Leukaemia

Patients diagnosed 1993-2019
(ICD10: C91-C95)

Further information

Further data is available at: **www.qub.ac.uk/research-centres/nicr**
Phone: +44 (0)28 9097 6028
e-mail: nicr@qub.ac.uk

Acknowledgements

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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.

Incidence

During 2015-2019:

▪ There were 150 male and 108 female cases of leukaemia diagnosed each year.

▪ Leukaemia made up 3.0% of all male, and 2.2% of all female cancers (ex NMSC).

▪ The risk of developing leukaemia before the age of 75 was 1 in 99.6 for men and 1 in 149.7 for women, while before the age of 85 the risk was 1 in 54.1 for men and 1 in 90.0 for women.

Incidence by age at diagnosis - *Leukaemia, Cases in 2015-2019*

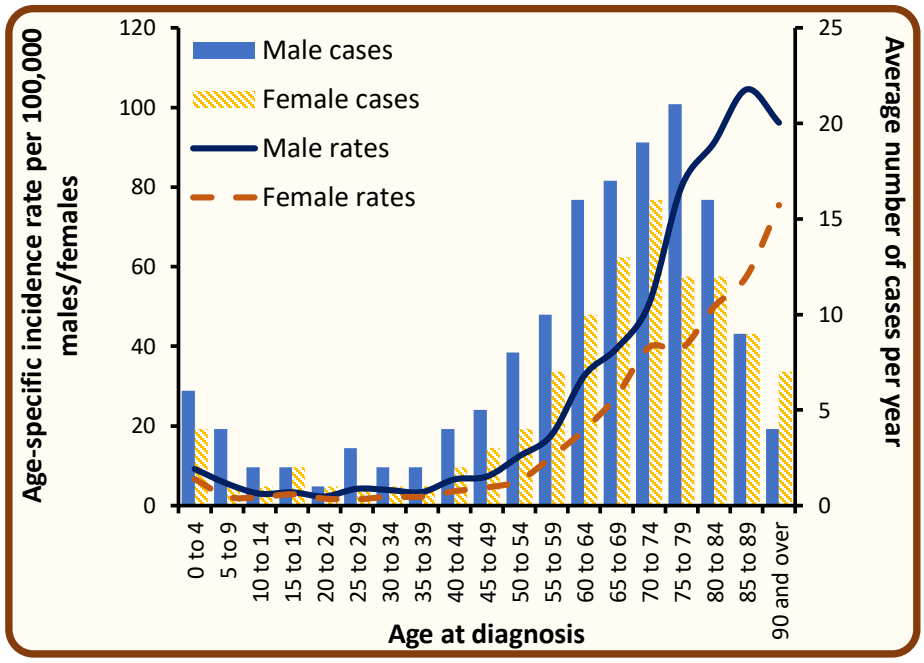
During 2015-2019:

▪ The median age at diagnosis was 67 for men and 70 for women.

▪ Cancer risk increased with age, with 33.3% of men and 37.0% of women aged 75 years or more at diagnosis.

▪ 23.6% of cases were diagnosed among those aged under 55.

Age at diagnosis	Average cases per year		
	Male	Female	Both sexes
0 - 54	39	21	61
54 - 64	26	17	44
65 - 74	36	29	65
75 +	50	40	89
All ages	150	108	258

