

Thyroid cancer

Patients diagnosed 1993-2019
(ICD10: C73)

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 2015-2019:

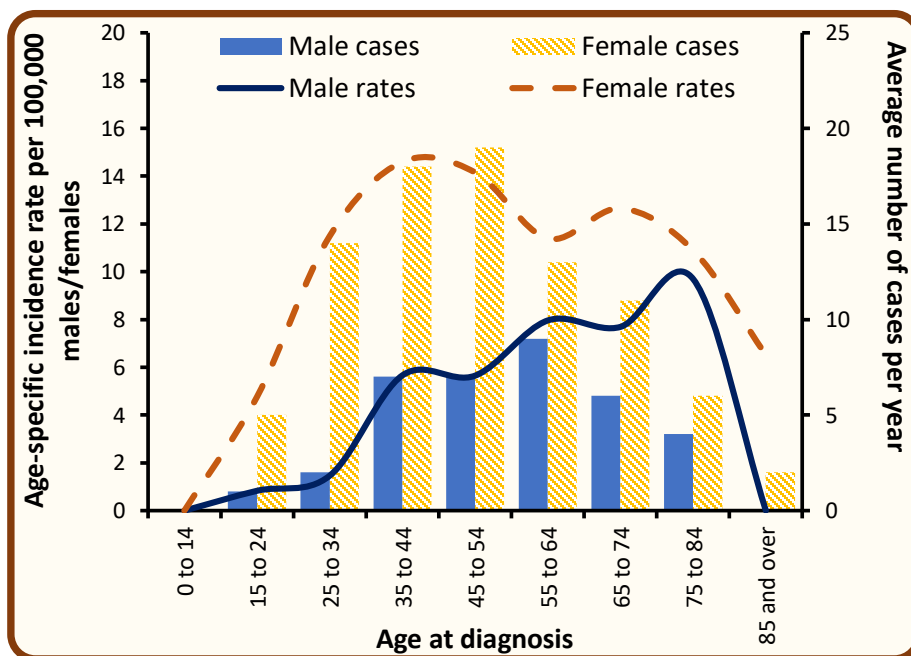
- There were 36 male and 88 female cases of thyroid cancer diagnosed each year.
- Thyroid cancer made up 0.7% of all male, and 1.8% of all female cancers (ex NMSC).
- The risk of developing thyroid cancer before the age of 75 was 1 in 338.8 for men and 1 in 144.9 for women, while before the age of 85 the risk was 1 in 254.3 for men and 1 in 124.8 for women.

Incidence by age at diagnosis - Thyroid cancer, Cases in 2015-2019

During 2015-2019:

- The median age at diagnosis was 55 for men and 47 for women.
- Cancer risk increased with age, with 52.8% of men and 36.4% of women aged 55 years or more at diagnosis.
- 17.7% of cases were diagnosed among those aged under 35.

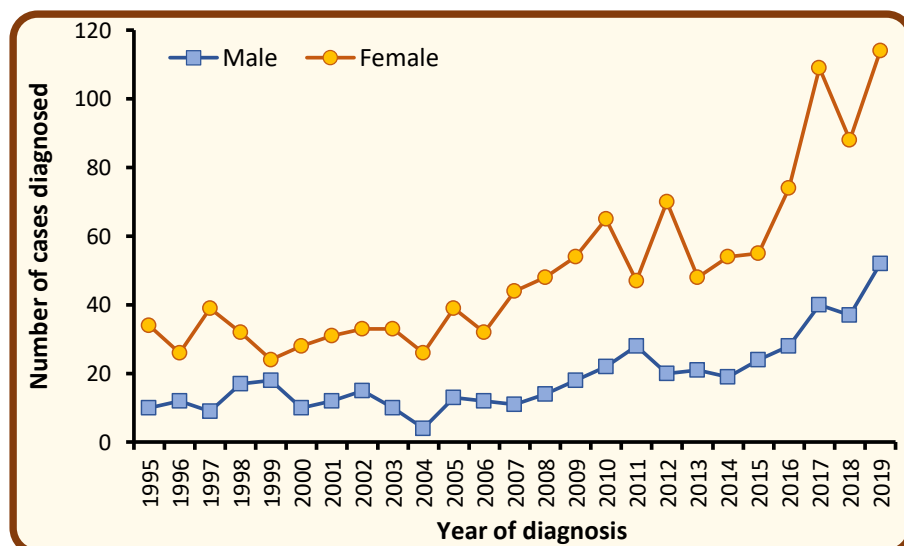
Age at diagnosis	Average cases per year		
	Male	Female	Both sexes
0 - 34	3	19	22
35 - 44	7	18	25
45 - 54	7	19	26
55+	19	32	50
All ages	36	88	124



