Cancer among young adults

(excluding non-melanoma skin cancer)

Patients diagnosed 1993-2020
(Ages 15 to 24; ICD10: C00-C43, C45-C97)

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

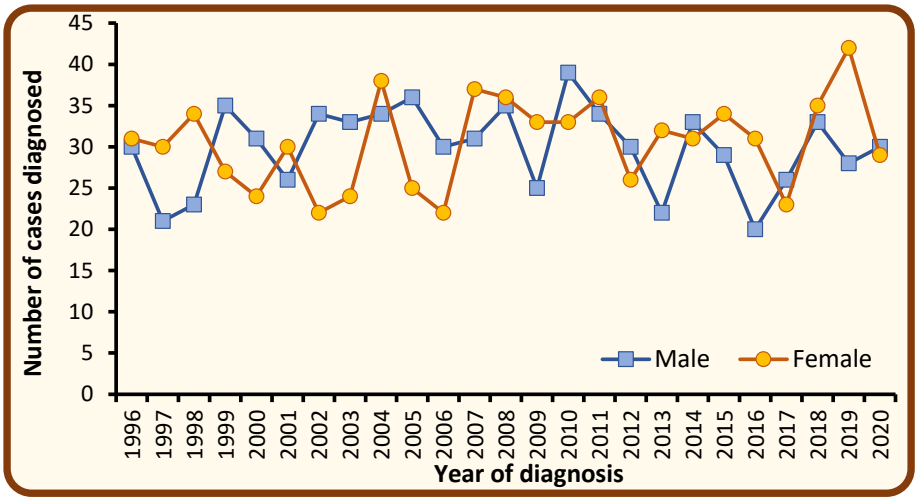
▪ During 2011-2020 there were 29 male and 32 female cases of cancer (ex NMSC) diagnosed among young adults (ages 15 to 24) each year.

▪ Cancer (ex NMSC) among young adults made up 0.6% of all male, and 0.7% of female cancers (ex NMSC) from all age groups.

Incidence by year of diagnosis - *Cancer among young adults, Cases in 1996-2020*

▪ The number of cases of cancer (ex NMSC) among young adults decreased by 9.4% among males and increased by 6.7% among females between 2001-2010 and 2011-2020.

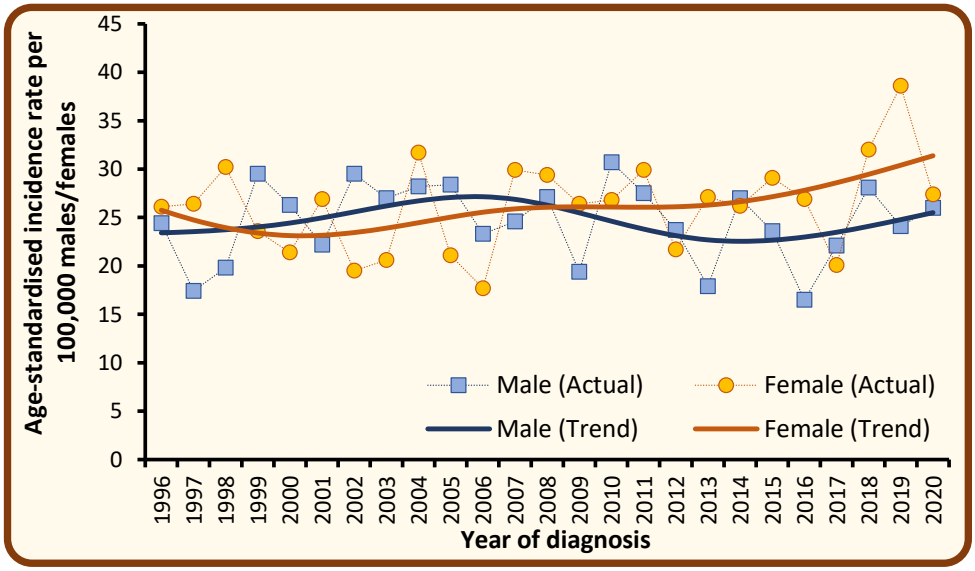
Year of diagnosis	Male	Female	Both sexes
2011	34	36	70
2012	30	26	56
2013	22	32	54
2014	33	31	64
2015	29	34	63
2016	20	31	51
2017	26	23	49
2018	33	35	68
2019	28	42	70
2020	30	29	59



Trends in age-standardised incidence rates - *Cancer among young adults, Cases in 1996-2020*

▪ Among men aged 15-24 age-standardised incidence rates of cancer (ex NMSC) decreased by 8.9% from 25.9 per 100,000 person years in 2001-2010 to 23.6 cases per 100,000 persons years in 2011-2020. This difference was not statistically significant.

