

Leukaemia

Patients diagnosed 1993-2020
(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

The Northern Ireland Cancer Registry (NICR) is funded by the Public Health Agency and is based in Queen's University, Belfast. NICR uses data provided by patients and collected by the health service as part of their care and support.

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 2016-2020:

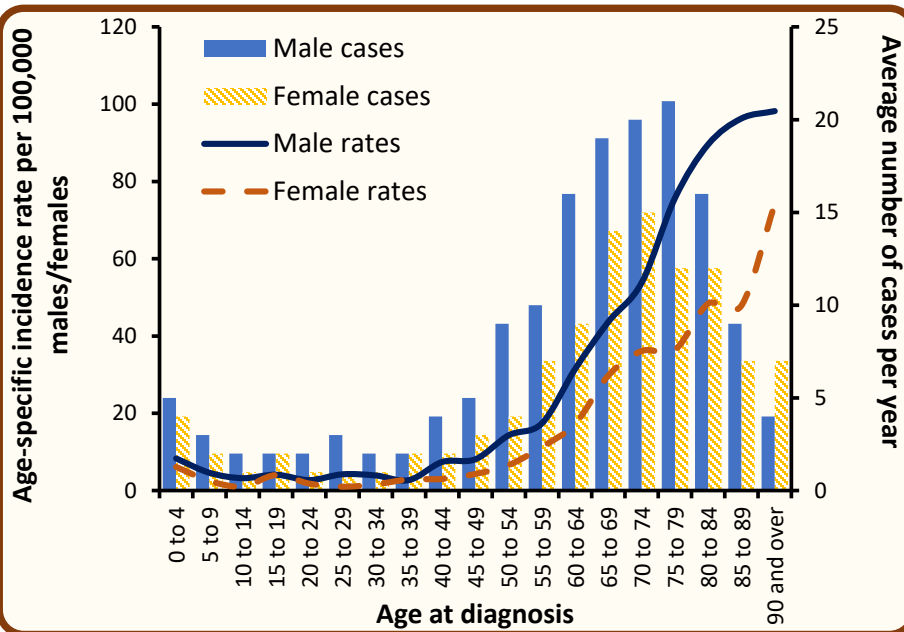
- There were 154 male and 104 female cases of leukaemia diagnosed each year.
- The risk of developing leukaemia before the age of 75 was 1 in 96 for men and 1 in 155 for women, while before the age of 85 the risk was 1 in 54 for men and 1 in 94 for women.

Incidence by age at diagnosis - Leukaemia, Cases in 2016-2020

During 2016-2020:

- The median age at diagnosis was 67 for men and 70 for women.
- Cancer risk increased with age, with 32.5% of men and 36.5% of women aged 75 years or more at diagnosis.
- 24.0% of cases were diagnosed among those aged under 55.

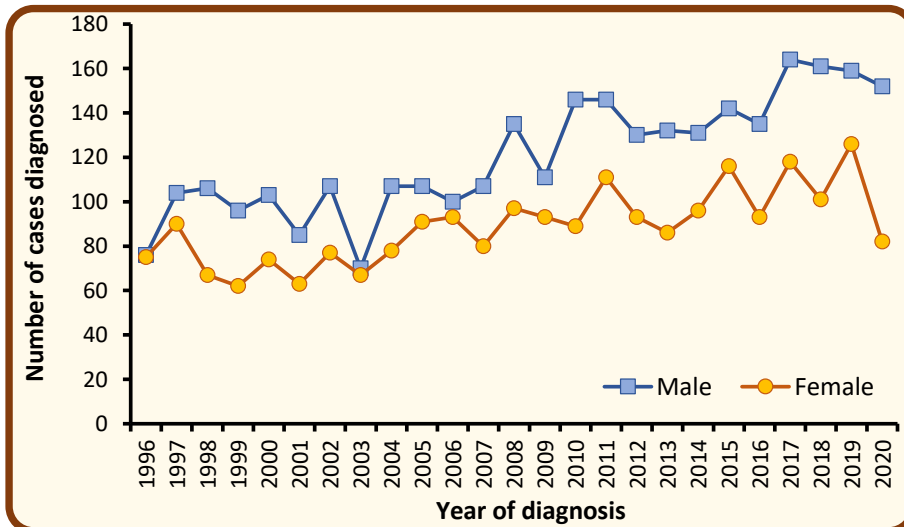
Age at diagnosis	Average cases per year		
	Male	Female	Both sexes
0 - 54	39	23	62
54 - 64	26	16	42
65 - 74	39	29	69
75 +	50	38	86
All ages	154	104	258



Incidence by year of diagnosis - Leukaemia, Cases in 1996-2020

- Among males the number of cases of leukaemia increased by 13.2% from an annual average of 136 cases in 2011-2015 to 154 cases in 2016-2020.
- Among females the number of cases of leukaemia increased by 4.0% from an annual average of 100 cases in 2011-2015 to 104 cases in 2016-2020.

