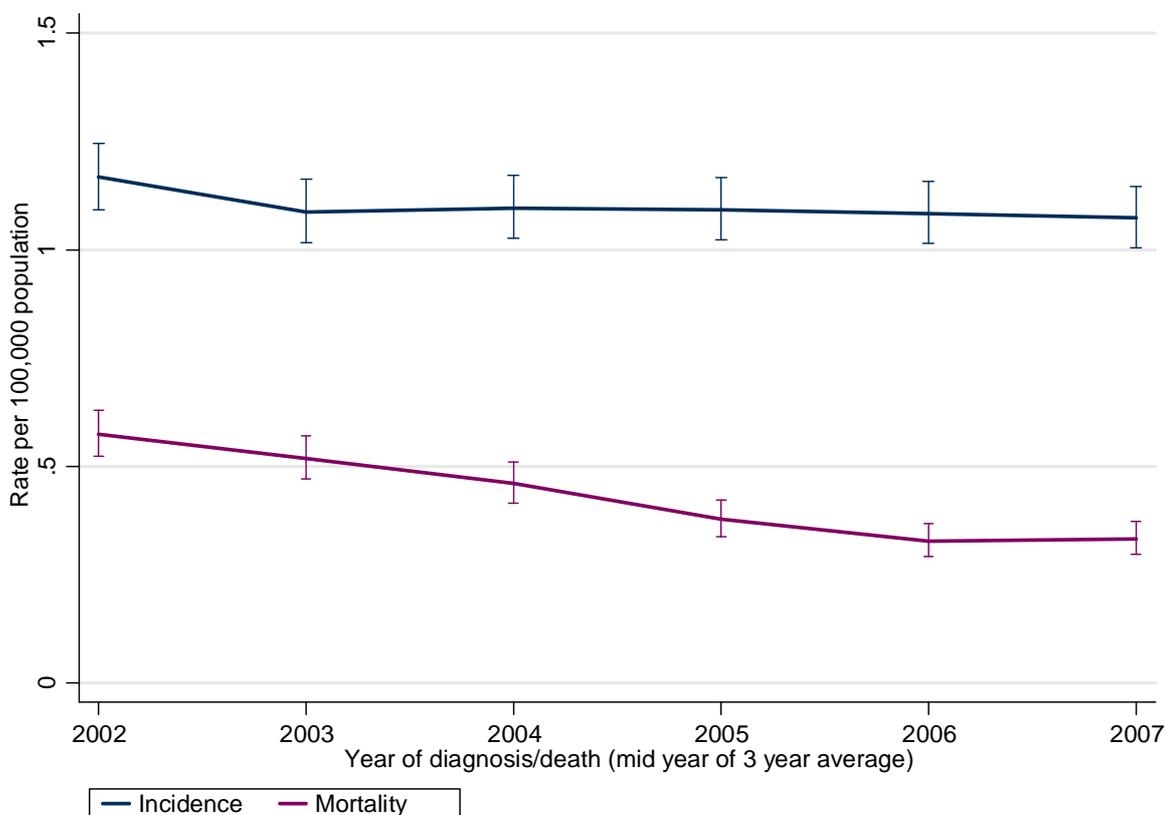


Table 5:3 Age-standardised incidence and mortality rates for chronic myeloid leukaemia in males in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | Mortality | | |
|-----------|-----------|-----|---------|-----------|-----|---------|
| | Cases* | ASR | 95% CI | Deaths* | ASR | 95% CI |
| 2001-2003 | 314 | 1.2 | 1.1 1.3 | 163 | 0.6 | 0.5 0.6 |
| 2002-2004 | 301 | 1.1 | 1.0 1.2 | 149 | 0.5 | 0.5 0.6 |
| 2003-2005 | 308 | 1.1 | 1.0 1.2 | 136 | 0.5 | 0.4 0.5 |
| 2004-2006 | 311 | 1.1 | 1.0 1.2 | 114 | 0.4 | 0.3 0.4 |
| 2005-2007 | 311 | 1.1 | 1.0 1.2 | 102 | 0.3 | 0.3 0.4 |
| 2006-2008 | 310 | 1.1 | 1.0 1.2 | 105 | 0.3 | 0.3 0.4 |

*3 year moving average

Trends in incidence and mortality (females)

Figure 5:4 Age-standardised incidence and mortality rates for chronic myeloid leukaemia in females in the period 2001-2008 in England (3 year moving average)

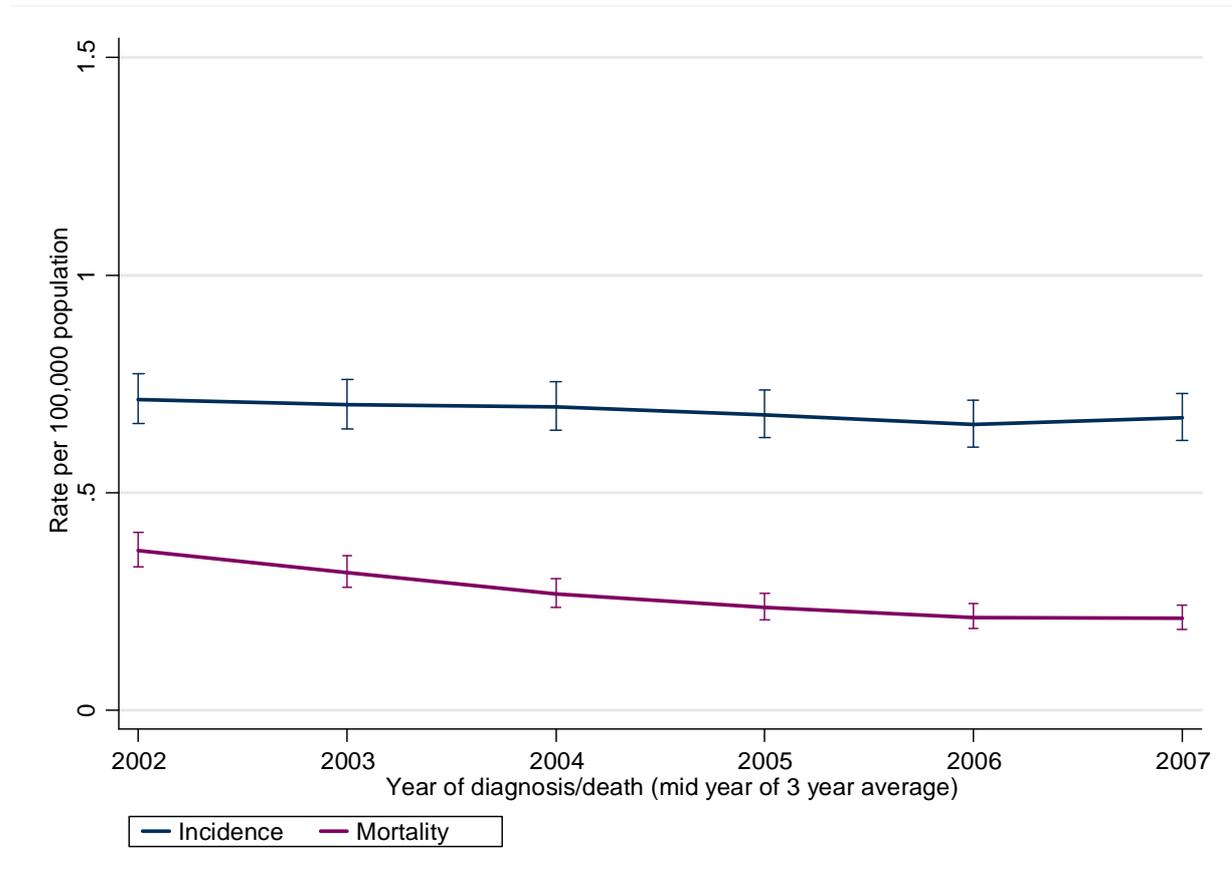


Table 5:5 Age-standardised incidence and mortality rates for chronic myeloid leukaemia in females in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | | Mortality | | | |
|-----------|-----------|------------|--------|-----|-----------|------------|--------|-----|
| | Cases* | ASR | 95% CI | | Deaths* | ASR | 95% CI | |
| 2001-2003 | 238 | 0.7 | 0.7 | 0.8 | 140 | 0.4 | 0.3 | 0.4 |
| 2002-2004 | 234 | 0.7 | 0.7 | 0.8 | 126 | 0.3 | 0.3 | 0.4 |
| 2003-2005 | 236 | 0.7 | 0.6 | 0.8 | 110 | 0.3 | 0.2 | 0.3 |
| 2004-2006 | 234 | 0.7 | 0.6 | 0.7 | 101 | 0.2 | 0.2 | 0.3 |
| 2005-2007 | 231 | 0.7 | 0.6 | 0.7 | 92 | 0.2 | 0.2 | 0.2 |
| 2006-2008 | 234 | 0.7 | 0.6 | 0.7 | 96 | 0.2 | 0.2 | 0.2 |

*3 year moving average

Trends in survival (males)

Figure 5:6 Trends in relative survival rates for chronic myeloid leukaemia in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

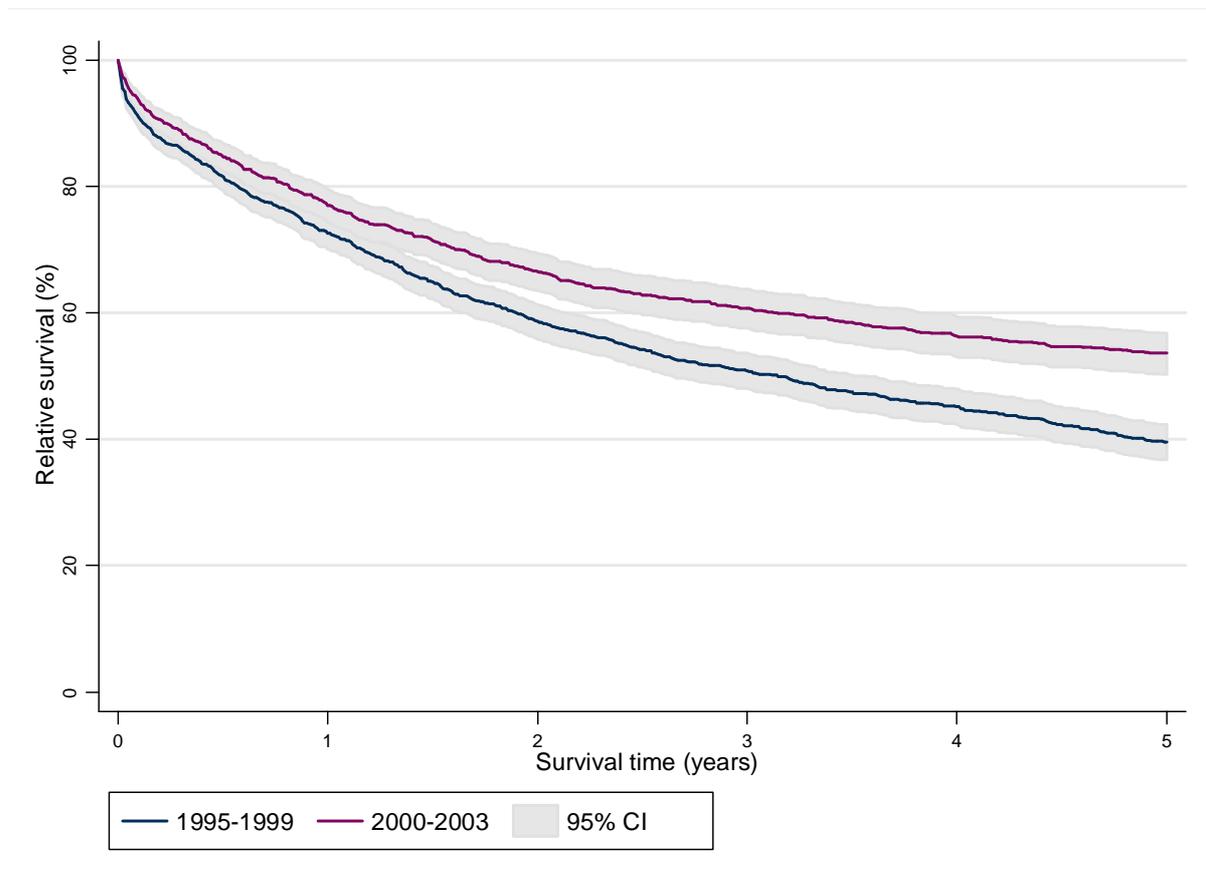


Table 5:7 Trends in relative survival rates for chronic myeloid leukaemia diagnosed in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003, followed up to the end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-----------|--------|------|--------|--------|-----------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 72.4 | 69.9 | 74.8 | 1,541 | 484 | 77.3 | 74.6 | 79.8 | 1,181 | 312 |
| 2 | 58.7 | 55.9 | 61.4 | 1,541 | 721 | 67.2 | 64.1 | 70.0 | 1,181 | 450 |
| 3 | 51.2 | 48.4 | 54.0 | 1,541 | 851 | 62.3 | 59.1 | 65.4 | 1,181 | 531 |
| 4 | 45.9 | 43.0 | 48.7 | 1,541 | 946 | 58.6 | 55.3 | 61.8 | 1,181 | 590 |
| 5 | 40.7 | 37.8 | 43.5 | 1,541 | 1,030 | 56.9 | 53.5 | 60.2 | 1,181 | 628 |

Figure 5:8 Trends for males (all ages) in relative survival rates for chronic myeloid leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

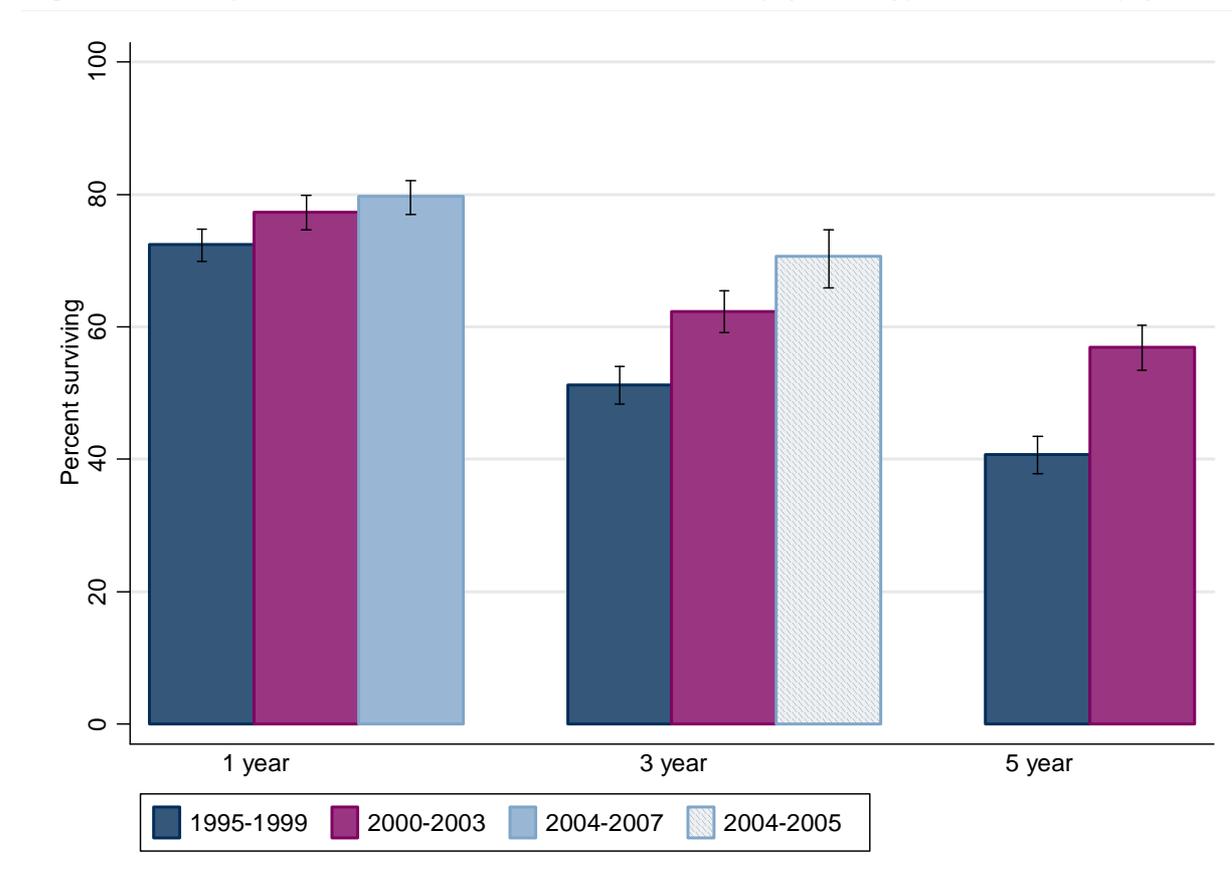


Table 5:9 Trends for males (all ages) in relative survival rates for chronic myeloid leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|----------------------------------|------------------|------|--------|-------|--------|--------|
| | | | Lower | Upper | | |
| 1 year | 1995-1999 | 72.4 | 69.9 | 74.8 | 1,541 | 484 |
| | 2000-2003 | 77.3 | 74.6 | 79.8 | 1,181 | 312 |
| | 2004-2007 | 79.7 | 77.0 | 82.1 | 1,161 | 284 |
| 3 year | 1995-1999 | 51.2 | 48.4 | 54.0 | 1,541 | 851 |
| | 2000-2003 | 62.3 | 59.1 | 65.4 | 1,181 | 531 |
| | 2004-2005 | 70.6 | 65.9 | 74.7 | 568 | 215 |
| 5 year | 1995-1999 | 40.7 | 37.8 | 43.5 | 1,541 | 1,030 |
| | 2000-2003 | 56.9 | 53.5 | 60.2 | 1,181 | 628 |

Trends in survival (females)

Figure 5:10 Trends in relative survival rates for chronic myeloid leukaemia in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

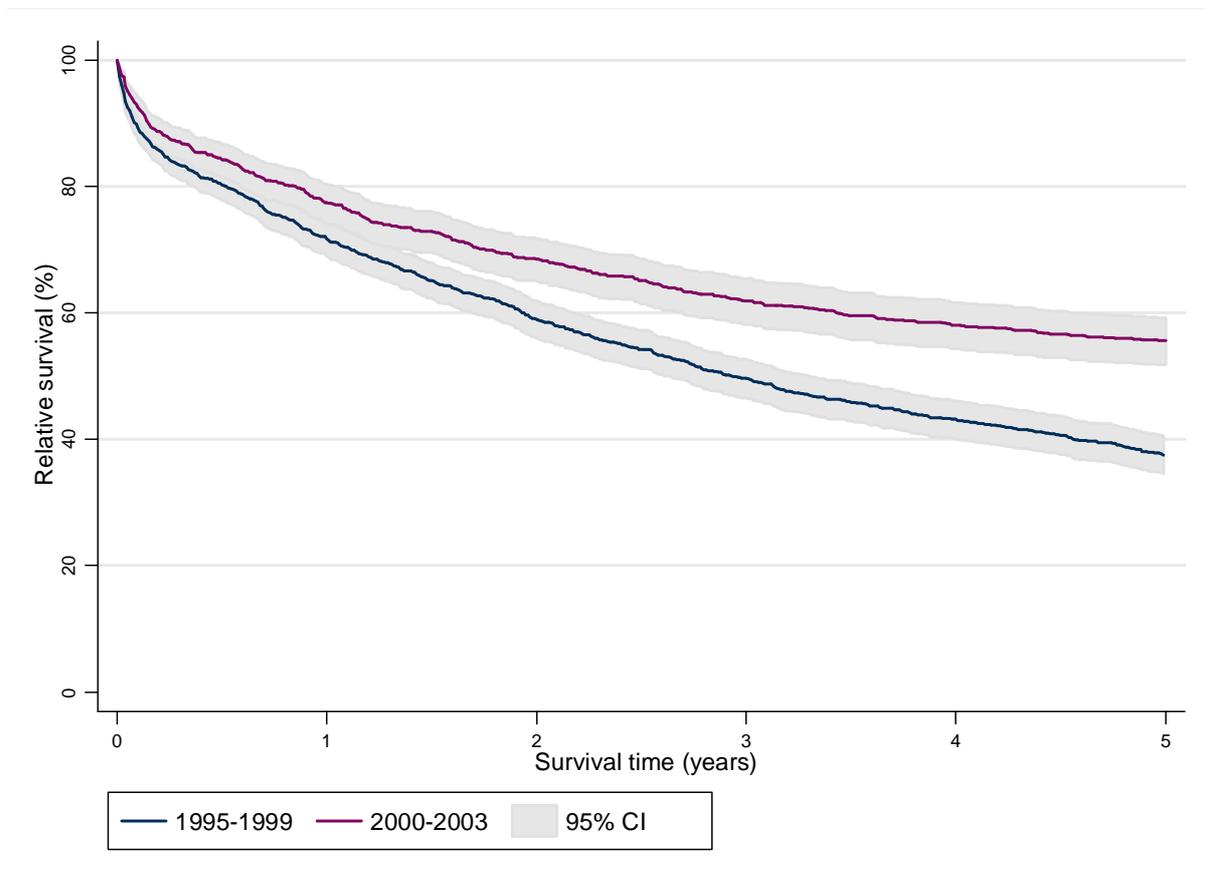


Table 5:11 Trends in relative survival rates for chronic myeloid leukaemia diagnosed in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003, followed up to the end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 71.5 | 68.8 | 74.0 | 1,310 | 419 | 77.5 | 74.3 | 80.4 | 889 | 237 |
| 2 | 59.0 | 56.0 | 61.9 | 1,310 | 602 | 69.4 | 65.8 | 72.6 | 889 | 325 |
| 3 | 49.8 | 46.7 | 52.7 | 1,310 | 737 | 63.4 | 59.7 | 66.9 | 889 | 393 |
| 4 | 43.7 | 40.7 | 46.7 | 1,310 | 822 | 60.4 | 56.5 | 64.0 | 889 | 432 |
| 5 | 38.4 | 35.4 | 41.4 | 1,310 | 892 | 58.7 | 54.8 | 62.4 | 889 | 457 |

Figure 5:12 Trends for females in relative survival rates for chronic myeloid leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