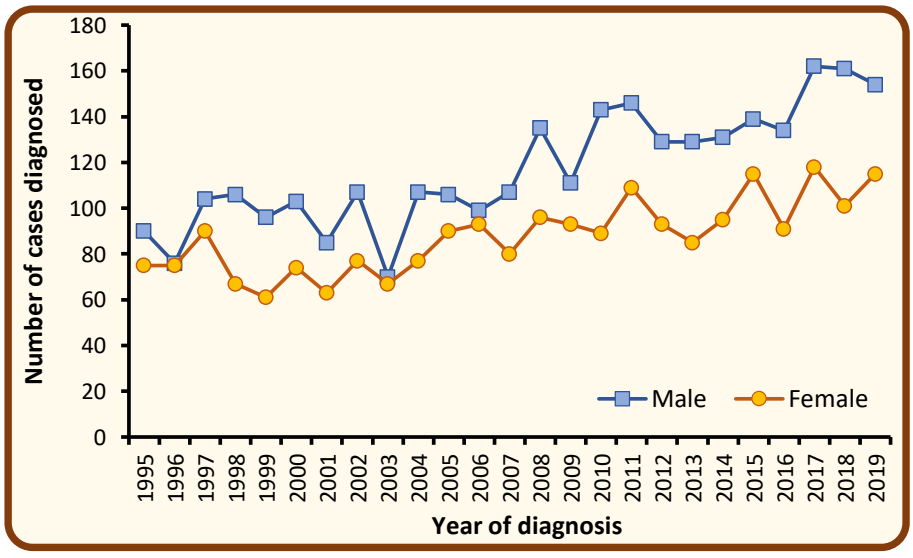


Incidence by year of diagnosis - *Leukaemia, Cases in 1995-2019*

▪ Among males the number of cases of leukaemia increased by 10.3% from an annual average of 136 cases in 2010-2014 to 150 cases in 2015-2019.

▪ Among females the number of cases of leukaemia increased by 14.9% from an annual average of 94 cases in 2010-2014 to 108 cases in 2015-2019.

Year of diagnosis	Male	Female	Both sexes
2010	143	89	232
2011	146	109	255
2012	129	93	222
2013	129	85	214
2014	131	95	226
2015	139	115	254
2016	134	91	225
2017	162	118	280
2018	161	101	262
2019	154	115	269

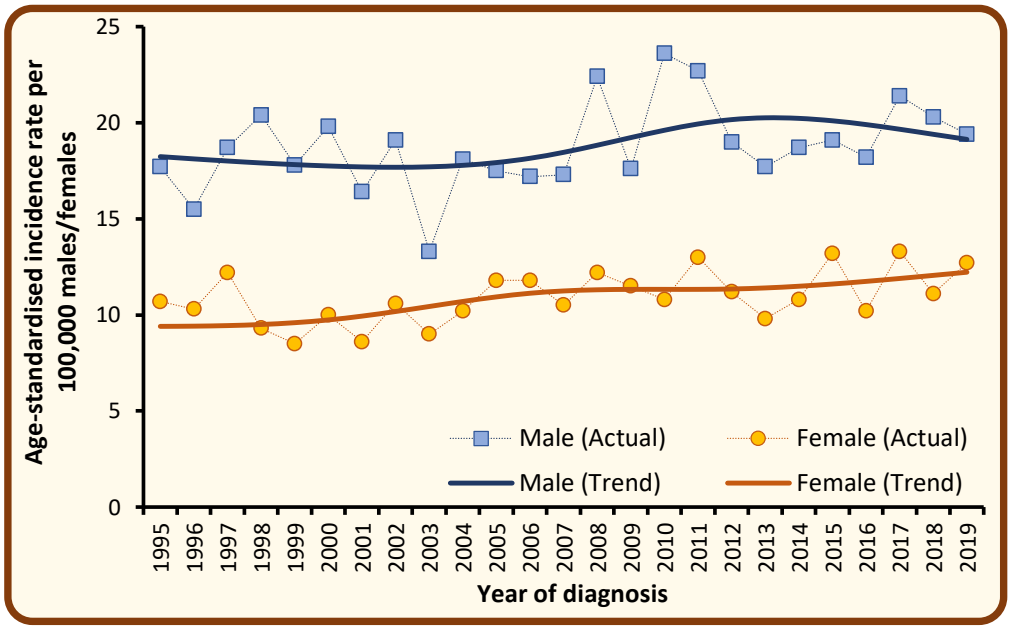


Note: Annual averages have been rounded to the nearest integer. Sums of numbers in table rows or columns may thus differ slightly from the given total.
NMSC: Non-melanoma skin cancer

Trends in age-standardised incidence rates - *Leukaemia, Cases in 1995-2019*

▪ Among males age-standardised incidence rates of leukaemia decreased by 2.5% from 20.2 per 100,000 person years in 2010-2014 to 19.7 cases per 100,000 persons years in 2015-2019. This difference was not statistically significant.