▪ Among women aged 15-24 age-standardised incidence rates of cancer (ex NMSC) increased by 11.2% from 25.0 per 100,000 person years in 2001-2010 to 27.8 cases per 100,000 persons years in 2011-2020. 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).

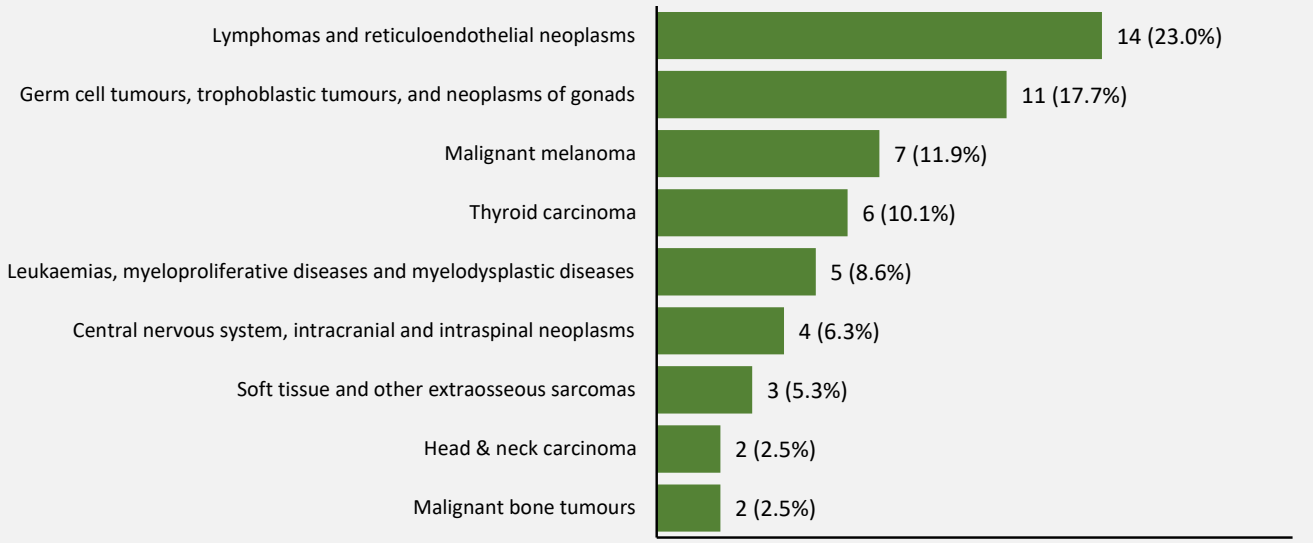
They thus represent changes other than those caused by population growth and/or ageing.

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).

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

Incidence by cancer type - *Cancer among young adults, Cases in 2011-2020*

The most common cancer types among young adults aged 15-24 (excluding NMSC), were lymphomas and reticuloendothelial neoplasms (23.0%), germ cell tumours, trophoblastic tumours, and neoplasms of gonads (17.7%) and malignant melanoma (11.9%).



Note: Classified using the International Classification of Childhood Cancer

Incidence by deprivation quintile - *Cancer among young adults, Cases in 2011-2020*

The annual number of cases during 2011-2020 varied in each deprivation quintile due to variations in population size and age.

After accounting for these factors, incidence rates:

