
Leukaemia

1993-2021

(ICD10 codes: C91-C95)



Northern Ireland Cancer Registry, 2024

An official statistics publication

ABOUT THIS REPORT

Contents

This report includes information on incidence of leukaemia as recorded by the Northern Ireland Cancer Registry (NICR). Incidence data is available annually from 1993 to 2021, however in order to provide stable and robust figures the majority of information presented in this report is based upon the average number of cases diagnosed in the last five years.

Methodology

The methodology used in producing the statistics presented in this report, including details of data sources, classifications and coding are available in the accompanying methodology report available at: www.qub.ac.uk/research-centres/nicr/CancerInformation/official-statistics.

Official statistics

The incidence, prevalence and survival statistics in this publication are designated as official statistics signifying that they comply with the Code of Practice for Official Statistics. Further information on this code is available at code.statisticsauthority.gov.uk.

Cancer mortality data

The NI Statistics and Research Agency (NISRA) is the official statistics provider of cancer mortality data in Northern Ireland. However, for completeness, data on cancer mortality is also provided in this report. While analysis is conducted by NICR staff, the original data is provided courtesy of the General Register Office (NI) via the Department of Health.

Reuse of information

The information in this report (and any supplementary material) is available for reuse free of charge and without the need to contact NICR. However, we request that NICR is acknowledged as the source of any reused information. The following reference is recommended:

Northern Ireland Cancer Registry 2024. Leukaemia: 1993-2021. Available at: www.qub.ac.uk/research-centres/nicr

Further information

Further information is available at: www.qub.ac.uk/research-centres/nicr

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Acknowledgements

The Northern Ireland Cancer Registry (NICR) uses data provided by patients and collected by the health service as part of their care and support.

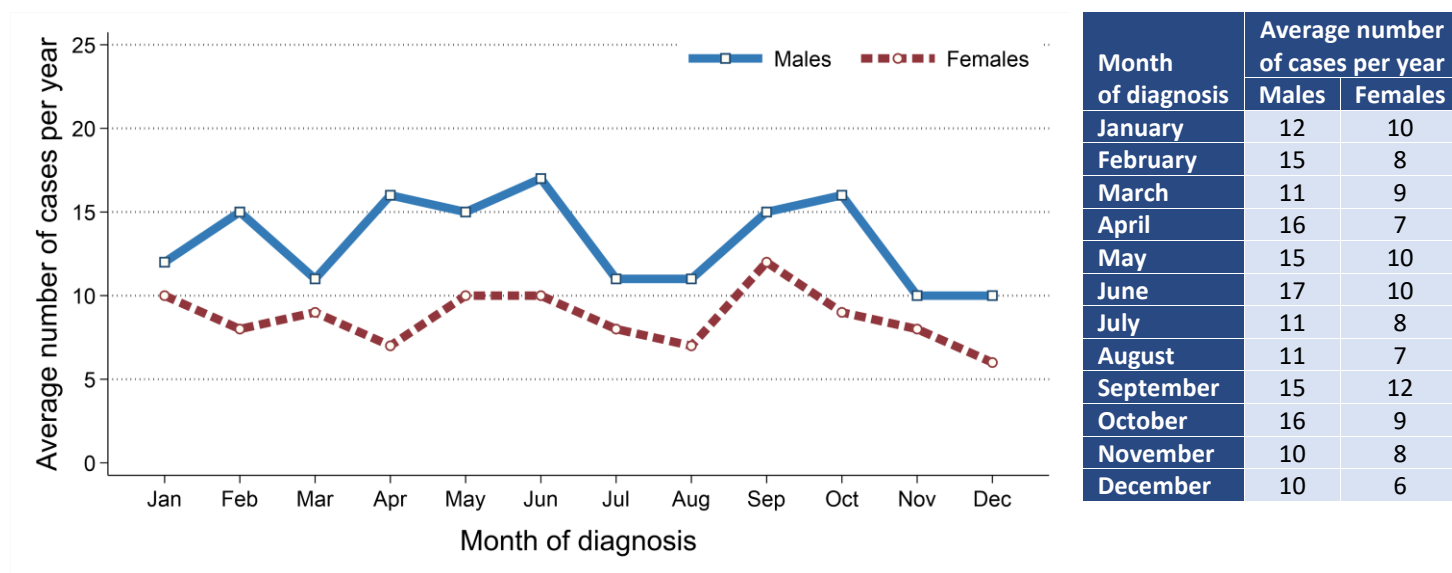
NICR is funded by the Public Health Agency and is based in Queen's University, Belfast.



INCIDENCE

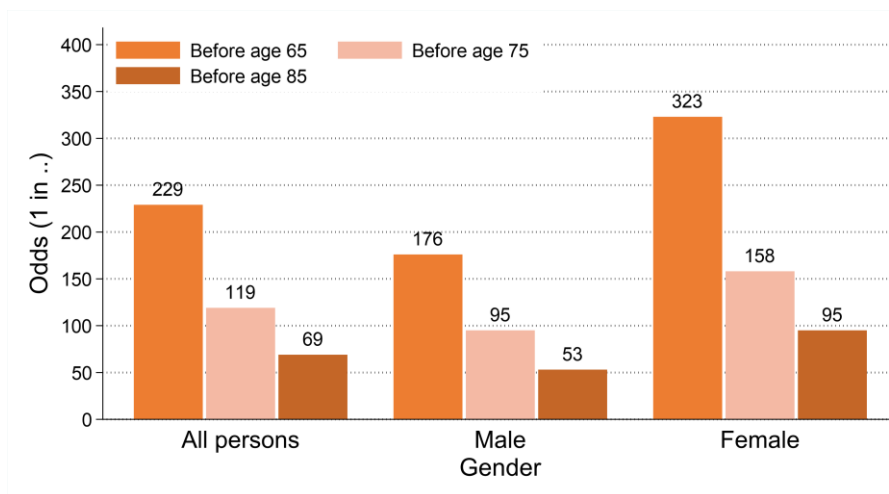
- There were 1,323 cases of leukaemia diagnosed during 2017-2021 in Northern Ireland. On average this was 265 cases per year.
- During this period 39.9% of leukaemia cases were among women (Male cases: 795, Female cases: 528). On average there were 159 male and 106 female cases of leukaemia per year.
- The most common diagnosis month during 2017-2021 was June among males with 17 cases per year and September among females with 12 cases per year.

Figure 1: Average number of cases of leukaemia per year in 2017-2021 by month of diagnosis



- Leukaemia made up 3.1% of all male and 2.1% of all female cancer cases (excluding non-melanoma skin cancer).
- The leukaemia incidence rates for each gender were 17.1 cases per 100,000 males and 11.0 cases per 100,000 females.
- The odds of developing leukaemia before age 85 was 1 in 53 for men and 1 in 95 for women.