▪ Among females age-standardised incidence rates of leukaemia increased by 9.0% from 11.1 per 100,000 person years in 2010-2014 to 12.1 cases per 100,000 persons years in 2015-2019. This difference was not statistically significant.



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 quintile - *Leukaemia, Cases in 2015-2019*

The annual number of cases during 2015-2019 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.

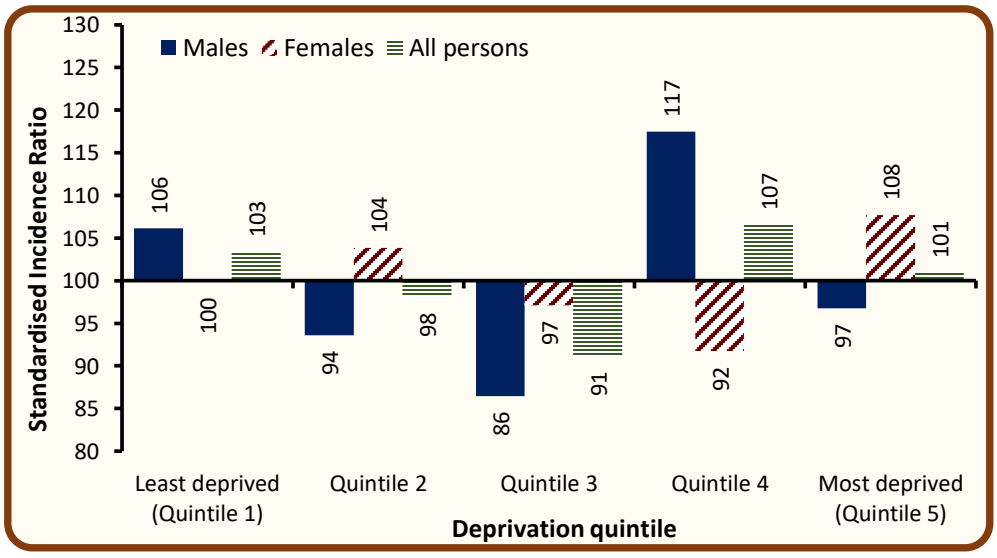
▪ in the least socio-economically deprived areas did not vary significantly from the NI average.

Deprivation quintile	Average cases per year		
	Male	Female	Both sexes
Least deprived (Quintile 1)	33	23	56
Quintile 2	30	23	53
Quintile 3	28	22	49
Quintile 4	35	20	55
Most deprived (Quintile 5)	24	20	44
Northern Ireland	150	108	258

Standardised incidence ratios compare incidence rates in each deprivation quintile with the Northern Ireland incidence rate.

A value above 100 means that incidence rates in that deprivation quintile are greater than the Northern Ireland average.

This measure takes account of population size and age structure. Differences are thus not a result of these factors.