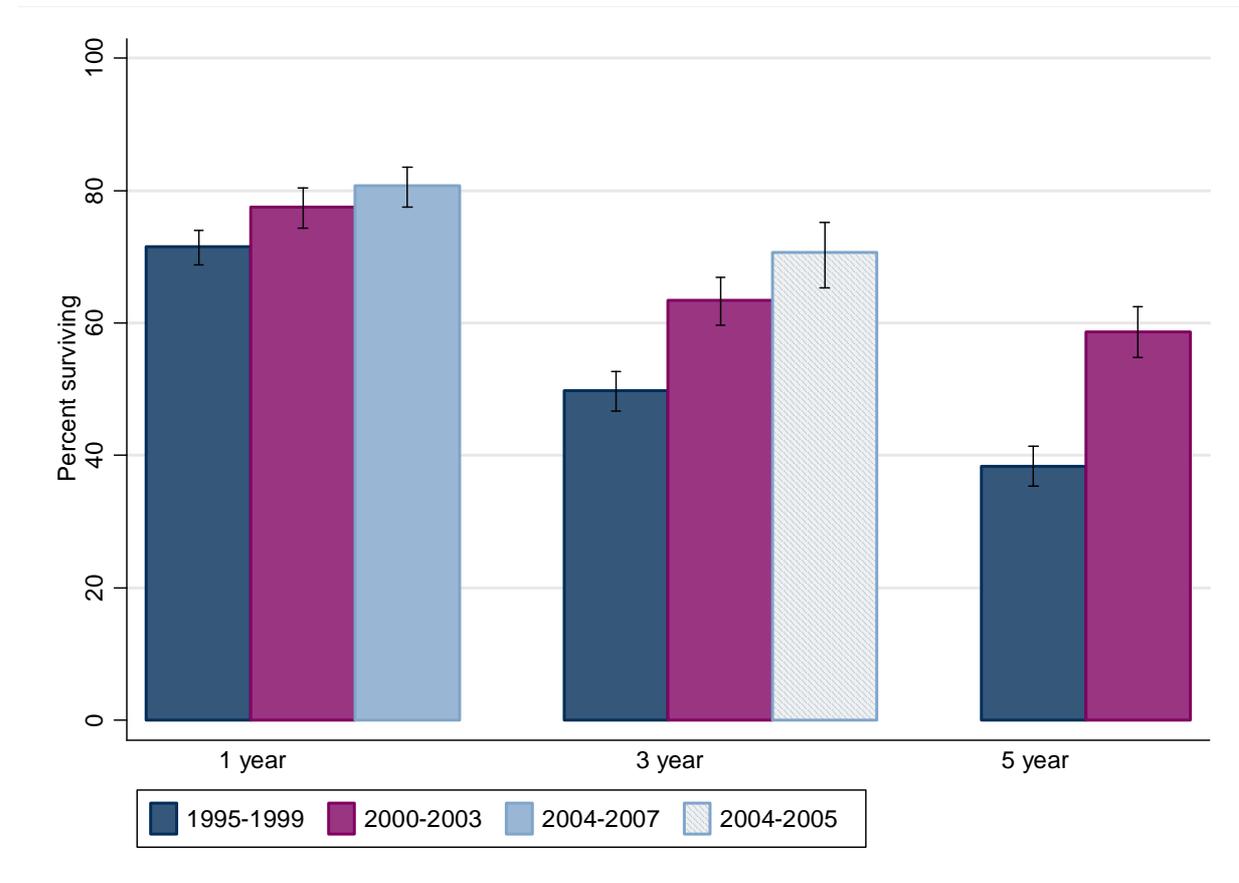


Table 5:13 Trends for females in relative survival rates for chronic myeloid leukaemia diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|-------------------------------|------------------|-------------|--------|------|--------|--------|
| 1 year | 1995-1999 | 71.5 | 68.8 | 74.0 | 1,310 | 419 |
| | 2000-2003 | 77.5 | 74.3 | 80.4 | 889 | 237 |
| | 2004-2007 | 80.7 | 77.5 | 83.5 | 854 | 203 |
| 3 year | 1995-1999 | 49.8 | 46.7 | 52.7 | 1,310 | 737 |
| | 2000-2003 | 63.4 | 59.7 | 66.9 | 889 | 393 |
| | 2004-2005 | 70.6 | 65.3 | 75.2 | 429 | 159 |
| 5 year | 1995-1999 | 38.4 | 35.4 | 41.4 | 1,310 | 892 |
| | 2000-2003 | 58.7 | 54.8 | 62.4 | 889 | 457 |

Trends in survival by age (males)

Figure 5:14 Trends in relative survival rates for chronic myeloid leukaemia diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

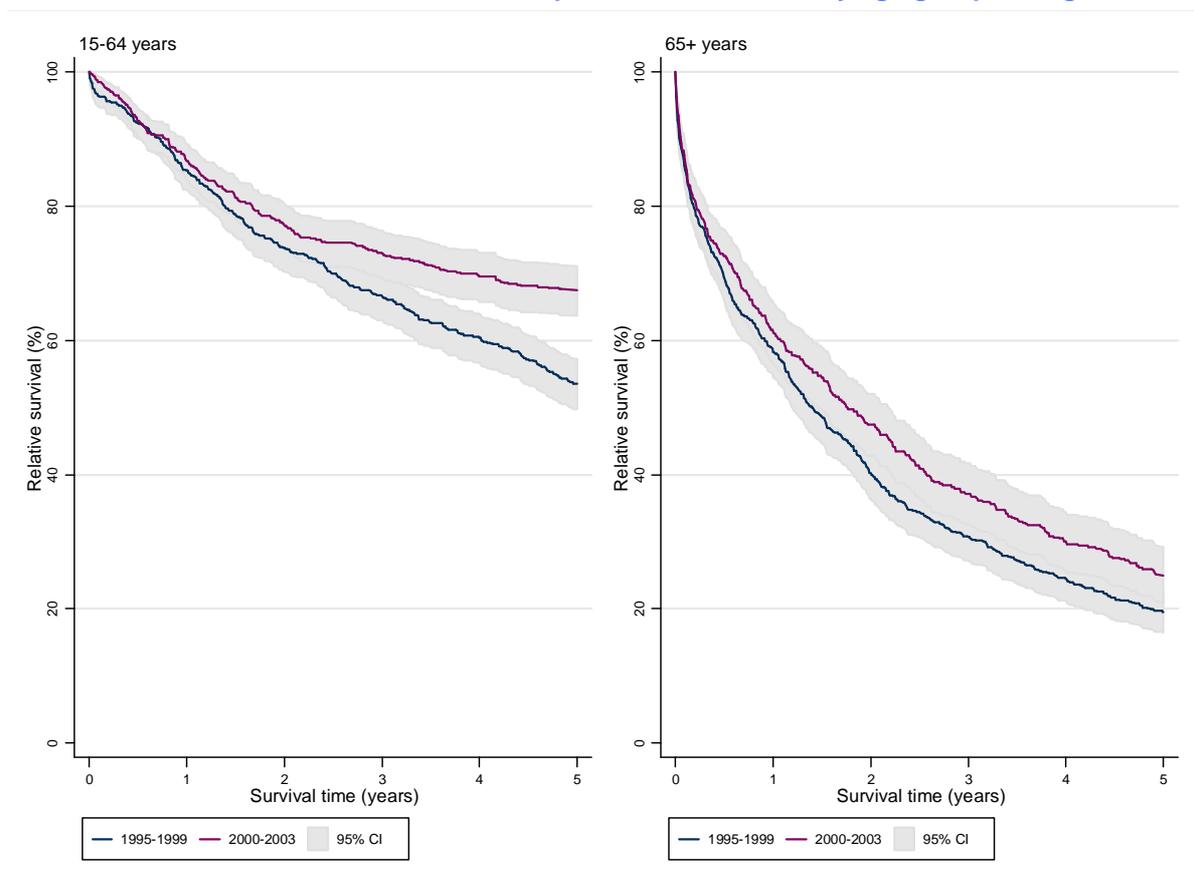


Table 5:15 Trends in relative survival rates for chronic myeloid leukaemia diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-------------|---------|------|--------|--------|-------------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 85.5 | 82.6 | 88.0 | 712 | 108 | 87.0 | 84.0 | 89.4 | 635 | 86 |
| | 2 | 74.1 | 70.7 | 77.3 | 712 | 191 | 77.5 | 74.0 | 80.7 | 635 | 148 |
| | 3 | 67.3 | 63.6 | 70.7 | 712 | 243 | 73.7 | 70.0 | 77.1 | 635 | 175 |
| | 4 | 61.3 | 57.4 | 64.9 | 712 | 289 | 70.5 | 66.7 | 74.0 | 635 | 198 |
| | 5 | 54.7 | 50.8 | 58.5 | 712 | 338 | 69.0 | 65.0 | 72.6 | 635 | 211 |
| 65+ years | 1 | 58.0 | 54.2 | 61.7 | 797 | 368 | 62.1 | 57.3 | 66.4 | 525 | 223 |
| | 2 | 40.7 | 36.9 | 44.5 | 797 | 518 | 49.5 | 44.6 | 54.3 | 525 | 299 |
| | 3 | 31.9 | 28.1 | 35.6 | 797 | 592 | 40.5 | 35.5 | 45.4 | 525 | 353 |
| | 4 | 26.6 | 23.0 | 30.3 | 797 | 639 | 34.4 | 29.5 | 39.3 | 525 | 389 |
| | 5 | 22.3 | 18.8 | 26.0 | 797 | 674 | 30.3 | 25.4 | 35.2 | 525 | 414 |

Trends in survival by age (females)

Figure 5:16 Trends in relative survival rates for chronic myeloid leukaemia diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

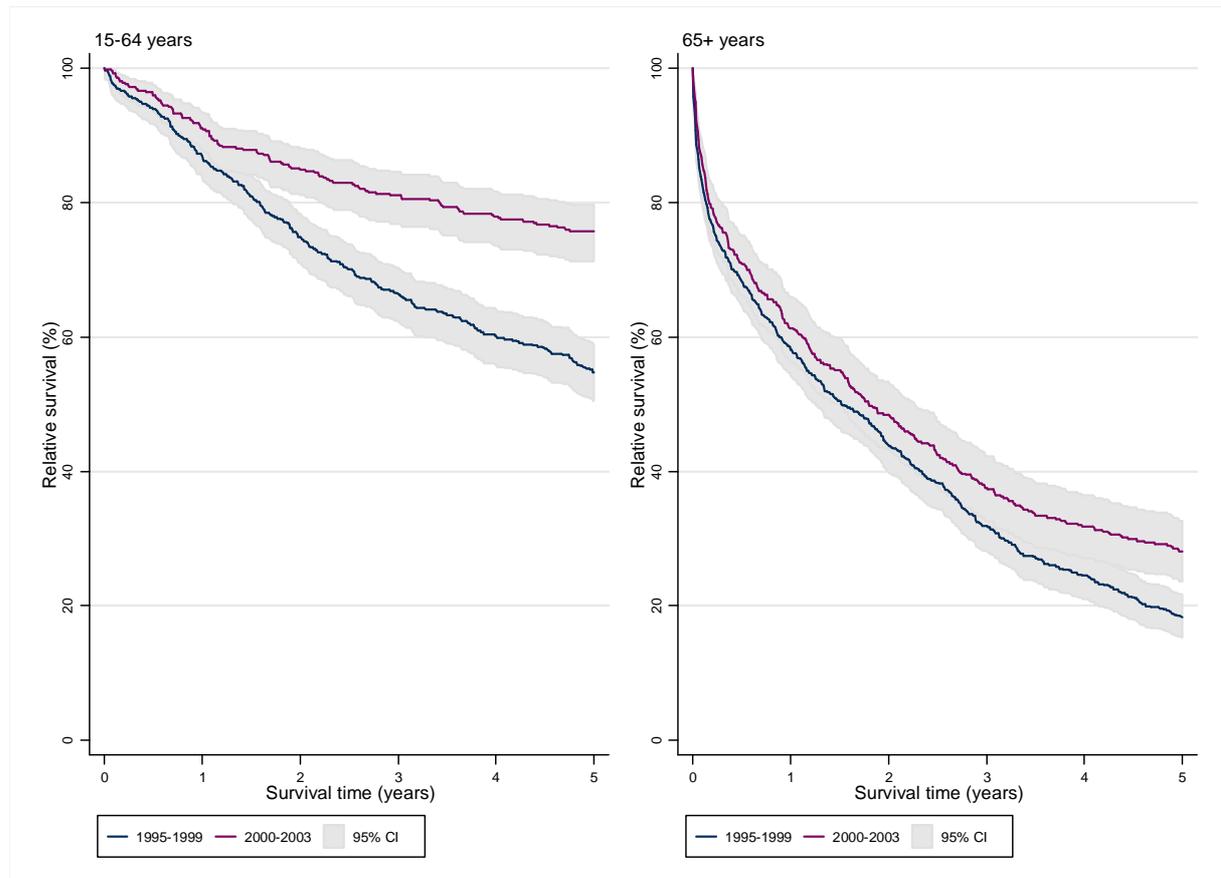


Table 5:17 Trends in relative survival rates for chronic myeloid leukaemia diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | 2000-2003 | | | | | |
|--------------|------------------|-----------|---------|------|--------|-----------|------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 87.1 | 84.0 | 89.7 | 551 | 73 | 91.3 | 88.1 | 93.7 | 412 | 37 |
| | 2 | 75.2 | 71.3 | 78.6 | 551 | 140 | 85.3 | 81.4 | 88.4 | 412 | 63 |
| | 3 | 66.9 | 62.7 | 70.7 | 551 | 187 | 81.6 | 77.4 | 85.1 | 412 | 79 |
| | 4 | 60.8 | 56.5 | 64.8 | 551 | 222 | 78.8 | 74.4 | 82.6 | 412 | 92 |
| | 5 | 55.6 | 51.3 | 59.8 | 551 | 252 | 77.0 | 72.5 | 81.0 | 412 | 101 |
| 65+ years | 1 | 58.0 | 54.0 | 61.7 | 740 | 339 | 61.6 | 56.6 | 66.3 | 464 | 199 |
| | 2 | 44.5 | 40.4 | 48.4 | 740 | 453 | 50.1 | 44.8 | 55.1 | 464 | 260 |
| | 3 | 33.2 | 29.3 | 37.1 | 740 | 541 | 39.9 | 34.8 | 45.0 | 464 | 311 |
| | 4 | 26.1 | 22.5 | 29.9 | 740 | 591 | 35.3 | 30.1 | 40.4 | 464 | 337 |
| | 5 | 20.2 | 16.9 | 23.8 | 740 | 630 | 32.7 | 27.6 | 38.0 | 464 | 353 |

Trends in survival by age (persons)

Figure 5:18 Trends in relative survival rates for chronic myeloid leukaemia diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

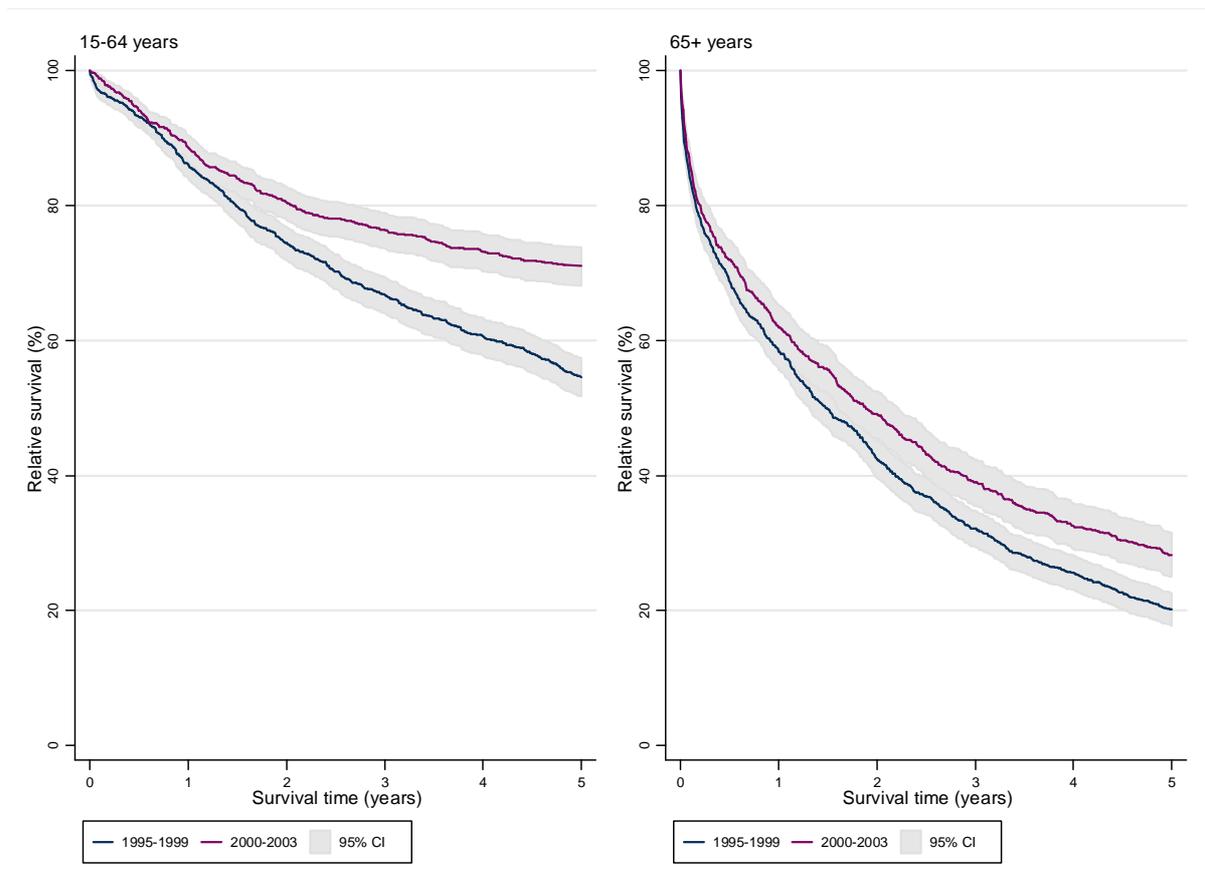


Table 5:19 Trends in relative survival rates for chronic myeloid leukaemia diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-------------|---------|------|--------|--------|-------------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 86.2 | 84.1 | 88.0 | 1,263 | 181 | 88.7 | 86.6 | 90.5 | 1,047 | 123 |
| | 2 | 74.6 | 72.1 | 77.0 | 1,263 | 331 | 80.6 | 78.0 | 82.9 | 1,047 | 211 |
| | 3 | 67.1 | 64.4 | 69.7 | 1,263 | 430 | 76.9 | 74.1 | 79.4 | 1,047 | 254 |
| | 4 | 61.0 | 58.2 | 63.7 | 1,263 | 511 | 73.8 | 70.9 | 76.5 | 1,047 | 290 |
| | 5 | 55.1 | 52.2 | 57.9 | 1,263 | 590 | 72.2 | 69.2 | 74.9 | 1,047 | 312 |
| 65+ years | 1 | 58.0 | 55.3 | 60.7 | 1,537 | 707 | 61.9 | 58.5 | 65.1 | 989 | 422 |
| | 2 | 42.5 | 39.8 | 45.3 | 1,537 | 971 | 49.8 | 46.2 | 53.3 | 989 | 559 |
| | 3 | 32.5 | 29.8 | 35.2 | 1,537 | 1,133 | 40.2 | 36.6 | 43.8 | 989 | 664 |
| | 4 | 26.4 | 23.8 | 29.0 | 1,537 | 1,230 | 34.8 | 31.2 | 38.4 | 989 | 726 |
| | 5 | 21.2 | 18.8 | 23.8 | 1,537 | 1,304 | 31.5 | 27.9 | 35.1 | 989 | 767 |

Hodgkin Lymphoma

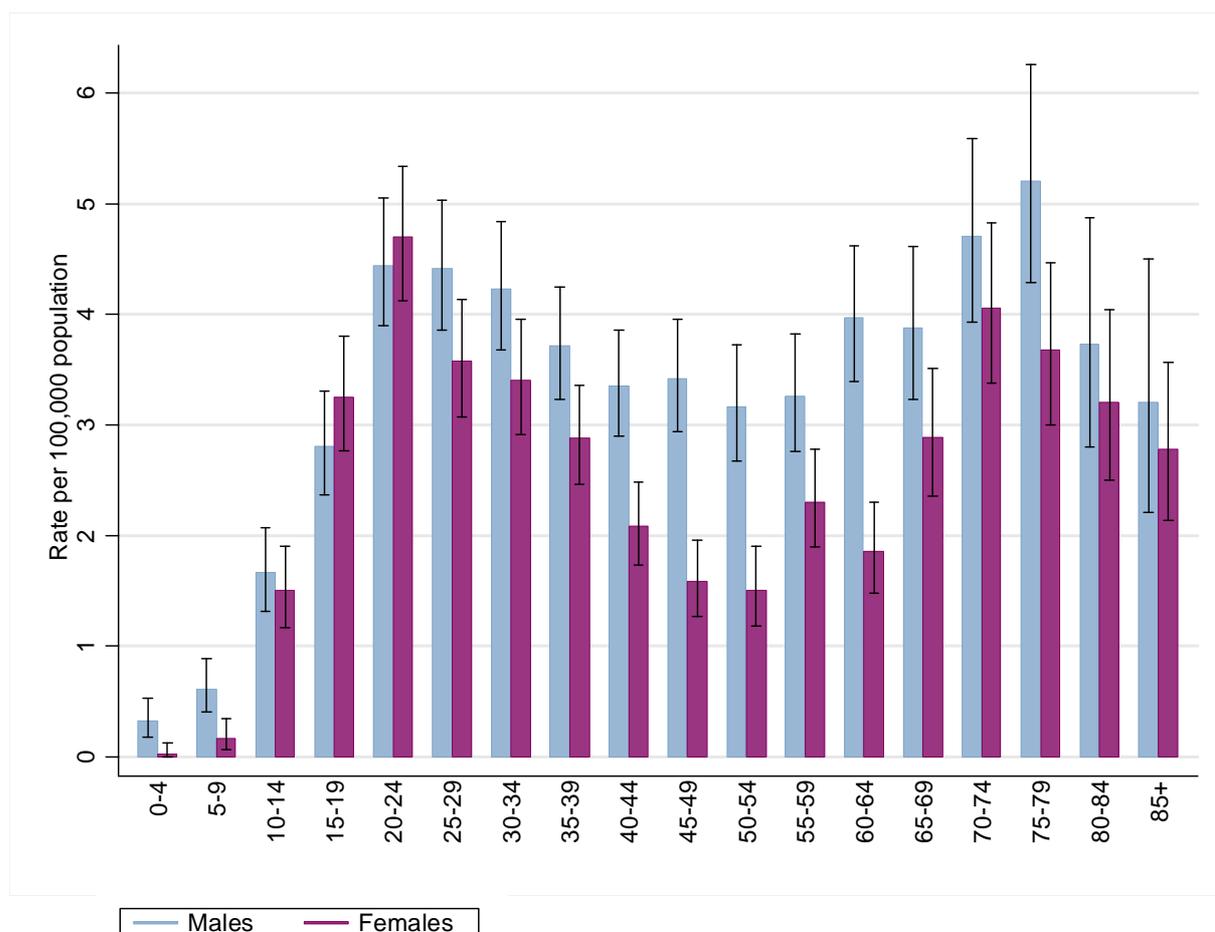
The age distribution for Hodgkin lymphoma has two peaks, the first in young adults and the second in old age. In the age range 15-24 years the incidence of disease is higher in females, but at all other ages the disease is more common in males,

Over the period reported, incidence has not changed in males, whilst there has been a rise in incidence in females. Mortality from Hodgkin lymphoma did not change between 2001 and 2008. Relative survival did not change for females, in males relative survival was very slightly lower in the later time period. Survival is good in children and young adults, but a poorer outcome is seen for elderly patients.

Treatment is with chemotherapy for most patients, radiotherapy with or without chemotherapy for a few. Whilst great advances were made in treatment of this disease in the 1970s and 1980s, progress has slowed since then. For younger patients, where survival is very good, there is considerable interest in minimising any long term adverse effects of treatment.