Incidence by year of diagnosis - Thyroid cancer, Cases in 1995-2019

- Among males the number of cases of thyroid cancer increased by 63.6% from an annual average of 22 cases in 2010-2014 to 36 cases in 2015-2019.
- Among females the number of cases of thyroid cancer increased by 54.4% from an annual average of 57 cases in 2010-2014 to 88 cases in 2015-2019.

Year of diagnosis	Male	Female	Both sexes
2010	22	65	87
2011	28	47	75
2012	20	70	90
2013	21	48	69
2014	19	54	73
2015	24	55	79
2016	28	74	102
2017	40	109	149
2018	37	88	125
2019	52	114	166

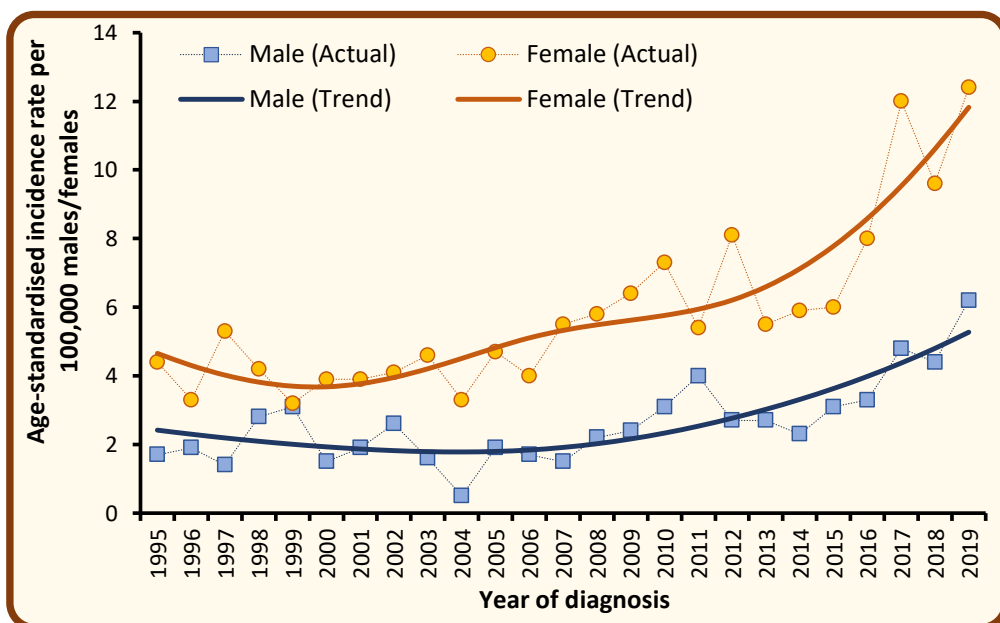


Note: Annual averages have been rounded to the nearest integer. Sums of numbers in table rows or columns may thus differ slightly from the given total.

NMSC: Non-melanoma skin cancer

Trends in age-standardised incidence rates - Thyroid cancer, Cases in 1995-2019

- Among males age-standardised incidence rates of thyroid cancer increased by 51.7% from 2.9 per 100,000 person years in 2010-2014 to 4.4 cases per 100,000 persons years in 2015-2019. This difference was statistically significant.
- Among females age-standardised incidence rates of thyroid cancer increased by 50.0% from 6.4 per 100,000 person years in 2010-2014 to 9.6 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 in 2019).