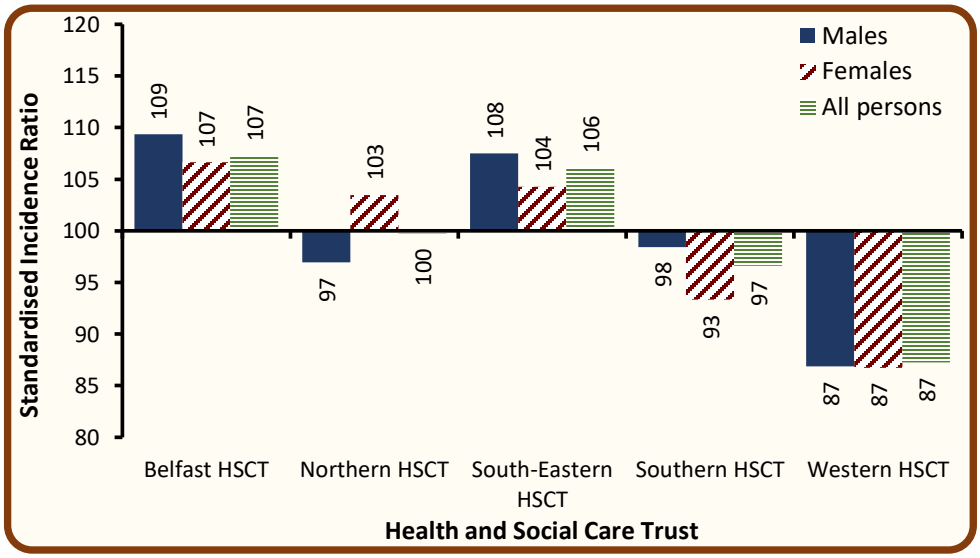
Incidence by Health and Social Care Trust (HSCT) - *Leukaemia, Cases in 2015-2019*

The annual number of cases during 2015-2019 varied in each HSCT 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.

Health and Social Care Trust	Average cases per year		
	Male	Female	Both sexes
Belfast HSCT	29	22	51
Northern HSCT	38	29	68
South-Eastern HSCT	33	23	57
Southern HSCT	28	19	47
Western HSCT	21	14	35
Northern Ireland	150	108	258



Standardised incidence ratios compare incidence rates in each HSC Trust with the Northern Ireland incidence rate. A value above 100 means that incidence rates in that HSC Trust are greater than the NI average.

This measure takes account of population size and age structure. Differences are thus not a result of these factors.

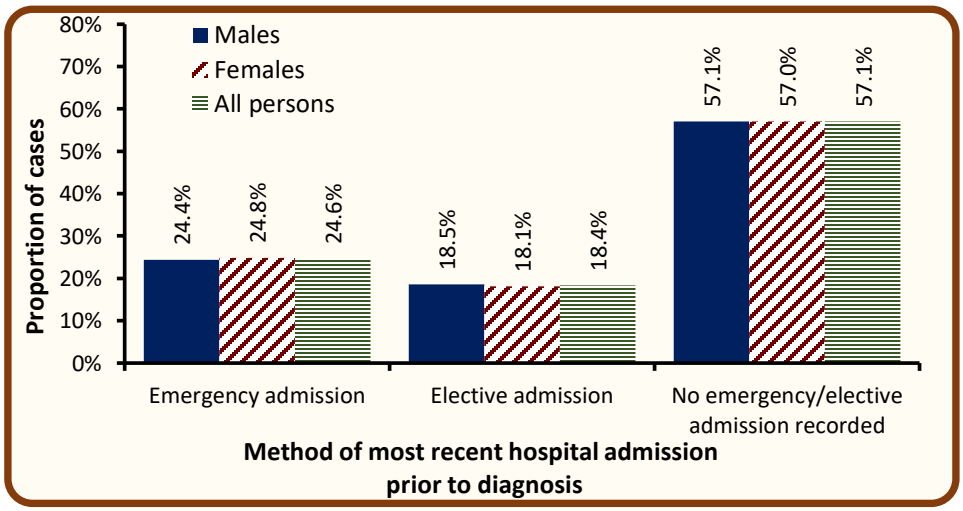
Data for Local Government Districts and Parliamentary Constituencies are available at www.qub.ac.uk/research-centres/nicr

Incidence by method of most recent admission to hospital - *Leukaemia, Cases in 2015-2019*

During 2015-2019:

- 24.6% of cases had an emergency admission to hospital recorded up to 30 days prior to their cancer diagnosis.
- 24.4% of male cases had an emergency admission up to 30 days prior to diagnosis, compared to 24.8% of female cases.
- In 57.1% of diagnosed cases there was no record of a hospital inpatient admission up to 30 days prior to diagnosis.