Age distribution

Figure 6:1 Age-specific incidence rates by age group for Hodgkin lymphoma in males and females between 2006-2008 in England



Trends in incidence and mortality (males)

Figure 6:2 Age-standardised incidence and mortality rates for Hodgkin lymphoma in males in the period 2001-2008 in England (3 year moving average)

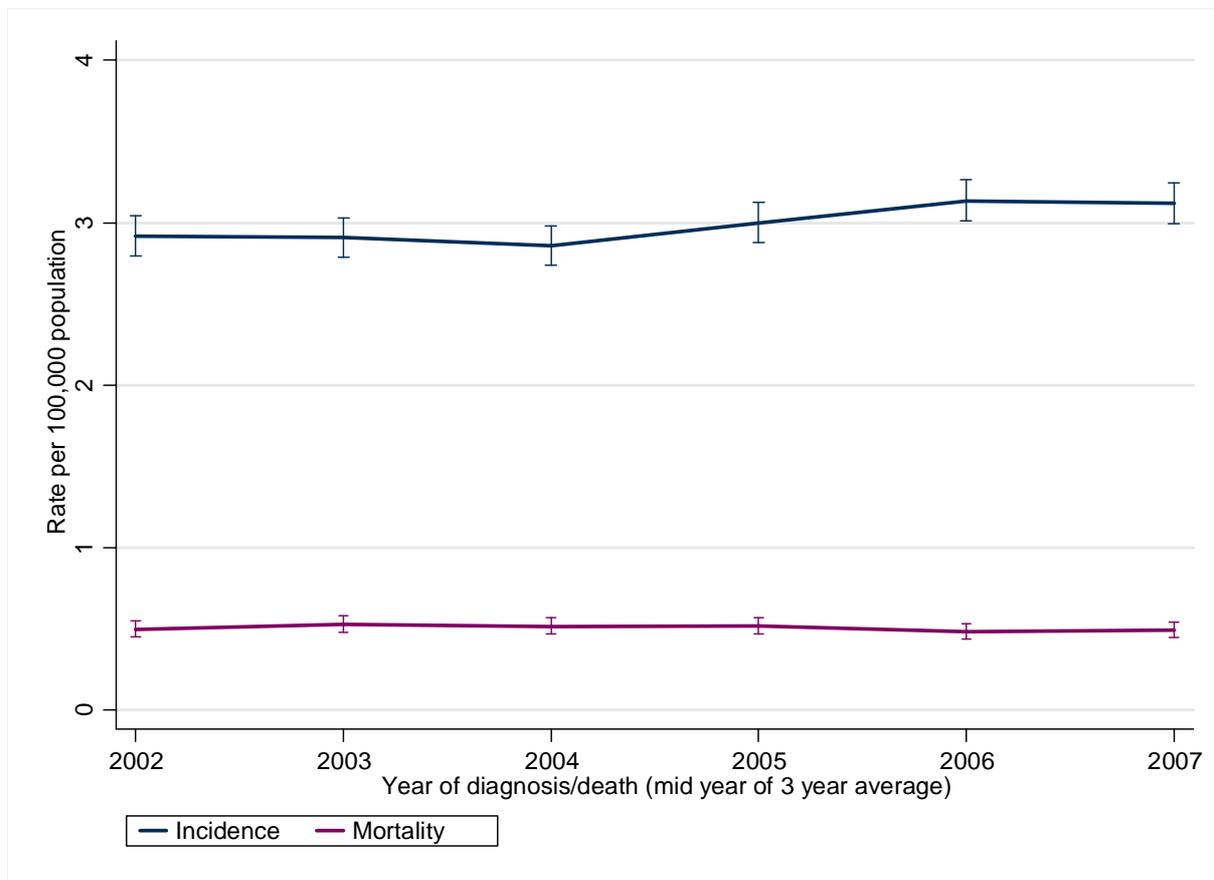


Table 6:3 Age-standardised incidence and mortality rates for Hodgkin lymphoma in males in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | Mortality | | |
|-----------|-----------|-----|---------|-----------|-----|---------|
| | Cases* | ASR | 95% CI | Deaths* | ASR | 95% CI |
| 2001-2003 | 729 | 2.9 | 2.8 3.0 | 135 | 0.5 | 0.5 0.6 |
| 2002-2004 | 735 | 2.9 | 2.8 3.0 | 147 | 0.5 | 0.5 0.6 |
| 2003-2005 | 733 | 2.9 | 2.7 3.0 | 146 | 0.5 | 0.5 0.6 |
| 2004-2006 | 772 | 3.0 | 2.9 3.1 | 148 | 0.5 | 0.5 0.6 |
| 2005-2007 | 814 | 3.1 | 3.0 3.3 | 140 | 0.5 | 0.4 0.5 |
| 2006-2008 | 816 | 3.1 | 3.0 3.3 | 144 | 0.5 | 0.4 0.5 |

*3 year moving average

Trends in incidence and mortality (females)

Figure 6:4 Age-standardised incidence and mortality rates for Hodgkin lymphoma in females in the period 2001-2008 in England (3 year moving average)

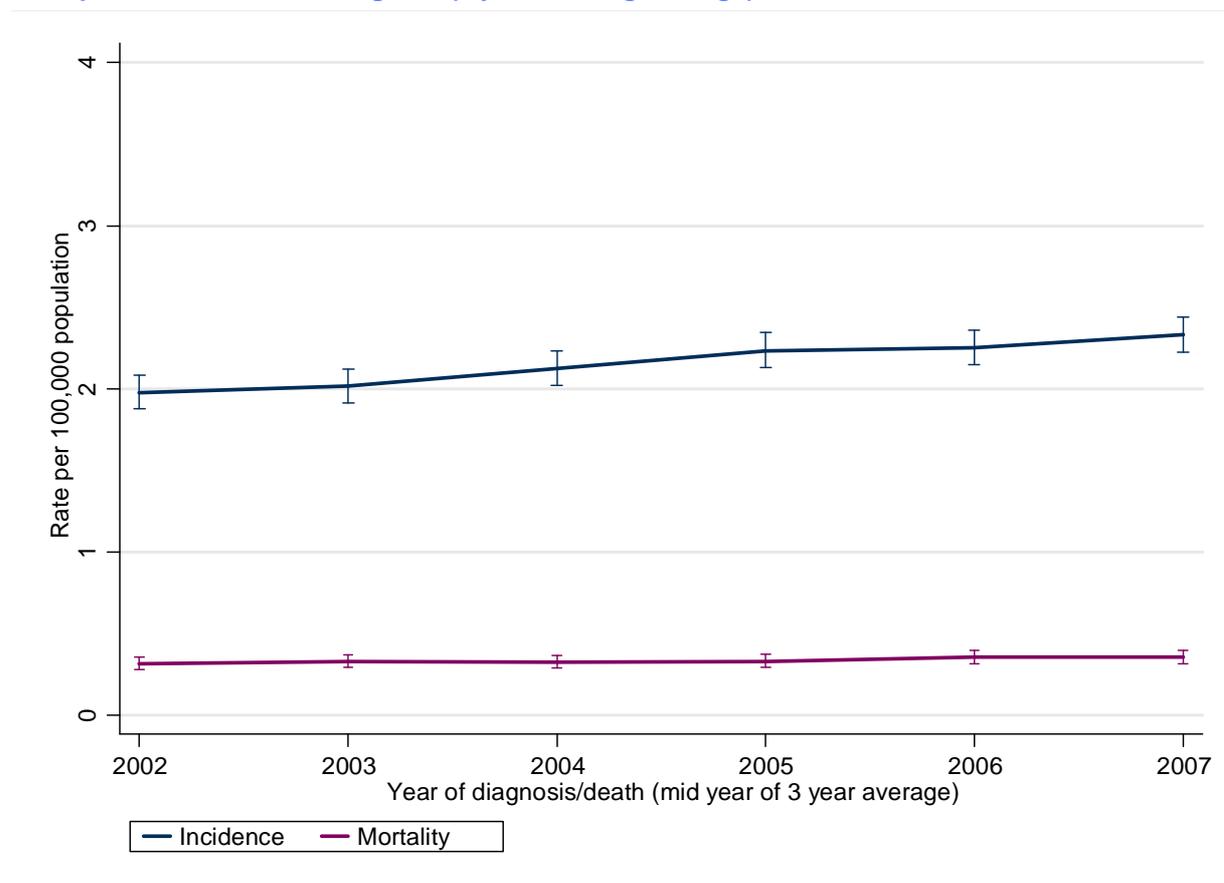


Table 6:5 Age-standardised incidence and mortality rates for Hodgkin lymphoma in females in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | | Mortality | | | |
|-----------|-----------|------------|--------|-----|-----------|------------|--------|-----|
| | Cases* | ASR | 95% CI | | Deaths* | ASR | 95% CI | |
| 2001-2003 | 521 | 2.0 | 1.9 | 2.1 | 103 | 0.3 | 0.3 | 0.4 |
| 2002-2004 | 531 | 2.0 | 1.9 | 2.1 | 108 | 0.3 | 0.3 | 0.4 |
| 2003-2005 | 563 | 2.1 | 2.0 | 2.2 | 107 | 0.3 | 0.3 | 0.4 |
| 2004-2006 | 604 | 2.2 | 2.1 | 2.3 | 111 | 0.3 | 0.3 | 0.4 |
| 2005-2007 | 617 | 2.3 | 2.2 | 2.4 | 120 | 0.4 | 0.3 | 0.4 |
| 2006-2008 | 641 | 2.3 | 2.2 | 2.4 | 125 | 0.4 | 0.3 | 0.4 |

*3 year moving average

Trends in survival (males)

Figure 6:6 Trends in relative survival rates for Hodgkin lymphoma in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

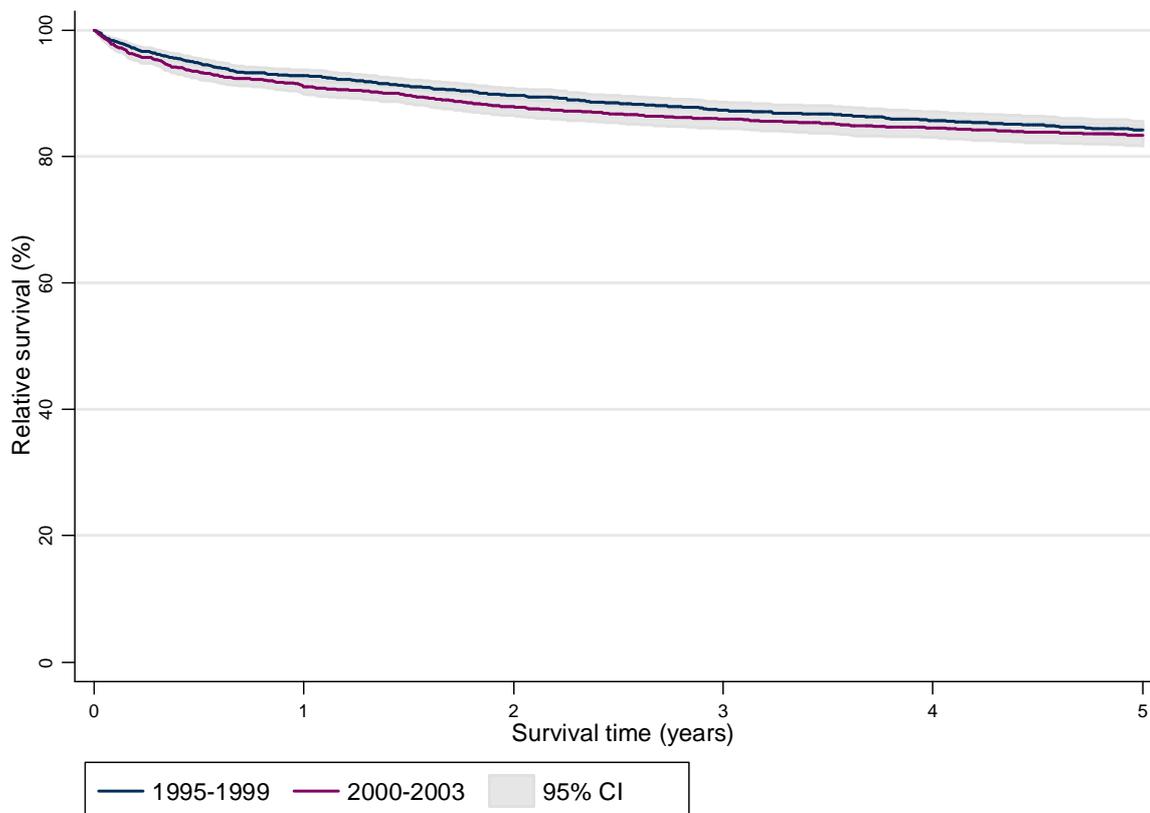


Table 6:7 Trends in relative survival rates for Hodgkin lymphoma in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | 2000-2003 | | | |
|-----------------------|-------------|-------------|--------|--------|-------------|-------------|--------|--------|
| | RS | 95% CI | Cohort | Deaths | RS | 95% CI | Cohort | Deaths |
| 1 | 92.8 | 91.8 - 93.8 | 3,308 | 317 | 91.1 | 89.9 - 92.2 | 2,923 | 330 |
| 2 | 89.9 | 88.6 - 91.0 | 3,308 | 450 | 88.1 | 86.7 - 89.3 | 2,923 | 449 |
| 3 | 87.8 | 86.4 - 89.0 | 3,308 | 561 | 86.4 | 84.9 - 87.7 | 2,923 | 524 |
| 4 | 86.3 | 84.9 - 87.6 | 3,308 | 636 | 85.1 | 83.6 - 86.5 | 2,923 | 591 |
| 5 | 84.9 | 83.4 - 86.2 | 3,308 | 713 | 84.0 | 82.4 - 85.5 | 2,923 | 648 |

Figure 6:8 Trends for males (all ages) in relative survival rates for Hodgkin lymphoma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

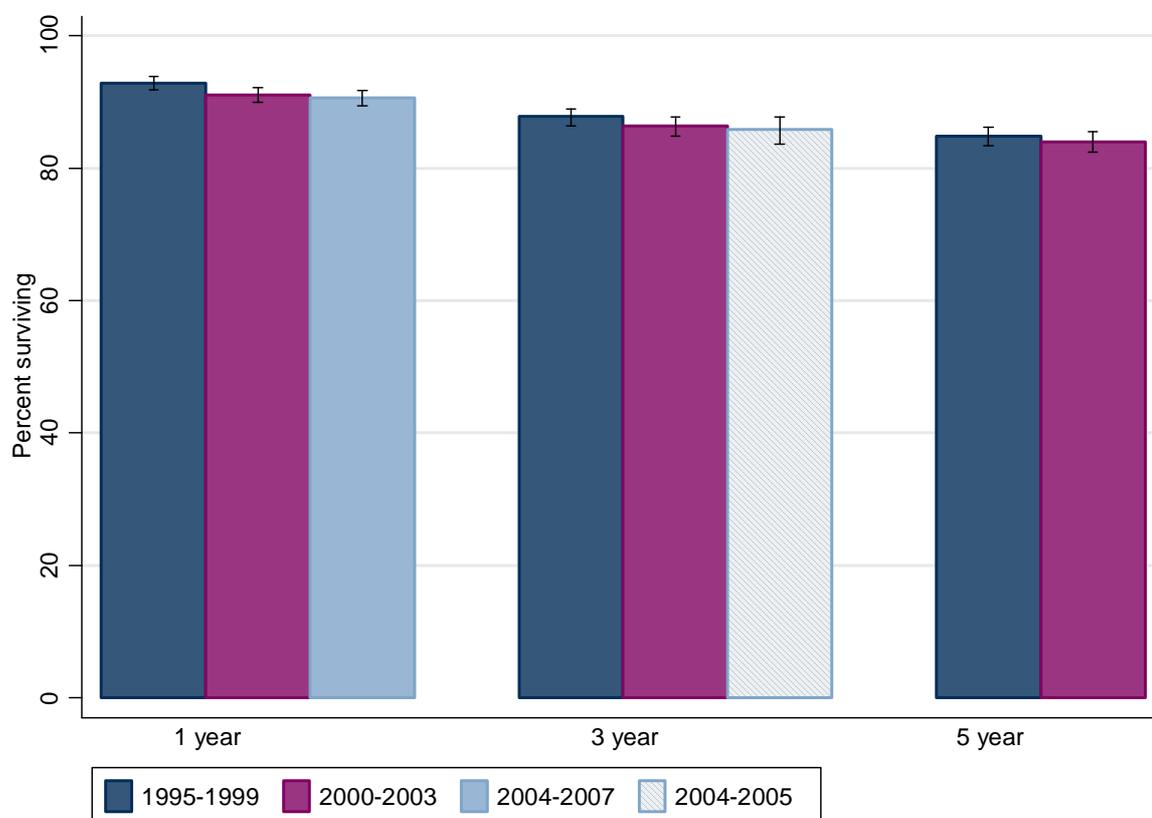


Table 6:9 Trends for males (all ages) in relative survival rates for Hodgkin lymphoma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | Cohort | Deaths |
|-------------------------------|------------------|------|-----------|--------|--------|
| 1 year | 1995-1999 | 92.8 | 91.8 93.8 | 3,308 | 317 |
| | 2000-2003 | 91.1 | 89.9 92.2 | 2,923 | 330 |
| | 2004-2007 | 90.6 | 89.4 91.7 | 3,138 | 380 |
| 3 year | 1995-1999 | 87.8 | 86.4 89.0 | 3,308 | 561 |
| | 2000-2003 | 86.4 | 84.9 87.7 | 2,923 | 524 |
| | 2004-2005 | 85.8 | 83.6 87.7 | 1,504 | 292 |
| 5 year | 1995-1999 | 84.9 | 83.4 86.2 | 3,308 | 713 |
| | 2000-2003 | 84.0 | 82.4 85.5 | 2,923 | 648 |

Trends in survival (females)

Figure 6:10 Trends in relative survival rates for Hodgkin lymphoma in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

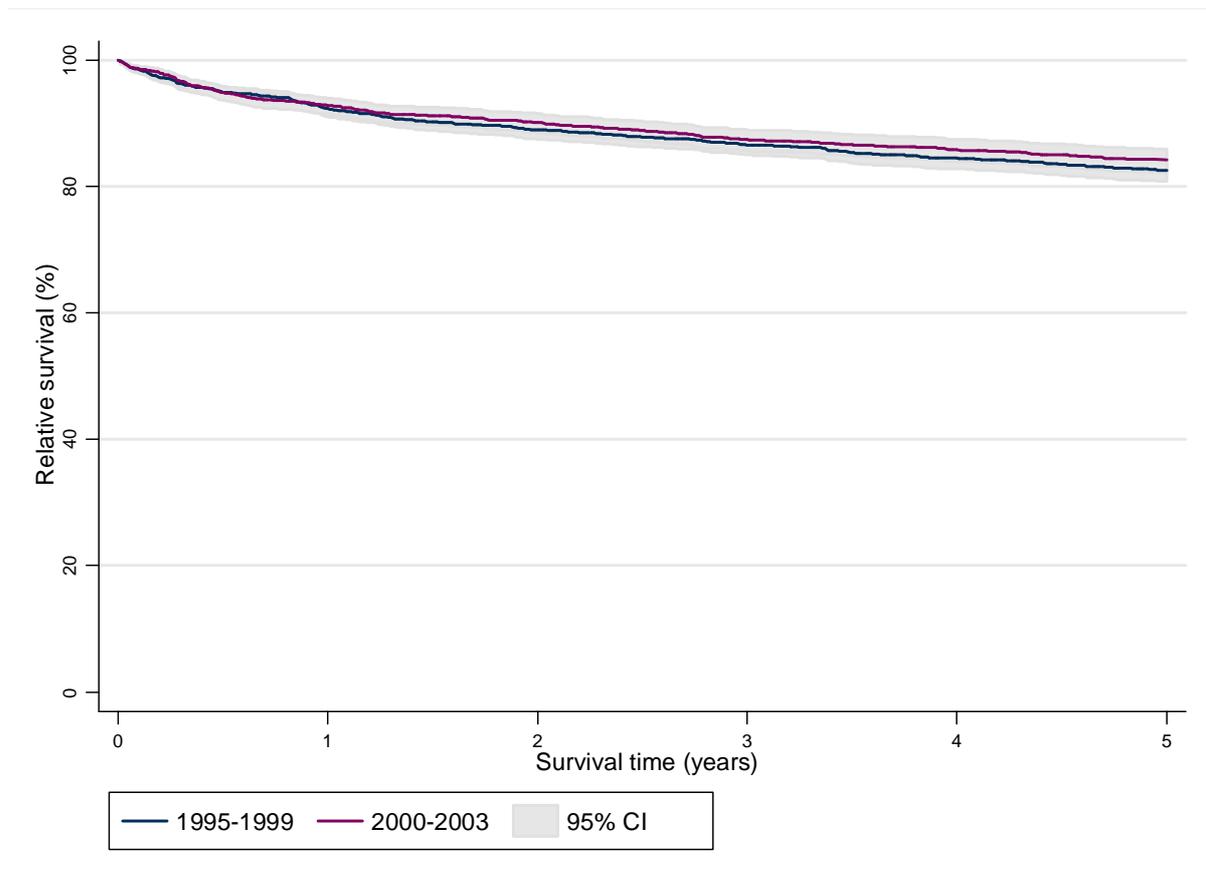


Table 6:11 Trends in relative survival rates for Hodgkin lymphoma in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 92.4 | 91.2 | 93.5 | 2,536 | 253 | 93.0 | 91.6 | 94.1 | 2,067 | 200 |
| 2 | 89.2 | 87.8 | 90.5 | 2,536 | 362 | 90.6 | 89.0 | 91.9 | 2,067 | 273 |
| 3 | 87.0 | 85.4 | 88.4 | 2,536 | 440 | 88.1 | 86.4 | 89.6 | 2,067 | 343 |
| 4 | 85.0 | 83.4 | 86.5 | 2,536 | 506 | 86.8 | 85.0 | 88.4 | 2,067 | 383 |
| 5 | 83.5 | 81.8 | 85.1 | 2,536 | 564 | 85.6 | 83.7 | 87.2 | 2,067 | 423 |

Figure 6:12 Trends for females (all ages) in relative survival rates for Hodgkin lymphoma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

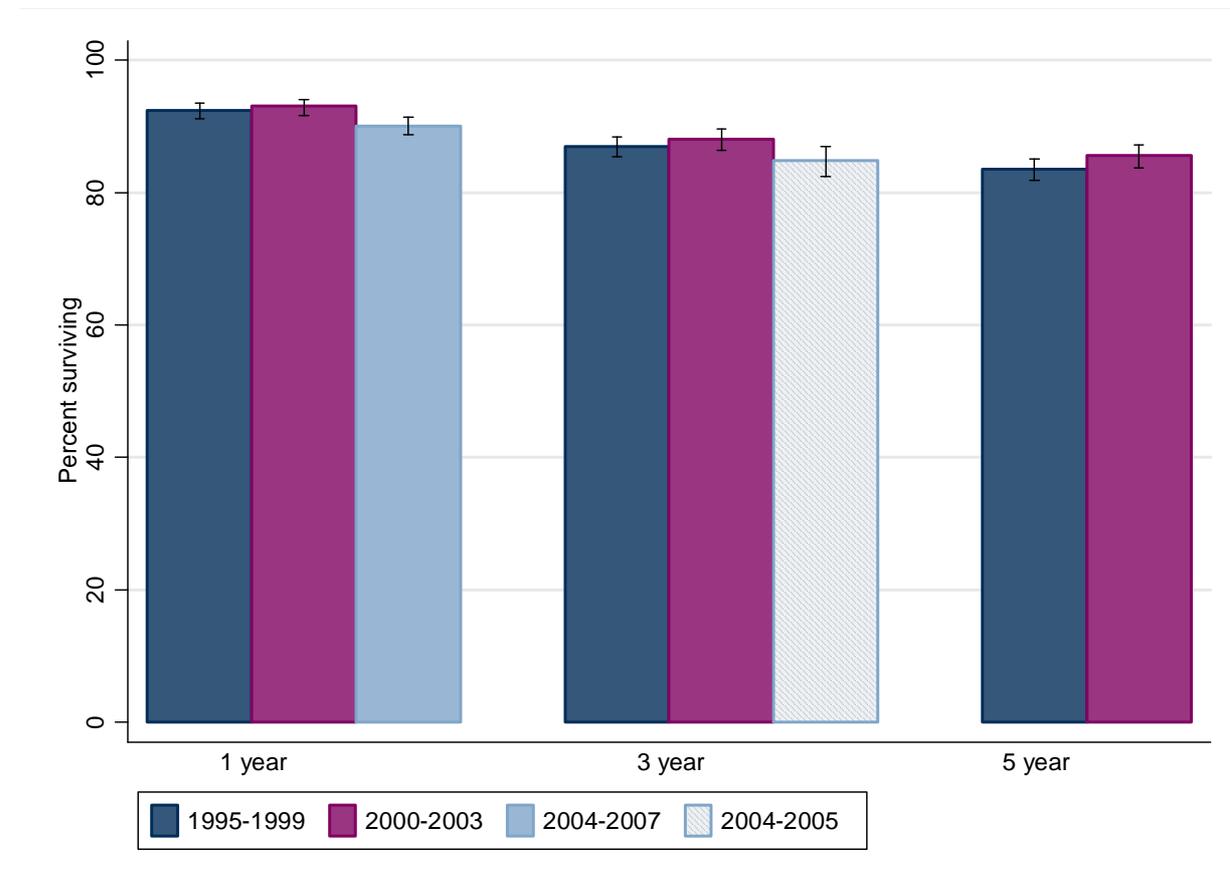


Table 6:13 Trends for females (all ages) in relative survival rates for Hodgkin lymphoma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | | 95% CI | | Cohort | Deaths |
|----------------------------------|------------------|------|--------|--------|--------|--------|--------|
| | | RS | 95% CI | 95% CI | 95% CI | | |
| 1 year | 1995-1999 | 92.4 | 91.2 | 93.5 | 2,536 | 253 | |
| | 2000-2003 | 93.0 | 91.6 | 94.1 | 2,067 | 200 | |
| | 2004-2007 | 90.1 | 88.7 | 91.4 | 2,412 | 296 | |
| 3 year | 1995-1999 | 87.0 | 85.4 | 88.4 | 2,536 | 440 | |
| | 2000-2003 | 88.1 | 86.4 | 89.6 | 2,067 | 343 | |
| | 2004-2005 | 84.8 | 82.4 | 87.0 | 1,156 | 223 | |
| 5 year | 1995-1999 | 83.5 | 81.8 | 85.1 | 2,536 | 564 | |
| | 2000-2003 | 85.6 | 83.7 | 87.2 | 2,067 | 423 | |

