

Outcomes in leukaemia: Trends in five year survival between 1995 and 2003

NCIN Data Briefing

Introduction

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.

They are a diverse group of diseases affecting people across the whole life course, but with their greatest incidence in the elderly. The prognosis and responsiveness to treatment also varies considerably by age and between the different diseases.

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.

New treatments were being introduced for several forms of leukaemia over this time period; these survival analyses demonstrate the initial impact of these approaches. **The uptake of effective treatments has increased further since 2003, particularly for chronic myeloid leukaemia (CML), and so the information shown here under-estimates the survival for patients being diagnosed at the present time.**

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" (see NCIN data briefing "[Understanding outcomes in leukaemia; why grouping different cancers is misleading](#)"). Continuing improvements to cancer registration in the UK will allow refinement of these categories, but for this briefing leukaemias have been described in disease groups by combining ICD-10 codes where relevant.

This data briefing is condensed from a more comprehensive report describing trends in incidence, mortality and survival for all types of haematological cancers, including lymphomas and myeloma, in England (see **Further Information** section at the end of this briefing).

KEY MESSAGES:

The greatest survival improvements for males and females of all ages are observed in Chronic Myeloid Leukaemia (CML).

Increased use of effective treatment for CML since 2003 means survival for patients diagnosed more recently will be higher than reported here.

Acute Lymphoblastic Leukaemia shows significant increases in survival in the 0-14 age group.

Acute Myeloid Leukaemia and Chronic Lymphocytic Leukaemia have experienced no significant changes in survival over the period.

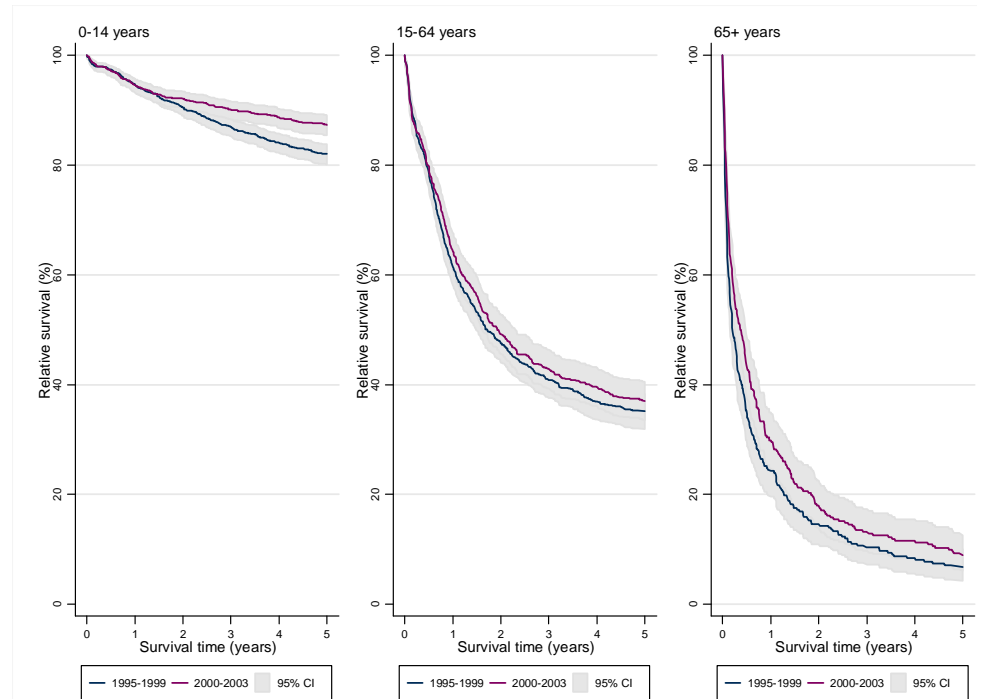
Changes in coding and registration practice must be taken into account when interpreting changes in trends

Acute Lymphoblastic Leukaemia (C91.0)

Acute lymphoblastic leukaemia (ALL) is most common in young people, with a higher incidence in males than females.

Outcomes for ALL in children improved greatly over the second half of the 20th century. Over the time period reported in this briefing 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.