Figure 2: Odds of developing leukaemia in 2017-2021



INCIDENCE BY AGE

- The median age of patients diagnosed with leukaemia during 2017-2021 was 69 years (Males: 68, Females: 71).
- The risk of developing leukaemia varied by age, with 32.6% of men and 37.5% of women diagnosed with leukaemia aged 75 and over at diagnosis.
- In contrast, 23.4% of patients diagnosed with leukaemia were aged 0 to 54 at diagnosis.

Figure 3: Average number of cases of leukaemia diagnosed per year in 2017-2021 by age at diagnosis

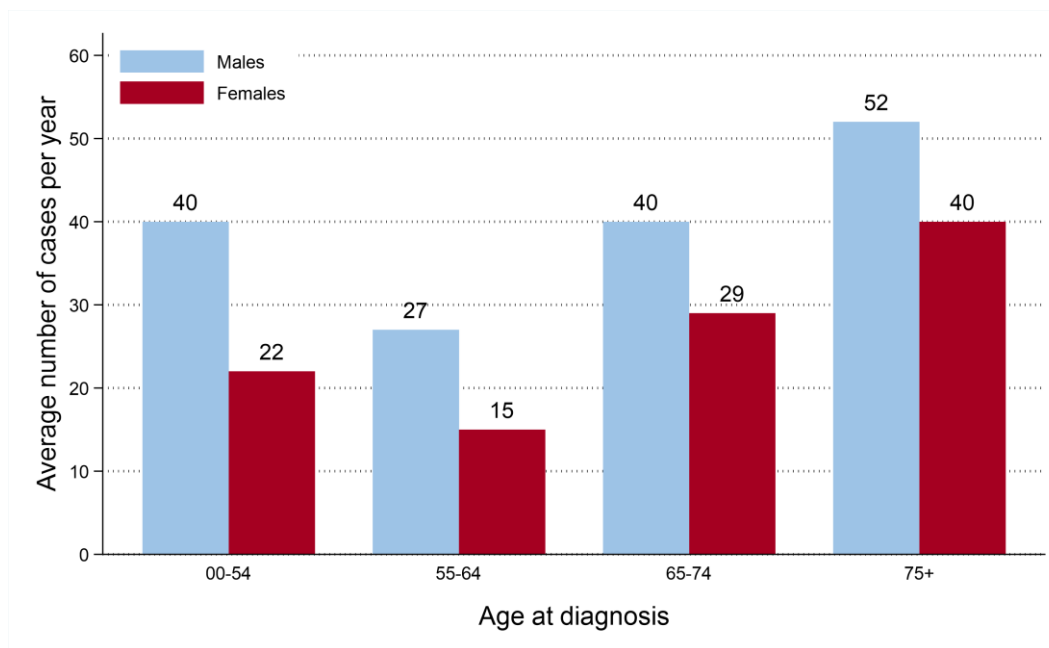
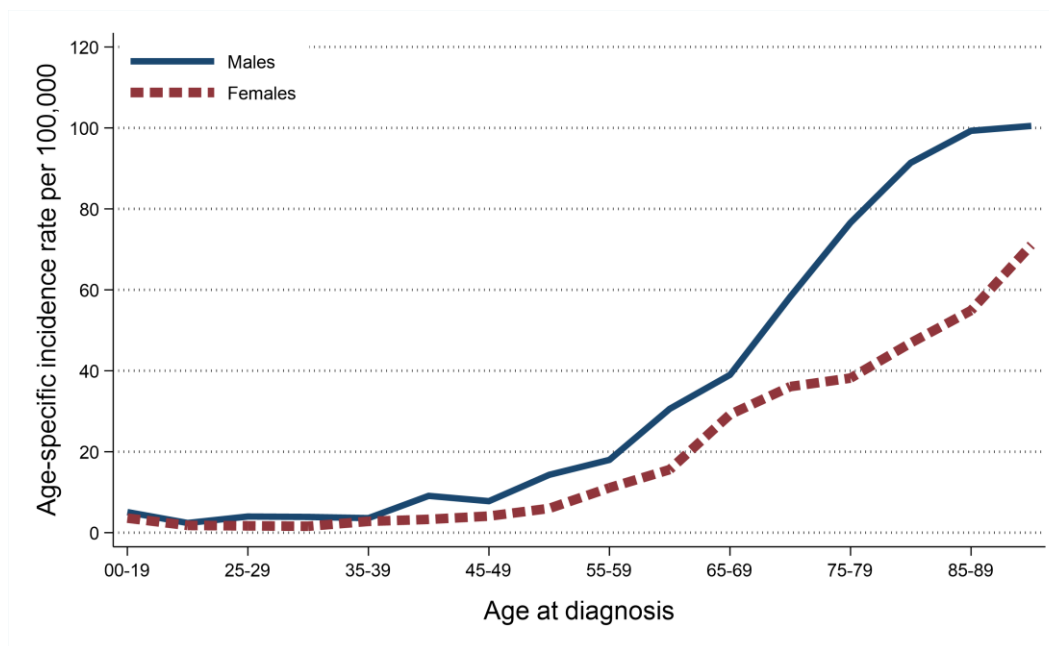


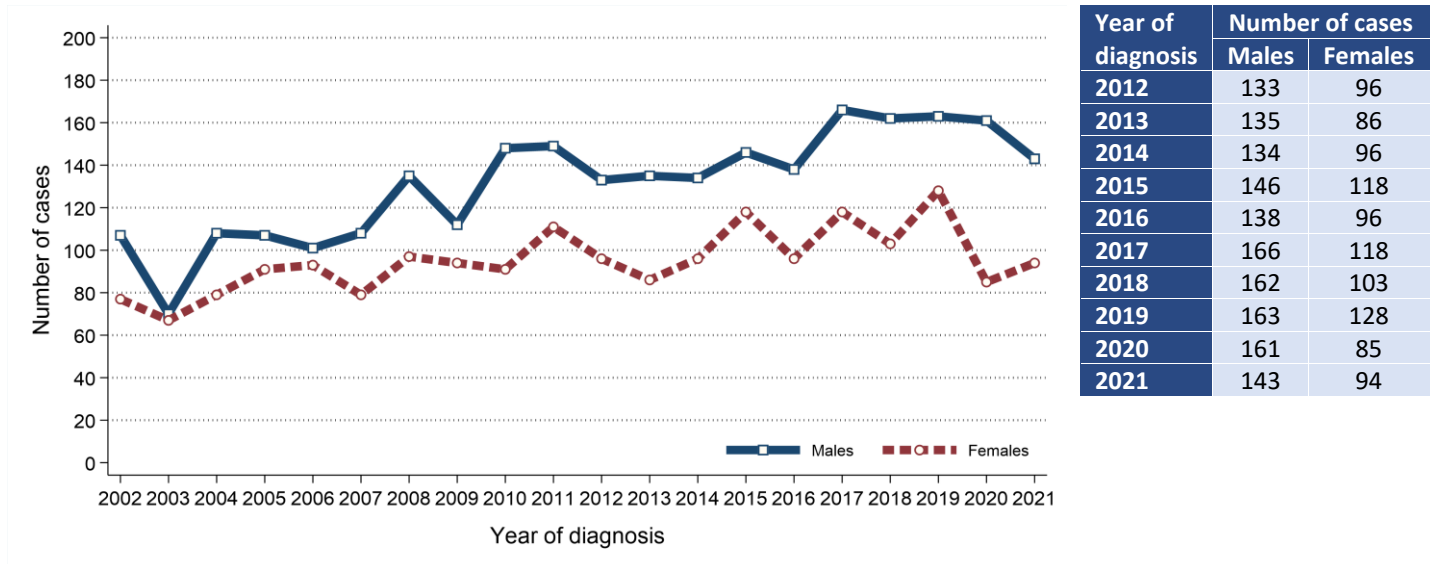
Figure 4: Age-specific incidence rates of leukaemia in 2017-2021