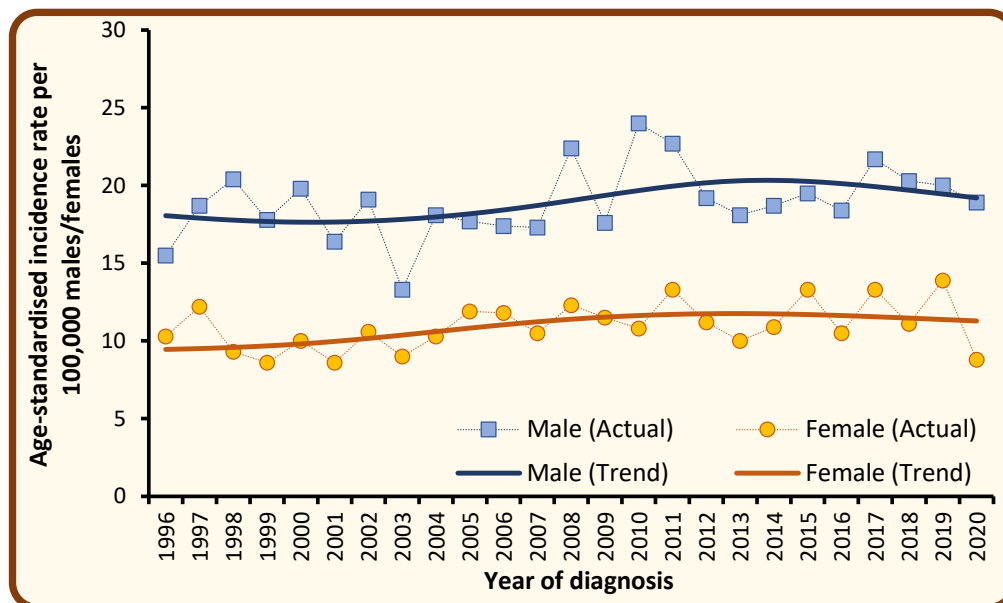
Year of diagnosis	Male	Female	Both sexes
2011	146	111	257
2012	130	93	223
2013	132	86	218
2014	131	96	227
2015	142	116	258
2016	135	93	228
2017	164	118	282
2018	161	101	262
2019	159	126	285
2020	152	82	234



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 1996-2020

- Among males age-standardised incidence rates of leukaemia increased by 1.0% from 19.6 per 100,000 person years in 2011-2015 to 19.8 cases per 100,000 persons years in 2016-2020. This difference was not statistically significant.
- Among females age-standardised incidence rates of leukaemia decreased by 2.5% from 11.8 per 100,000 person years in 2011-2015 to 11.5 cases per 100,000 persons years in 2016-2020. 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 2016-2020

The annual number of cases during 2016-2020 varied in each deprivation quintile due to variations in population size and age.

After accounting for these factors, incidence rates:

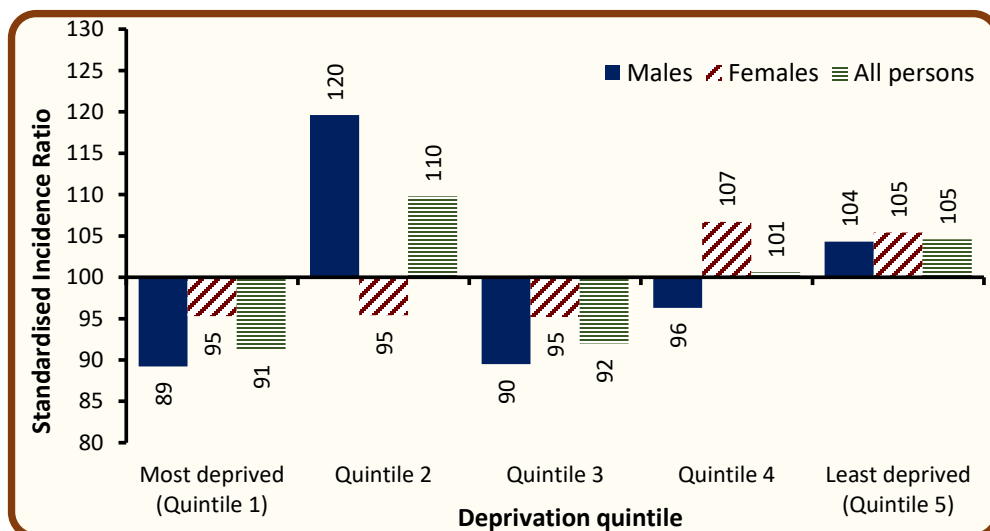
- in the least socio-economically deprived areas did not vary significantly from the NI average.
- in the most socio-economically deprived areas did not vary significantly from the NI average.