Trends in survival by age (males)

Figure 6:14 Trends in relative survival rates for Hodgkin lymphoma diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

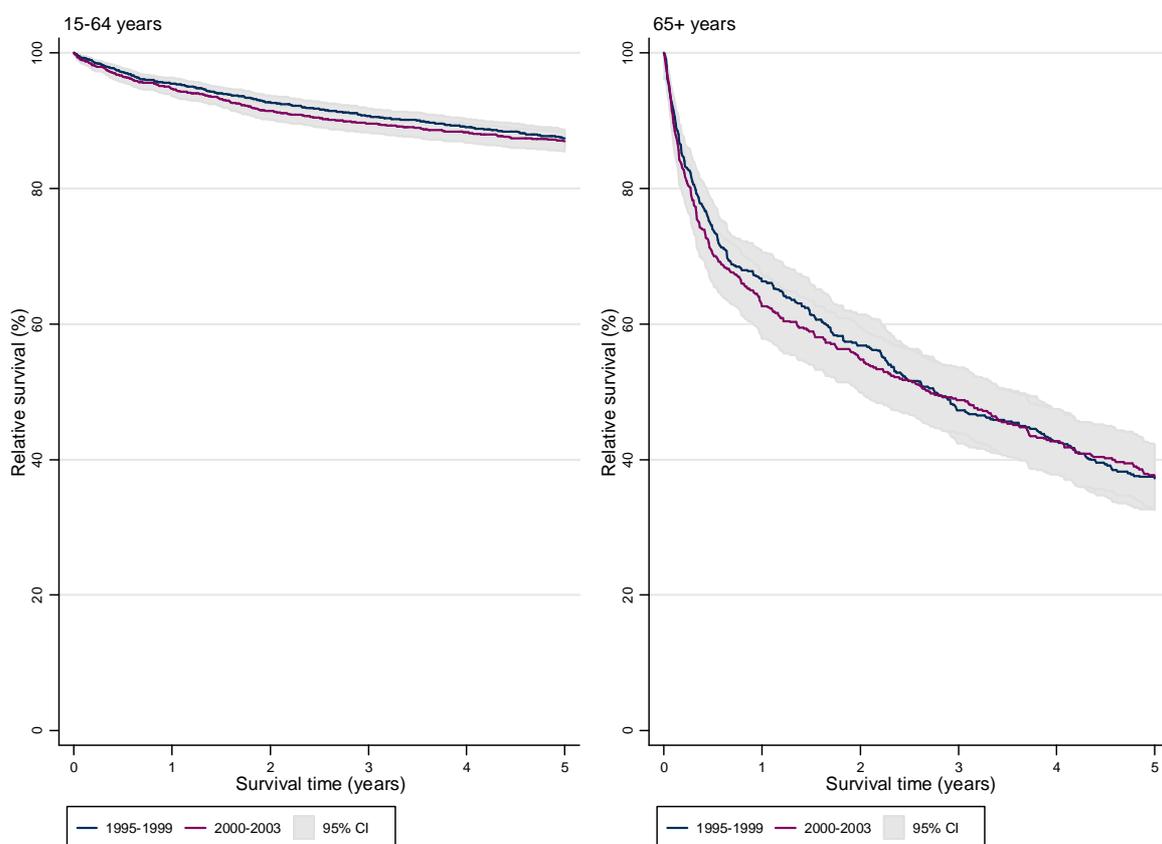


Table 6:15 Trends in relative survival rates for Hodgkin lymphoma diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-------------|---------|------|--------|--------|-------------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 95.6 | 94.6 | 96.3 | 2,625 | 134 | 94.8 | 93.8 | 95.7 | 2,291 | 132 |
| | 2 | 92.9 | 91.7 | 93.8 | 2,625 | 214 | 91.8 | 90.5 | 92.9 | 2,291 | 211 |
| | 3 | 91.0 | 89.8 | 92.2 | 2,625 | 274 | 90.1 | 88.7 | 91.3 | 2,291 | 255 |
| | 4 | 89.7 | 88.3 | 90.9 | 2,625 | 321 | 89.0 | 87.6 | 90.3 | 2,291 | 290 |
| | 5 | 88.2 | 86.8 | 89.5 | 2,625 | 369 | 88.0 | 86.5 | 89.4 | 2,291 | 322 |
| 65+ years | 1 | 66.8 | 62.1 | 71.1 | 495 | 183 | 63.2 | 58.4 | 67.7 | 477 | 193 |
| | 2 | 58.9 | 53.9 | 63.6 | 495 | 233 | 57.4 | 52.2 | 62.2 | 477 | 233 |
| | 3 | 50.9 | 45.7 | 55.8 | 495 | 282 | 52.7 | 47.4 | 57.7 | 477 | 263 |
| | 4 | 48.0 | 42.6 | 53.2 | 495 | 306 | 48.2 | 42.7 | 53.4 | 477 | 293 |
| | 5 | 43.8 | 38.3 | 49.1 | 495 | 333 | 44.2 | 38.6 | 49.6 | 477 | 318 |

NB. 0-14 age group is not reported because of small numbers

To enable smooth curves, the intervals adopted in the survival analysis are closer together than those used to produce the tables; hence the annual survival point estimates may vary between the graphs and tables.

Trends in survival by age (females)

Figure 6:16 Trends in relative survival rates for Hodgkin lymphoma diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

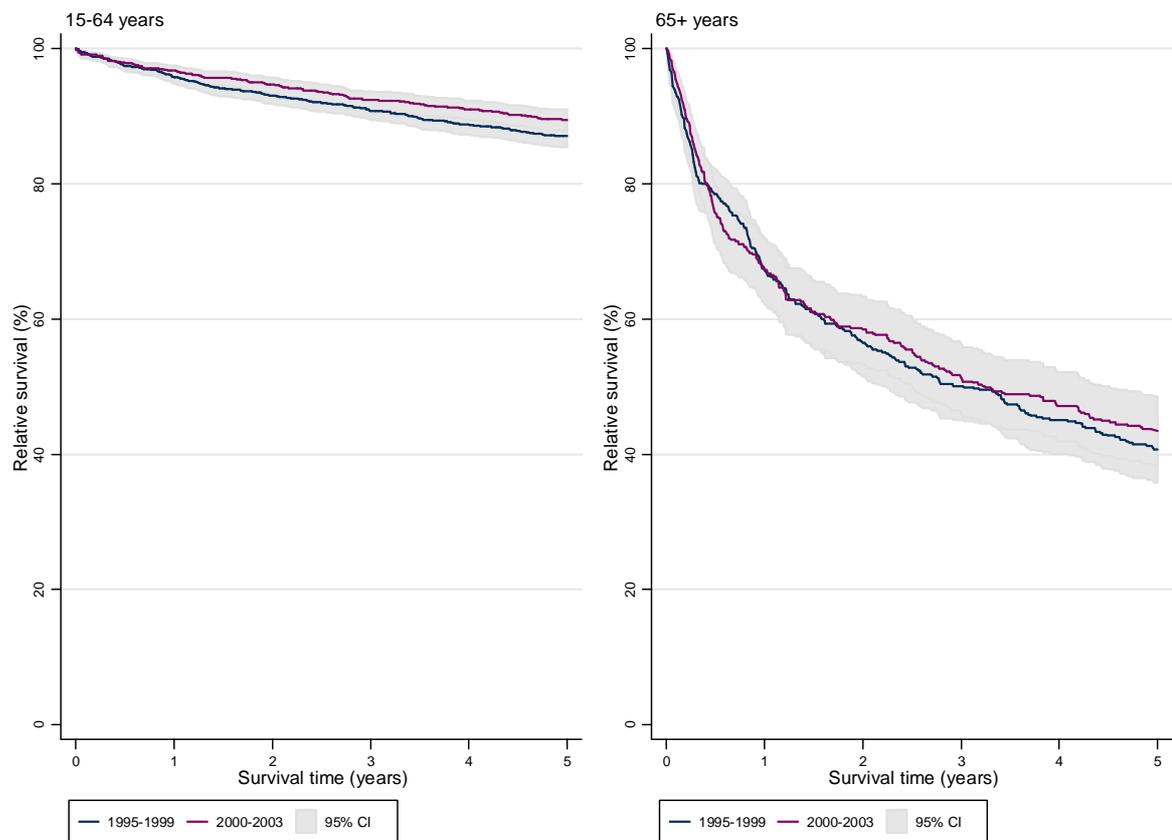


Table 6:17 Trends in relative survival rates for Hodgkin lymphoma diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | 2000-2003 | | | |
|--------------|------------------|-----------|-----------|--------|--------|-----------|-----------|--------|--------|
| | | RS | 95 % CI | Cohort | Deaths | RS | 95 % CI | Cohort | Deaths |
| 15-64 years | 1 | 95.9 | 94.9 96.8 | 1,974 | 88 | 96.8 | 95.8 97.6 | 1,565 | 54 |
| | 2 | 93.3 | 92.1 94.4 | 1,974 | 144 | 95.0 | 93.7 96.0 | 1,565 | 87 |
| | 3 | 91.2 | 89.8 92.4 | 1,974 | 191 | 92.9 | 91.4 94.1 | 1,565 | 123 |
| | 4 | 89.3 | 87.8 90.7 | 1,974 | 232 | 91.6 | 90.0 92.9 | 1,565 | 146 |
| | 5 | 87.8 | 86.1 89.2 | 1,974 | 269 | 90.3 | 88.6 91.7 | 1,565 | 171 |
| 65+ years | 1 | 68.0 | 63.1 72.4 | 455 | 162 | 68.1 | 63.0 72.6 | 413 | 146 |
| | 2 | 58.4 | 53.2 63.2 | 455 | 214 | 60.8 | 55.3 65.8 | 413 | 184 |
| | 3 | 53.2 | 47.9 58.3 | 455 | 244 | 55.0 | 49.4 60.3 | 413 | 215 |
| | 4 | 49.6 | 44.1 54.9 | 455 | 268 | 52.0 | 46.3 57.5 | 413 | 232 |
| | 5 | 46.7 | 41.1 52.1 | 455 | 288 | 49.6 | 43.7 55.2 | 413 | 247 |

NB. 0-14 age group is not reported because of small numbers

Trends in survival by age (persons)

Figure 6:18 Trends in relative survival rates for Hodgkin lymphoma diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

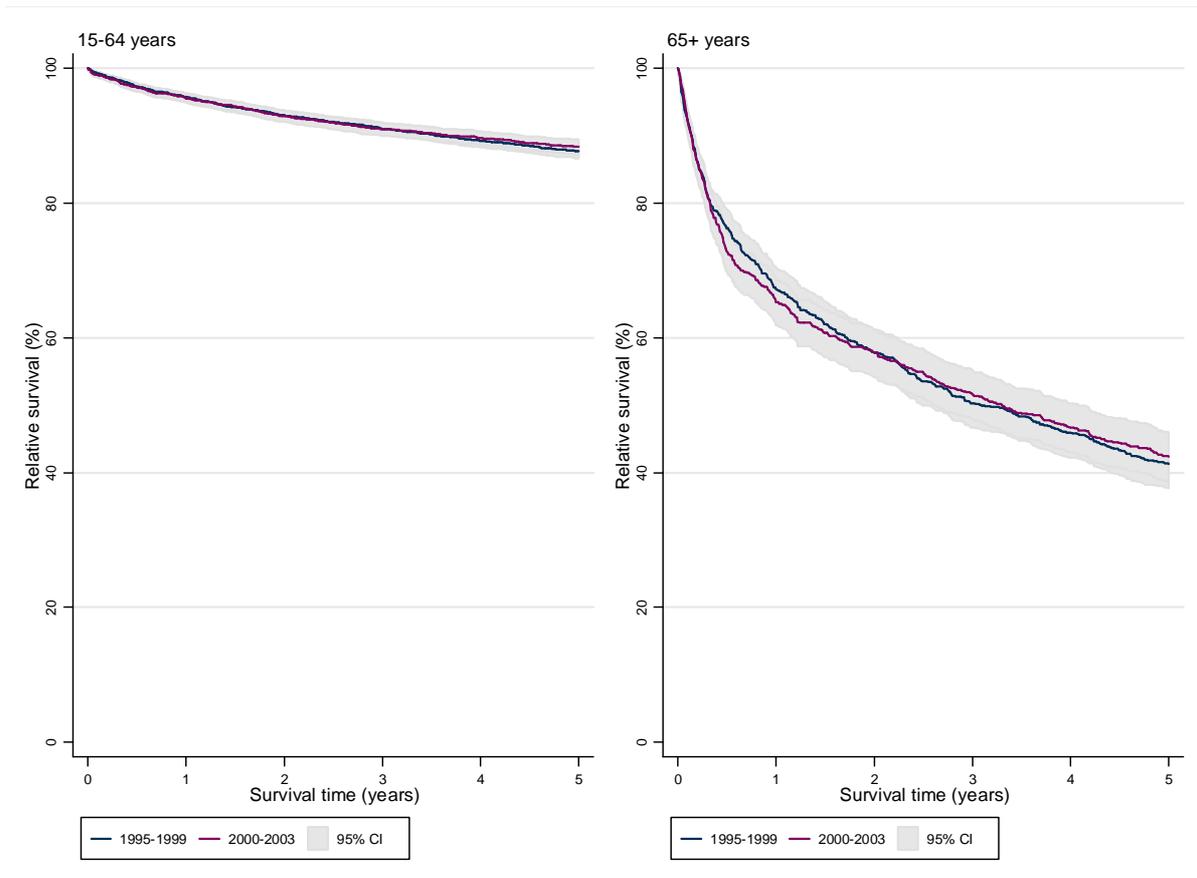


Table 6:19 Trends in relative survival rates for Hodgkin lymphoma diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-----------|---------|------|--------|--------|-----------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 95.7 | 95.1 | 96.3 | 4,599 | 222 | 95.7 | 94.9 | 96.3 | 3,856 | 186 |
| | 2 | 93.1 | 92.2 | 93.8 | 4,599 | 358 | 93.1 | 92.2 | 93.9 | 3,856 | 298 |
| | 3 | 91.1 | 90.2 | 91.9 | 4,599 | 465 | 91.3 | 90.3 | 92.2 | 3,856 | 378 |
| | 4 | 89.5 | 88.5 | 90.4 | 4,599 | 553 | 90.1 | 89.0 | 91.0 | 3,856 | 436 |
| | 5 | 88.0 | 87.0 | 89.0 | 4,599 | 638 | 89.0 | 87.8 | 90.0 | 3,856 | 493 |
| 65+ years | 1 | 67.4 | 64.1 | 70.5 | 950 | 345 | 65.5 | 62.0 | 68.7 | 890 | 339 |
| | 2 | 58.6 | 55.1 | 62.0 | 950 | 447 | 58.9 | 55.2 | 62.4 | 890 | 417 |
| | 3 | 52.0 | 48.3 | 55.6 | 950 | 526 | 53.8 | 49.9 | 57.4 | 890 | 478 |
| | 4 | 48.8 | 45.0 | 52.5 | 950 | 574 | 50.0 | 46.1 | 53.9 | 890 | 525 |
| | 5 | 45.3 | 41.4 | 49.1 | 950 | 621 | 46.8 | 42.8 | 50.8 | 890 | 565 |

NB. 0-14 age group is not reported because of small numbers

Non-Hodgkin Lymphoma

Non-Hodgkin lymphoma (NHL) is not one but several diseases, in this report they have been analysed together, but each of the different NHLs has different behaviour, prognosis and treatment and observed changes in incidence or outcome are unlikely to apply to all forms of NHL.

The incidence of NHL increases with age, with most cases occurring in the elderly, incidence rates are higher in men at all ages. Age-standardised incidence rates rose over the period reported in men and women and age-standardised mortality fell.

Relative survival improved over the period reported in both sexes and across all ages.

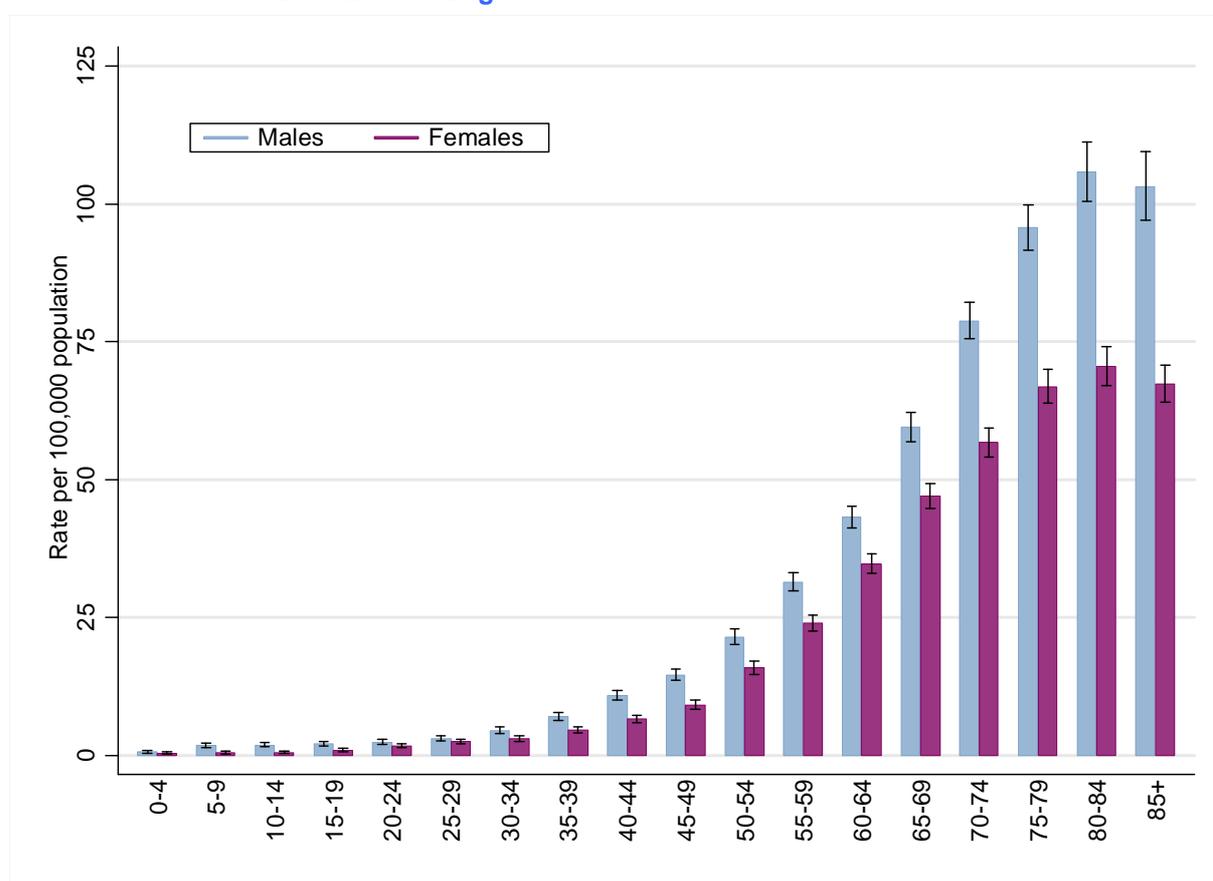
The improvement in survival is most likely to be due to the introduction of rituximab, which is now used in the treatment of the two commonest lymphomas: Diffuse large B cell lymphoma (DLBCL) and follicular lymphoma (FL) as well as some of the less common lymphomas. This drug was licensed in 1997 (USA) and 1998 (UK) and its use has increased as evidence of benefit in FL and DLBCL emerged.

NICE has released a number of Technology Appraisals (TAs), which have led to the widespread use of this drug in combination with other older chemotherapy drugs. This treatment will have begun to have an effect on survival during the period analysed in this report. It is likely that the improvement in survival has increased since then.

Registration rates for NHL have been rising since the 1970's; it is not clear exactly what the determinants of this apparent increase in incidence are. But it is important to recognise that improvements in the ascertainment of these cancers, with changing thresholds for diagnosis and greater access to diagnostic testing particularly in the elderly, is likely to contribute at least in part to this trend.