INCIDENCE TRENDS

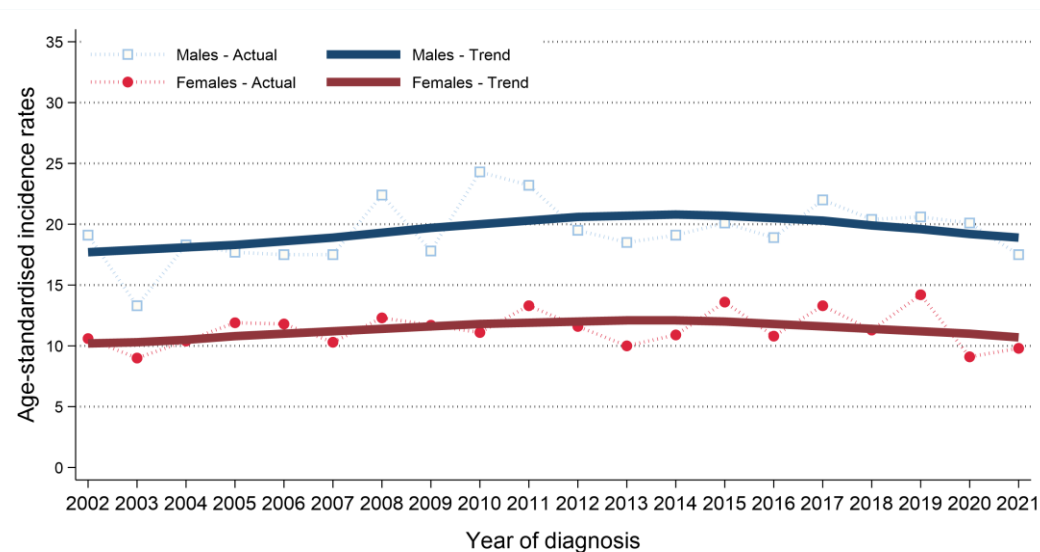
- The number of cases of leukaemia among males increased between 2012-2016 and 2017-2021 by 15.9% from 686 cases (137 cases per year) to 795 cases (159 cases per year).
- The number of cases of leukaemia among females increased between 2012-2016 and 2017-2021 by 7.3% from 492 cases (98 cases per year) to 528 cases (106 cases per year).

Figure 5: Trends in number of cases of leukaemia diagnosed from 2002 to 2021



- Male age-standardised leukaemia incidence rates increased between 2012-2016 and 2017-2021 by 4.7% from 19.2 to 20.1 cases per 100,000 males. This change was not statistically significant.
- Female age-standardised leukaemia incidence rates increased between 2012-2016 and 2017-2021 by 0.9% from 11.4 to 11.5 cases per 100,000 females. This change was not statistically significant.

Figure 6: Trends in incidence rates of leukaemia from 2002 to 2021



Age-standardised incidence rates illustrate the change in the number of cases within a population of a fixed size and age structure (2013 European Standard).

They thus represent changes other than those caused by population growth and/or ageing.

Trends can also be influenced by changes in how cancer is classified and coded. (e.g. the move from ICD-0-2 to ICD-0-3 in 2019).

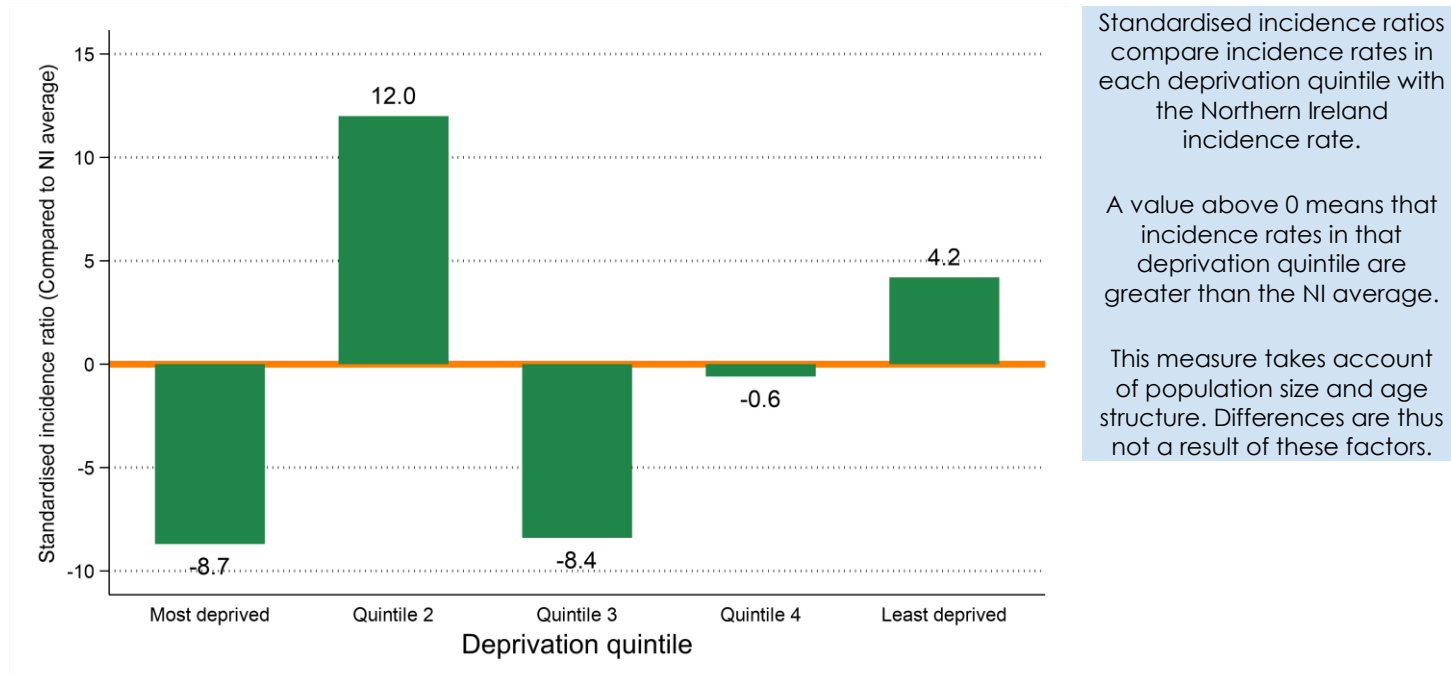
INCIDENCE BY DEPRIVATION

- The number of cases of leukaemia diagnosed during 2017-2021 varied in each deprivation quintile due to variations in population size and age.
- After accounting for these factors, incidence rates:
 - in the most socio-economically deprived areas did not vary significantly from the NI average.
 - in the least socio-economically deprived areas did not vary significantly from the NI average.

