

# Cancer among children

(excluding non-melanoma skin cancer)

Patients diagnosed 1993-2020  
(Ages 0 to 14; ICD10: C00-C43, C45-C97)

## Further information

Further data is available at: [www.qub.ac.uk/research-centres/nicr](http://www.qub.ac.uk/research-centres/nicr)

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## 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.



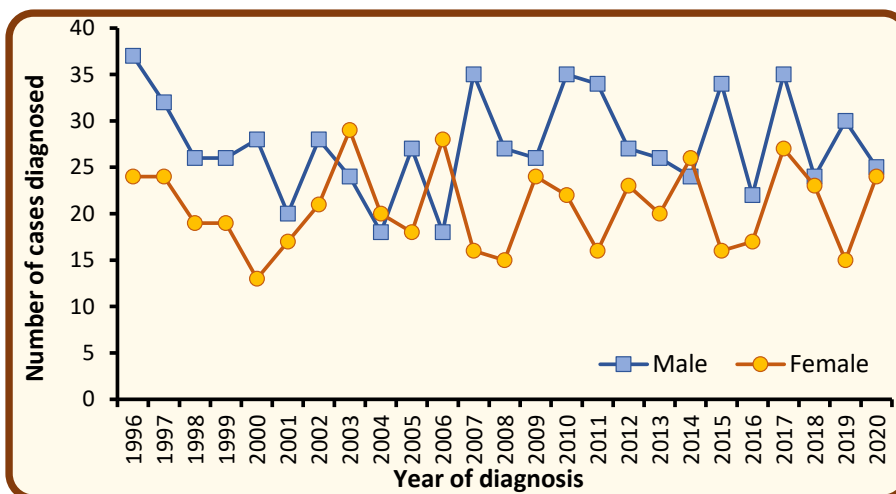
## Incidence

- During 2011-2020 there were 28 male and 21 female cases of cancer (ex NMSC) diagnosed among children (ages 0 to 14) each year.
- Cancer (ex NMSC) among children made up 0.6% of all male, and 0.4% of female cancers (ex NMSC) from all age groups.

### Incidence by year of diagnosis - Cancer among children, Cases in 1996-2020

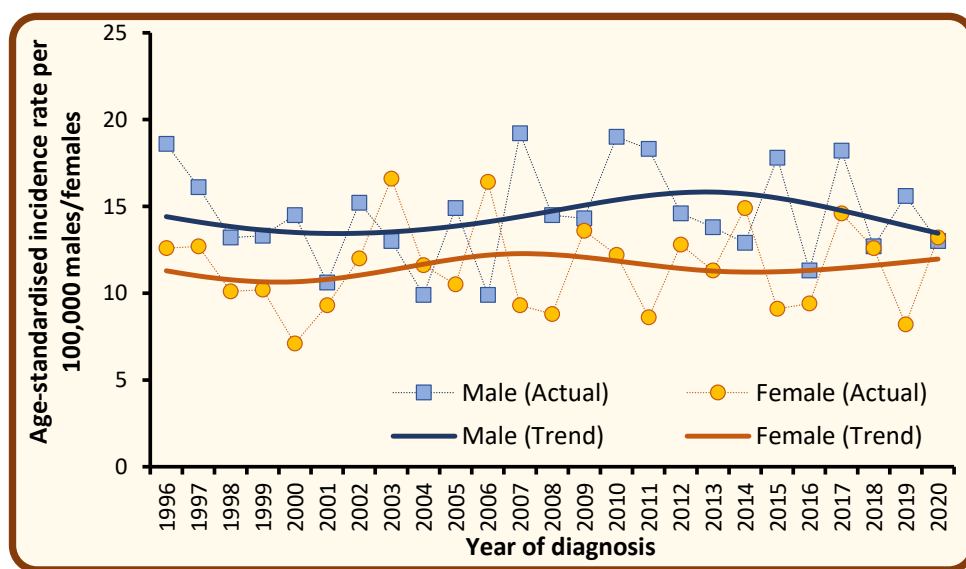
- The number of cases of cancer (ex NMSC) among children increased by 7.7% among males and did not change among females between 2001-2010 and 2011-2020.