Incidence by deprivation quintile - Thyroid cancer, 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:

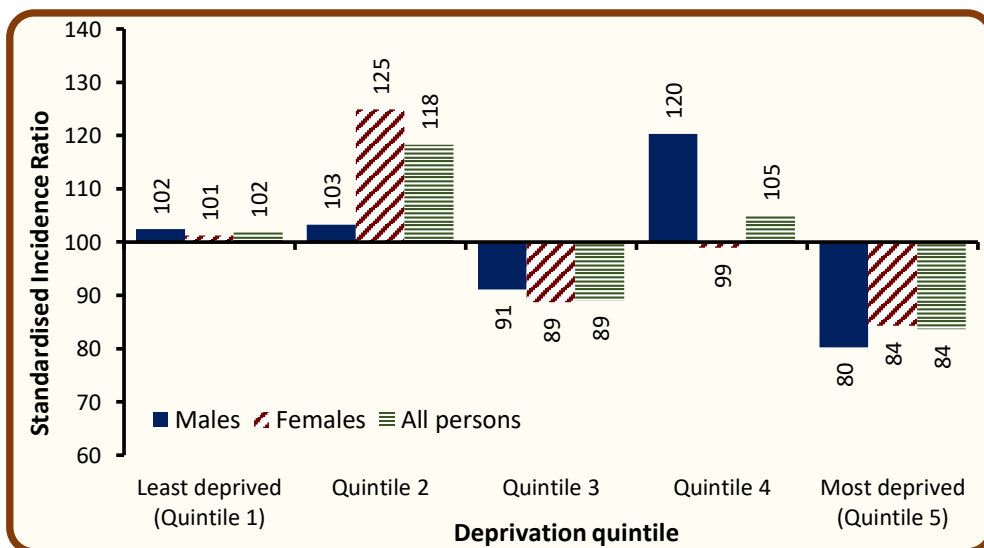
- in the most socio-economically deprived areas did not vary significantly from the NI average.
- in the least socio-economically deprived areas did not vary significantly from the NI average.

Deprivation quintile	Average cases per year		
	Male	Female	Both sexes
Least deprived (Quintile 1)	7	18	25
Quintile 2	8	23	31
Quintile 3	7	16	23
Quintile 4	9	18	26
Most deprived (Quintile 5)	5	14	19
Northern Ireland	36	88	124

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.



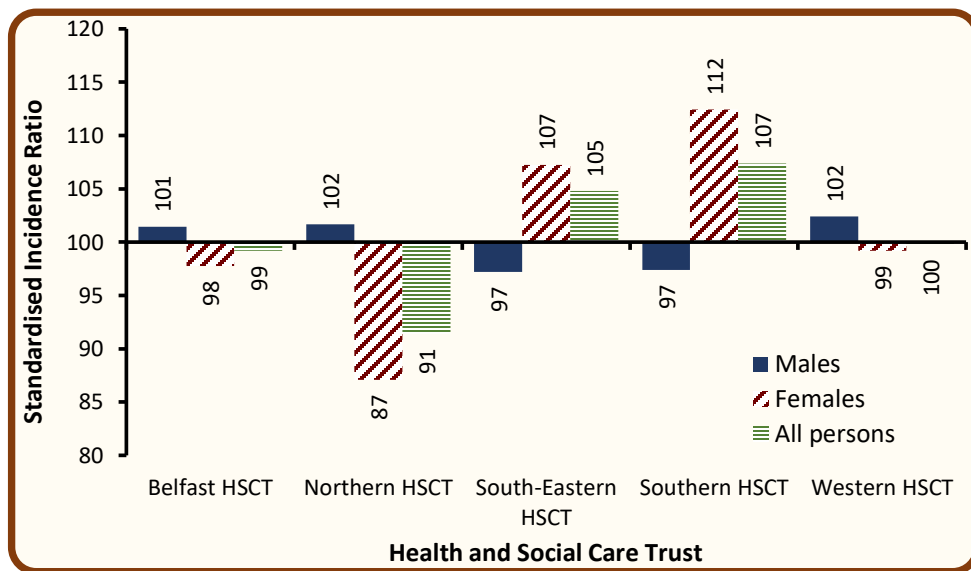
Incidence by Health and Social Care Trust (HSCT) - Thyroid cancer, Cases in 2015-2019

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	7	17	23
Northern HSCT	10	20	29
South-Eastern HSCT	7	19	26
Southern HSCT	7	19	26
Western HSCT	6	14	20
Northern Ireland	36	88	124



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.