Table 1: Number of cases of leukaemia diagnosed in 2017-2021 by deprivation quintile

Deprivation quintile	All persons		Male		Female	
	Total cases in period	Average cases per year	Total cases in period	Average cases per year	Total cases in period	Average cases per year
Northern Ireland	1,323	265	795	159	528	106
Most deprived
Quintile 2	203	41	117	23	86	17
Quintile 3	298	60	185	37	113	23
Quintile 4	255	51	151	30	104	21
Least deprived	278	56	168	34	110	22
Unknown	288	58	173	35	115	23
Unknown	1	0	1	0	0	0

Figure 7: Standardised incidence ratio comparing deprivation quintile to Northern Ireland for leukaemia diagnosed in 2017-2021



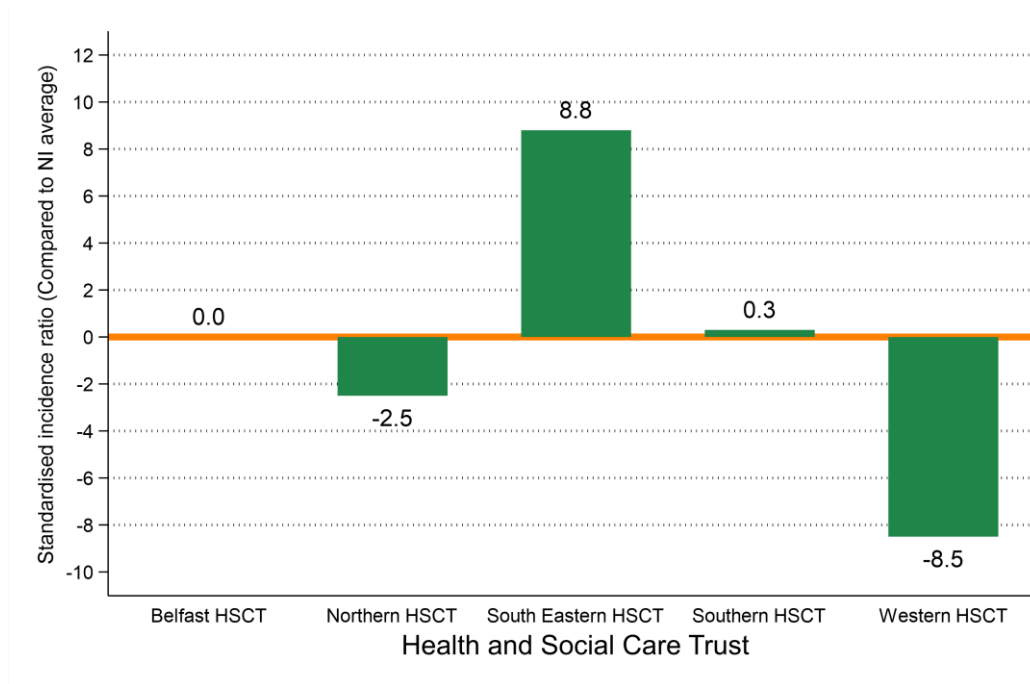
INCIDENCE BY HEALTH AND SOCIAL CARE TRUST

- The number of cases of leukaemia diagnosed during 2017-2021 varied in each Health and Social Care Trust due to variations in population size and age.
- After accounting for these factors, incidence rates:
 - in Belfast HSCT did not vary significantly from the NI average.
 - in Northern HSCT did not vary significantly from the NI average.
 - in South Eastern HSCT did not vary significantly from the NI average.
 - in Southern HSCT did not vary significantly from the NI average.
 - in Western HSCT did not vary significantly from the NI average.

Table 2: Number of cases of leukaemia diagnosed in 2017-2021 by Health and Social Care Trust

Health and Social Care Trust	All persons		Male		Female	
	Total cases in period	Average cases per year	Total cases in period	Average cases per year	Total cases in period	Average cases per year
Northern Ireland	1,323	265	795	159	528	106
Belfast HSCT	241	48	136	27	105	21
Northern HSCT	340	68	203	41	137	27
South Eastern HSCT	299	60	176	35	123	25
Southern HSCT	253	51	159	32	94	19
Western HSCT	189	38	120	24	69	14
Unknown	1	0	1	0	0	0

Figure 8: Standardised incidence ratio comparing Health and Social Care Trust to Northern Ireland for leukaemia diagnosed in 2017-2021