Year of diagnosis	Male	Female	Both sexes
2011	34	16	50
2012	27	23	50
2013	26	20	46
2014	24	26	50
2015	34	16	50
2016	22	17	39
2017	35	27	62
2018	24	23	47
2019	30	15	45
2020	25	24	49



### Trends in age-standardised incidence rates - Cancer among children, Cases in 1996-2020

- Among boys aged 0-14 age-standardised incidence rates of cancer (ex NMSC) increased by 5.7% from 14.0 per 100,000 person years in 2001-2010 to 14.8 cases per 100,000 persons years in 2011-2020. This difference was not statistically significant.
- Among girls aged 0-14 age-standardised incidence rates of cancer (ex NMSC) decreased by 5.0% from 12.0 per 100,000 person years in 2001-2010 to 11.4 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.

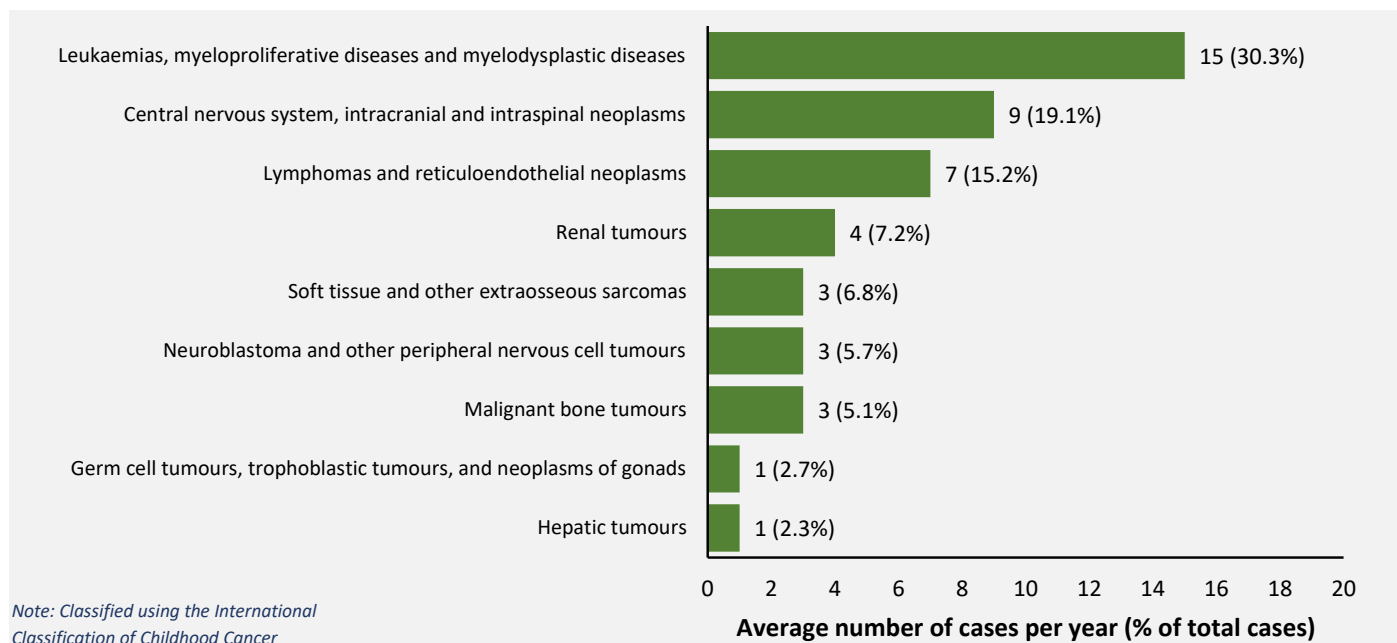
Trends can also be influenced by changes in how cancer is classified and coded. (e.g. the move from ICD-0-2 to ICD-0-3 in 2019).

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 children, Cases in 2011-2020

The most common cancer types among children aged 0-14 (excluding NMSC), were leukaemias, myeloproliferative diseases and myelodysplastic diseases (30.3%), central nervous system, intracranial and intraspinal neoplasms (19.1%) and lymphomas and reticuloendothelial neoplasms (15.2%).