Method of admission	Average cases per year		
	Male	Female	Both sexes
Emergency admission	37	27	63
Elective admission	28	20	47
No emergency/elective admission recorded	86	62	147
Total	150	108	258



Admission method refers to the most recent hospital inpatient admission that a patient had prior to cancer diagnosis, regardless of reason for the admission.

Admissions are considered up to a maximum of 30 days prior to diagnosis. Admissions up to two days post diagnosis are also considered to allow for a reasonable margin or error in data recording.

The majority of patients with no inpatient admission recorded prior to diagnosis are likely to have been diagnosed via an outpatient route.

Survival

▪ 69.0% of patients were alive one year and 47.1% were alive five years from a leukaemia diagnosis in 2010-2014. (observed survival)

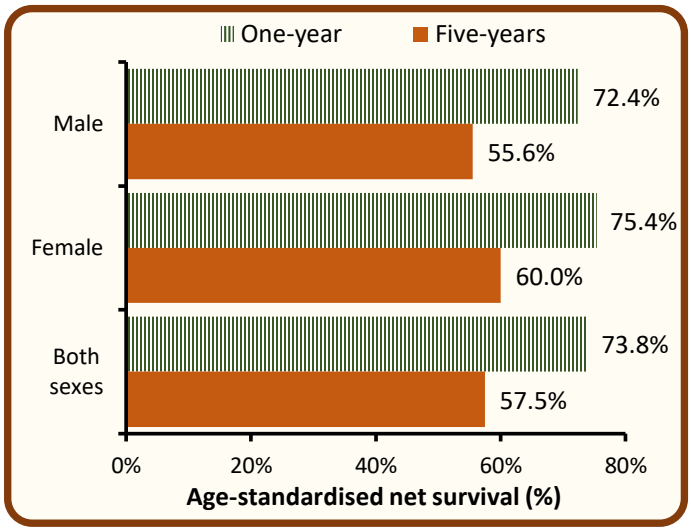
▪ Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 73.8% one year and 57.5% five years from a leukaemia diagnosis in 2010-2014.

▪ Five-year survival (ASNS) for leukaemia patients diagnosed in 2010-2014 was 55.6% among men and 60.0% among women.

Gender	Observed survival		Age-standardised net survival	
	One-year	Five-years	One-year	Five-years
Male	68.8%	46.6%	72.4%	55.6%
Female	69.2%	47.7%	75.4%	60.0%
Both sexes	69.0%	47.1%	73.8%	57.5%

Observed survival is the proportion of patients still alive one/five years after diagnosis. However, in this measure patients may have died from causes unrelated to their cancer.

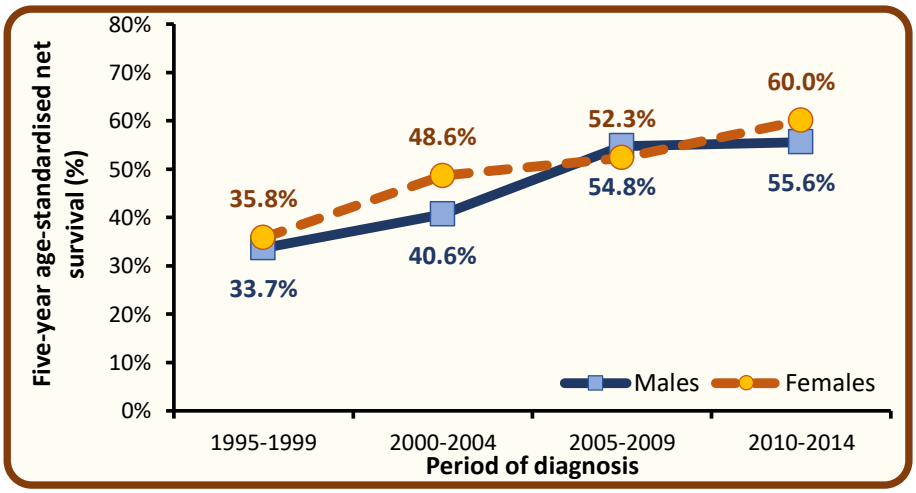
Age-standardised net survival is the proportion of patients who would survive if the patient could not die from causes unrelated to their cancer. This measure is more typically used in studies of cancer survival.