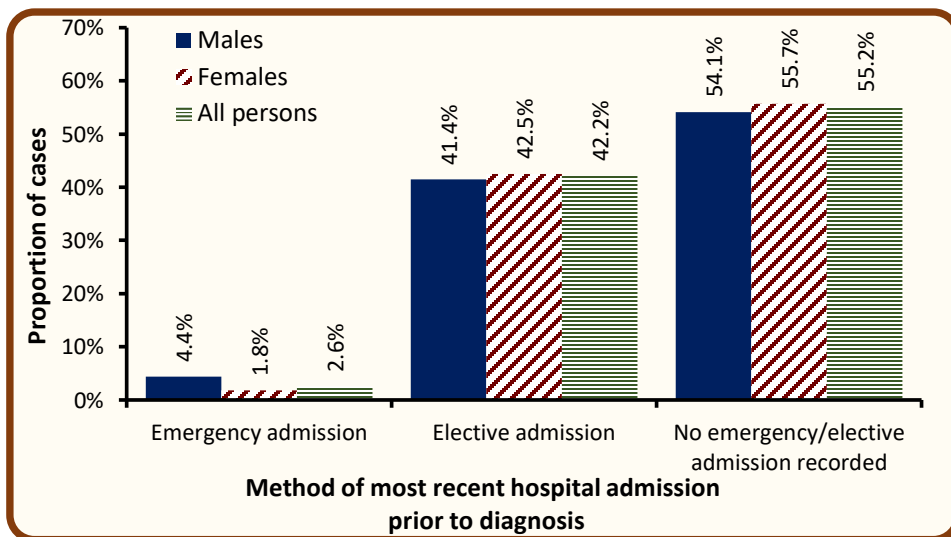
Data for Local Government Districts and Parliamentary Constituencies are available at www.qub.ac.uk/research-centres/nicr

Incidence by method of most recent admission to hospital - Thyroid cancer, Cases in 2015-2019

During 2015-2019:

- 2.6% of cases had an emergency admission to hospital recorded up to 30 days prior to their cancer diagnosis.
- 4.4% of male cases had an emergency admission up to 30 days prior to diagnosis, compared to 1.8% of female cases.
- In 55.2% of diagnosed cases there was no record of a hospital inpatient admission up to 30 days prior to the diagnosis.

Method of admission	Average cases per year		
	Male	Female	Both sexes
Emergency admission	2	2	3
Elective admission	15	37	52
No emergency/elective admission recorded	20	49	69
Total	36	88	124



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.

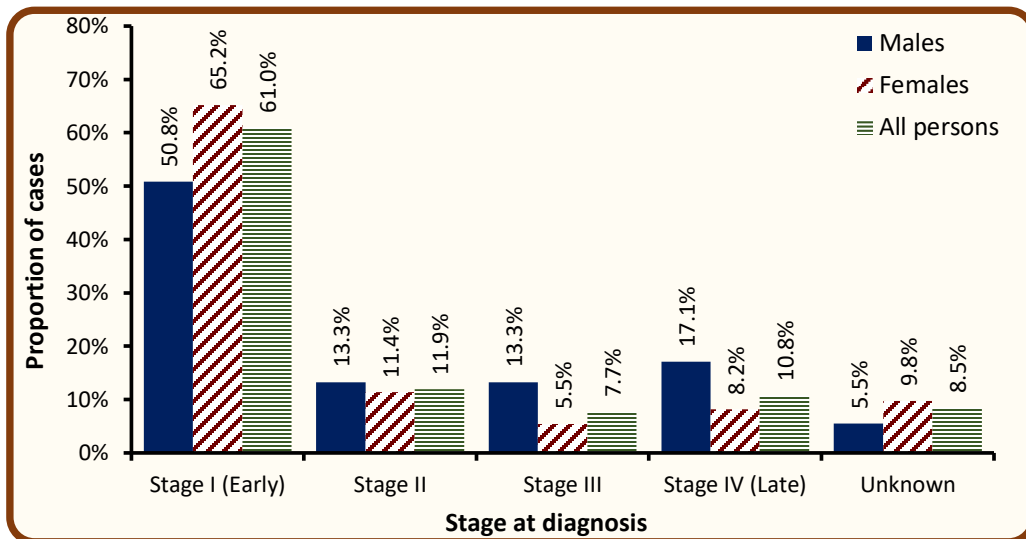
The majority of patients with no inpatient admission recorded prior to diagnosis are likely to have been diagnosed via an outpatient route.