Age distribution

Figure 7:1 Age-specific incidence rates by age group for Non-Hodgkin lymphoma in males and females between 2006-2008 in England



Trends in incidence and mortality (males)

Figure 7:2 Age-standardised incidence and mortality rates for Non-Hodgkin lymphoma in males in the period 2001-2008 in England (3 year moving average)

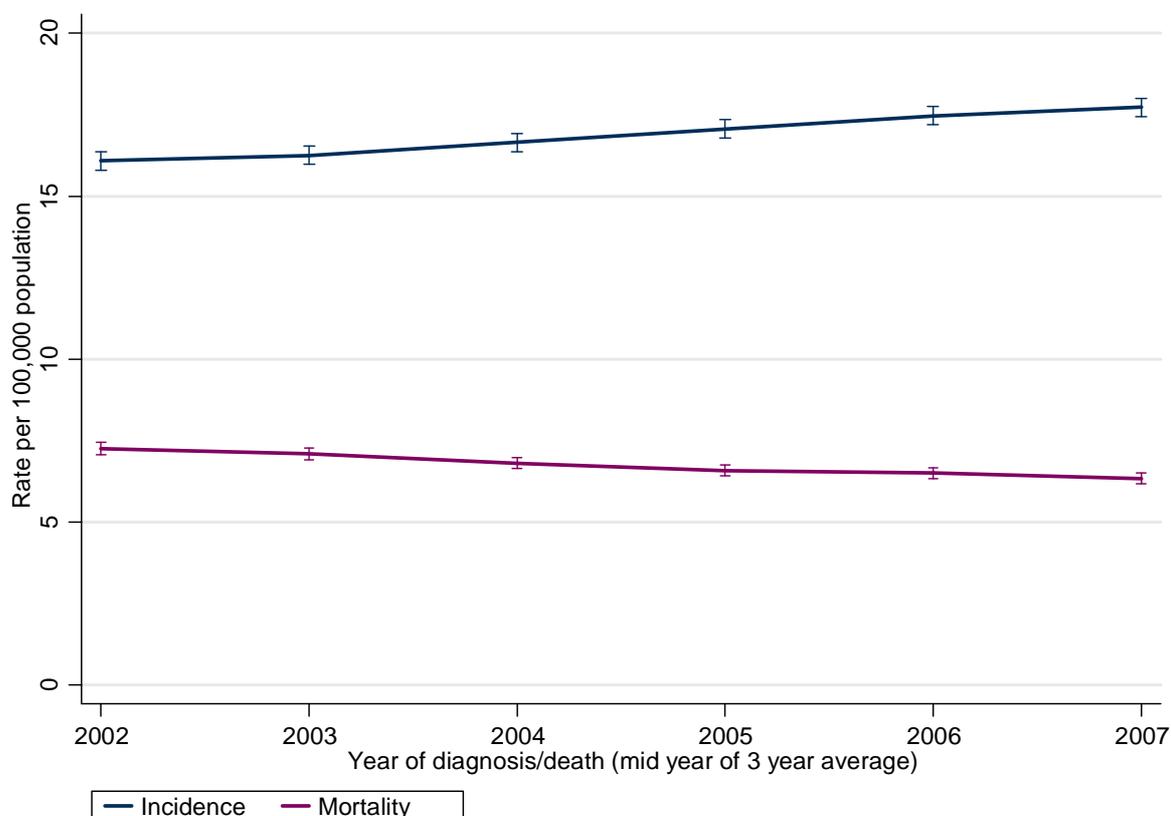


Table 7:3 Age-standardised incidence and mortality rates for Non-Hodgkin lymphoma in males in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | | Mortality | | | |
|-----------|-----------|-------------|--------|------|-----------|------------|--------|-----|
| | Cases* | ASR | 95% CI | | Deaths* | ASR | 95% CI | |
| 2001-2003 | 4,417 | 16.1 | 15.8 | 16.4 | 2,073 | 7.3 | 7.1 | 7.4 |
| 2002-2004 | 4,530 | 16.3 | 16.0 | 16.5 | 2,056 | 7.1 | 6.9 | 7.3 |
| 2003-2005 | 4,701 | 16.6 | 16.4 | 16.9 | 2,011 | 6.8 | 6.6 | 7.0 |
| 2004-2006 | 4,883 | 17.1 | 16.8 | 17.3 | 1,983 | 6.6 | 6.4 | 6.8 |
| 2005-2007 | 5,070 | 17.5 | 17.2 | 17.8 | 2,010 | 6.5 | 6.3 | 6.7 |
| 2006-2008 | 5,225 | 17.7 | 17.4 | 18.0 | 2,011 | 6.3 | 6.2 | 6.5 |

*3 year moving average

Trends in incidence and mortality (females)

Figure 7:4 Age-standardised incidence and mortality rates for Non-Hodgkin lymphoma in females in the period 2001-2008 in England (3 year moving average)

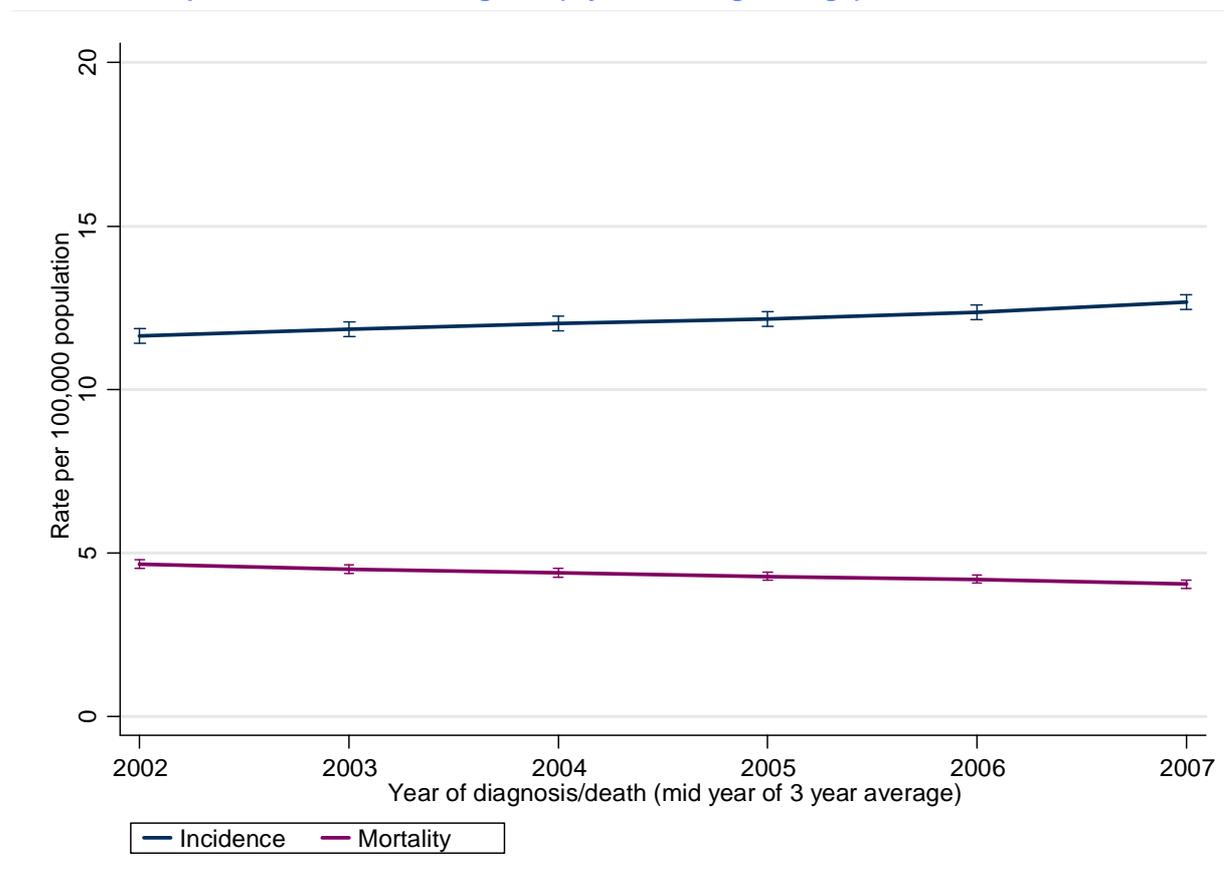


Table 7:5 Age-standardised incidence and mortality rates for Non-Hodgkin lymphoma in females in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | | Mortality | | | |
|-----------|-----------|------|--------|------|-----------|-----|--------|-----|
| | Cases* | ASR | 95% CI | | Cases* | ASR | 95% CI | |
| 2001-2003 | 3,934 | 11.6 | 11.4 | 11.6 | 1,818 | 4.7 | 4.5 | 4.7 |
| 2002-2004 | 4,037 | 11.8 | 11.6 | 11.8 | 1,796 | 4.5 | 4.4 | 4.5 |
| 2003-2005 | 4,115 | 12.0 | 11.8 | 12.0 | 1,767 | 4.4 | 4.3 | 4.4 |
| 2004-2006 | 4,194 | 12.2 | 11.9 | 12.2 | 1,748 | 4.3 | 4.2 | 4.3 |
| 2005-2007 | 4,292 | 12.4 | 12.1 | 12.4 | 1,742 | 4.2 | 4.1 | 4.2 |
| 2006-2008 | 4,466 | 12.7 | 12.4 | 12.7 | 1,724 | 4.0 | 3.9 | 4.0 |

*3 year moving average

Trends in survival (males)

Figure 7:6 Trends in relative survival rates for Non-Hodgkin lymphoma in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

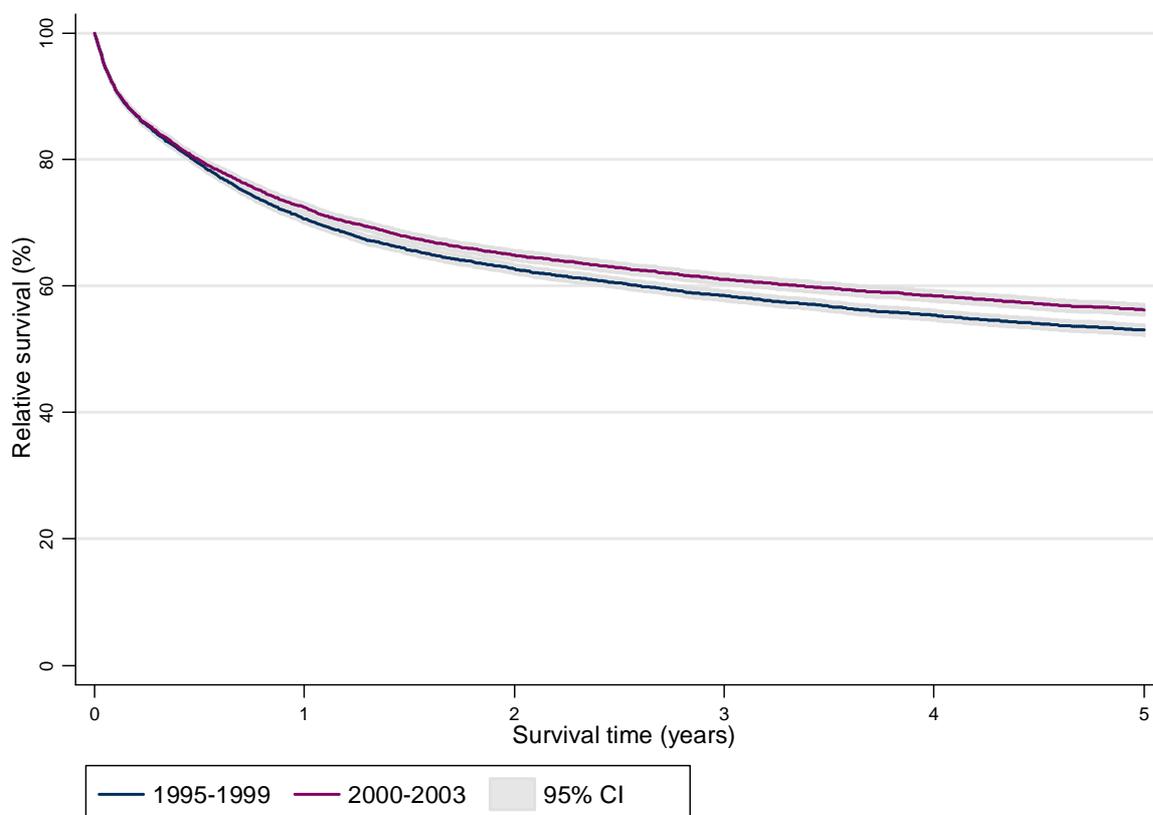


Table 7:7 Trends in relative survival rates for Non-Hodgkin lymphoma in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 70.6 | 69.9 | 71.3 | 18,563 | 6,008 | 72.5 | 71.7 | 73.2 | 16,831 | 5,156 |
| 2 | 62.7 | 61.9 | 63.4 | 18,563 | 7,814 | 64.9 | 64.1 | 65.7 | 16,831 | 6,748 |
| 3 | 58.4 | 57.6 | 59.2 | 18,563 | 8,902 | 61.1 | 60.2 | 61.9 | 16,831 | 7,677 |
| 4 | 55.4 | 54.6 | 56.2 | 18,563 | 9,740 | 58.5 | 57.6 | 59.3 | 16,831 | 8,379 |
| 5 | 53.0 | 52.1 | 53.8 | 18,563 | 10,417 | 56.3 | 55.4 | 57.2 | 16,831 | 8,983 |

Figure 7:8 Trends for males (all ages) in relative survival rates for Non-Hodgkin lymphoma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

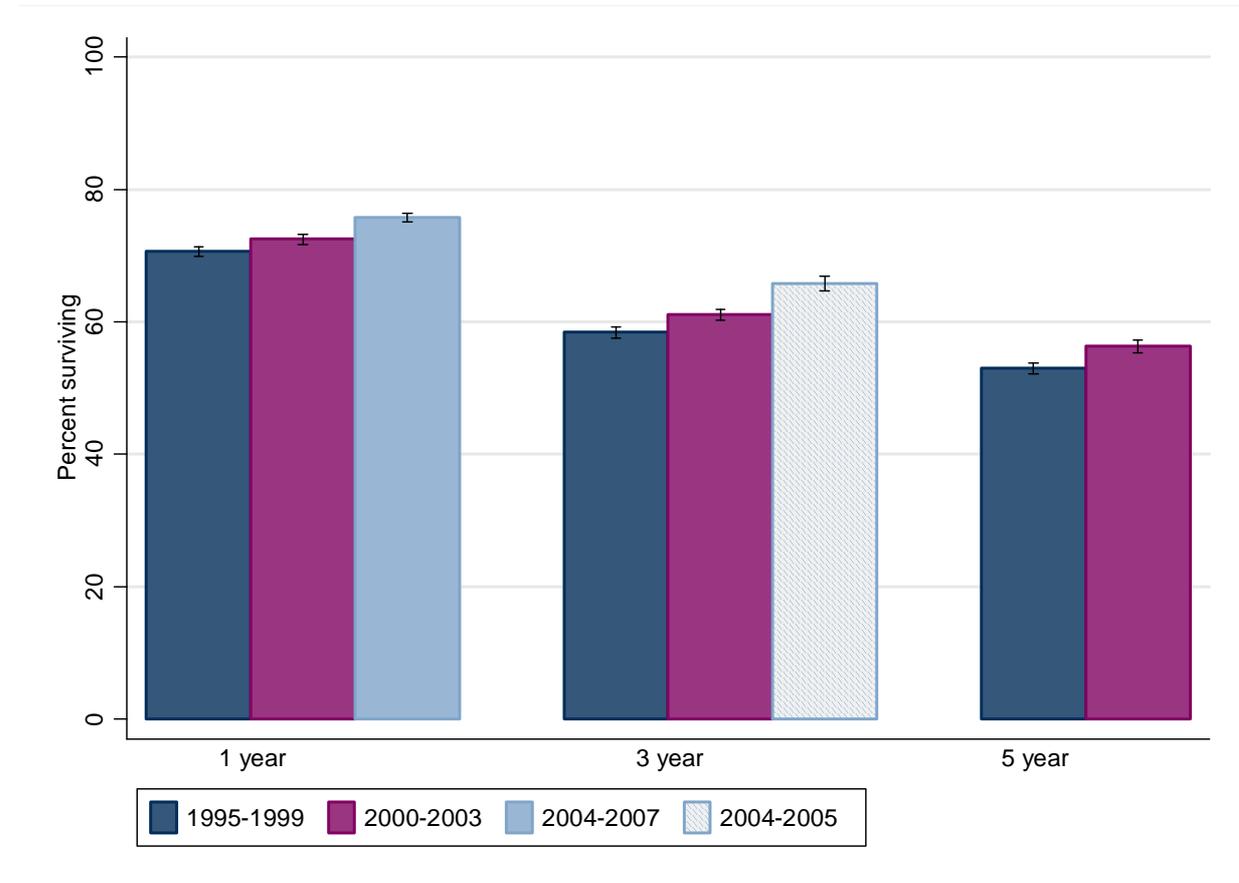


Table 7:9 Trends for males (all ages) in relative survival rates for Non-Hodgkin lymphoma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|-------------------------------|------------------|-------------|--------|-------|--------|--------|
| | | | Lower | Upper | | |
| 1 year | 1995-1999 | 70.6 | 69.9 | 71.3 | 18,563 | 6,008 |
| | 2000-2003 | 72.5 | 71.7 | 73.2 | 16,831 | 5,156 |
| | 2004-2007 | 75.7 | 75.1 | 76.4 | 19,243 | 5,298 |
| 3 year | 1995-1999 | 58.4 | 57.6 | 59.2 | 18,563 | 8,902 |
| | 2000-2003 | 61.1 | 60.2 | 61.9 | 16,831 | 7,677 |
| | 2004-2005 | 65.8 | 64.7 | 66.9 | 9,242 | 3,824 |
| 5 year | 1995-1999 | 53.0 | 52.1 | 53.8 | 18,563 | 10,417 |
| | 2000-2003 | 56.3 | 55.4 | 57.2 | 16,831 | 8,983 |

Trends in survival (females)

Figure 7:10 Trends in relative survival rates for Non-Hodgkin lymphoma in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

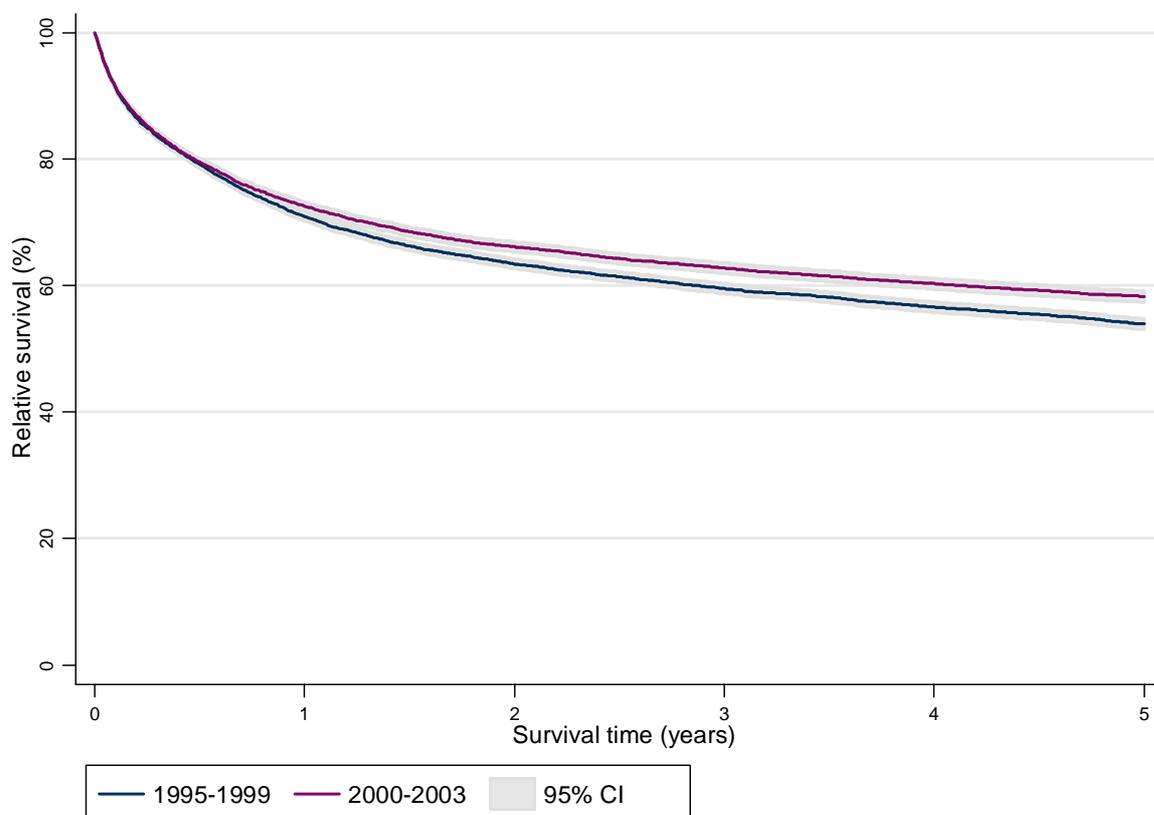


Table 7:11 Trends in relative survival rates for Non-Hodgkin lymphoma in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 70.9 | 70.1 | 71.6 | 16,372 | 5,246 | 72.6 | 71.8 | 73.3 | 14,950 | 4,558 |
| 2 | 63.4 | 62.6 | 64.2 | 16,372 | 6,755 | 66.1 | 65.3 | 67.0 | 14,950 | 5,783 |
| 3 | 59.5 | 58.7 | 60.4 | 16,372 | 7,645 | 62.8 | 61.9 | 63.6 | 14,950 | 6,543 |
| 4 | 56.6 | 55.8 | 57.5 | 16,372 | 8,345 | 60.4 | 59.5 | 61.2 | 14,950 | 7,119 |
| 5 | 53.9 | 53.0 | 54.8 | 16,372 | 8,982 | 58.3 | 57.4 | 59.3 | 14,950 | 7,630 |

Figure 7:12 Trends for females in relative survival rates for Non-Hodgkin lymphoma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

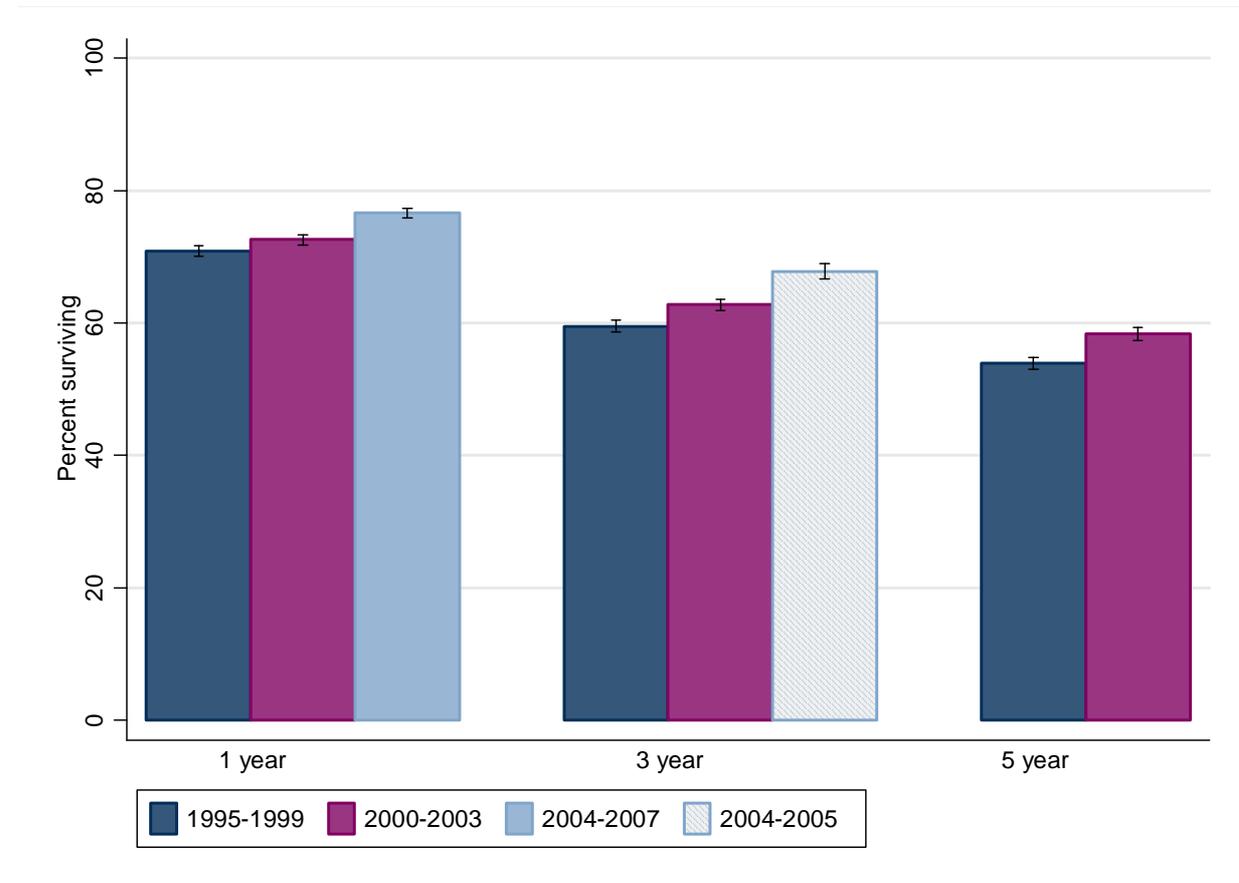


Table 7:13 Trends for females (all ages) in relative survival rates for Non-Hodgkin lymphoma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|-------------------------------|------------------|-------------|--------|------|--------|--------|
| 1 year | 1995-1999 | 70.9 | 70.1 | 71.6 | 16,372 | 5,246 |
| | 2000-2003 | 72.6 | 71.8 | 73.3 | 14,950 | 4,558 |
| | 2004-2007 | 76.6 | 75.9 | 77.3 | 16,432 | 4,371 |
| 3 year | 1995-1999 | 59.5 | 58.7 | 60.4 | 16,372 | 7,645 |
| | 2000-2003 | 62.8 | 61.9 | 63.6 | 14,950 | 6,543 |
| | 2004-2005 | 67.8 | 66.7 | 69.0 | 7,971 | 3,114 |
| 5 year | 1995-1999 | 53.9 | 53.0 | 54.8 | 16,372 | 8,982 |
| | 2000-2003 | 58.3 | 57.4 | 59.3 | 14,950 | 7,630 |

Trends in survival by age (males)

Figure 7:14 Trends in relative survival rates for Non-Hodgkin lymphoma diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