## Incidence by deprivation quintile - Cancer among children, 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:

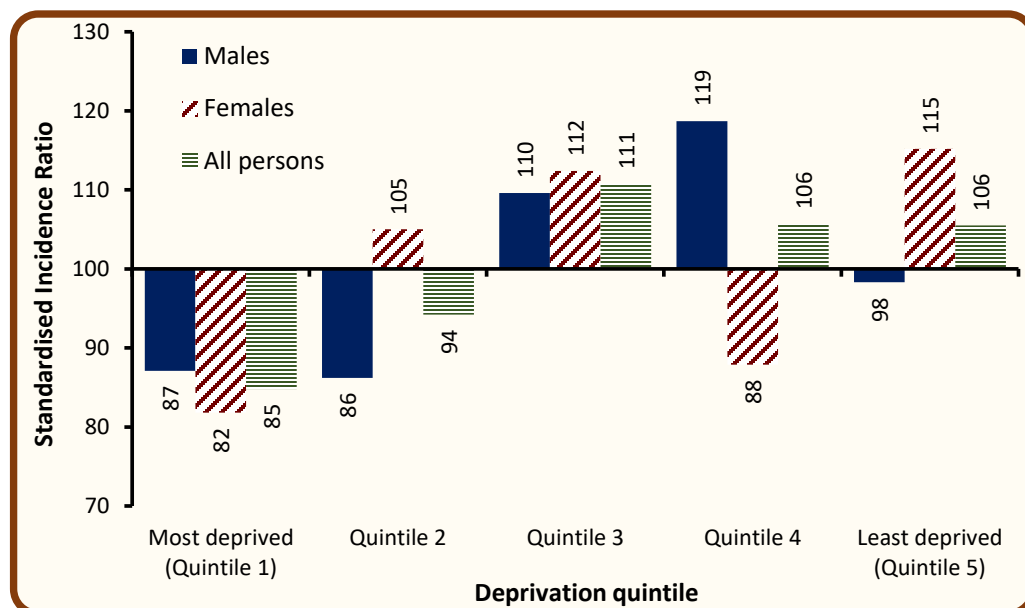
- in the least socio-economically deprived areas did not vary significantly from the NI average.
- in the most socio-economically deprived areas did not vary significantly from the NI average.

Deprivation quintile	Average cases per year		
	Male	Female	Both sexes
Most deprived (Quintile 1)	5	4	9
Quintile 2	5	5	10
Quintile 3	7	5	11
Quintile 4	7	4	11
Least deprived (Quintile 5)	5	4	9
Northern Ireland	28	21	49

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.



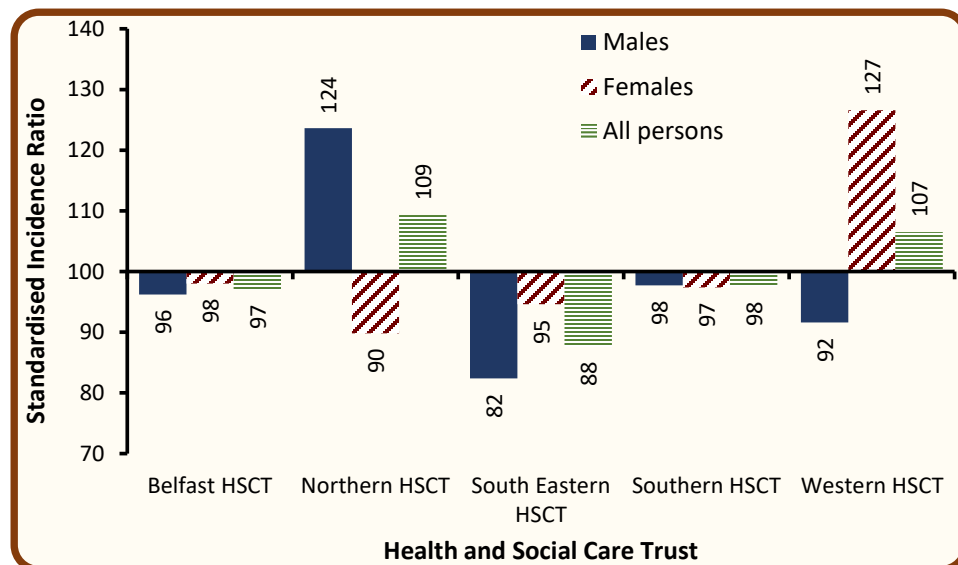
## Incidence by Health and Social Care Trust (HSCT) - Cancer among children, Cases in 2011-2020

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	5	4	8
Northern HSCT	9	5	13
South Eastern HSCT	4	4	8
Southern HSCT	6	5	11
Western HSCT	4	4	9
<b>Northern Ireland</b>	<b>28</b>	<b>21</b>	<b>49</b>