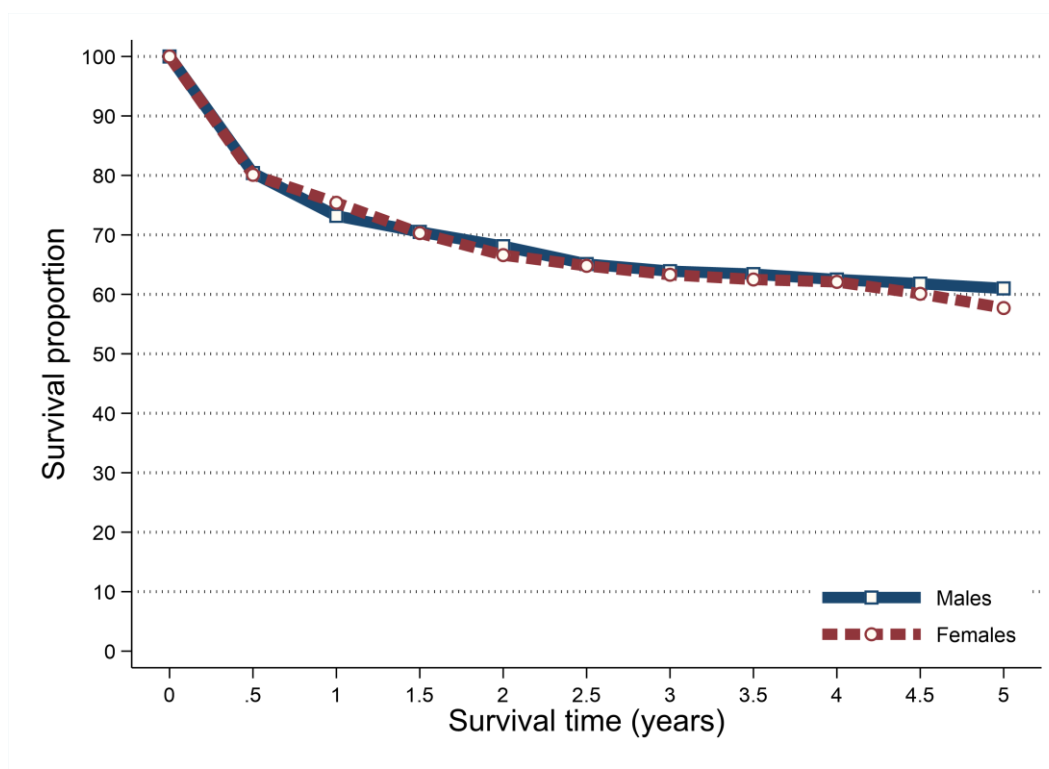
SURVIVAL

- 69.8% of patients were alive one year and 50.0% were alive five years from a leukaemia diagnosis in 2012-2016. (observed survival)
- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 74.1% one year and 59.6% five years from a leukaemia diagnosis in 2012-2016.
- Five-year survival (ASNS) for leukaemia patients diagnosed in 2012-2016 was 61.0% among men and 57.7% among women.

Table 3: Survival from leukaemia for patients diagnosed in 2012-2016

Time since diagnosis	All persons		Male		Female	
	Observed survival	Age-standardised net survival	Observed survival	Age-standardised net survival	Observed survival	Age-standardised net survival
6 months	76.8%	80.2%	78.1%	80.4%	74.9%	80.1%
One year	69.8%	74.1%	70.2%	73.2%	69.2%	75.4%
Two years	61.6%	67.4%	63.4%	68.1%	59.2%	66.6%
Five years	50.0%	59.6%	52.2%	61.0%	47.0%	57.7%

Figure 9: Age-standardised net survival from leukaemia for patients diagnosed in 2012-2016



Observed survival examines the time between diagnosis and death from any cause, however, due to the inclusion of non-cancer deaths it may not fully reflect how changes in cancer care impact survival from cancer.

Age-standardised net survival provides an estimate of patient survival which has been adjusted to take account of deaths unrelated to cancer. It is more widely used to assess the impact of changes in cancer care on patient survival.

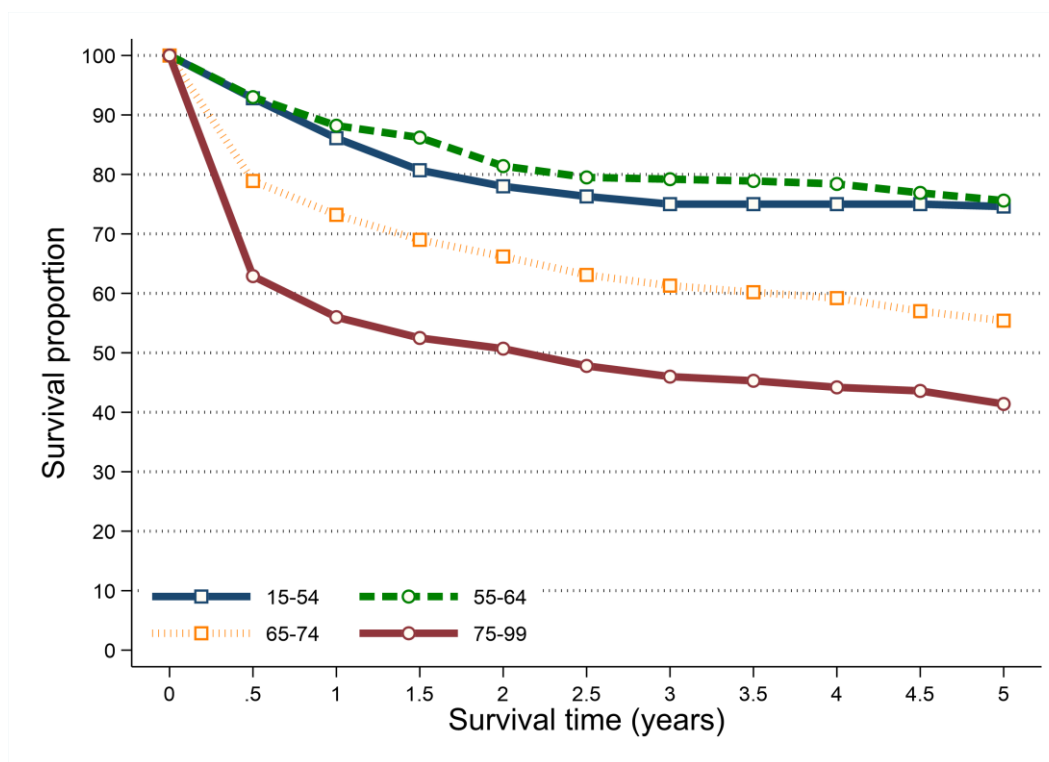
SURVIVAL BY AGE

- Survival from leukaemia among patients diagnosed during 2012-2016 was related to age with better five-year survival among younger age groups.
- Five-year net survival ranged from 75.6% among patients aged 55 to 64 at diagnosis to 41.4% among those aged 75 to 99.

Table 4: Net survival from leukaemia for patients diagnosed in 2012-2016 by age at diagnosis

Age group	All persons	
	One-year	Five-years
15 to 54	86.1%	74.6%
55 to 64	88.2%	75.6%
65 to 74	73.2%	55.4%
75 to 99	56.0%	41.4%

Figure 10: Net survival from leukaemia for patients diagnosed in 2012-2016 by age at diagnosis

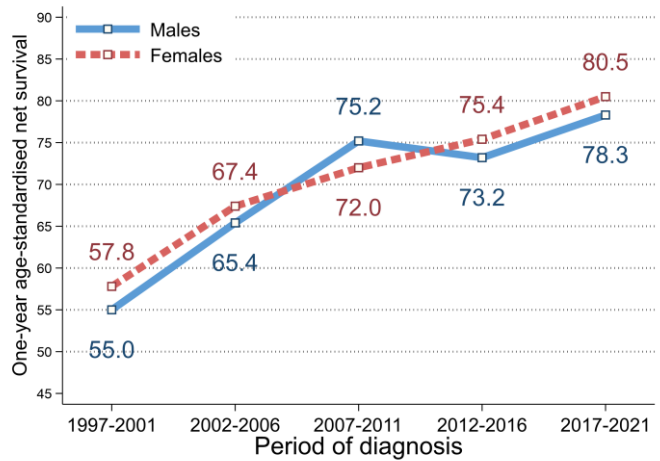
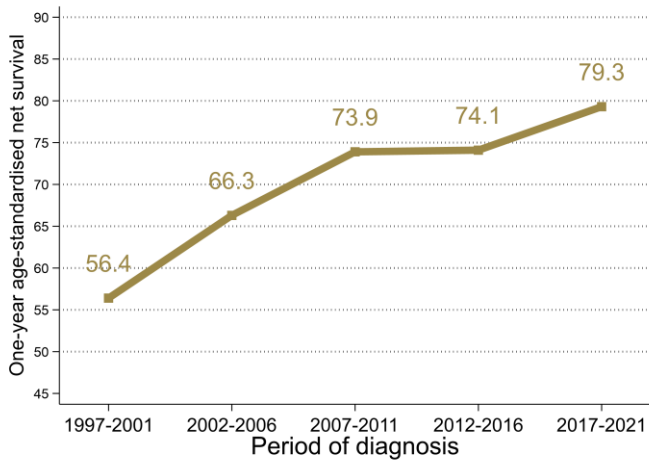