Deprivation quintile	Average cases per year		
	Male	Female	Both sexes
Most deprived (Quintile 1)	23	17	40
Quintile 2	37	20	57
Quintile 3	29	21	50
Quintile 4	32	23	55
Least deprived (Quintile 5)	33	23	56
Northern Ireland	154	104	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.



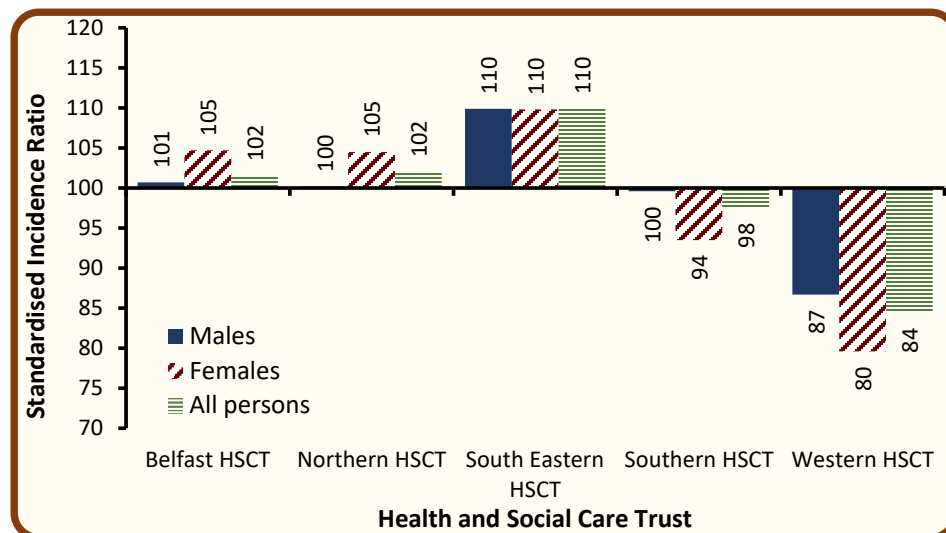
Incidence by Health and Social Care Trust (HSCT) - Leukaemia, Cases in 2016-2020

The annual number of cases during 2016-2020 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 were significantly lower than the NI average.

Health and Social Care Trust	Average cases per year		
	Male	Female	Both sexes
Belfast HSCT	27	21	48
Northern HSCT	41	29	69
South Eastern HSCT	35	24	59
Southern HSCT	30	18	48
Western HSCT	21	13	34
Northern Ireland	154	104	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.

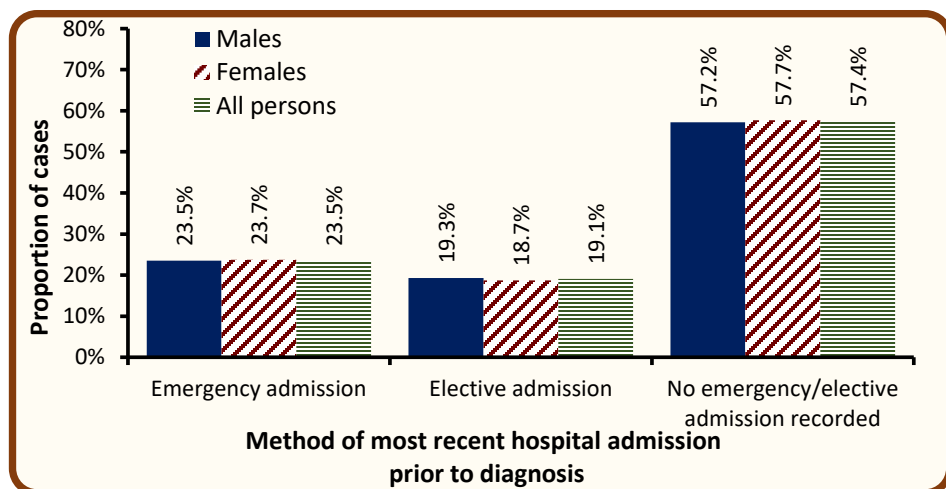
Data for Local Government Districts and Parliamentary Constituencies are available at www.qub.ac.uk/research-centres/nicr