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](http://www.qub.ac.uk/research-centres/nicr)

## Survival

88.0% of patients aged 0-14 were alive one year and 78.9% were alive five years from a cancer (ex NMSC) diagnosis in 2006-2015. (observed survival)

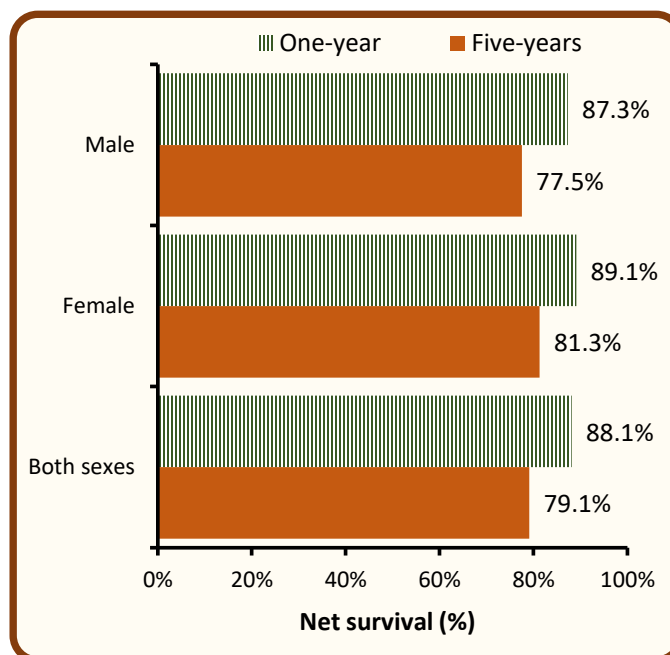
Net survival, which removes the effect of deaths from causes unrelated to cancer, was 88.1% one year and 79.1% five years from a cancer (ex NMSC) diagnosis among those aged 0-14 in 2006-2015.

Five-year net survival for patients aged 0-14 and diagnosed in 2006-2015 was 77.5% among boys and 81.3% among girls.

Gender	Observed survival		Net survival	
	One-year	Five-years	One-year	Five-years
Male	87.2%	77.3%	87.3%	77.5%
Female	89.1%	81.2%	89.1%	81.3%
Both sexes	88.0%	78.9%	88.1%	79.1%

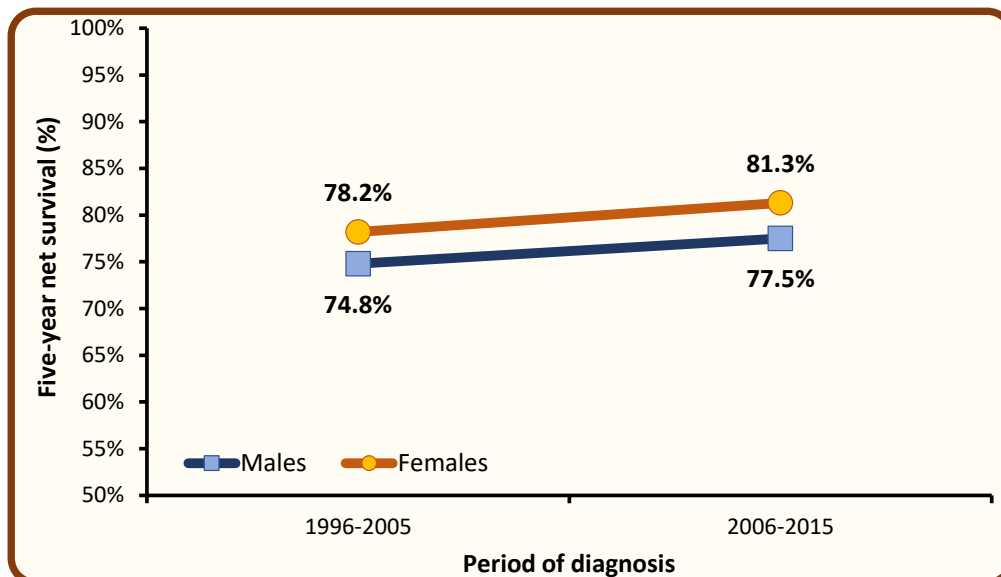
Observed survival is the proportion of patients still alive one/five years after diagnosis. However, in this measure patients may have died from causes unrelated to their cancer.

