Non-invasive brain tumours

Patients diagnosed 1993-2019
(ICD10: D32-D33, D35.2-D35.4, D42-D43, D44.3-D44.5)

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 109 male and 153 female non-invasive brain tumours diagnosed each year.

▪ The risk of developing a non-invasive brain tumour before the age of 75 was 1 in 124.8 for men and 1 in 103.3 for women, while before the age of 85 the risk was 1 in 81.9 for men and 1 in 67.5 for women.

Incidence by age at diagnosis - *Non-invasive brain tumours, Cases in 2015-2019*

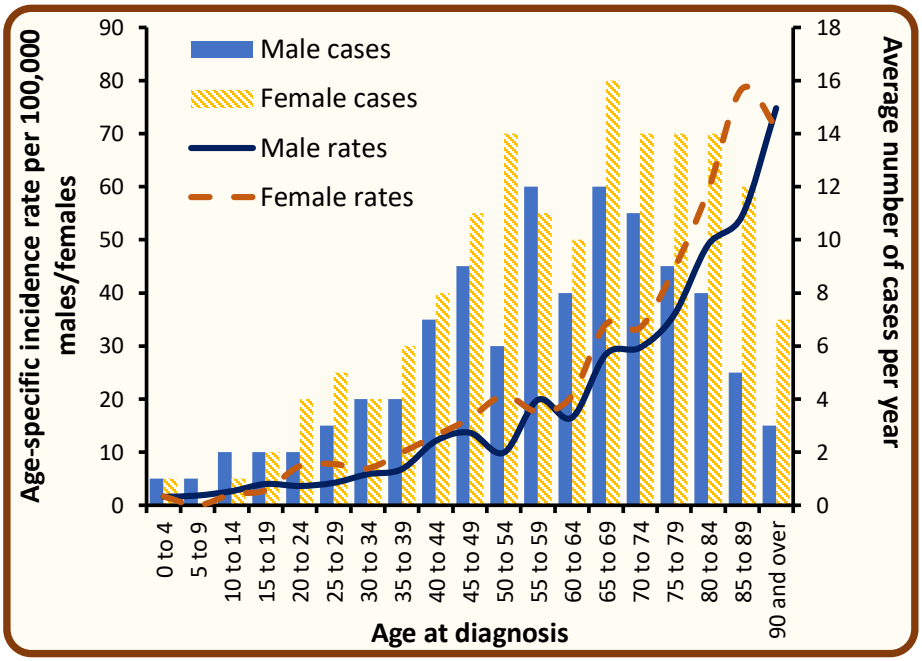
During 2015-2019:

▪ The median age at diagnosis was 61 for men and 64 for women.

▪ Cancer risk increased with age, with 22.9% of men and 30.7% of women aged 75 years or more at diagnosis.

▪ 28.6% of cases were diagnosed among those aged under 50.

Age at diagnosis	Average cases per year		
	Male	Female	Both sexes
0 - 49	35	42	75
50 - 64	26	35	61
65 - 74	23	30	53
75 +	25	47	71
All ages	109	153	262

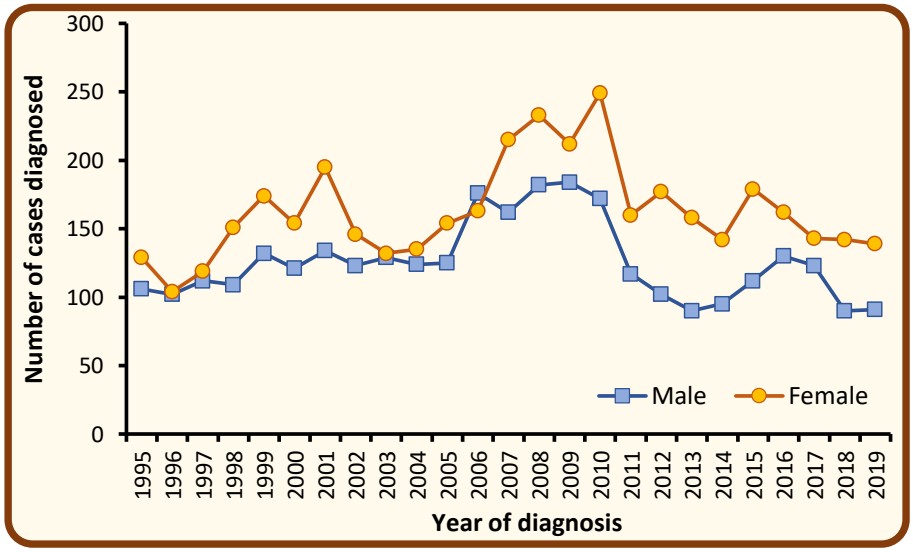


Incidence by year of diagnosis - *Non-invasive brain tumours, Cases in 1995-2019*