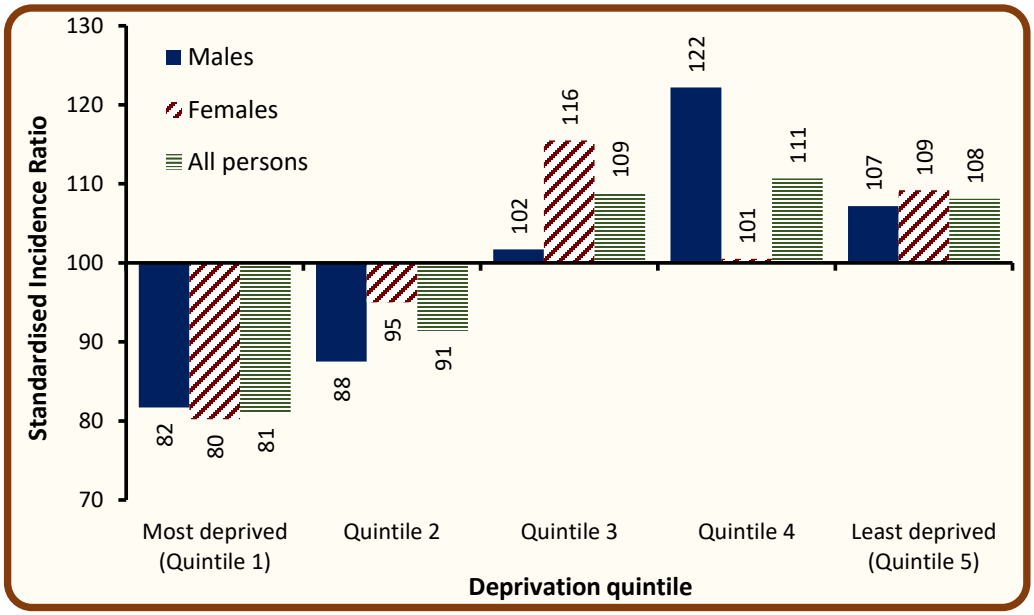
- in the least socio-economically deprived areas did not vary significantly from the NI average.
- in the most socio-economically deprived areas were 19.0% lower than the NI average.

Deprivation quintile	Average cases per year		
	Male	Female	Both sexes
Most deprived (Quintile 1)	5	5	10
Quintile 2	5	6	11
Quintile 3	6	8	14
Quintile 4	7	6	13
Least deprived (Quintile 5)	6	6	12
Northern Ireland	29	32	60

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.

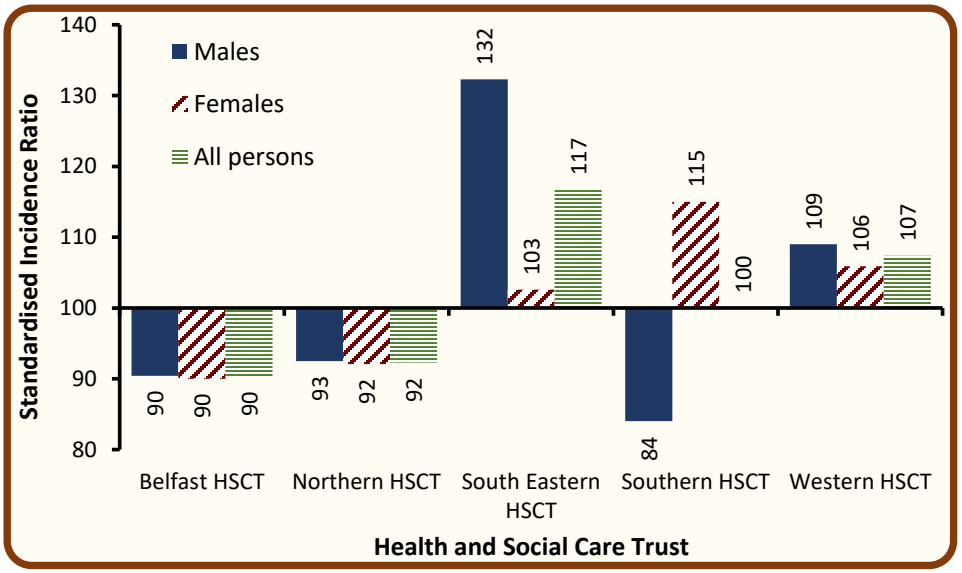


Incidence by Health and Social Care Trust (HSCT) - *Cancer among young adults, Cases in 2011-2020*

The annual number of cases during 2011-2020 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 did not vary significantly from the NI average.