Trends in survival - *Leukaemia, Patients diagnosed in 1995-2014*

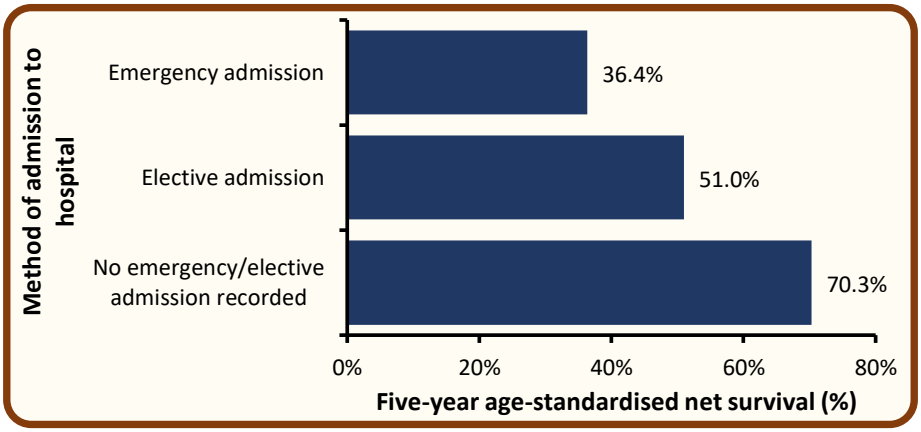
▪ Among men five-year survival (ASNS) from leukaemia increased from 54.8% in 2005-2009 to 55.6% in 2010-2014. This difference was not statistically significant.

▪ Among women five-year survival (ASNS) from leukaemia increased from 52.3% in 2005-2009 to 60.0% in 2010-2014. This difference was not statistically significant.



Survival by method of most recent admission to hospital - *Leukaemia, Patients diagnosed in 2010-2014*

▪ Five-year survival (ASNS) among leukaemia patients who had an emergency admission to hospital up to 30 days prior to their cancer diagnosis was 36.4% compared to 51.0% among those with elective admissions and 70.3% among those who had no hospital admissions recorded up to 30 days prior to diagnosis.

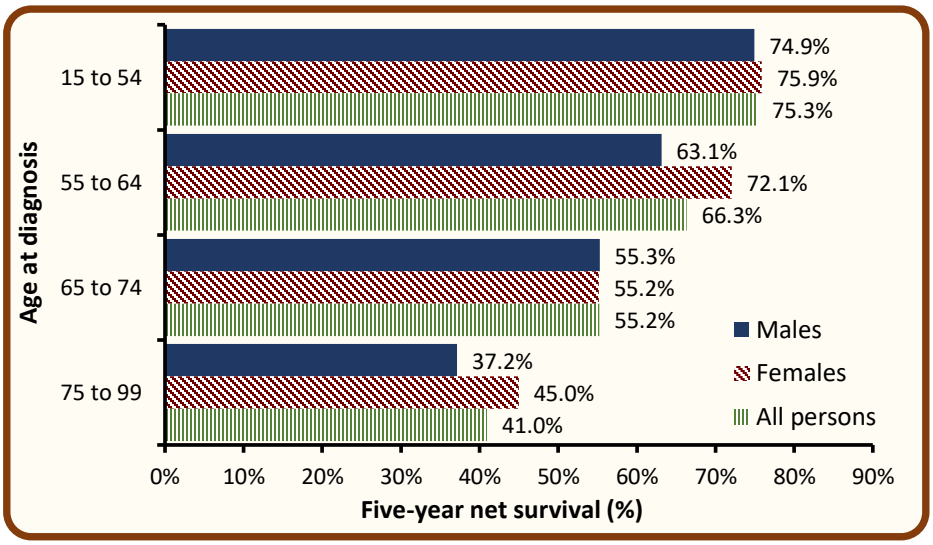


Survival by age at diagnosis - *Leukaemia, Patients diagnosed in 2010-2014*

▪ Survival from leukaemia among patients diagnosed in 2010-2014 was strongly related to age with five-year survival decreasing as age increases.