▪ Among males the number of non-invasive brain tumours decreased by 5.2% from an annual average of 115 cases in 2010-2014 to 109 cases in 2015-2019.

▪ Among females the number of cases of non-invasive brain tumours decreased by 13.6% from an annual average of 177 cases in 2010-2014 to 153 cases in 2015-2019.

Year of diagnosis	Male	Female	Both sexes
2010	172	249	421
2011	117	160	277
2012	102	177	279
2013	90	158	248
2014	95	142	237
2015	112	179	291
2016	130	162	292
2017	123	143	266
2018	90	142	232
2019	91	139	230

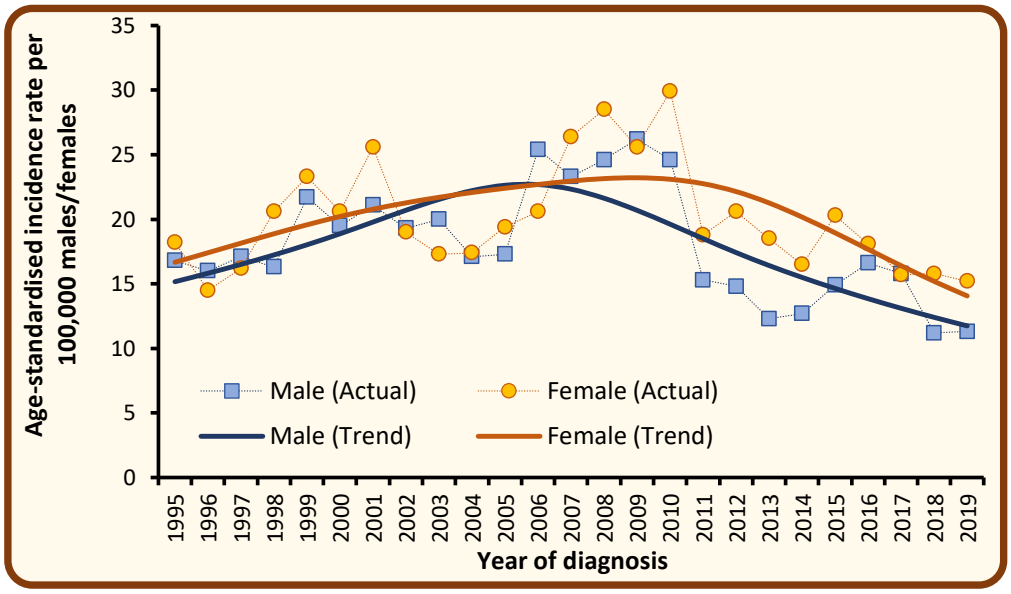


Note: Annual averages based upon several years have been rounded to the nearest integer. Sums of numbers in table rows or columns may thus differ slightly from the given total.

Trends in age-standardised incidence rates - *Non-invasive brain tumours, Cases in 1995-2019*

▪ Among males age-standardised incidence rates of non-invasive brain tumours decreased by 12.6% from 15.9 per 100,000 person years in 2010-2014 to 13.9 cases per 100,000 persons years in 2015-2019. This difference was not statistically significant.

▪ Among females age-standardised incidence rates of non-invasive brain tumours decreased by 18.3% from 20.8 per 100,000 person years in 2010-2014 to 17.0 cases per 100,000 persons years in 2015-2019. This difference was 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

Incidence by deprivation quintile - *Non-invasive brain tumours, 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 were 18.2% higher than the NI average.