Health and Social Care Trust	Average cases per year		
	Male	Female	Both sexes
Belfast HSCT	6	7	12
Northern HSCT	7	7	14
South Eastern HSCT	7	6	12
Southern HSCT	5	7	12
Western HSCT	5	5	10
Northern Ireland	29	32	60



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

Survival

- 93.6% of patients aged 15-24 were alive one year and 83.2% were alive five years from a cancer (ex NMSC) diagnosis in 2006-2015. (observed survival)

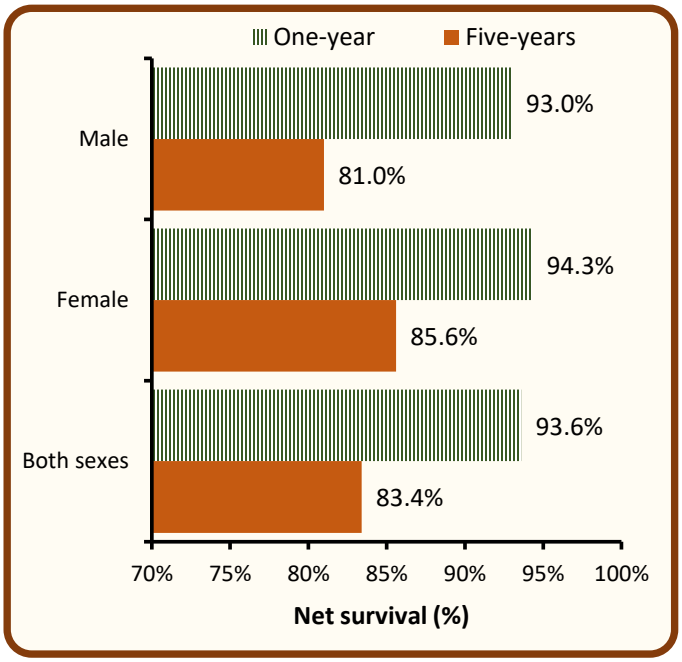
- Net survival, which removes the effect of deaths from causes unrelated to cancer, was 93.6% one year and 83.4% five years from a cancer (ex NMSC) diagnosis among those aged 15-24 in 2006-2015.

- Five-year net survival for patients aged 15-24 and diagnosed in 2006-2015 was 81.0% among men and 85.6% among women.

Gender	Observed survival		Net survival	
	One-year	Five-years	One-year	Five-years
Male	93.0%	80.8%	93.0%	81.0%
Female	94.2%	85.5%	94.3%	85.6%
Both sexes	93.6%	83.2%	93.6%	83.4%

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.

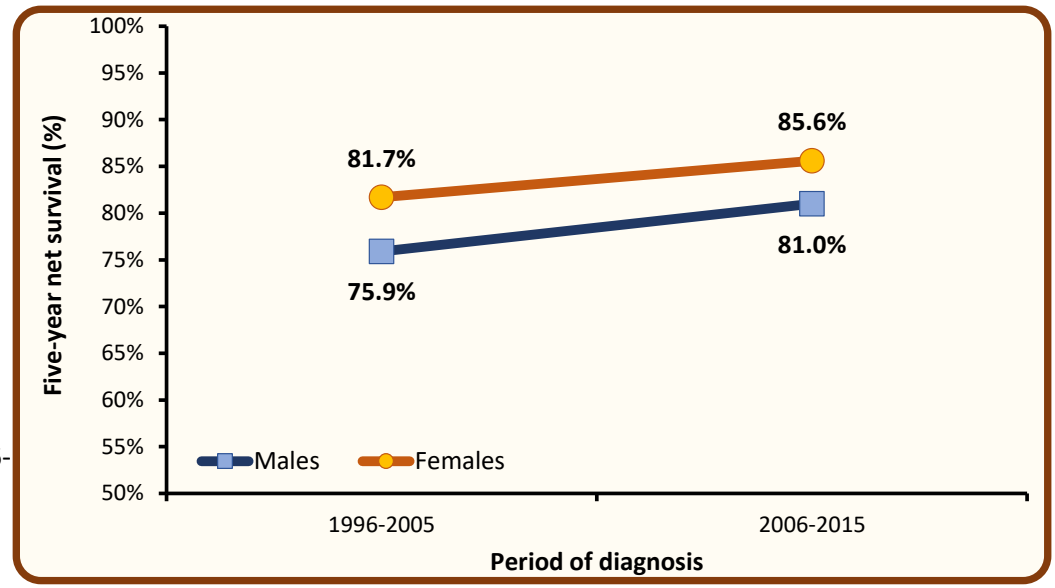
Net survival is the proportion of patients who would survive if the patient could not die from causes unrelated to their cancer. This measure is more typically used in studies of cancer survival.



Trends in survival - *Cancer among young adults, Patients diagnosed in 1996-2015*

▪ Among men aged 15-24 five-year net survival from cancer (ex NMSC) increased from 75.9% in 1996-2005 to 81.0% in 2006-2015. This difference was not statistically significant.