Incidence by stage at diagnosis - Thyroid cancer, Cases in 2015-2019

During 2015-2019:

- 91.5% of cases diagnosed had a stage assigned.
- 61.0% of cases were diagnosed at stage I. (66.7% of staged cases)
- 10.8% of cases were diagnosed at stage IV. (11.8% of staged cases)
- Among cases which were staged, 18.1% of male cases were diagnosed at stage IV, compared to 9.1% of female cases.

Stage at diagnosis	Average cases per year		
	Male	Female	Both sexes
Stage I (Early)	18	57	76
Stage II	5	10	15
Stage III	5	5	10
Stage IV (Late)	6	7	13
Unknown	2	9	11
All stages	36	88	124



Cancer stage describes the size of a cancer and how far it has grown and spread. This information is used to help decide what treatments are needed. The classification used here to stage cancer is the TNM classification (Version 7 prior to 2018, Version 8 from 2018 onwards).

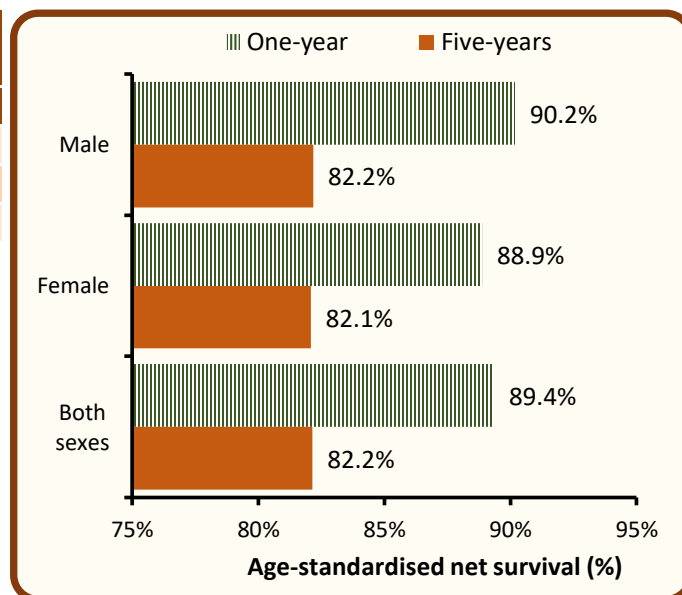
Survival

- 90.5% of patients were alive one year and 82.6% were alive five years from a thyroid cancer diagnosis in 2010-2014. (observed survival)
- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 89.4% one year and 82.2% five years from a thyroid cancer diagnosis in 2010-2014.
- Five-year survival (ASNS) for thyroid cancer patients diagnosed in 2010-2014 was 82.2% among men and 82.1% among women.

Gender	Observed survival		Age-standardised net survival	
	One-year	Five-years	One-year	Five-years
Male	88.8%	78.4%	90.2%	82.2%
Female	91.1%	84.3%	88.9%	82.1%
Both sexes	90.5%	82.6%	89.4%	82.2%