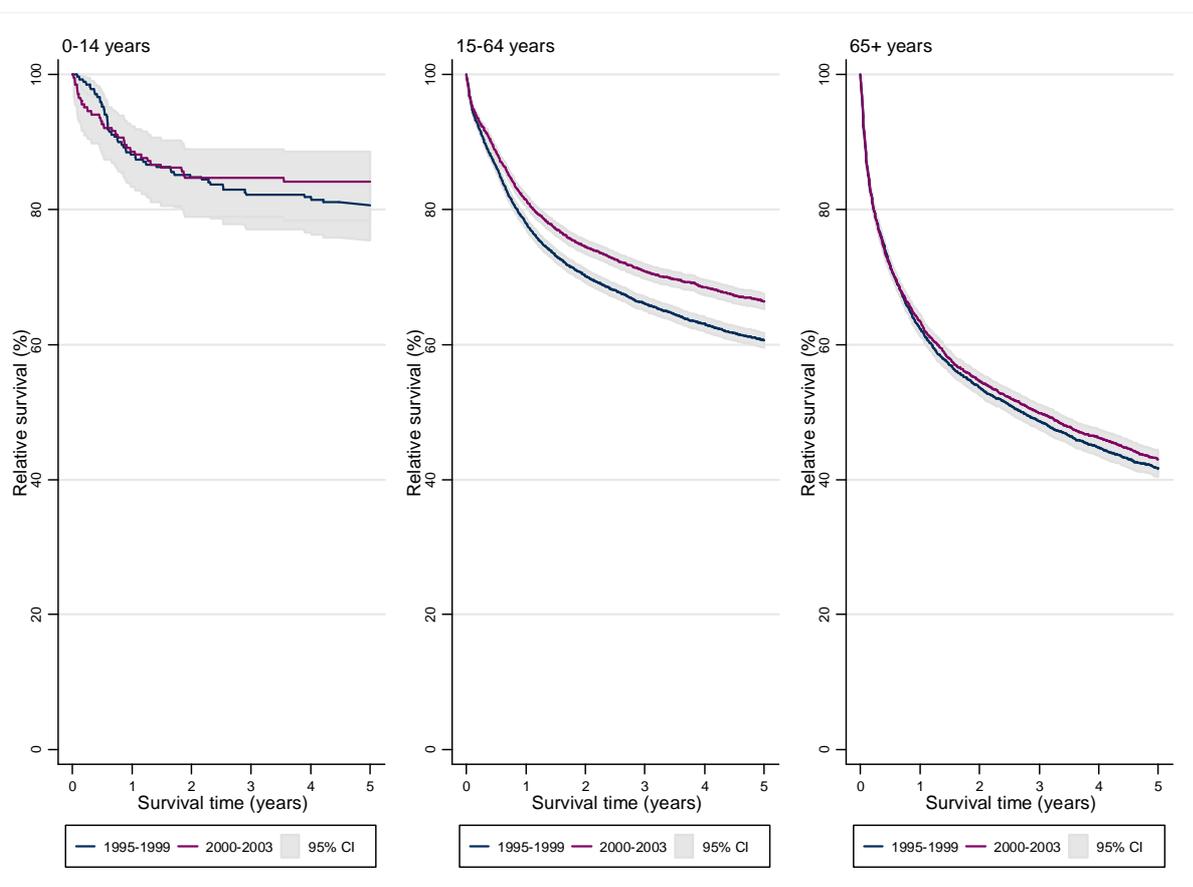


Table 7:15 Trends in relative survival rates for Non-Hodgkin lymphoma diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | 2000-2003 | | | |
|--------------|------------------|-----------|-----------|--------|--------|-----------|-----------|--------|--------|
| | | RS | 95 % CI | Cohort | Deaths | RS | 95 % CI | Cohort | Deaths |
| 0-14 years | 1 | 88.1 | 83.7 91.5 | 269 | 32 | 88.6 | 83.4 92.3 | 202 | 23 |
| | 2 | 84.8 | 79.9 88.6 | 269 | 41 | 84.7 | 78.9 89.0 | 202 | 31 |
| | 3 | 82.2 | 77.1 86.3 | 269 | 48 | 84.7 | 78.9 89.0 | 202 | 31 |
| | 4 | 81.9 | 76.7 86.0 | 269 | 49 | 84.2 | 78.4 88.6 | 202 | 32 |
| | 5 | 80.8 | 75.5 85.0 | 269 | 52 | 84.2 | 78.4 88.6 | 202 | 32 |
| 15-64 years | 1 | 77.9 | 77.0 78.8 | 8,811 | 2,000 | 81.4 | 80.5 82.2 | 7,589 | 1,459 |
| | 2 | 70.0 | 69.0 71.0 | 8,811 | 2,736 | 74.4 | 73.4 75.4 | 7,589 | 2,026 |
| | 3 | 65.9 | 64.9 67.0 | 8,811 | 3,143 | 70.8 | 69.7 71.8 | 7,589 | 2,346 |
| | 4 | 63.0 | 61.9 64.0 | 8,811 | 3,450 | 68.4 | 67.3 69.5 | 7,589 | 2,567 |
| | 5 | 60.6 | 59.5 61.7 | 8,811 | 3,709 | 66.4 | 65.2 67.5 | 7,589 | 2,765 |
| 65+ years | 1 | 62.2 | 61.1 63.3 | 9,483 | 3,976 | 63.4 | 62.3 64.4 | 9,040 | 3,674 |
| | 2 | 53.5 | 52.3 54.6 | 9,483 | 5,037 | 54.5 | 53.3 55.6 | 9,040 | 4,691 |
| | 3 | 48.5 | 47.3 49.7 | 9,483 | 5,711 | 49.8 | 48.6 51.0 | 9,040 | 5,300 |
| | 4 | 44.6 | 43.4 45.9 | 9,483 | 6,241 | 46.3 | 45.0 47.5 | 9,040 | 5,780 |
| | 5 | 41.7 | 40.4 42.9 | 9,483 | 6,656 | 43.3 | 42.0 44.6 | 9,040 | 6,186 |

Trends in survival by age (females)

Figure 7:16 Trends in relative survival rates for Non-Hodgkin lymphoma diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

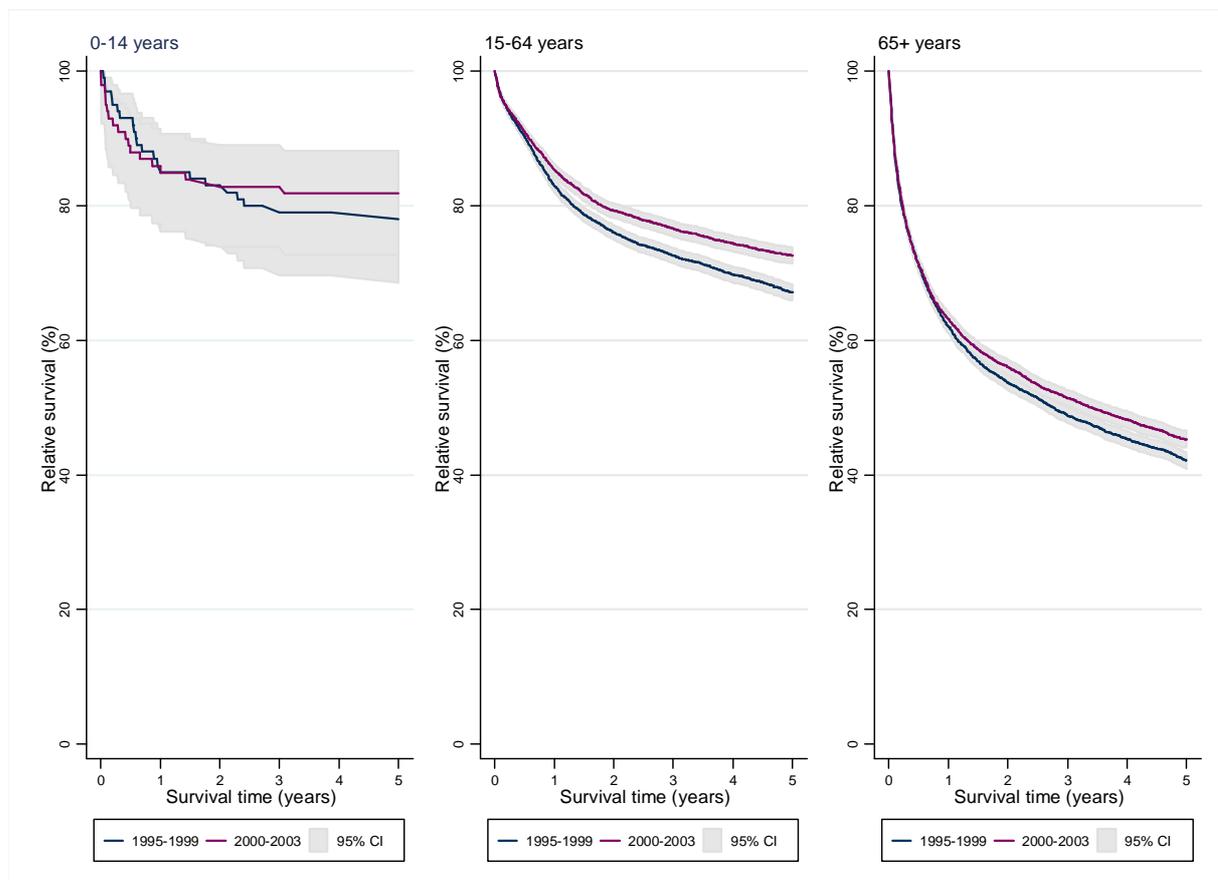


Table 7:17 Trends in relative survival rates for Non-Hodgkin lymphoma diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-----------|---------|------|--------|--------|-----------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 0-14 years | 1 | 85.0 | 76.4 | 90.7 | 100 | 15 | 85.9 | 77.3 | 91.4 | 99 | 14 |
| | 2 | 83.1 | 74.1 | 89.1 | 100 | 17 | 82.8 | 73.8 | 89.0 | 99 | 17 |
| | 3 | 79.0 | 69.7 | 85.8 | 100 | 21 | 82.8 | 73.8 | 89.0 | 99 | 17 |
| | 4 | 78.1 | 68.6 | 85.0 | 100 | 22 | 81.8 | 72.7 | 88.2 | 99 | 18 |
| | 5 | 78.1 | 68.6 | 85.0 | 100 | 22 | 81.8 | 72.7 | 88.2 | 99 | 18 |
| 15-64 years | 1 | 82.9 | 81.9 | 83.8 | 6,341 | 1,109 | 85.3 | 84.3 | 86.2 | 5,767 | 873 |
| | 2 | 76.0 | 74.9 | 77.0 | 6,341 | 1,570 | 79.3 | 78.2 | 80.3 | 5,767 | 1,239 |
| | 3 | 72.6 | 71.4 | 73.7 | 6,341 | 1,810 | 76.6 | 75.5 | 77.7 | 5,767 | 1,414 |
| | 4 | 69.8 | 68.6 | 71.0 | 6,341 | 2,011 | 74.5 | 73.3 | 75.6 | 5,767 | 1,561 |
| | 5 | 67.2 | 66.0 | 68.4 | 6,341 | 2,202 | 72.8 | 71.5 | 73.9 | 5,767 | 1,687 |
| 65+ years | 1 | 62.0 | 60.9 | 63.0 | 9,931 | 4,122 | 63.1 | 62.0 | 64.1 | 9,084 | 3,671 |
| | 2 | 53.6 | 52.5 | 54.7 | 9,931 | 5,168 | 55.8 | 54.7 | 57.0 | 9,084 | 4,527 |
| | 3 | 48.8 | 47.7 | 49.9 | 9,931 | 5,814 | 51.3 | 50.1 | 52.5 | 9,084 | 5,112 |
| | 4 | 45.4 | 44.3 | 46.6 | 9,931 | 6,312 | 48.2 | 47.0 | 49.4 | 9,084 | 5,540 |
| | 5 | 42.2 | 41.0 | 43.4 | 9,931 | 6,758 | 45.3 | 44.1 | 46.6 | 9,084 | 5,925 |

Trends in survival by age (persons)

Figure 7:18 Trends in relative survival rates for Non-Hodgkin lymphoma diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

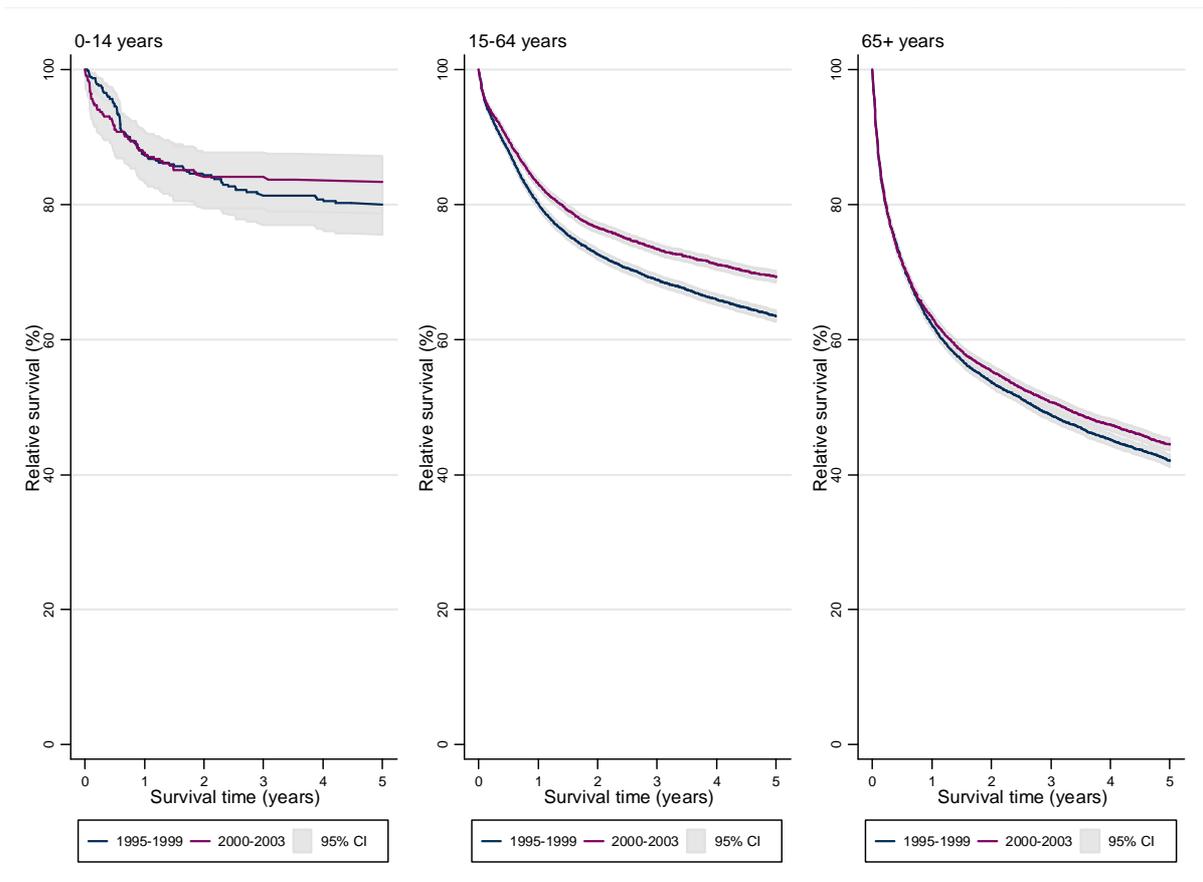


Table 7:19 Trends in relative survival rates for Non-Hodgkin lymphoma diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-----------|---------|------|--------|--------|-----------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 0-14 years | 1 | 87.3 | 83.5 | 90.3 | 369 | 47 | 87.7 | 83.5 | 91.0 | 301 | 37 |
| | 2 | 84.3 | 80.2 | 87.7 | 369 | 58 | 84.1 | 79.4 | 87.8 | 301 | 48 |
| | 3 | 81.4 | 77.0 | 85.0 | 369 | 69 | 84.1 | 79.4 | 87.8 | 301 | 48 |
| | 4 | 80.9 | 76.5 | 84.5 | 369 | 71 | 83.4 | 78.7 | 87.2 | 301 | 50 |
| | 5 | 80.1 | 75.6 | 83.8 | 369 | 74 | 83.4 | 78.7 | 87.2 | 301 | 50 |
| 15-64 years | 1 | 80.0 | 79.4 | 80.7 | 15,152 | 3,109 | 83.1 | 82.4 | 83.7 | 13,356 | 2,332 |
| | 2 | 72.5 | 71.8 | 73.3 | 15,152 | 4,306 | 76.5 | 75.8 | 77.2 | 13,356 | 3,265 |
| | 3 | 68.8 | 68.0 | 69.5 | 15,152 | 4,953 | 73.3 | 72.5 | 74.1 | 13,356 | 3,760 |
| | 4 | 65.9 | 65.1 | 66.7 | 15,152 | 5,461 | 71.1 | 70.3 | 71.9 | 13,356 | 4,128 |
| | 5 | 63.4 | 62.6 | 64.2 | 15,152 | 5,911 | 69.2 | 68.4 | 70.0 | 13,356 | 4,452 |
| 65+ years | 1 | 62.1 | 61.3 | 62.8 | 19,414 | 8,098 | 63.2 | 62.5 | 64.0 | 18,124 | 7,345 |
| | 2 | 53.5 | 52.7 | 54.3 | 19,414 | 10,205 | 55.2 | 54.3 | 56.0 | 18,124 | 9,218 |
| | 3 | 48.7 | 47.9 | 49.5 | 19,414 | 11,525 | 50.6 | 49.7 | 51.4 | 18,124 | 10,412 |
| | 4 | 45.1 | 44.2 | 45.9 | 19,414 | 12,553 | 47.3 | 46.4 | 48.1 | 18,124 | 11,320 |
| | 5 | 41.9 | 41.1 | 42.8 | 19,414 | 13,414 | 44.4 | 43.5 | 45.3 | 18,124 | 12,111 |

Myeloma is predominantly a disease of older people, with low incidence before the age of fifty; the incidence is greater in men at all ages. Over the reported period the age-standardised incidence of disease rose in men and women and age-standardised mortality fell slightly. The time period covered in this reports shows an improvement in relative survival in patients with myeloma.

The rising registration rates for myeloma may in part be due to greater ascertainment of cases, particularly in the elderly. The improvements in survival seen in the period reported are likely to be due to the increased use of autologous stem cell transplant in younger (mostly under 70 years) patients, and increasing use of the drug thalidomide.

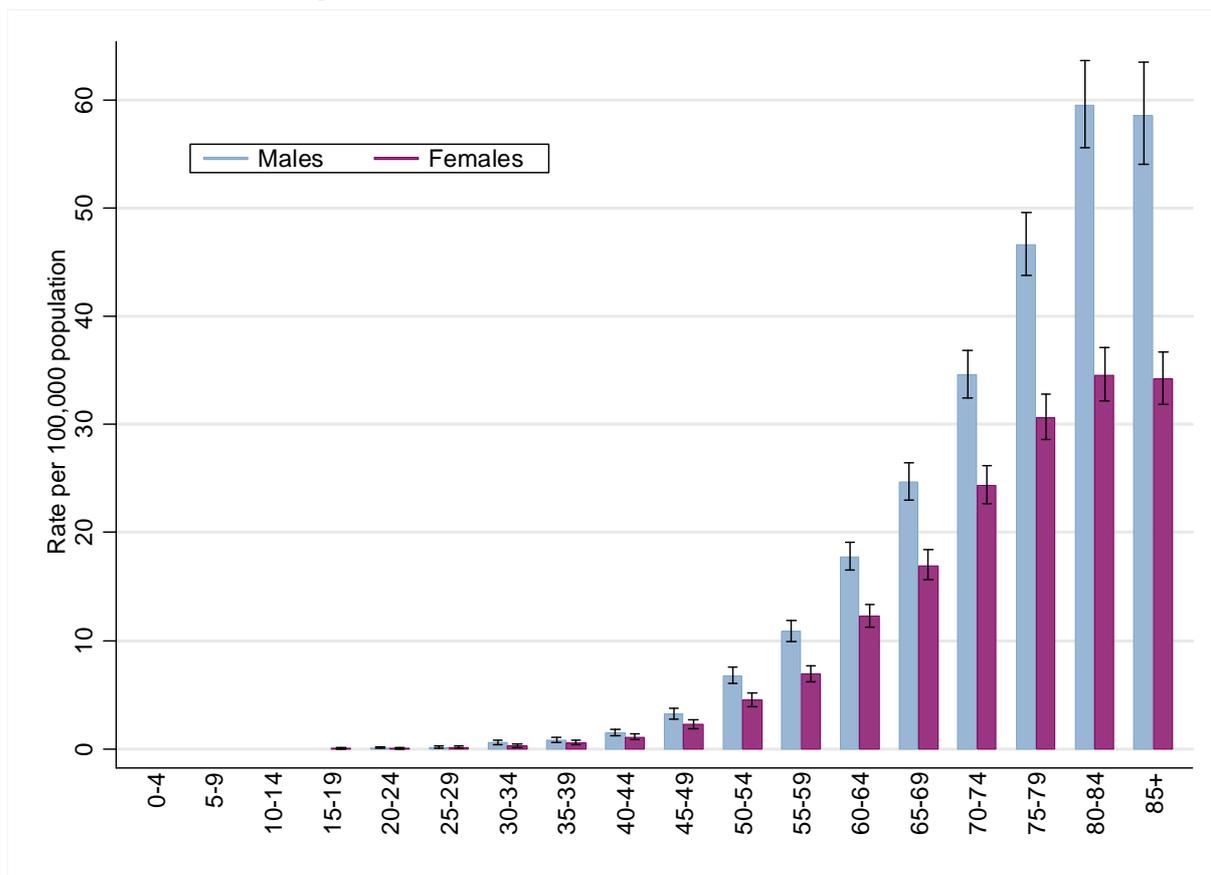
Clinical practice was influenced by three clinical trials which showed (in the relatively young patients, mostly age <70 in whom this potentially toxic treatment could be used) benefit from high dose chemotherapy with autologous stem cell transplant.

Thalidomide was increasingly used after first line chemotherapy had ceased to be beneficial, and Myeloma IX, the UK trial in which half the patients received thalidomide as part of their initial treatment (later shown, by the trial, to be beneficial) started in 2003.

More recently two more drugs bortezomib and lenalidomide have been introduced to clinical practice, with clinical trial evidence of effectiveness, and it is likely that current patient cohorts will have experienced further improvements in survival.