SURVIVAL TRENDS

ONE-YEAR NET SURVIVAL

- Between 2012-2016 and 2017-2021 there was no significant change in one-year survival (ASNS) from leukaemia.
- Compared to 1997-2001 one-year survival (ASNS) from leukaemia in 2017-2021 increased significantly from 56.4% to 79.3%. This increase was significant for males (55.0% to 78.3%) and females (57.8% to 80.5%).

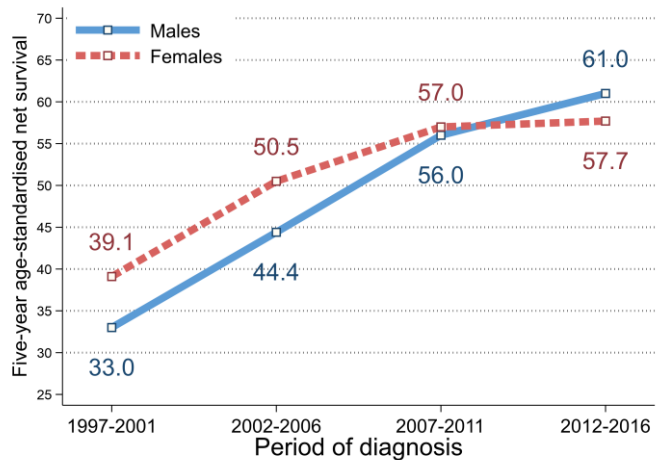
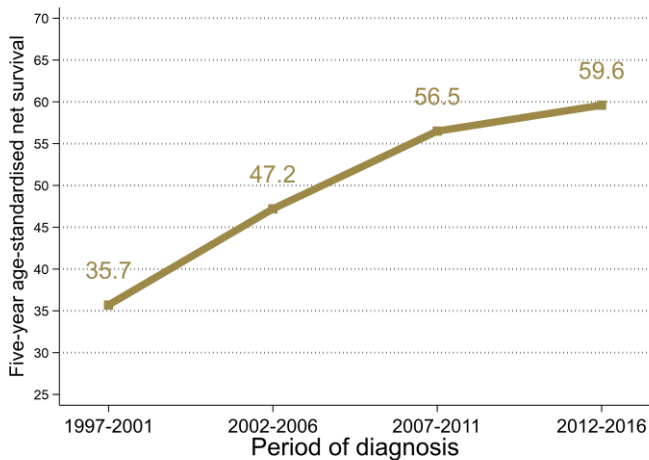
Figure 11: Trends in one-year age-standardised net survival from leukaemia in 1997-2021



FIVE-YEAR NET SURVIVAL

- Between 2007-2011 and 2012-2016 there was no significant change in five-year survival (ASNS) from leukaemia.
- Compared to 1997-2001 five-year survival (ASNS) from leukaemia in 2012-2016 increased significantly from 35.7% to 59.6%. This increase was significant for males (33.0% to 61.0%) and females (39.1% to 57.7%).

Figure 12: Trends in five-year age-standardised net survival from leukaemia in 1997-2016



PREVALENCE

- At the end of 2021, there were 2,073 people (Males: 1,205; Females: 868) living with leukaemia who had been diagnosed with the disease during 1997-2021.
- Of these 8.9% had been diagnosed in the previous year (one-year prevalence) and 67.3% in the previous 10 years (ten-year prevalence).
- 29.3% of leukaemia survivors were aged 75 and over at the end of 2021.

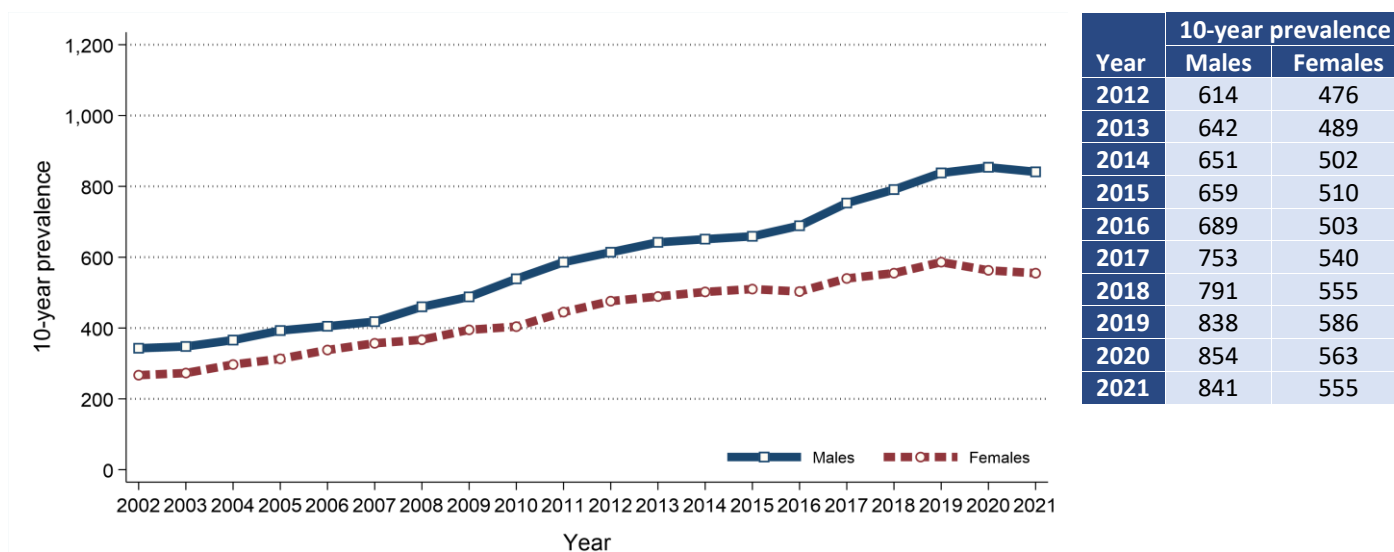
Table 5: 25-year prevalence of leukaemia by age at end of 2021

Gender	Age at end of 2021	25-year prevalence	Time since diagnosis			
			0 to 1 year	1 to 5 years	5 to 10 years	10 to 25 years
All persons	All ages	2,073	184	693	519	677
	0 to 74	1,466	128	495	361	482
	75 and over	607	56	198	158	195
Male	All ages	1,205	111	419	311	364
	0 to 74	887	81	312	228	266
	75 and over	318	30	107	83	98
Female	All ages	868	73	274	208	313
	0 to 74	579	47	183	133	216
	75 and over	289	26	91	75	97

PREVALENCE TRENDS

- 10-year prevalence of leukaemia among males increased between 2016 and 2021 by 22.1% from 689 survivors to 841 survivors.
- 10-year prevalence of leukaemia among females increased between 2016 and 2021 by 10.3% from 503 survivors to 555 survivors.