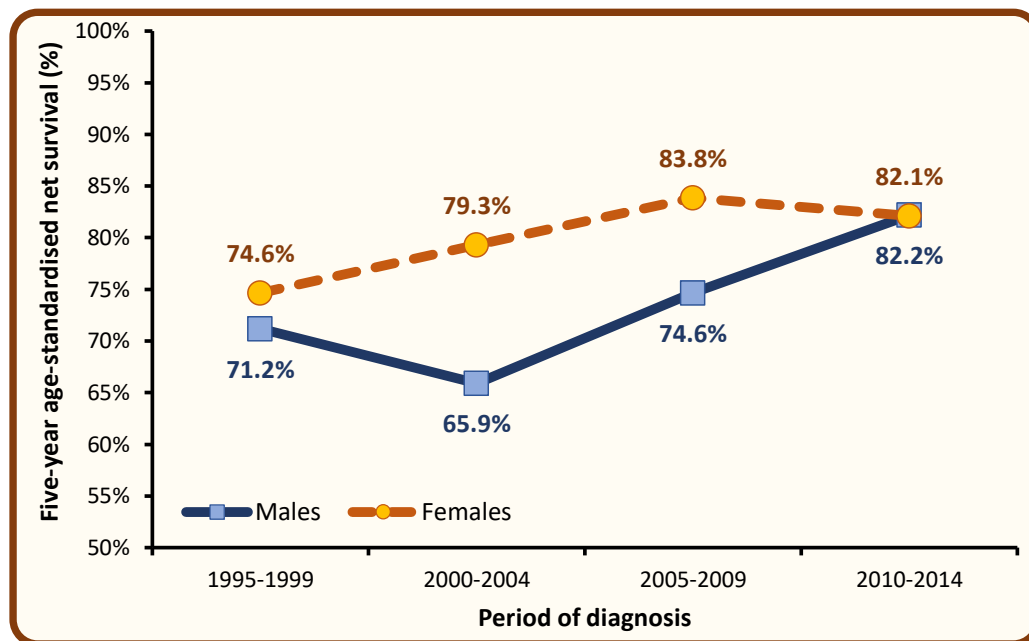
Observed survival is the proportion of patients still alive one/five years after diagnosis. However, in this measure patients may have died from causes unrelated to their cancer.

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.



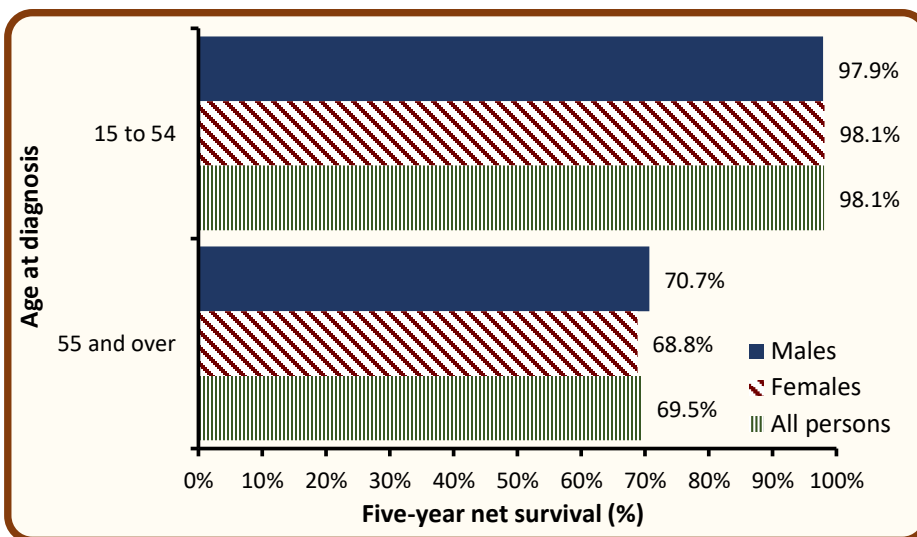
Trends in survival - Thyroid cancer, Patients diagnosed in 1995-2014

- Among men five-year survival (ASNS) from thyroid cancer increased from 74.6% in 2005-2009 to 82.2% in 2010-2014. This difference was not statistically significant.
- Among women five-year survival (ASNS) from thyroid cancer decreased from 83.8% in 2005-2009 to 82.1% in 2010-2014. This difference was not statistically significant.