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.



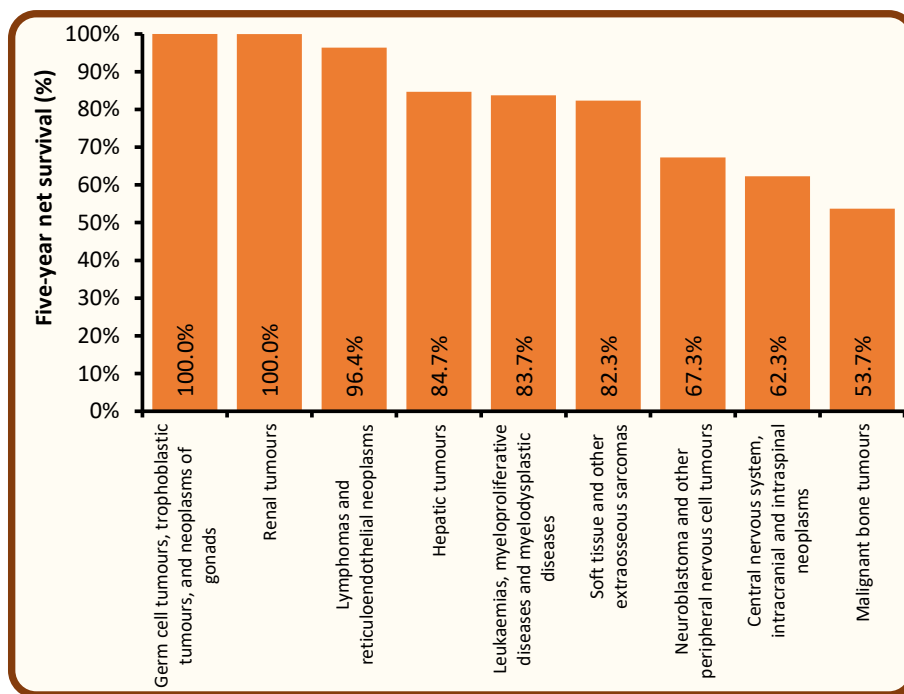
## Trends in survival - Cancer among children, Patients diagnosed in 1996-2015

- Among boys aged 0-14 five-year net survival from cancer (ex NMSC) increased from 74.8% in 1996-2005 to 77.5% in 2006-2015. This difference was not statistically significant.
- Among girls aged 0-14 five-year net survival from cancer (ex NMSC) increased from 78.2% in 1996-2005 to 81.3% in 2006-2015. This difference was not statistically significant.



## Survival by cancer type - Cancer among children, Patients diagnosed in 2006-2015

- Five-year net survival for patients diagnosed in 2006-2015 ranged from 100.0% for germ cell tumours, trophoblastic tumours, and neoplasms of gonads to 53.7% for malignant bone tumours.
- In particular five-year net survival for the most common cancer types was 83.7% for leukaemias, myeloproliferative diseases and myelodysplastic diseases, 96.4% for lymphomas and reticuloendothelial neoplasms and 62.3% for central nervous system, intracranial and intraspinal neoplasms.



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

## Prevalence

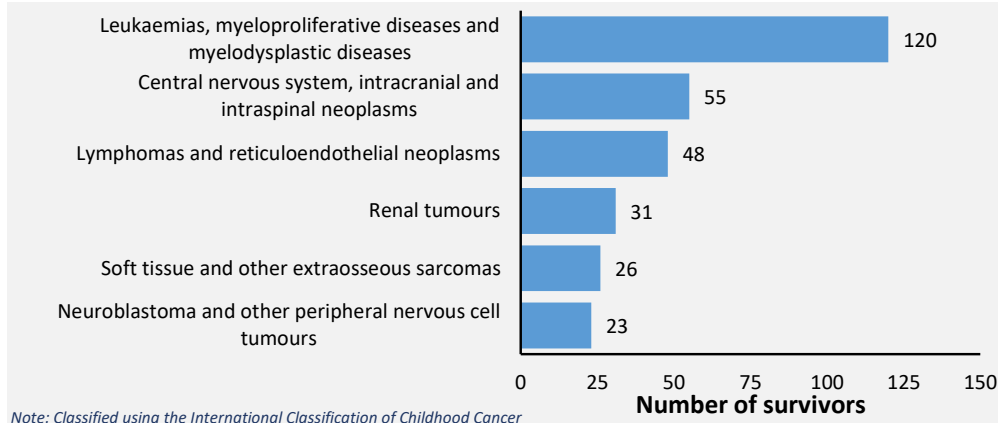
- At the end of 2020, there were 348 children (Males: 201; Females: 147) living with cancer (ex NMSC) who had previously been diagnosed with the disease.
- While complete prevalence figures are quoted for cancer patients who were still children at the end of 2020, there are additional cancer survivors who were diagnosed with cancer as children, but are now adults.
- In total there were, 399 cancer (ex NMSC) patients diagnosed at ages 0-14 during 2011-2020 who were still alive at the end of 2020 (and aged up to 24), while there were 879 cancer patients (ex NMSC) diagnosed at ages 0-14 during 1996-2020 who were still alive (and aged up to 39) at the end of 2020.