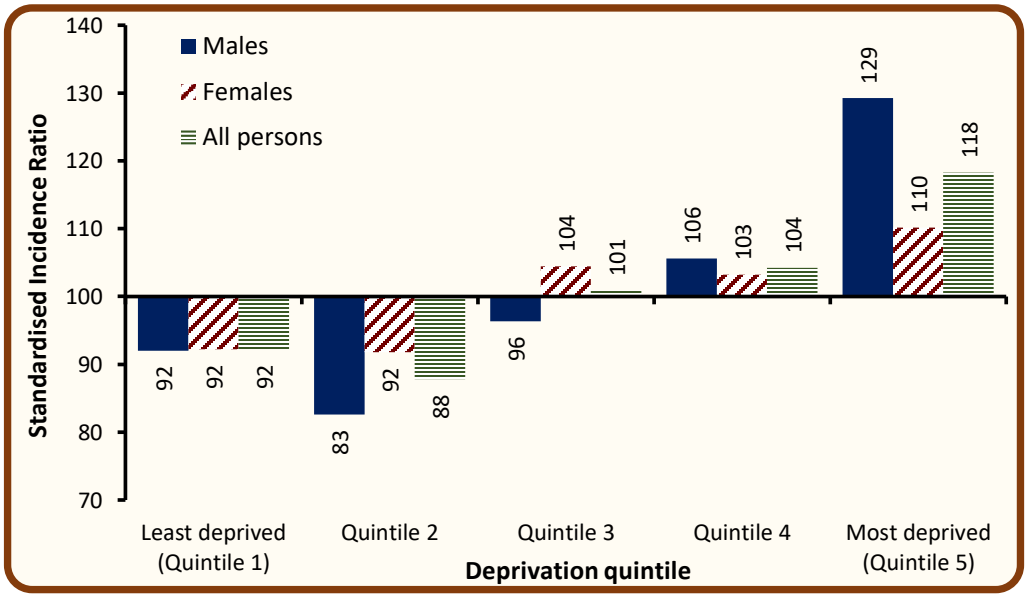
▪ in the least socio-economically deprived areas did not vary significantly from the NI average.

Deprivation quintile	Average cases per year		
	Male	Female	Both sexes
Least deprived (Quintile 1)	20	29	50
Quintile 2	19	29	49
Quintile 3	22	33	56
Quintile 4	23	32	55
Most deprived (Quintile 5)	24	29	53
Northern Ireland	109	153	262

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.



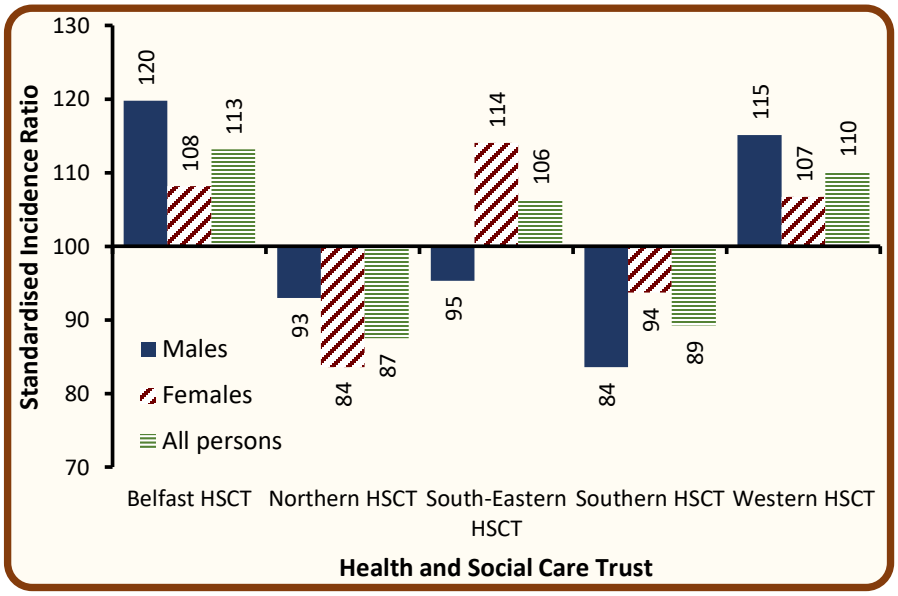
Incidence by Health and Social Care Trust (HSCT) - *Non-invasive brain tumours, Cases in 2015-2019*