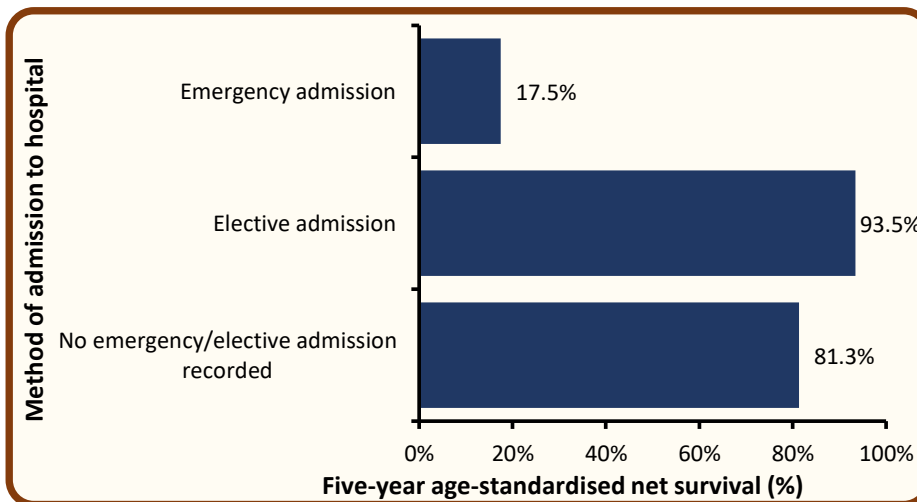
Survival by age at diagnosis - Thyroid cancer, Patients diagnosed in 2010-2014

- Survival from thyroid cancer among patients diagnosed in 2010-2014 was strongly related to patient age with five-year survival decreasing as age increases.
- Five-year net survival ranged from 98.1% among patients aged 15 to 54 at diagnosis to 69.5% among those aged 55 and over.
- Five-year net survival among patients aged 55 and over was 70.7% for men and 68.8% for women.



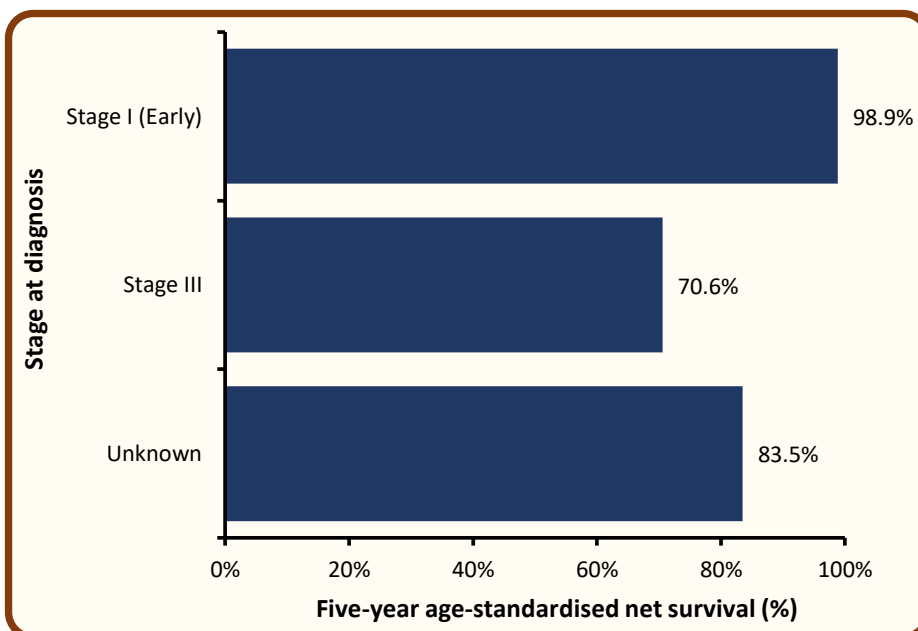
Survival by method of most recent admission to hospital - Thyroid cancer, Patients diagnosed in 2010-2014

- Five-year survival (ASNS) among thyroid cancer patients who had an emergency admission to hospital up to 30 days prior to their cancer diagnosis was 17.5% compared to 93.5% among those with elective admissions and 81.3% among those who had no hospital admissions recorded up to 30 days prior to diagnosis.



Survival by stage at diagnosis - Thyroid cancer, Patients diagnosed in 2010-2014

- Stage at diagnosis is one of the most important factors in thyroid cancer survival with five-year survival decreasing as stage increases.
- Five-year survival (ASNS) ranged from 98.9% for early stage (stage I/II) disease to 70.6% for late stage (stage III/IV) disease.
- Five-year survival for unstaged cancer was 83.5%.