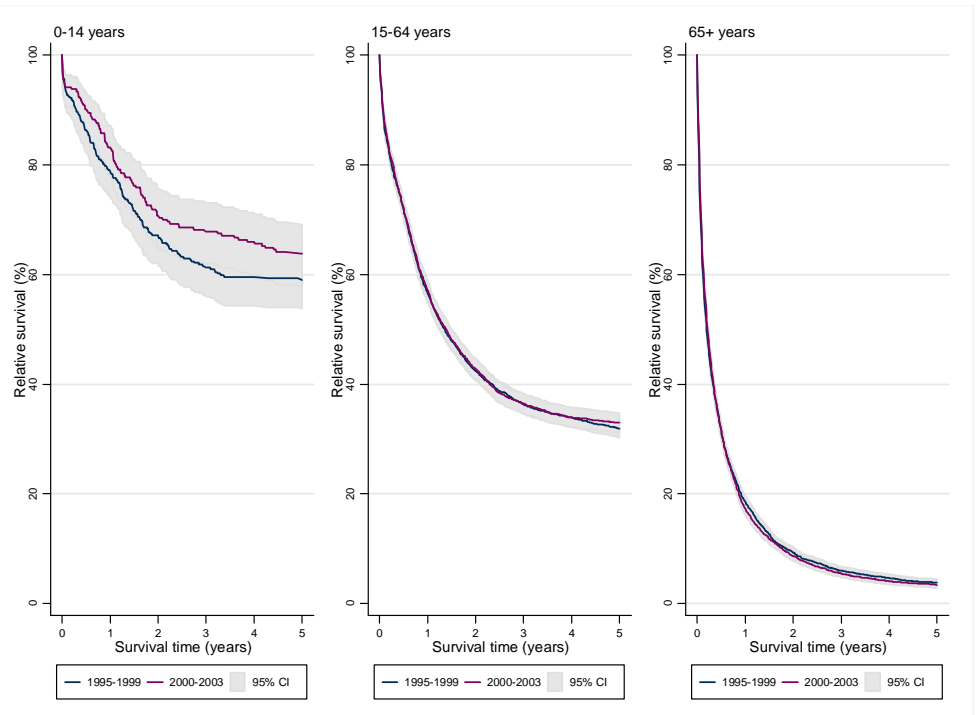
Figure 1: Trends in relative survival rates for ALL diagnosed in persons in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England



Acute Myeloid Leukaemia (C92.0, C92.4, C92.5, C93.0, C94.0, C94.2)

Acute Myeloid Leukaemia (AML) 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 change in the incidence, mortality or relative survival amongst adults diagnosed with AML and the outcome from this leukaemia remains generally poor.

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

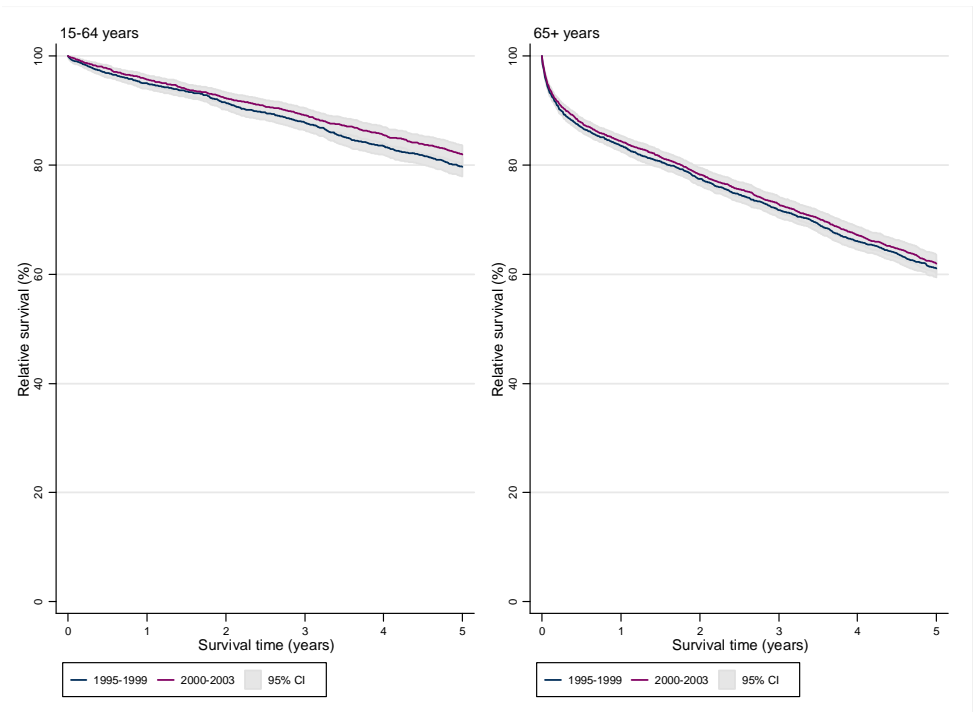


Chronic Lymphocytic Leukaemia (C91.1)

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

There is evidence of wide variation in registration rates at a sub-national level for CLL, 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.