▪ Five-year net survival ranged from 75.3% among patients aged 15 to 54 at diagnosis to 41.0% among those aged 75 and over.

▪ Five-year net survival among patients aged 75 and over was 37.2% for men and 45.0% for women.



Prevalence

▪ At the end of 2019, there were 1,948 people (Males: 1,117; Females: 831) living with leukaemia who had been diagnosed with the disease during 1995-2019.

▪ Of these, 57.3% were male, 28.8% were aged 75 and over, and 11.6% had been diagnosed in the previous year.

25-year prevalence refers to the number of cancer survivors who were alive at the end of 2019, and had been diagnosed with their cancer in the previous 25 years (i.e. 1995-2019).

Time since diagnosis	25-year prevalence								
	Aged 0-74			Aged 75+			All ages		
	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes
0-1 year	89	68	157	39	29	68	128	97	225
1-5 years	286	166	452	101	83	184	387	249	636
5-10 years	204	126	330	76	81	157	280	207	487
10-25 years	246	202	448	76	76	152	322	278	600
0-25 years	825	562	1,387	292	269	561	1,117	831	1,948

Trends in 10-year prevalence - *Leukaemia, Patients alive at end of each year from 2010-2019*

▪ Among males the number of survivors from leukaemia who had been diagnosed within the previous ten years increased by 26.4% from 629 survivors in 2014 to 795 survivors in 2019.

▪ Among females the number of survivors from leukaemia who had been diagnosed within the previous ten years increased by 12.6% from 491 survivors in 2014 to 553 survivors in 2019.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Male	533	577	601	624	629	630	658	720	756	795
Female	397	436	464	476	491	498	486	522	536	553
Both sexes	930	1,013	1,065	1,100	1,120	1,128	1,144	1,242	1,292	1,348

Mortality

- During 2015-2019 there were 65 male and 51 female deaths from leukaemia each year.
- Leukaemia made up 2.8% of all male, and 2.4% of all female cancer deaths (ex NMSC).

Deaths by age at death - *Leukaemia, Deaths in 2015-2019*

- The median age at death during 2015-2019 was 76 for men and 77 for women.
- Risk of death from leukaemia was strongly related to patient age, with 53.8% of men and 54.9% of women aged 75 years or more at time of death.
- 9.5% of leukaemia deaths occurred among those aged under 55.

Age at death	Average deaths per year		
	Male	Female	Both sexes
0 - 54	6	4	11
55 - 64	7	3	10
65 - 74	17	13	31
75 +	35	28	64
All ages	65	51	116