Incidence by method of most recent admission to hospital - Leukaemia, Cases in 2016-2020

During 2016-2020:

- 23.5% of cases had an emergency admission to hospital recorded up to 30 days prior to their cancer diagnosis.
- 23.5% of male cases had an emergency admission up to 30 days prior to diagnosis, compared to 23.7% of female cases.
- In 57.4% 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	36	25	61
Elective admission	30	19	49
No emergency/elective admission recorded	88	60	148
Total	154	104	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.

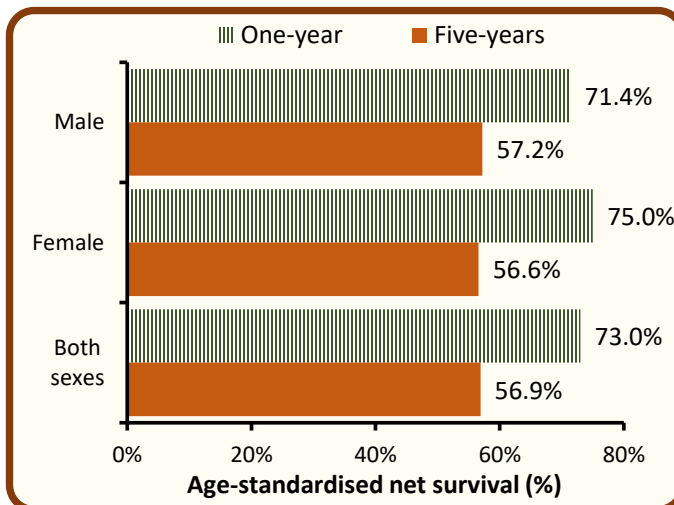
Survival

- 68.3% of patients were alive one year and 47.0% were alive five years from a leukaemia diagnosis in 2011-2015. (observed survival)
- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 73.0% one year and 56.9% five years from a leukaemia diagnosis in 2011-2015.
- Five-year survival (ASNS) for leukaemia patients diagnosed in 2011-2015 was 57.2% among men and 56.6% among women.

Gender	Observed survival		Age-standardised net survival	
	One-year	Five-years	One-year	Five-years
Male	68.2%	48.5%	71.4%	57.2%
Female	68.4%	45.1%	75.0%	56.6%
Both sexes	68.3%	47.0%	73.0%	56.9%

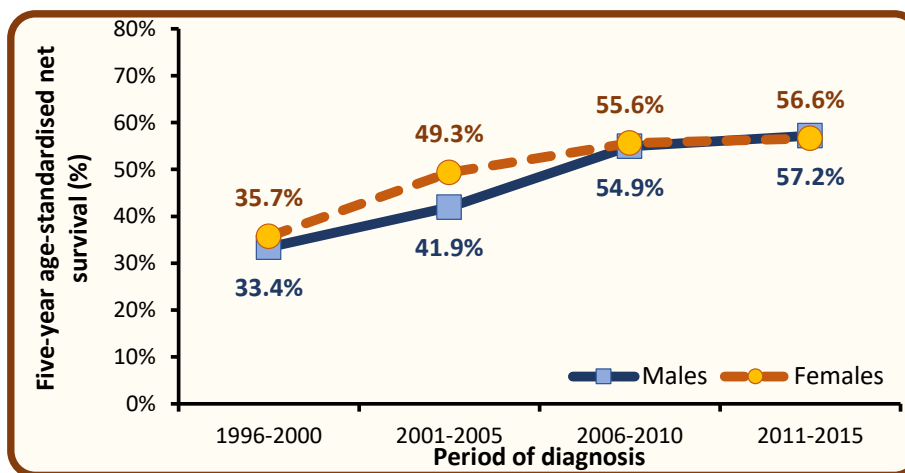
Observed survival is the proportion of patients still alive one/five years after diagnosis. However, in this measure patients may have died from causes unrelated to their cancer.

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.