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 were significantly higher than the NI average.
- in Northern HSCT were significantly lower than 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	24	32	56
Northern HSCT	27	33	60
South-Eastern HSCT	21	36	57
Southern HSCT	18	27	45
Western HSCT	20	25	45
Northern Ireland	109	153	262



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

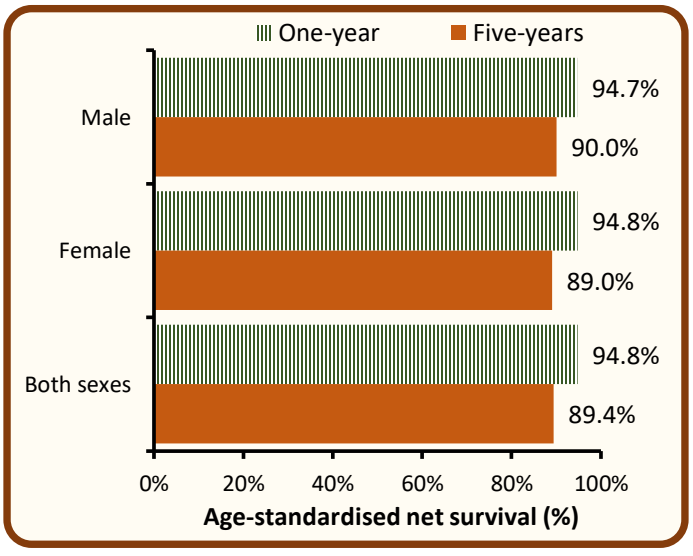
Survival

- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 94.8% one year and 89.4% five years from a non-invasive brain tumour diagnosis in 2010-2014.
- Five-year survival (ASNS) for patients diagnosed in 2010-2014 was 90.0% for men and 89.0% for women.

Gender	Observed survival		Age-standardised net survival	
	One-year	Five-years	One-year	Five-years
Male	91.8%	79.5%	94.7%	90.0%
Female	91.6%	77.9%	94.8%	89.0%
Both sexes	91.7%	78.5%	94.8%	89.4%

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.

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.

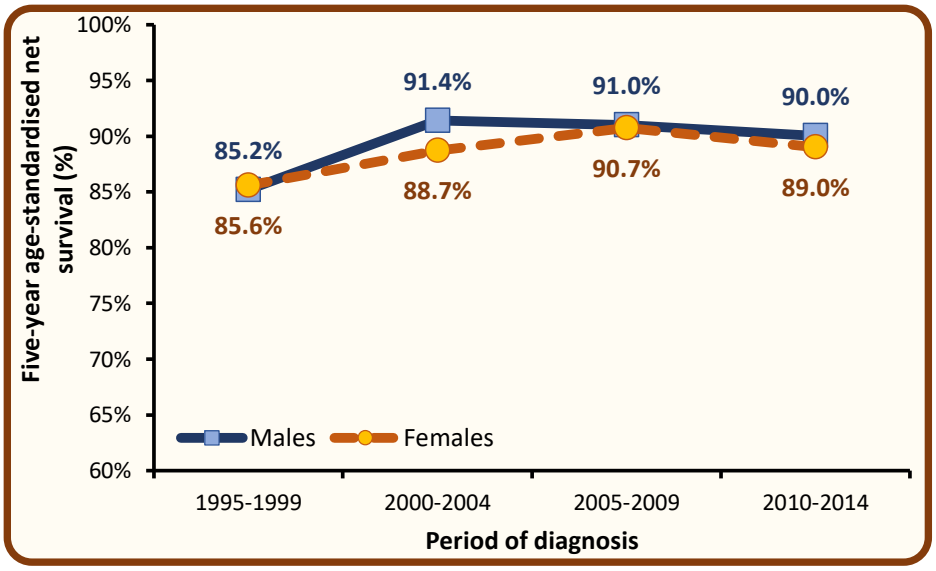


Trends in survival - *Non-invasive brain tumours, Patients diagnosed in 1995-2014*

▪ Among men five-year survival (ASNS) from non-invasive brain tumours decreased from 91.0% in 2005-2009 to 90.0% in 2010-2014. This difference was not statistically significant.