Prevalence

- At the end of 2019, there were 1,292 people (Males: 319; Females: 973) living with thyroid cancer who had been diagnosed with the disease during 1995-2019.
- Of these, 24.7% were male, 49.8% were aged 55 and over, and 12.2% 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 0-54			Aged 55+			All ages		
	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes
0-1 year	20	73	93	29	35	64	49	108	157
1-5 years	53	184	237	56	116	172	109	300	409
5-10 years	29	138	167	44	88	132	73	226	299
10-25 years	28	123	151	60	216	276	88	339	427
0-25 years	130	518	648	189	455	644	319	973	1,292

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

- Among males the number of survivors from thyroid cancer who had been diagnosed within the previous ten years increased by 77.7% from 130 survivors in 2014 to 231 survivors in 2019.
- Among females the number of survivors from thyroid cancer who had been diagnosed within the previous ten years increased by 53.5% from 413 survivors in 2014 to 634 survivors in 2019.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Male	96	105	114	121	130	143	159	184	204	231
Female	335	343	380	392	413	431	468	541	578	634
Both sexes	431	448	494	513	543	574	627	725	782	865

Mortality

- During 2015-2019 there were 5 male and 5 female deaths from thyroid cancer each year.
- Thyroid cancer made up 0.2% of all male, and 0.3% of all female cancer deaths (ex NMSC).

Deaths by age at death - Thyroid cancer, Deaths in 2015-2019

- The median age at death during 2015-2019 was 79 for men and 82 for women.
- Risk of death from thyroid cancer was strongly related to age, with 70.0% of patients aged 75 years or more at time of death.

Age at death	Average deaths per year
	Both sexes
0 - 54	0
55 - 64	1
65 - 74	2
75 and over	7
All ages	10

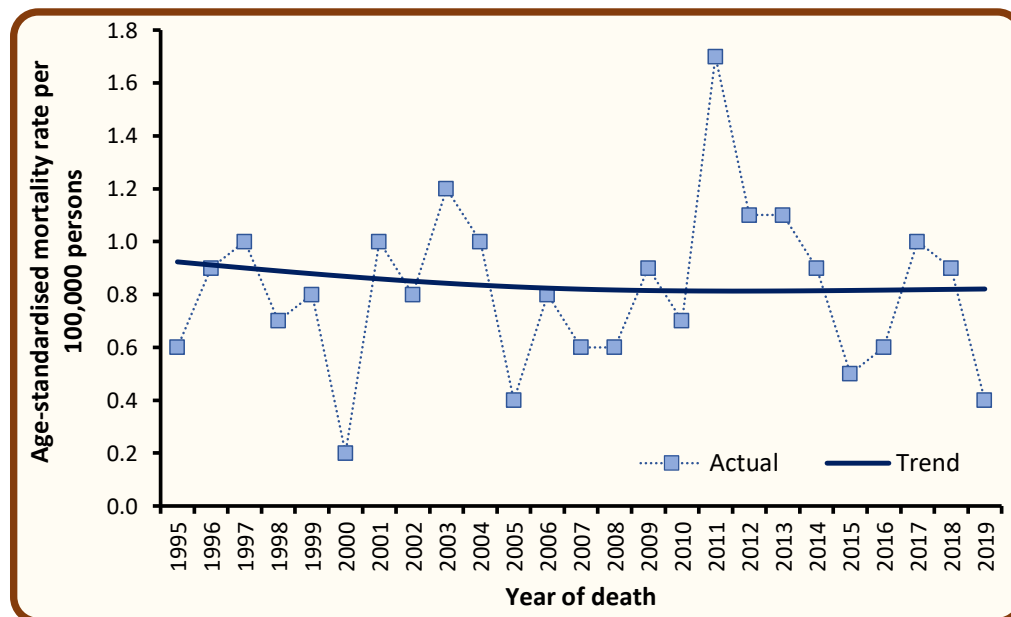
Deaths by year of death - Thyroid cancer, Deaths in 2010-2019

- The number of deaths from thyroid cancer decreased by 33.3% from an annual average of 15 deaths in 2010-2014 to 10 deaths in 2015-2019.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Both sexes	9	24	15	15	13	8	9	15	13	7

Trends in age-standardised mortality rates - Thyroid cancer, Deaths in 1995-2019

- Age-standardised mortality rates of thyroid cancer decreased by 36.4% from 1.1 per 100,000 person years in 2010-2014 to 0.7 deaths per 100,000 persons years in 2015-2019. This difference was 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 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.