Figure 13: Trends in 10-year prevalence of leukaemia in 2002-2021



MORTALITY

- There were 555 deaths from leukaemia during 2017-2021 in Northern Ireland. On average this was 111 deaths per year.
- During this period 43.2% of leukaemia deaths were among women (Male deaths: 315, Female deaths: 240). On average there were 63 male and 48 female deaths from leukaemia per year.
- Leukaemia deaths made up 2.7% of all male cancer deaths and 2.2% of all female cancer deaths.
- The median age of patients who died from leukaemia during 2017-2021 was 77 years (Males: 77, Females: 77).
- The risk of dying from leukaemia varied by age, with 55.9% of men and 57.9% of women who died from leukaemia aged 75 and over at death.
- In contrast, 8.6% of patients who died from leukaemia were aged 0 to 54 at death.

Figure 14: Average number of deaths from leukaemia per year in 2017-2021 by age at death

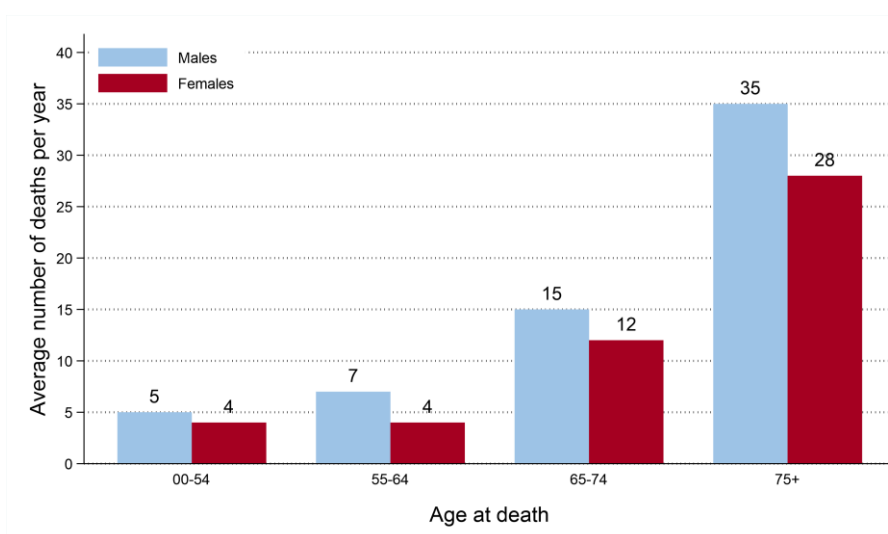
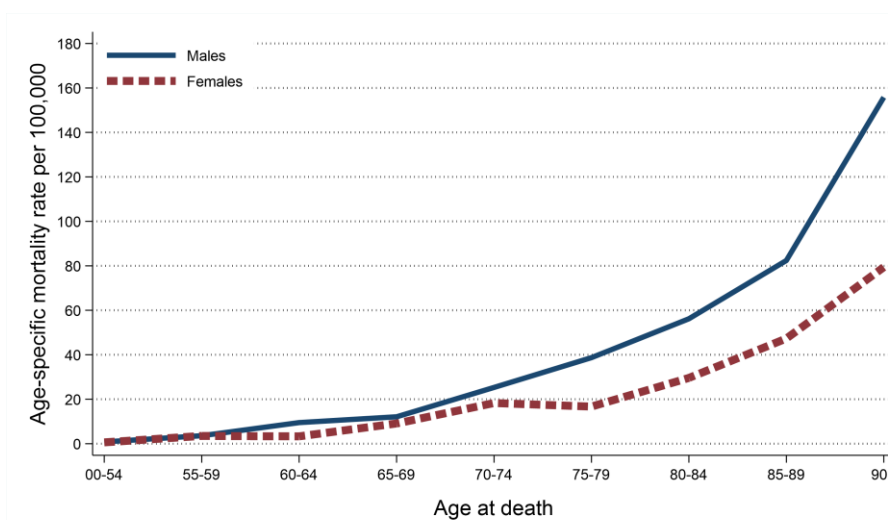


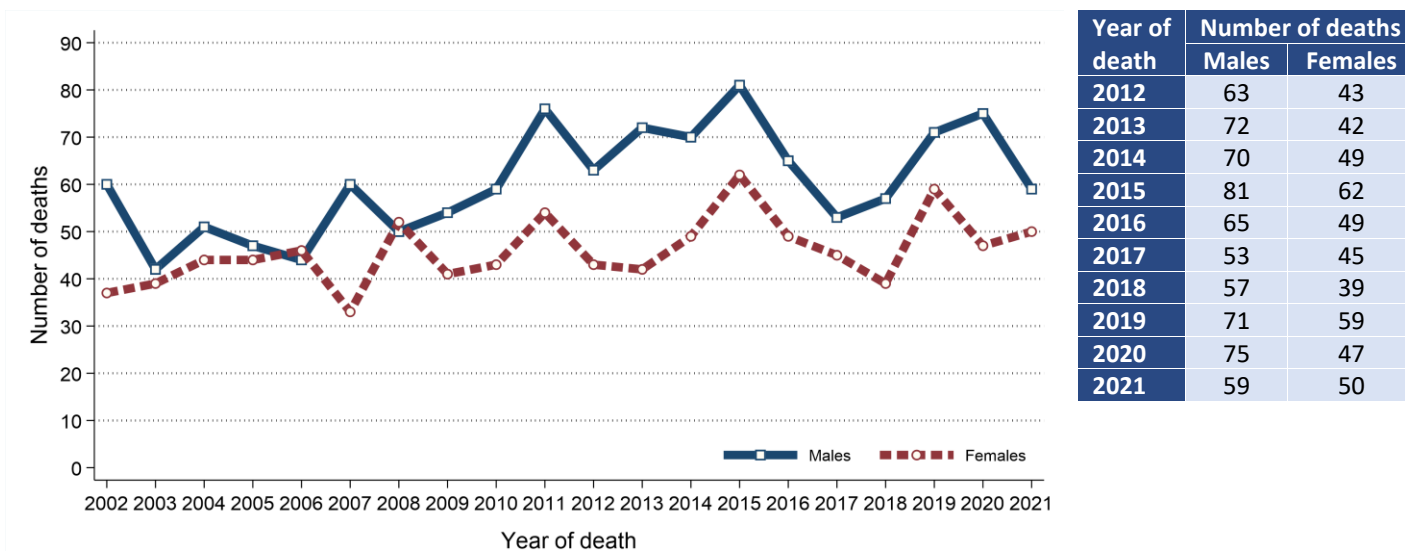
Figure 15: Age-specific mortality rates of leukaemia in 2017-2021