Age distribution

Figure 8:1 Age-specific incidence rates by age group for myeloma in males and females between 2006-2008 in England



Trends in incidence and mortality (males)

Figure 8:2 Age-standardised incidence and mortality rates for myeloma in males in the period 2001-2008 in England (3 year moving average)

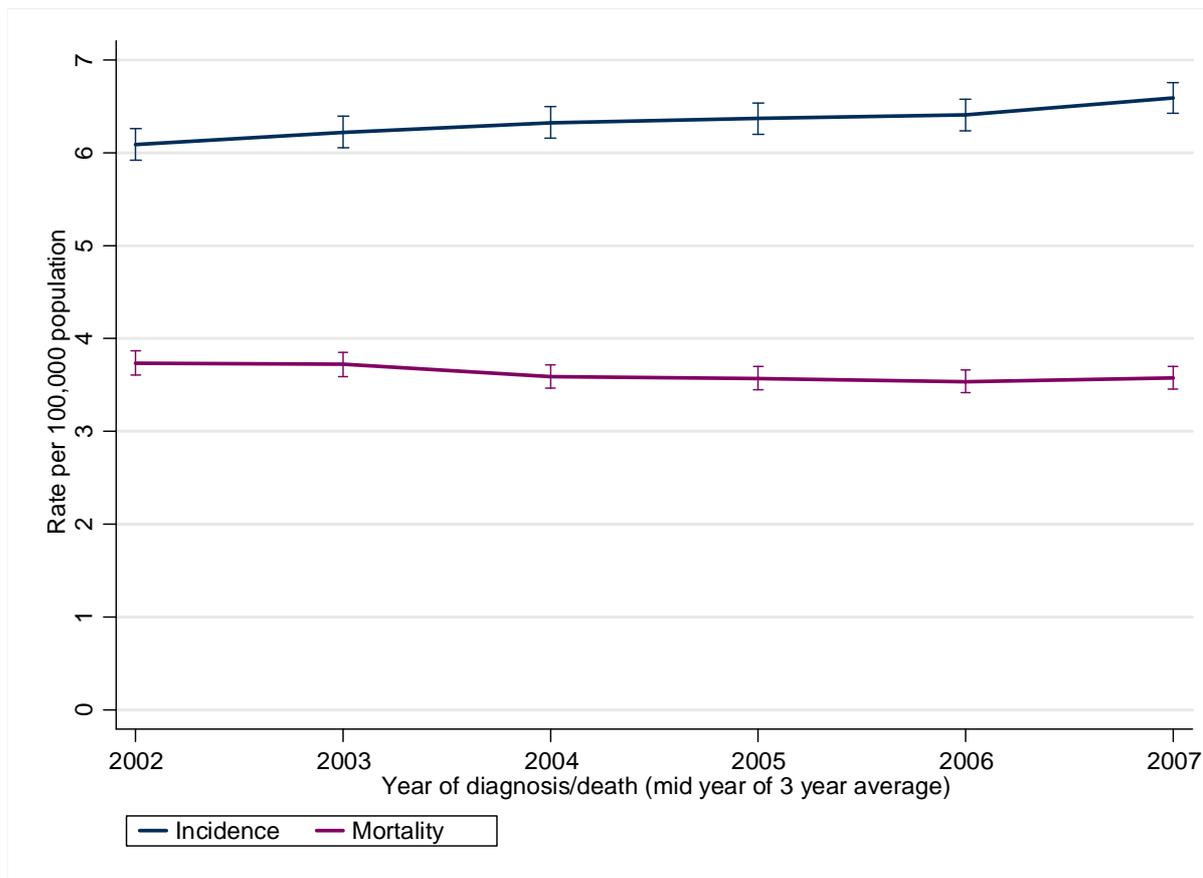


Table 8:3 Age-standardised incidence and mortality rates for myeloma in males in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | Mortality | | |
|-----------|-----------|-----|---------|-----------|-----|---------|
| | Cases* | ASR | 95% CI | Deaths* | ASR | 95% CI |
| 2001-2003 | 1,745 | 6.1 | 5.9 6.1 | 1,102 | 3.7 | 3.6 3.7 |
| 2002-2004 | 1,811 | 6.2 | 6.1 6.2 | 1,121 | 3.7 | 3.6 3.7 |
| 2003-2005 | 1,867 | 6.3 | 6.2 6.3 | 1,102 | 3.6 | 3.5 3.6 |
| 2004-2006 | 1,907 | 6.4 | 6.2 6.4 | 1,111 | 3.6 | 3.5 3.6 |
| 2005-2007 | 1,950 | 6.4 | 6.2 6.4 | 1,125 | 3.5 | 3.4 3.5 |
| 2006-2008 | 2,047 | 6.6 | 6.4 6.6 | 1,167 | 3.6 | 3.5 3.6 |

*3 year moving average

Trends in incidence and mortality (females)

Figure 8:4 Age-standardised incidence and mortality rates for myeloma in females in the period 2001-2008 in England (3 year moving average)

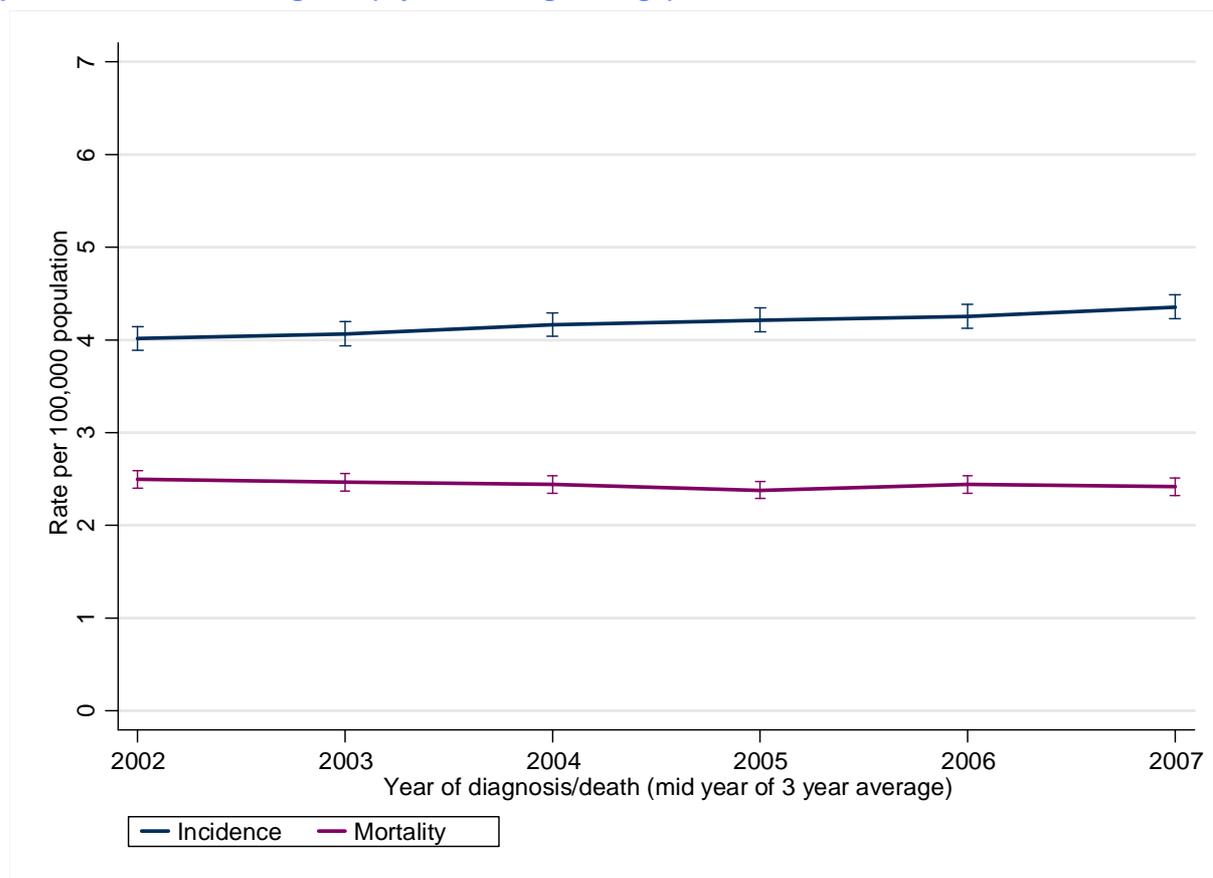


Table 8:5 Age-standardised incidence and mortality rates for myeloma in females in the period 2001-2008 in England (3 year moving average)

| Year | Incidence | | | Mortality | | |
|-----------|-----------|-----|---------|-----------|-----|---------|
| | Cases* | ASR | 95% CI | Deaths* | ASR | 95% CI |
| 2001-2003 | 1,519 | 4.0 | 3.9 4.0 | 1,043 | 2.5 | 2.4 2.5 |
| 2002-2004 | 1,537 | 4.1 | 3.9 4.1 | 1,031 | 2.5 | 2.4 2.5 |
| 2003-2005 | 1,585 | 4.2 | 4.0 4.2 | 1,024 | 2.4 | 2.4 2.4 |
| 2004-2006 | 1,608 | 4.2 | 4.1 4.2 | 1,006 | 2.4 | 2.3 2.4 |
| 2005-2007 | 1,643 | 4.3 | 4.1 4.3 | 1,044 | 2.4 | 2.4 2.4 |
| 2006-2008 | 1,689 | 4.4 | 4.2 4.4 | 1,045 | 2.4 | 2.3 2.4 |

*3 year moving average

Trends in survival (males)

Figure 8:6 Trends in relative survival rates for myeloma in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

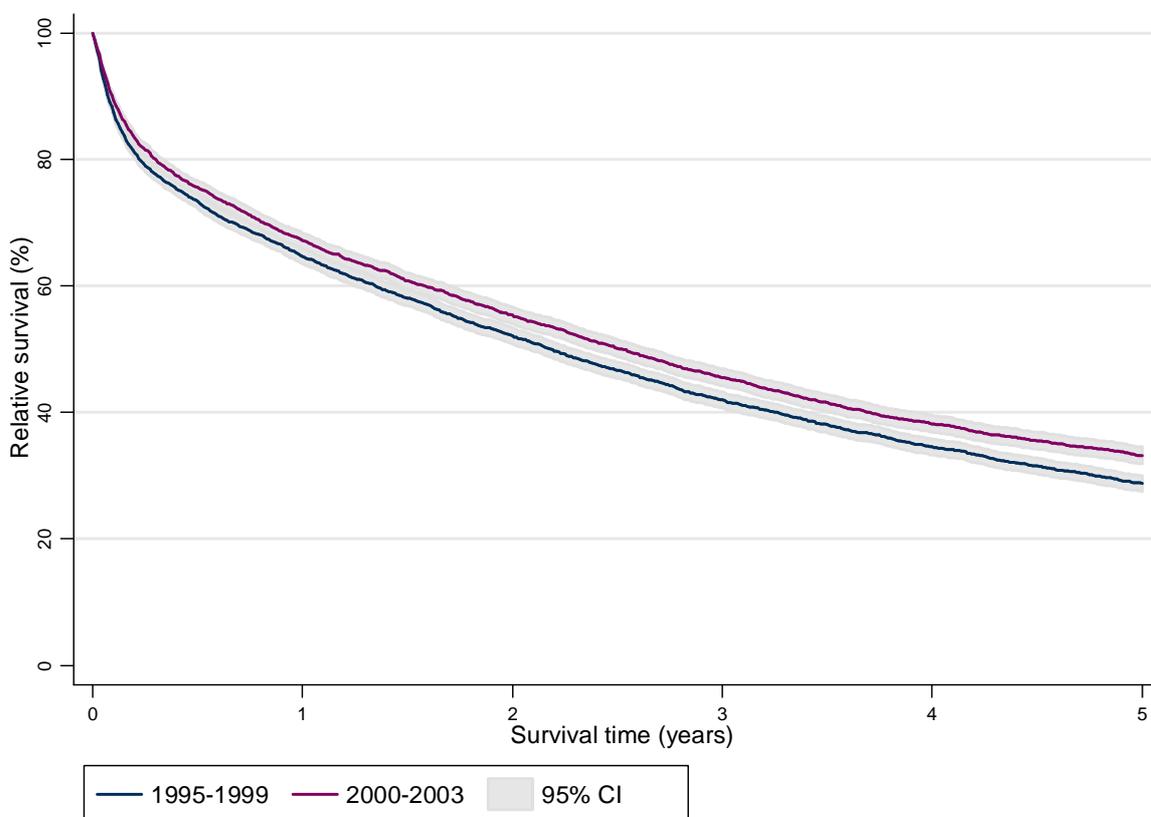


Table 8:7 Trends in relative survival rates for myeloma in males (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 64.6 | 63.4 | 65.8 | 7,226 | 2,820 | 67.2 | 66.0 | 68.4 | 6,592 | 2,409 |
| 2 | 52.1 | 50.8 | 53.3 | 7,226 | 3,844 | 55.4 | 54.1 | 56.8 | 6,592 | 3,301 |
| 3 | 42.0 | 40.7 | 43.3 | 7,226 | 4,630 | 45.6 | 44.2 | 46.9 | 6,592 | 4,010 |
| 4 | 34.6 | 33.3 | 35.9 | 7,226 | 5,181 | 38.2 | 36.8 | 39.5 | 6,592 | 4,521 |
| 5 | 28.8 | 27.6 | 30.0 | 7,226 | 5,594 | 33.1 | 31.8 | 34.4 | 6,592 | 4,867 |

Figure 8:8 Trends for males (all ages) in relative survival rates for myeloma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

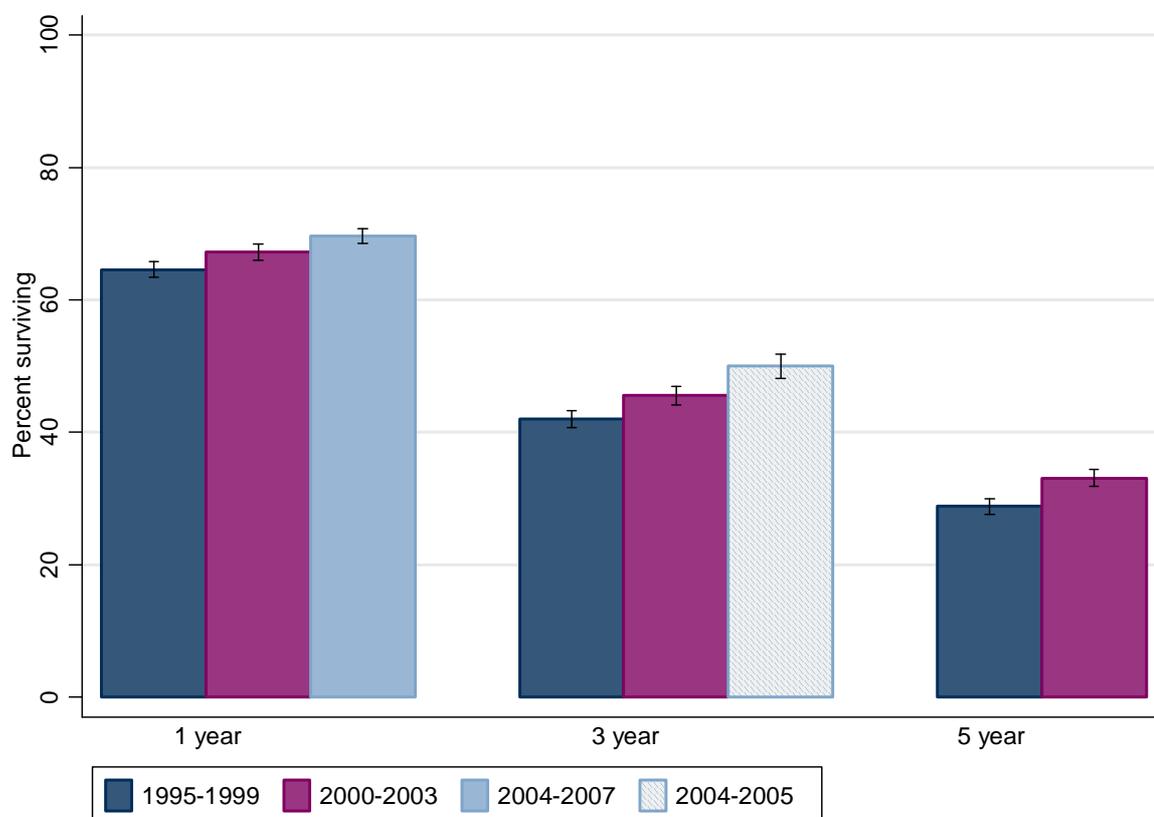


Table 8:9 Trends for males (all ages) in relative survival rates for myeloma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|-------------------------------|------------------|------|--------|------|--------|--------|
| 1 year | 1995-1999 | 64.6 | 63.4 | 65.8 | 7,226 | 2,820 |
| | 2000-2003 | 67.2 | 66.0 | 68.4 | 6,592 | 2,409 |
| | 2004-2007 | 69.7 | 68.5 | 70.8 | 7,360 | 2,510 |
| 3 year | 1995-1999 | 42.0 | 40.7 | 43.3 | 7,226 | 4,630 |
| | 2000-2003 | 45.6 | 44.2 | 46.9 | 6,592 | 4,010 |
| | 2004-2005 | 50.0 | 48.1 | 51.8 | 3,581 | 2,037 |
| 5 year | 1995-1999 | 28.8 | 27.6 | 30.0 | 7,226 | 5,594 |
| | 2000-2003 | 33.1 | 31.8 | 34.4 | 6,592 | 4,867 |

Trends in survival (females)

Figure 8:10 Trends in relative survival rates for myeloma in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

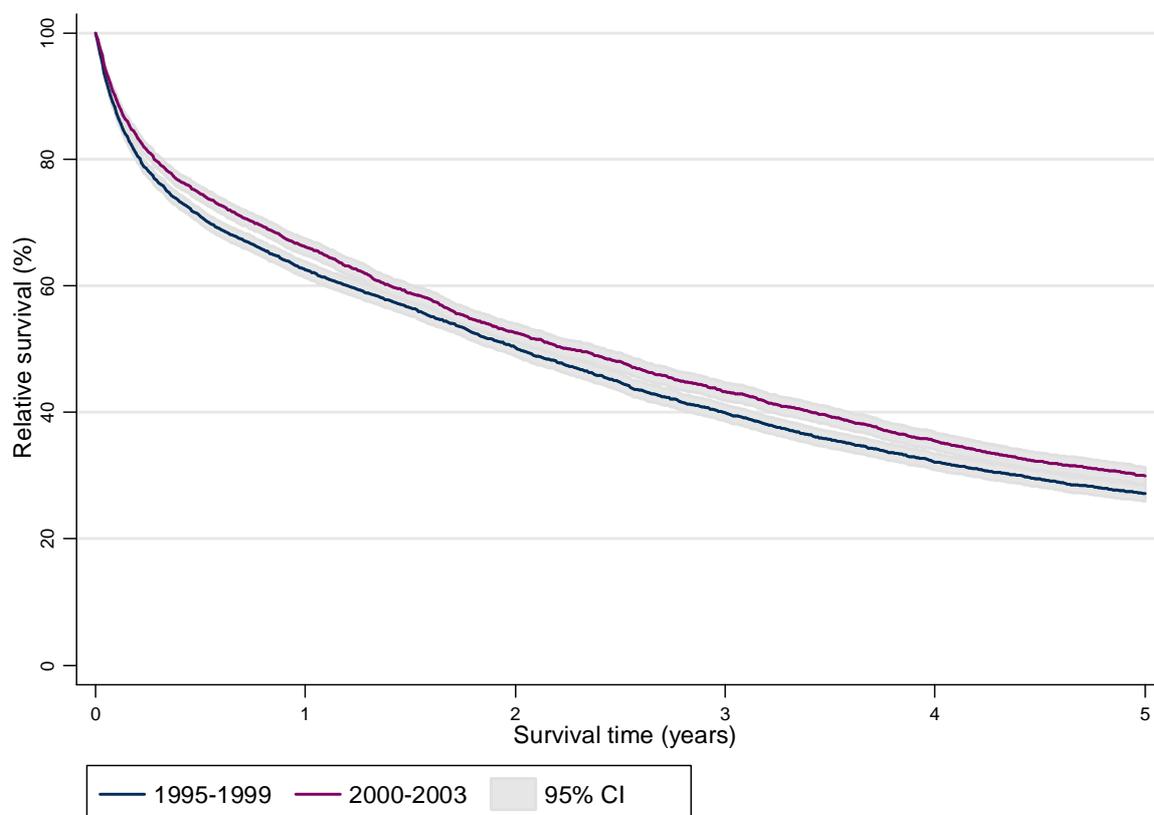


Table 8:11 Trends in relative survival rates for myeloma in females (all ages) diagnosed in the periods 1995-1999 and 2000-2003 followed up to end of 2008 in England

| Survival Time (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|-----------------------|-------------|--------|------|--------|--------|-------------|--------|------|--------|--------|
| | RS | 95% CI | | Cohort | Deaths | RS | 95% CI | | Cohort | Deaths |
| 1 | 62.6 | 61.3 | 63.8 | 6,590 | 2,663 | 66.2 | 64.9 | 67.5 | 5,806 | 2,154 |
| 2 | 50.2 | 48.9 | 51.5 | 6,590 | 3,568 | 52.6 | 51.2 | 54.0 | 5,806 | 3,031 |
| 3 | 39.9 | 38.6 | 41.2 | 6,590 | 4,285 | 43.2 | 41.8 | 44.6 | 5,806 | 3,616 |
| 4 | 32.1 | 30.9 | 33.4 | 6,590 | 4,815 | 35.5 | 34.1 | 36.9 | 5,806 | 4,081 |
| 5 | 27.1 | 25.9 | 28.4 | 6,590 | 5,149 | 29.9 | 28.6 | 31.3 | 5,806 | 4,408 |

Figure 8:12 Trends for females (all ages) in relative survival rates for myeloma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

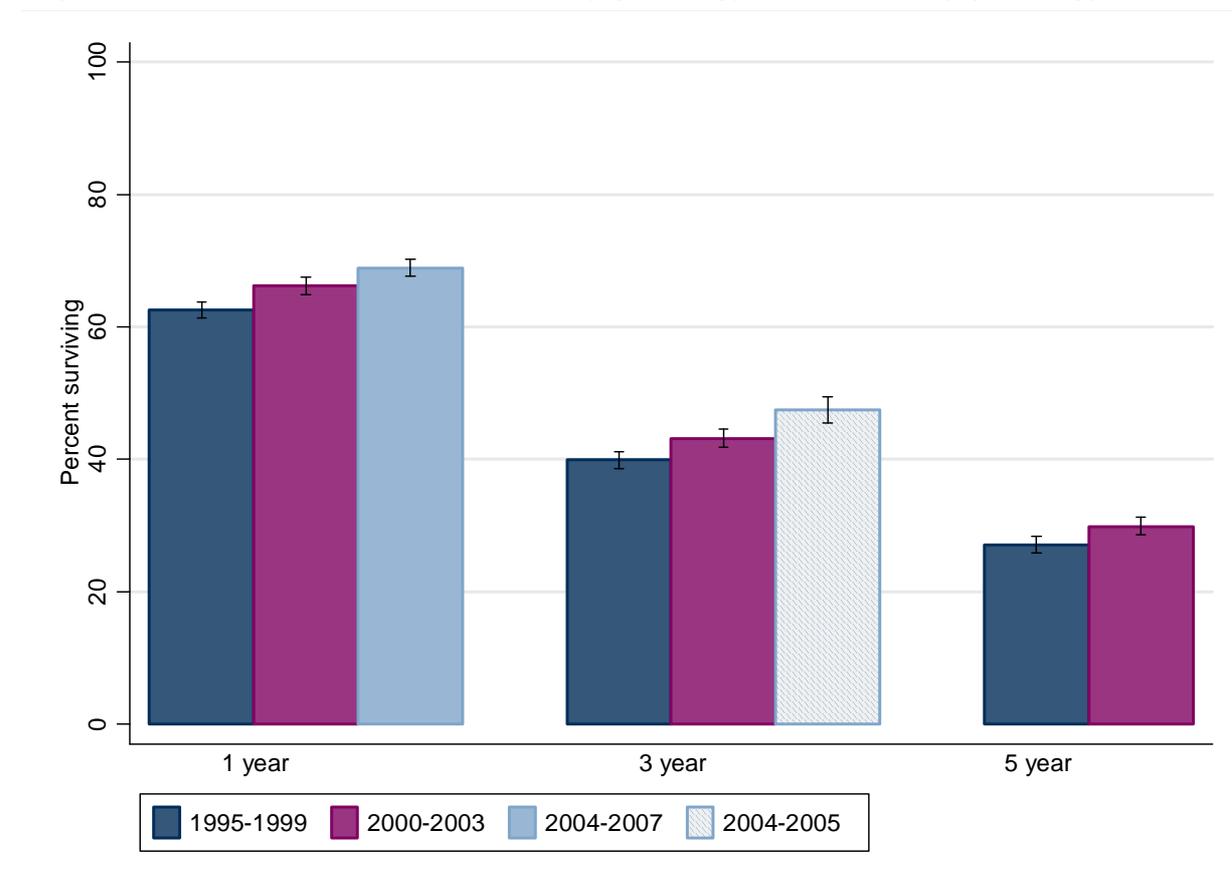


Table 8:13 Trends for females (all ages) in relative survival rates for myeloma diagnosed in the periods 1995-1999, 2000-2003, 2004-2007 (1 year only) and 2004-2005 (3 year only)

| Relative Survival Time Period | Diagnosis cohort | RS | 95% CI | | Cohort | Deaths |
|-------------------------------|------------------|------|--------|------|--------|--------|
| 1 year | 1995-1999 | 62.6 | 61.3 | 63.8 | 6,590 | 2,663 |
| | 2000-2003 | 66.2 | 64.9 | 67.5 | 5,806 | 2,154 |
| | 2004-2007 | 68.9 | 67.7 | 70.2 | 6,132 | 2,112 |
| 3 year | 1995-1999 | 39.9 | 38.6 | 41.2 | 6,590 | 4,285 |
| | 2000-2003 | 43.2 | 41.8 | 44.6 | 5,806 | 3,616 |
| | 2004-2005 | 47.5 | 45.5 | 49.5 | 3,008 | 1,768 |
| 5 year | 1995-1999 | 27.1 | 25.9 | 28.4 | 6,590 | 5,149 |
| | 2000-2003 | 29.9 | 28.6 | 31.3 | 5,806 | 4,408 |