Prevalence type	Male	Female	Both sexes
10-year prevalence	172	126	298
Complete prevalence	201	147	348

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. 2010-2020).

## Complete prevalence by cancer type - Cancer among children, Patients alive at end of 2020

The most prevalent cancer types among cancer survivors aged 0-14 at the end of 2020 (ex NMSC), were leukaemias, myeloproliferative diseases and myelodysplastic diseases (120 survivors) and central nervous system, intracranial and intraspinal neoplasms (55 survivors).



## Trends in 10-year prevalence - Cancer among children, Patients alive at end of each year from 2011-2020

▪ The number of survivors from cancer (ex NMSC) aged 0-14 who had been diagnosed within the previous ten years increased by 6.4% from 280 survivors in 2010 to 298 survivors in 2020.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Both sexes	286	289	283	286	292	282	297	297	303	298

## Mortality

During 2011-2020 there were 5 male and 3 female deaths among children from cancer (ex NMSC) each year.

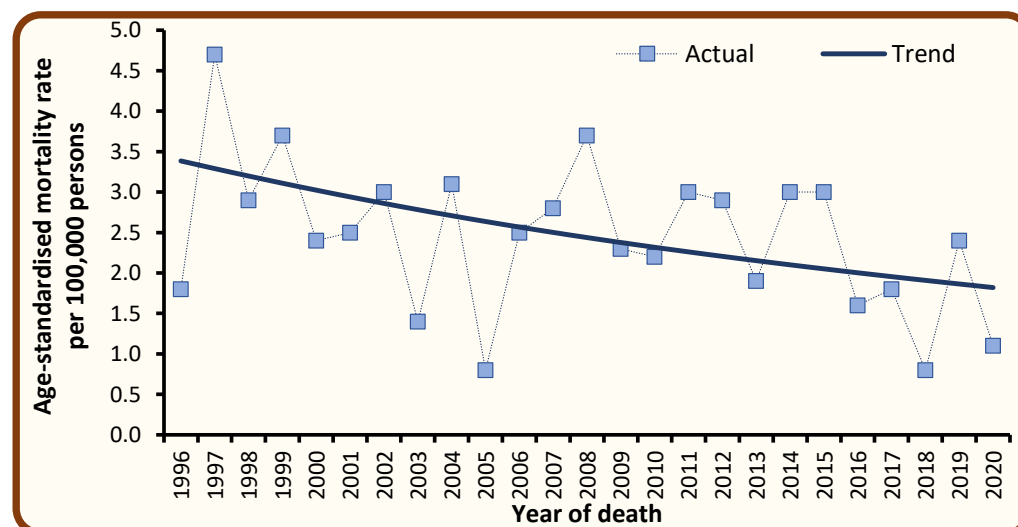
## Deaths by year of death - Cancer among children, Deaths in 2011-2020

▪ Among children aged 0-14 the number of deaths from cancer (ex NMSC) decreased by 11.1% from an annual average of 9 deaths in 2001-2010 to 8 deaths in 2011-2020.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Both sexes	11	10	7	11	11	6	7	3	9	4

## Trends in age-standardised mortality rates - Cancer among children, Deaths in 1996-2020

▪ Among children aged 0-14 the age-standardised mortality rates from cancer (ex NMSC) decreased by 12.5% between 2001-2010 and 2011-2020 from 2.4 to 2.1 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](http://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](http://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](http://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.