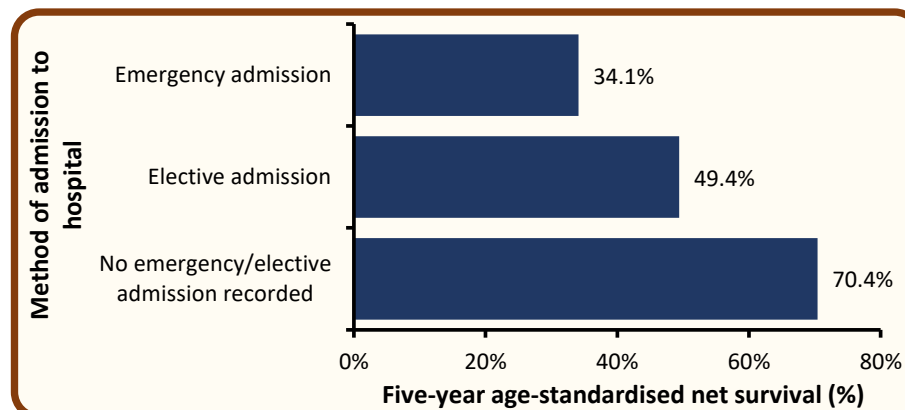
Trends in survival - Leukaemia, Patients diagnosed in 1996-2015

- Among men five-year survival (ASNS) from leukaemia increased from 54.9% in 2006-2010 to 57.2% in 2011-2015. This difference was not statistically significant.
- Among women five-year survival (ASNS) from leukaemia increased from 55.6% in 2006-2010 to 56.6% in 2011-2015. This difference was not statistically significant.



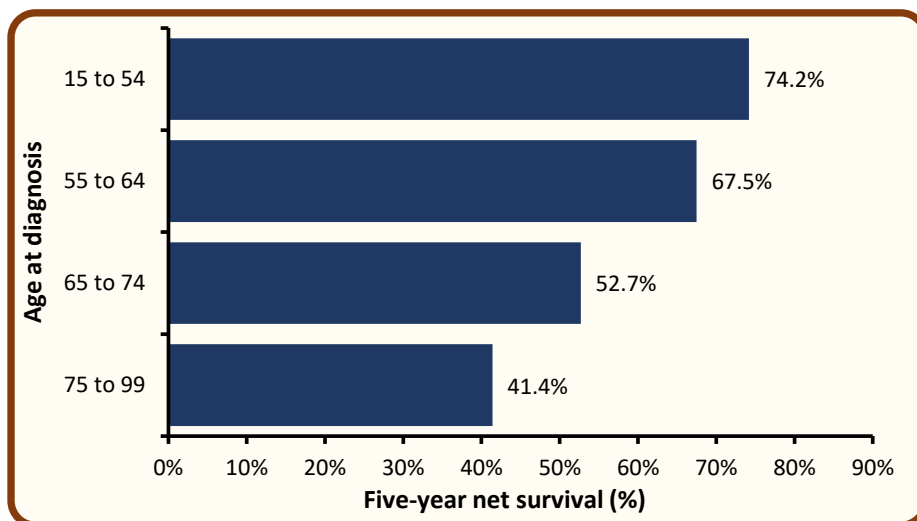
Survival by method of most recent admission to hospital - Leukaemia, Patients diagnosed in 2011-2015

- Five-year survival (ASNS) among leukaemia patients who had an emergency admission to hospital up to 30 days prior to their cancer diagnosis was 34.1% compared to 49.4% among those with elective admissions and 70.4% among those who had no hospital admissions recorded up to 30 days prior to diagnosis.



Survival by age at diagnosis - Leukaemia, Patients diagnosed in 2011-2015

- Survival from leukaemia among patients diagnosed in 2011-2015 was strongly related to age with five-year survival decreasing as age increases.
- Five-year net survival ranged from 74.2% among patients aged 15 to 54 at diagnosis to 41.4% among those aged 75 and over.



Prevalence

- At the end of 2020, there were 2,002 people (Males: 1,155; Females: 847) living with leukaemia who had been diagnosed with the disease during 1996-2020.
- Of these, 57.7% were male, 28.9% were aged 75 and over, and 9.4% had been diagnosed in the previous year.

25-year prevalence refers to the number of cancer survivors who were alive at the end of 2020, and had been diagnosed with their cancer in the previous 25 years (i.e. 1996-2020).