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

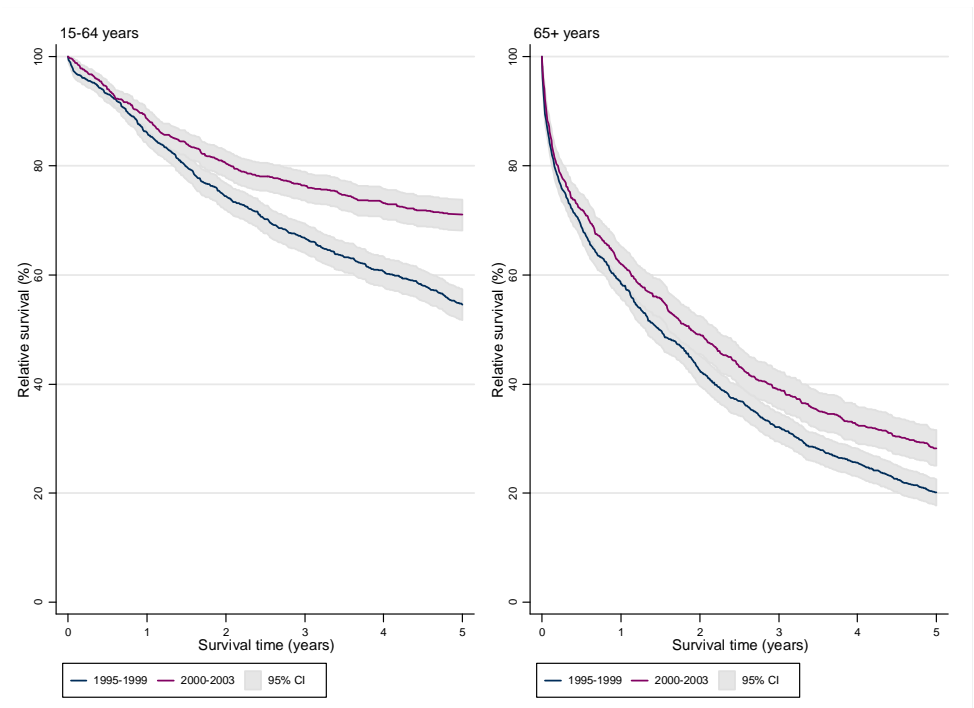


Chronic Myeloid Leukaemia (C92.1)

Chronic myeloid leukaemia (CML) is a relatively rare cancer, predominantly affecting people over the age of 60, with higher age-standardised incidence in males.

In the 1990's cancer registrations for CML were not distinguished from chronic myelomonocytic leukaemia (CMML). Whilst CMML is now registered separately there is a possibility, particularly in the elderly, that registrations for CML may include some cases of CMML.

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



This may contribute to high rates of registration reported in the elderly (see main report), 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.

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 two consecutive diagnostic cohorts (1995-1999) and (2000-2003) show a substantial improvement, in both males and females. The improvement in prognosis is due to the introduction of the family of drugs called Tyrosine Kinase Inhibitors (TKIs), the first of which, imatinib (Glivec), was licenced in 2001. TKI's are now the standard treatment for CML and the survival for patients diagnosed more recently will be considerably higher than seen here.

Table 1: Five year relative survival (RS) and 95% confidence intervals for persons diagnosed in the periods 1995-1999 and 2000-2003 and followed up to the end of 2008, by age group in England*

Disease	Age (years)	1995-1999			2000-2003		
		5 year RS (%)	95% LCI	95% UCL	5 year RS (%)	95% LCI	95% UCL
ALL	0-14	82	80	84	87	85	89
	15-64	35	32	39	37	34	41
	65+	8	5	12	11	7	15
AML	0-14	59	54	64	64	58	69
	15-64	32	30	34	33	31	35
	65+	4	3	5	4	3	4
CLL	15-64	81	79	82	83	82	85
	65+	61	60	63	63	61	64
CML	15-64	55	52	58	72	69	75
	65+	21	19	24	32	28	35

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

Further information

Further information on the incidence, mortality and survival trends for these and other types of haematological malignancies can be found in *Haematological malignancies in England. Cancers diagnosed 2001-2008, Northern and Yorkshire Cancer Registry and Information Service (NYCRIS), January 2013*. This document also includes an appendix outlining the statistical methodologies for this work.

Find out more:

Northern and Yorkshire Cancer Registry and Information Service (NYCRIS)

NYCRIS is the lead Cancer Registry for haematological malignancies

<http://www.nycris.nhs.uk>

Other useful resources within the NCIN partnership:

Cancer Research UK CancerStats – Key facts and detailed statistics for health professionals

<http://info.cancerresearchuk.org/cancerstats/>