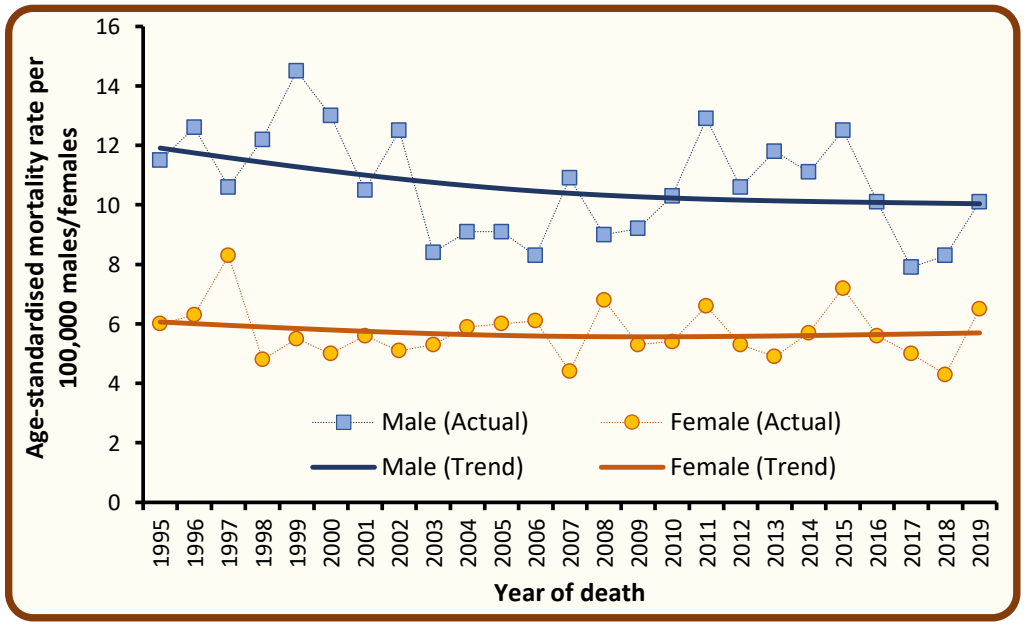
Deaths by year of death - *Leukaemia, Deaths in 2010-2019*

- Among males the number of deaths from leukaemia decreased by 4.4% from an annual average of 68 deaths in 2010-2014 to 65 deaths in 2015-2019.
- Among females the number of deaths from leukaemia increased by 10.9% from an annual average of 46 deaths in 2010-2014 to 51 deaths in 2015-2019.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Male	59	76	63	72	70	81	65	52	57	71
Female	43	54	43	42	49	62	49	45	39	59
Both sexes	102	130	106	114	119	143	114	97	96	130

Trends in age-standardised mortality rates - *Leukaemia, Deaths in 1995-2019*

- Among males age-standardised mortality rates from leukaemia decreased by 14.2% between 2010-2014 and 2015-2019 from 11.3 to 9.7 deaths per 100,000 persons years. This difference was not statistically significant.
- Among females age-standardised mortality rates from leukaemia increased by 1.8% between 2010-2014 and 2015-2019 from 5.6 to 5.7 deaths per 100,000 persons years. This difference was not statistically significant.



Mortality data are provided by the Northern Ireland General Registrar Office via the Department of Health.

Counts of the number of deaths are based upon the year that death occurred, and upon the primary cause of death only.

Age-standardised mortality rates remove changes over time caused by population growth and/or ageing.

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 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 are assigned based on a patient's postcode of usual residence at diagnosis using the Jan 2021 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).

A **crude incidence/mortality rate** is 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.

An **age-standardised incidence/mortality rate** per 100,000 person years is an estimate 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.

A **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 are a measure of the precision of a statistic (e.g. colorectal cancer 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. cervical cancer 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 2019 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.

Observed survival refers to the proportion of patients who survive a specified amount of time from their date of diagnosis. Observed survival considers death from any cause and is not adjusted for the age of the patient. Cause of death may be unrelated to the cancer the patient has been diagnosed with.

Net Survival is an estimate of survival where the effect on survival of background population mortality rates has been removed. It represents the [theoretical] survival of cancer patients if they could only die from cancer-related causes. Age-standardised net survival estimates are the estimates that would occur if that population of cancer patients had a standard population age structure. The age groups and weights used here are those used by international studies such as EUROCARE, an international study group that compares cancer survival among European countries. However, due to the small number of patients in NI, the first two age categories in the standard population are combined.

Mortality: Information relating to cancer mortality is sourced from the General Registrar Office (GRONI) via the Department of Health (NI). Results are based upon the date on which death occurs, and may thus differ slightly than those produced by the Northern Ireland Statistics and Research Agency (NISRA), which produces deaths data based upon the date on which the death is registered with GRONI.