MORTALITY TRENDS

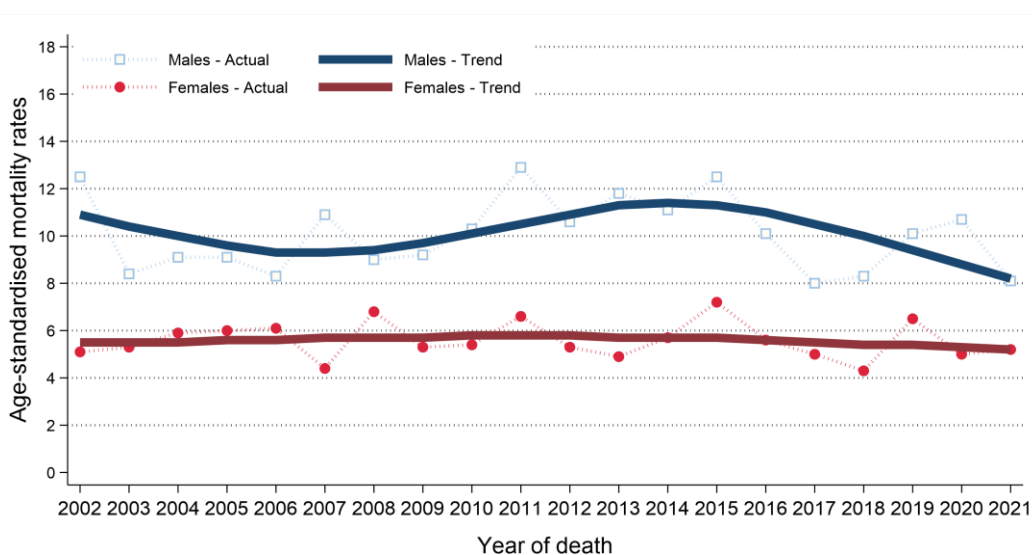
- The number of deaths from leukaemia among males decreased between 2012-2016 and 2017-2021 by 10.3% from 351 deaths (70 deaths per year) to 315 deaths (63 deaths per year).
- The number of deaths from leukaemia among females decreased between 2012-2016 and 2017-2021 by 2.0% from 245 deaths (49 deaths per year) to 240 deaths (48 deaths per year).

Figure 16: Trends in the number of deaths from leukaemia from 2002 to 2021



- Male age-standardised leukaemia mortality rates decreased between 2012-2016 and 2017-2021 by 19.6% from 11.2 to 9.0 deaths per 100,000 males. This change was not statistically significant.
- Female age-standardised leukaemia mortality rates decreased between 2012-2016 and 2017-2021 by 8.8% from 5.7 to 5.2 deaths per 100,000 females. This change was not statistically significant.

Figure 17: Trends in mortality rates of leukaemia from 2002 to 2021



Age-standardised mortality rates illustrate the change in the number of deaths within a population of a fixed size and age structure (2013 European Standard).

They thus represent changes other than those caused by population growth and/or ageing.

Trends can also be influenced by changes in how cancer is classified and coded.

BACKGROUND NOTES

Cancer classification: Classification of tumour sites is carried out using ICD10 codes. For a listing and explanation of ICD10 codes see: World Health Organisation at <http://apps.who.int/classifications/icd10/browse/2010/en#/II>

Population data: Population data for Northern Ireland, and smaller geographic areas, are extracted from the NI mid-year population estimates available from the NI Statistics and Research Agency (available at www.nisra.gov.uk).

Geographic areas: Geographic areas are assigned based on a patient's postcode of usual residence at diagnosis using the Jan 2023 Central Postcode Directory (CPD) produced by the NI Statistics and Research Agency (available at www.nisra.gov.uk).

Deprivation quintiles: Super output areas (SOA) are assigned to each patient based on their postcode of usual residence at diagnosis. Using the SOA each patient is assigned a socio-economic deprivation quintile based on the 2017 Multiple Deprivation Measure. The 2017 Multiple Deprivation Measure is available from the NI Statistics and Research Agency (available at www.nisra.gov.uk).

Crude incidence/mortality rate: The number of cases/deaths per 100,000 person years in the population. Person years are the sum of the population over the number of years included.

Age-standardised incidence/mortality rates per 100,000 person years are estimates of the incidence/mortality rate if that population had a standard age structure. Throughout this report the 2013 European Standard Population has been used. Standardising to a common Standard Population allows comparisons of incidence/mortality rates to be made between different time periods and geographic areas while removing the effects of population change and ageing.

Standardised Incidence/Mortality Ratio (SIR/SMR) is the ratio of the number of cases/deaths observed in a population to the expected number of cases/deaths, based upon the age-specific rates in a reference population. This statistic is often used to compare incidence/mortality rates for geographic areas (e.g. Trusts) to the national incidence/mortality rates (i.e. Northern Ireland). An SIR/SMR of 100 indicates there is no difference between the geographic area and the national average.

Confidence intervals measure the precision of a statistic (e.g. leukaemia incidence rate). Typically, when numbers are low, precision is poorer and confidence intervals will be wider. As a general rule, when comparing statistics (e.g. leukaemia incidence rate in year 2012 vs year 2013), if the confidence interval around one statistic overlaps with the interval around another, it is unlikely that there is any real difference between the two. If there is no overlap, the difference is considered to be statistically significant.

Lifetime risk is estimated as the cumulative risk of getting cancer up to age 75/85, calculated directly from the age-specific incidence rates. The odds of developing the disease before age 75/85 is the inverse of the cumulative risk.

Prevalence is the number of cancer patients who are alive in the population on a specific date (31st December 2021 in this report). Since data from the NI Cancer Registry are only available since 1993, prevalence only refers to a fixed term (10 and 25 years in this report). There may be members of the population living with a diagnosis of cancer for more than 25 years.

Patient survival is evaluated using two measures. Observed survival examines the time between diagnosis and death from any cause. It thus represents what cancer patients experience, however, due to the inclusion of non-cancer deaths (e.g. heart disease), it may not reflect how changes in cancer care impact survival from cancer. Thus age-standardised net survival is also examined. This measure provides an estimate of patient survival which has been adjusted to take account of deaths unrelated to cancer. It also assumes a standard age distribution thereby removing the impact of changes in the age distribution of cancer patients on changes in survival over time. While this measure is hypothetical, as it assumes patients can only die from cancer related factors, it is a better indicator of the impact of changes in cancer care on patient survival.