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	50	139	32	18	50	121	68	189
1-5 years	302	182	484	104	93	197	406	275	681
5-10 years	211	131	342	84	75	159	295	206	501
10-25 years	252	207	459	81	91	172	333	298	631
0-25 years	854	570	1,424	301	277	578	1,155	847	2,002

Trends in 10-year prevalence - Leukaemia, Patients alive at end of each year from 2011-2020

- Among males the number of survivors from leukaemia who had been diagnosed within the previous ten years increased by 28.8% from 638 survivors in 2015 to 822 survivors in 2020.
- Among females the number of survivors from leukaemia who had been diagnosed within the previous ten years increased by 9.1% from 503 survivors in 2015 to 549 survivors in 2020.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Male	577	602	627	634	638	666	730	767	811	822
Female	441	469	482	497	503	493	529	542	571	549
Both sexes	1,018	1,071	1,109	1,131	1,141	1,159	1,259	1,309	1,382	1,371

Mortality

- During 2016-2020 there were 64 male and 48 female deaths from leukaemia each year.
- Leukaemia made up 2.7% of all male, and 2.2% of all female cancer deaths (ex NMSC).

Deaths by age at death - Leukaemia, Deaths in 2016-2020

- The median age at death during 2016-2020 was 76 for men and 77 for women.
- Risk of death from leukaemia was strongly related to patient age, with 54.7% of men and 58.3% of women aged 75 years or more at time of death.
- 9.8% of leukaemia deaths occurred among those aged under 55.

Age at death	Average deaths per year		
	Male	Female	Both sexes
0 - 54	5	4	11
55 - 64	7	3	10
65 - 74	16	12	29
75 +	35	28	63
All ages	64	48	112

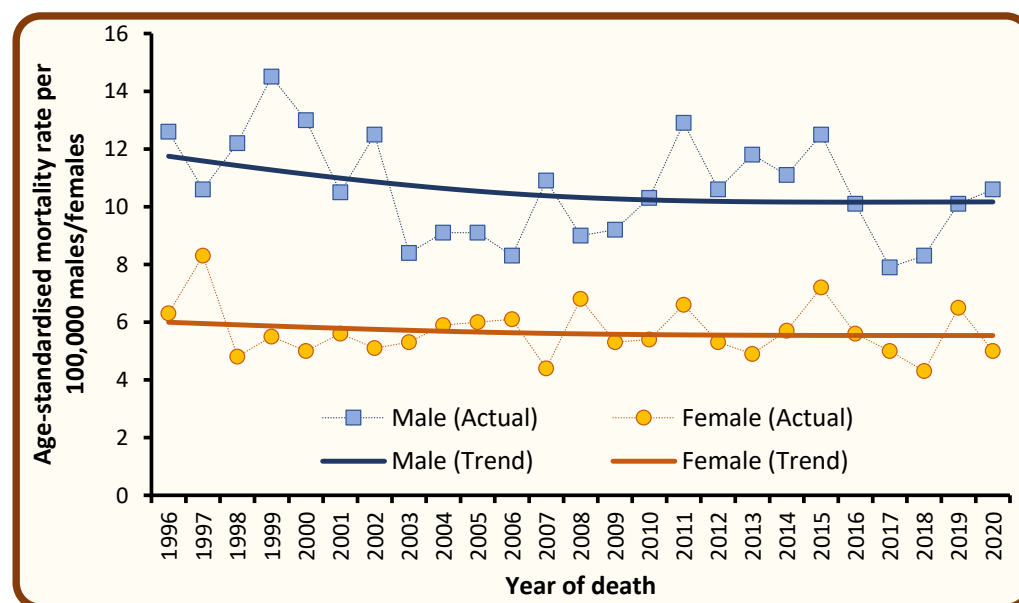
Deaths by year of death - Leukaemia, Deaths in 2011-2020

- Among males the number of deaths from leukaemia decreased by 11.1% from an annual average of 72 deaths in 2011-2015 to 64 deaths in 2016-2020.
- Among females the number of deaths from leukaemia decreased by 4.0% from an annual average of 50 deaths in 2011-2015 to 48 deaths in 2016-2020.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Male	76	63	72	70	81	65	52	57	71	74
Female	54	43	42	49	62	49	45	39	59	47
Both sexes	130	106	114	119	143	114	97	96	130	121

Trends in age-standardised mortality rates - Leukaemia, Deaths in 1996-2020

- Among males age-standardised mortality rates from leukaemia decreased by 20.3% between 2011-2015 and 2016-2020 from 11.8 to 9.4 deaths per 100,000 persons years. This difference was statistically significant.
- Among females age-standardised mortality rates from leukaemia decreased by 11.7% between 2011-2015 and 2016-2020 from 6.0 to 5.3 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#/I>

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 2020 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.