Trends in survival by age (males)

Figure 8:14 Trends in relative survival rates for myeloma diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

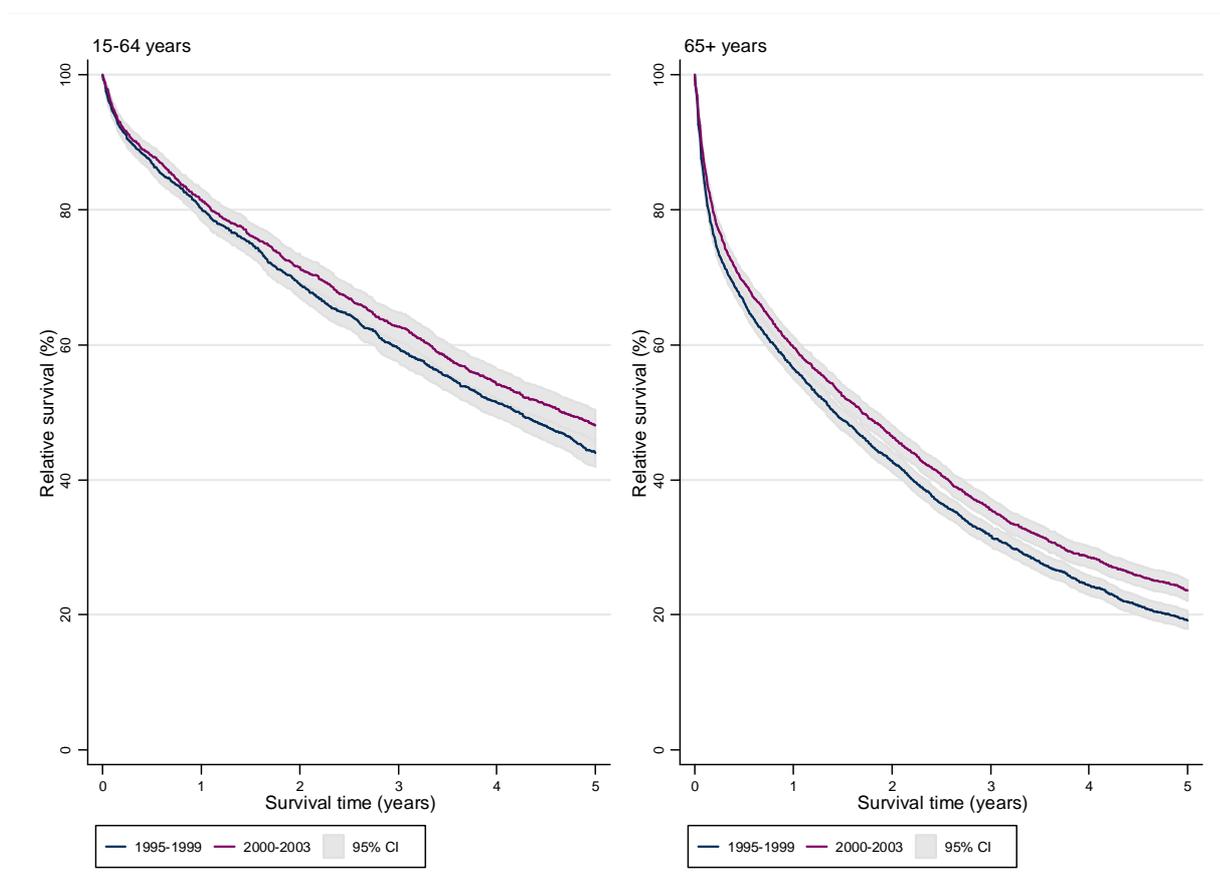


Table 8:15 Trends in relative survival rates for myeloma diagnosed in males in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | | 2000-2003 | | | | |
|--------------|------------------|-------------|---------|------|--------|--------|-------------|---------|------|--------|--------|
| | | RS | 95 % CI | | Cohort | Deaths | RS | 95 % CI | | Cohort | Deaths |
| 15-64 years | 1 | 80.2 | 78.5 | 81.8 | 2,293 | 473 | 81.4 | 79.7 | 83.1 | 2,075 | 401 |
| | 2 | 69.0 | 67.0 | 70.9 | 2,293 | 744 | 71.6 | 69.5 | 73.5 | 2,075 | 618 |
| | 3 | 59.7 | 57.6 | 61.8 | 2,293 | 968 | 62.9 | 60.7 | 65.0 | 2,075 | 808 |
| | 4 | 51.6 | 49.5 | 53.7 | 2,293 | 1,162 | 54.4 | 52.1 | 56.6 | 2,075 | 991 |
| | 5 | 44.2 | 42.1 | 46.4 | 2,293 | 1,337 | 48.6 | 46.3 | 50.8 | 2,075 | 1,119 |
| 65+ years | 1 | 56.3 | 54.8 | 57.8 | 4,932 | 2,347 | 59.6 | 58.1 | 61.2 | 4,517 | 2,008 |
| | 2 | 42.6 | 41.1 | 44.2 | 4,932 | 3,100 | 46.4 | 44.8 | 48.1 | 4,517 | 2,683 |
| | 3 | 31.6 | 30.2 | 33.1 | 4,932 | 3,662 | 35.5 | 33.9 | 37.1 | 4,517 | 3,202 |
| | 4 | 24.4 | 23.0 | 25.8 | 4,932 | 4,019 | 28.5 | 26.9 | 30.1 | 4,517 | 3,530 |
| | 5 | 19.3 | 18.0 | 20.7 | 4,932 | 4,257 | 23.6 | 22.1 | 25.1 | 4,517 | 3,748 |

Trends in survival by age (females)

Figure 8:16 Trends in relative survival rates for myeloma diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

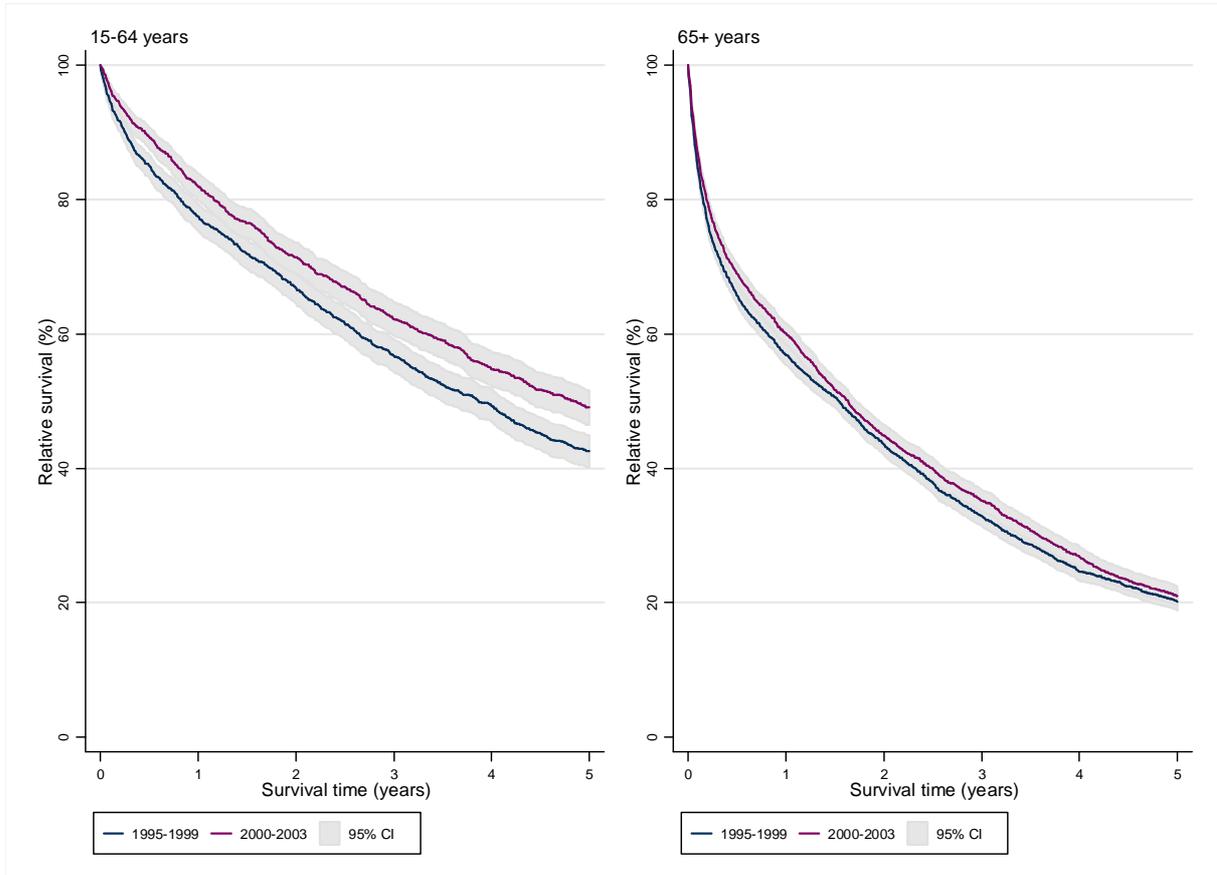


Table 8:17 Trends in relative survival rates for myeloma diagnosed in females in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | 2000-2003 | | | |
|--------------|------------------|-----------|-------------|--------|--------|-----------|-------------|--------|--------|
| | | RS | 95 % CI | Cohort | Deaths | RS | 95 % CI | Cohort | Deaths |
| 15-64 years | 1 | 77.5 | 75.4 - 79.4 | 1,697 | 390 | 82.0 | 80.0 - 83.9 | 1,501 | 277 |
| | 2 | 66.9 | 64.6 - 69.2 | 1,697 | 576 | 71.4 | 69.0 - 73.7 | 1,501 | 441 |
| | 3 | 56.9 | 54.5 - 59.3 | 1,697 | 750 | 62.4 | 59.9 - 64.9 | 1,501 | 581 |
| | 4 | 49.5 | 47.1 - 52.0 | 1,697 | 879 | 55.1 | 52.5 - 57.7 | 1,501 | 696 |
| | 5 | 42.7 | 40.3 - 45.1 | 1,697 | 996 | 49.5 | 46.9 - 52.1 | 1,501 | 783 |
| 65+ years | 1 | 56.8 | 55.3 - 58.3 | 4,893 | 2,273 | 60.0 | 58.4 - 61.5 | 4,304 | 1,876 |
| | 2 | 43.6 | 42.1 - 45.1 | 4,893 | 2,992 | 44.8 | 43.1 - 46.4 | 4,304 | 2,589 |
| | 3 | 32.9 | 31.4 - 34.4 | 4,893 | 3,535 | 35.0 | 33.4 - 36.6 | 4,304 | 3,034 |
| | 4 | 24.7 | 23.3 - 26.0 | 4,893 | 3,936 | 26.8 | 25.3 - 28.4 | 4,304 | 3,384 |
| | 5 | 20.3 | 19.0 - 21.6 | 4,893 | 4,153 | 20.9 | 19.5 - 22.4 | 4,304 | 3,624 |

Trends in survival by age (persons)

Figure 8:18 Trends in relative survival rates for myeloma diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

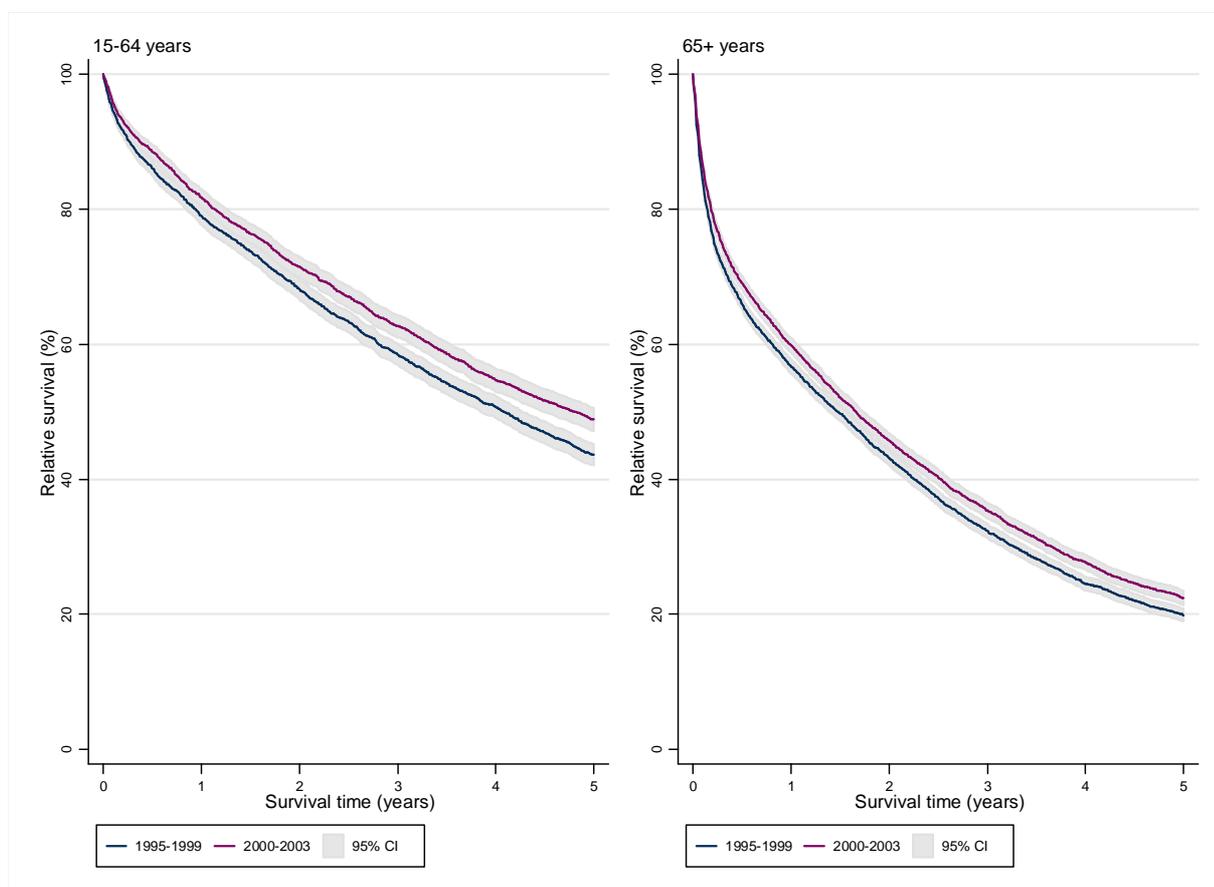


Table 8:19 Trends in relative survival rates for myeloma diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England

| Age Category | Survival (years) | 1995-1999 | | | | 2000-2003 | | | |
|--------------|------------------|-----------|-----------|--------|--------|-----------|-----------|--------|--------|
| | | RS | 95 % CI | Cohort | Deaths | RS | 95 % CI | Cohort | Deaths |
| 15-64 years | 1 | 79.0 | 77.7 80.3 | 3,990 | 863 | 81.7 | 80.4 82.9 | 3,576 | 678 |
| | 2 | 68.1 | 66.6 69.6 | 3,990 | 1,320 | 71.5 | 70.0 73.0 | 3,576 | 1,059 |
| | 3 | 58.5 | 56.9 60.1 | 3,990 | 1,718 | 62.7 | 61.0 64.3 | 3,576 | 1,389 |
| | 4 | 50.7 | 49.1 52.3 | 3,990 | 2,041 | 54.7 | 53.0 56.4 | 3,576 | 1,687 |
| | 5 | 43.6 | 42.0 45.2 | 3,990 | 2,333 | 49.0 | 47.3 50.7 | 3,576 | 1,902 |
| 65+ years | 1 | 56.6 | 55.5 57.6 | 9,825 | 4,620 | 59.8 | 58.7 60.9 | 8,821 | 3,884 |
| | 2 | 43.1 | 42.0 44.2 | 9,825 | 6,092 | 45.6 | 44.5 46.8 | 8,821 | 5,272 |
| | 3 | 32.3 | 31.2 33.3 | 9,825 | 7,197 | 35.3 | 34.1 36.4 | 8,821 | 6,236 |
| | 4 | 24.5 | 23.5 25.5 | 9,825 | 7,955 | 27.7 | 26.6 28.7 | 8,821 | 6,914 |
| | 5 | 19.8 | 18.9 20.8 | 9,825 | 8,410 | 22.3 | 21.2 23.3 | 8,821 | 7,372 |

Appendix 1: Dataset and Histological Groups as Defined in this Report

Datasets for the analysis of incidence and survival carried out in this report were generated from an extract of the 2008 NCDR (National Cancer Data Repository). This extract was based on any haematological cancer diagnoses with the ICD10 codes of “C81.0” to “C96.9”

Data in the incidence dataset was restricted to cancer diagnoses between 2001 and 2008. However a survival dataset required extra data to generate results regarding 3 year and 5 year survival rates and for this reason; the survival dataset was restricted to any cancer diagnosis with a diagnosis year beyond 1995.

Figure 9:1 Classification of haematological malignancies used in this report

| Disease Group | ICD10 code |
|-------------------------------|--|
| Acute lymphoblastic leukaemia | C91.0 |
| Acute myeloid leukaemia | C92.0, C92.4, C92.5, C93.0, C94.0, C94.2 |
| Chronic lymphocytic leukaemia | C91.1 |
| Chronic myeloid leukaemia | C92.1 |
| Hodgkin lymphoma | C81 |
| Non-Hodgkin lymphoma | C82, C83, C84, C85 |
| Myeloma | C90 |
| Other | C91.2, C91.3, C91.4, C91.5, C91.7, C91.9, C92.2, C92.3, C92.7, C92.9, C93.1, C93.2, C93.7, C93.9, C94.3, C94.4, C94.5, C94.7, C95.0, C95.1, C95.2, C95.7, C95.9, C96.0, C96.1, C96.2, C96.3, C96.7*, C96.9 |

Changes in coding of haematological malignancies

In ICD-O-3 a number of conditions where morphology was previously considered to be borderline have been categorised as malignant. For haematological malignancies this primarily affects conditions broadly referred to as Myelodysplastic Syndromes and Myeloproliferative Neoplasms. For registries recording morphology in ICD-O-2 these conditions have been mapped to the ICD10 disease codes D45-47, but for registries using ICD-O-3 the malignant nature of these conditions has been reflected in mapping them to code C96.7. The consequence of this change is for the overall number of haematological malignancies to be increased. The migration from ICD-O-2 has occurred at different times in different cancer registries and so users are advised to consult their local registry when interpreting local and national trends in haematological cancers.

Morphology codes

The grouping of haematological malignancies has been done on the basis of the ICD 10 code associated with each registration. Information is also recorded on the morphology of each cancer, a breakdown of the WHO International Classification of Diseases for Oncology (ICD-O) codes associated with each disease group is available from the report's authors (over this time period both the second and third editions of the ICD-O were in use)

Quality assurance of dataset

NYCRIS undertook a quality assurance exercise to verify both allocation of ICD10 site codes to disease groups and the resulting outputs for incidence, mortality and survival. There are limited sources of national data available for direct comparison with the disease groups included within this report. A number of comparisons were made with the UK Cancer Information Service (UKCIS) where some similar disease groups could be created. Direct comparisons could be made for Hodgkin Lymphoma (C81) and Myeloma (C90). A separate Quality Assurance report is available from the authors, detailing both methods and results.

Age-Standardised Rate (ASR)

The direct method of age standardisation was used to produce the theoretical rate that would occur if the observed age specific incidence/mortality rates applied in a standard population. In this report the European Standard Population was used. The European Standardised Rate (ESR) was calculated using the formula:

$$ESR = \frac{\sum_{i=1}^A a_i w_i}{\sum_{i=1}^A w_i}$$

Where
 A = the number of age intervals
 a_i = the incidence/mortality rate per 100,000 in age group i
 w_i = the European Standard Population in age group i

Survival

In a cohort of cancer patients, overall (observed) mortality can be divided into two components, the background mortality, also known as the expected mortality representing all-cause deaths in the general population and the excess mortality due to cancer. Background mortality is calculated from life tables for England.

excess mortality = observed mortality – expected mortality

$$\lambda_c(t) = \lambda(t) - \lambda_e(x+t, z) = \sum_{k=1}^m \alpha_k I_k(t)$$

where α_k = the excess mortality hazard in the k^{th} interval and $I_k(t) = \begin{cases} 1 & k^{th} \text{ interval} \\ 0 & \text{otherwise} \end{cases}$

Relative survival reflects the excess mortality among cancer patients, over and above the background mortality in the country or region where they live. It is the ratio of the observed survival rate and the expected survival rate of the general population with a similar age/sex structure to the cancer patients in the study.

The analyses undertaken in this report use relative survival estimated using the maximum likelihood method for individual records, developed by Estève *et al* using the *strel* command in Stata version 11. This method assumes that the hazard is constant within each interval. The cumulative relative survival at time t using the ML method is given by:

$$S_t = \exp\left(-\sum_{k=1}^{i-1} \alpha_k (t_k - t_{k-1}) + (t - t_{i-1})\right)$$

All cases were followed up for at least five years (unless otherwise stated) or until death. Registrations with zero survival were excluded from the analysis. The age at diagnosis for cases ranged between 0 and 108 years. Age-stratified relative survival analyses for disease groups Chronic Lymphocytic Leukaemia, Chronic Myeloid Leukaemia and Myeloma excluded those persons aged less than 15 years at diagnosis.

To enable smooth curves, the intervals adopted in the survival analysis are closer than those used to produce the tables; hence the annual survival point estimates may vary between the graphs and tables. This is most pronounced for age- & sex-stratified analyses of CML and Hodgkin lymphoma.

Confidence Intervals

The estimated rates presented (for incidence, mortality and survival) have 95% confidence intervals attached. There is a 95% chance that the true value of the estimated rate will lie within the interval given. The width of the interval is influenced by the number of cases used to estimate the rate. The more cases in the group, the more precise will be the estimate of the rate and the narrower the confidence interval. When comparing two different estimated rates, if their respective confidence intervals overlap, then the true value of both rates could be the same. The apparent difference in the estimates is due to chance. If the two confidence intervals do not overlap, there is evidence to suggest that the difference in the true values of the rates is real. If the difference in two rates could be due to chance (intervals overlap), it is described as not significant. If the intervals suggest that the true rates are different (intervals do not overlap) the difference is described as significant.

FIND OUT MORE:

Northern and Yorkshire Cancer Registry and Information Service (NYCRIS)
NYCRIS is the NCIN lead cancer registry for haematological cancers
<http://www.nycris.nhs.uk>



Northern and Yorkshire Cancer Registry and Information Service

The National Cancer Intelligence Network (NCIN) is a UK-wide initiative, working to drive improvements in standards of cancer care and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research. Sitting within the National Cancer Research Institute (NCRI), the NCIN works closely with cancer services in England, Scotland, Wales and Northern Ireland. In England, the NCIN is part of the National Cancer Programme.