▪ Among women five-year survival (ASNS) from non-invasive brain tumours decreased from 90.7% in 2005-2009 to 89.0% in 2010-2014. This difference was not statistically significant.

ASNS: Age-standardised net survival

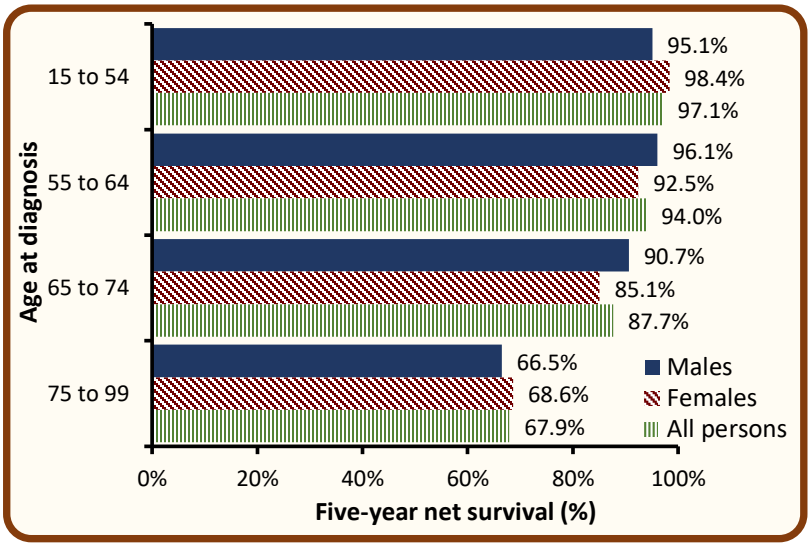


Survival by age at diagnosis - *Non-invasive brain tumours, Patients diagnosed in 2010-2014*

▪ Survival from non-invasive brain tumours among patients diagnosed in 2010-2014 was related to age with five-year survival decreasing as age increases.

▪ Five-year net survival ranged from 97.1% among patients aged 15-44 at diagnosis to 67.9% among those aged 75 and over.

▪ Five-year net survival among patients aged 75 and over was 66.5% for men and 68.6% for women.



Prevalence

▪ At the end of 2019, there were 4,934 people (Males: 2,136; Females: 2,798) living with a non-invasive brain tumour who had been diagnosed with the disease during 1995-2019.

▪ Of these, 43.3% were male, 23.8% were aged 75 and over, and 4.3% 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	63	99	162	21	30	51	84	129	213
1-5 years	293	370	663	85	130	215	378	500	878
5-10 years	311	472	783	107	149	256	418	621	1,039
10-25 years	960	1,193	2,153	296	355	651	1,256	1,548	2,804
0-25 years	1,627	2,134	3,761	509	664	1,173	2,136	2,798	4,934

Trends in 10-year prevalence - *Non-invasive brain tumours, Patients alive at end of each year from 2010-2019*

▪ Among males the number of survivors from non-invasive brain tumours who had been diagnosed within the previous ten years decreased by 23.1% from 1,145 survivors in 2014 to 880 survivors in 2019.

▪ Among females the number of survivors from non-invasive brain tumours who had been diagnosed within the previous ten years decreased by 19.3% from 1,548 survivors in 2014 to 1,250 survivors in 2019.

Year	10-year prevalence		
	Male	Female	Both sexes
2010	1,285	1,579	2,864
2011	1,265	1,532	2,797
2012	1,234	1,548	2,782
2013	1,196	1,560	2,756
2014	1,145	1,548	2,693
2015	1,119	1,535	2,654
2016	1,087	1,514	2,601
2017	1,044	1,432	2,476
2018	960	1,343	2,303
2019	880	1,250	2,130

Mortality

▪ During 2015-2019 there were 11 male and 14 female deaths from non-invasive brain tumours each year.

▪ The median age at death during 2015-2019 was 74 for men and 81 for women.

Deaths by year of death - *Non-invasive brain tumours, Deaths in 2010-2019*

▪ The number of deaths from non-invasive brain tumours decreased by 3.8% from an annual average of 26 deaths in 2010-2014 to 25 deaths in 2015-2019.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
All persons	29	33	23	22	23	31	18	32	22	20

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. brain tumour 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 last 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.