▪ Among women aged 15-24 five-year net survival from cancer (ex NMSC) increased from 81.7% in 1996-2005 to 85.6% in 2006-2015. This difference was not statistically significant.

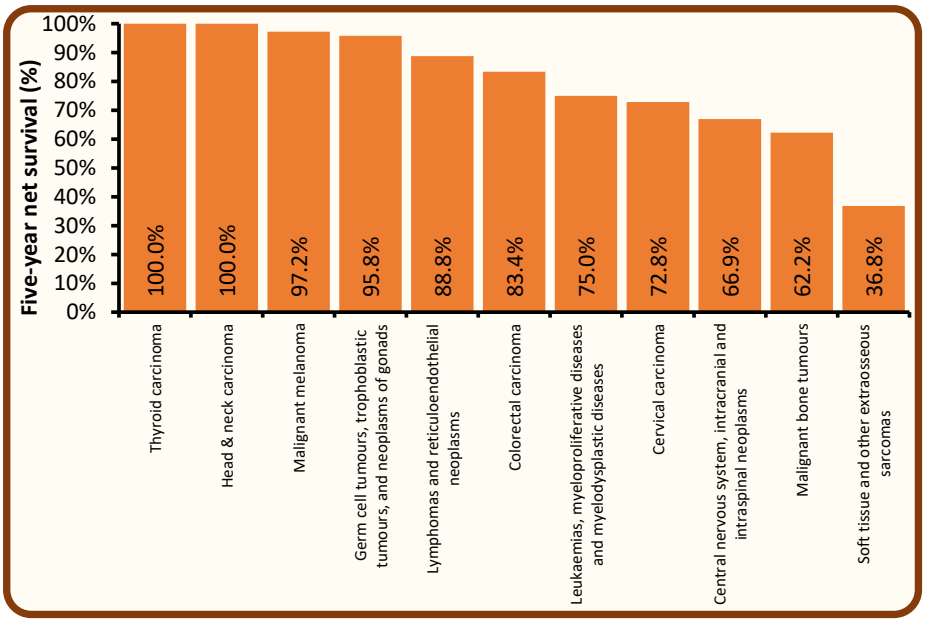


Survival by cancer type - *Cancer among young adults, Patients diagnosed in 2006-2015*

▪ Five-year net survival for patients diagnosed in 2006-2015 ranged from 100.0% for thyroid carcinoma to 36.8% for soft tissue and other extraosseous sarcomas.

▪ In particular five-year net survival for the most common cancer types was 88.8% for lymphomas and reticuloendothelial neoplasms, 95.8% for germ cell tumours, trophoblastic tumours, and neoplasms of gonads and 97.2% for malignant melanoma.

Note: Classified using the International Classification of Childhood Cancer. Survival only calculated for cancer types with more than 10 cases.



Prevalence

▪ At the end of 2020, there were 541 young adults (Males: 268; Females: 273) living with cancer (ex NMSC) who had previously been diagnosed with the disease.

Prevalence type	Male	Female	Both sexes
10-year prevalence	149	167	316
Complete prevalence	268	273	541

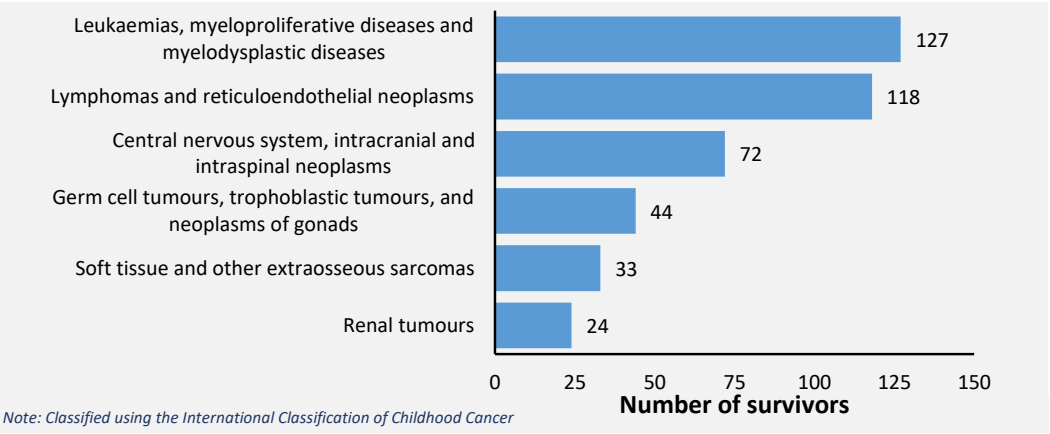
10-year prevalence refers to the number of cancer survivors who were alive at the end of 2020 and had been diagnosed with their cancer in the previous 10 years (i.e. 2011-2020).

▪ While complete prevalence figures are quoted for cancer patients who were still young adults at the end of 2020, there are additional cancer survivors who were diagnosed with cancer as young adults, but are now aged 25 and over.

▪ In total there were, 495 cancer (ex NMSC) patients diagnosed at ages 15-24 during 2011-2020 who were still alive at the end of 2020 (and aged up to 34), while there were 1,083 cancer patients (ex NMSC) diagnosed at ages 15-24 during 1996-2020 who were still alive (and aged up to 49) at the end of 2020.

Complete prevalence by cancer type - *Cancer among young adults, Patients alive at end of 2020*

The most prevalent cancer types among cancer survivors aged 15-24 at the end of 2020 (ex NMSC), were leukaemias, myeloproliferative diseases and myelodysplastic diseases (127 survivors) and lymphomas and reticuloendothelial neoplasms (118 survivors).



Note: Classified using the International Classification of Childhood Cancer

Trends in 10-year prevalence - *Cancer among young adults, Patients alive at end of each year from 2011-2020*

▪ The number of survivors from cancer (ex NMSC) aged 15-24 who had been diagnosed within the previous ten years decreased by 3.4% from 327 survivors in 2010 to 316 survivors in 2020.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Both sexes	336	324	304	301	300	285	279	307	316	316

Mortality

During 2011-2020 there were 4 male and 4 female deaths among young adults from cancer (ex NMSC) each year.

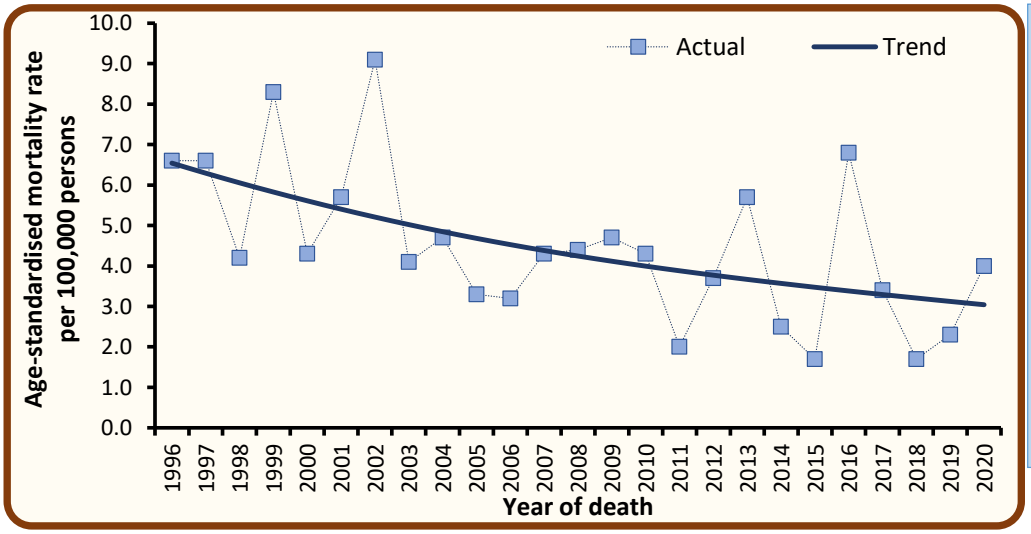
Deaths by year of death - *Cancer among young adults, Deaths in 2011-2020*

▪ Among young adults aged 15-24 the number of deaths from cancer (ex NMSC) decreased by 33.3% from an annual average of 12 deaths in 2001-2010 to 8 deaths in 2011-2020.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Both sexes	5	9	14	6	4	16	8	4	5	9

Trends in age-standardised mortality rates - *Cancer among young adults, Deaths in 1996-2020*

▪ Among young adults aged 15-24 the age-standardised mortality rates from cancer (ex NMSC) decreased by 29.2% between 2001-2010 and 2011-2020 from 4.8 to 3.4 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/2011/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 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.