

Kidney cancer

Patients diagnosed 1993-2020
(ICD10: C64)

Further information

Further data is available at: www.qub.ac.uk/research-centres/nicr

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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 2016-2020:

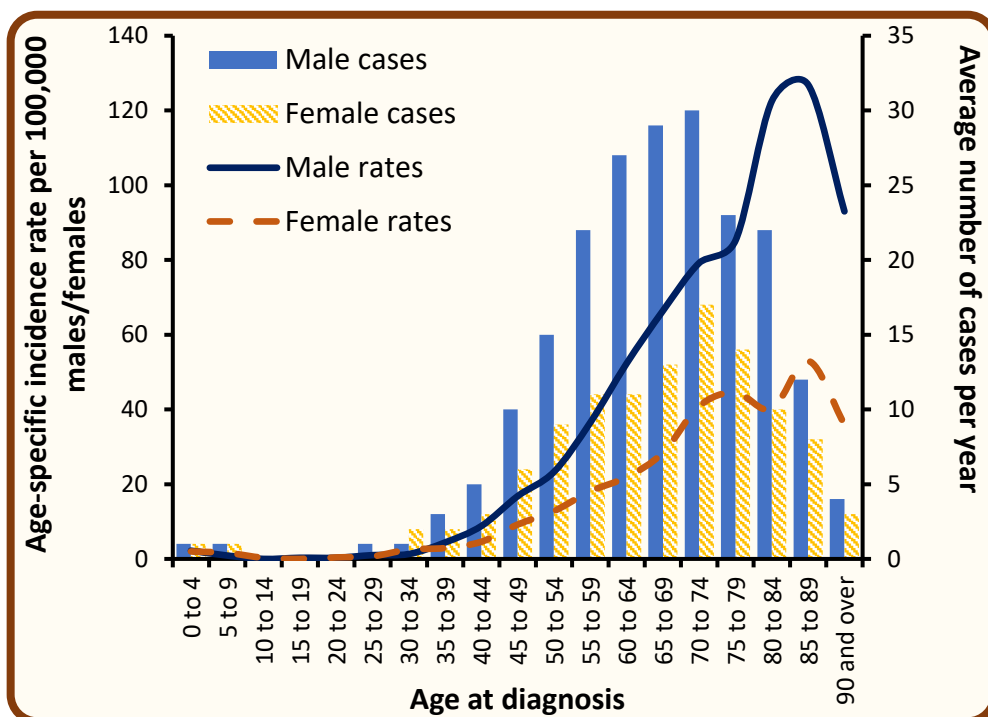
- There were 204 male and 112 female cases of kidney cancer diagnosed each year.
- The risk of developing kidney cancer before the age of 75 was 1 in 69 for men and 1 in 137 for women, while before the age of 85 the risk was 1 in 40 for men and 1 in 87 for women.

Incidence by age at diagnosis - Kidney cancer, Cases in 2016-2020

During 2016-2020:

- The median age at diagnosis was 67 for men and 69 for women.
- Cancer risk increased with age, with 29.9% of men and 31.3% of women aged 75 years or more at diagnosis.
- 18.9% of cases were diagnosed among those aged under 55.

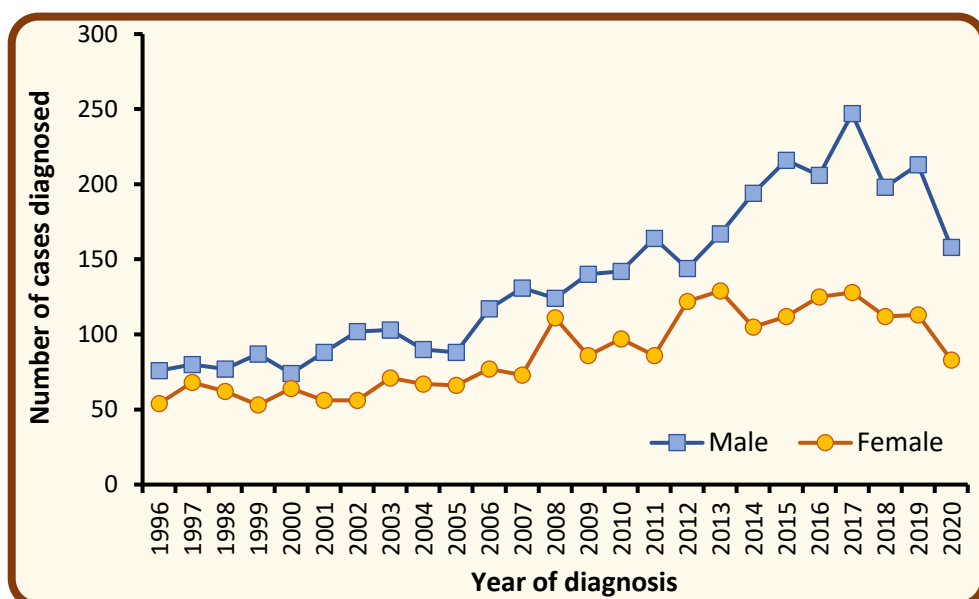
Age at diagnosis	Average cases per year		
	Male	Female	Both sexes
0 - 54	37	24	60
54 - 64	49	22	71
65 - 74	59	30	89
75 +	61	35	96
All ages	204	112	317



Incidence by year of diagnosis - Kidney cancer, Cases in 1996-2020

- Among males the number of cases of kidney cancer increased by 15.3% from an annual average of 177 cases in 2011-2015 to 204 cases in 2016-2020.
- Among females the number of cases of kidney cancer increased by 0.9% from an annual average of 111 cases in 2011-2015 to 112 cases in 2016-2020.

Year of diagnosis	Male	Female	Both sexes
2011	164	86	250
2012	144	122	266
2013	167	129	296
2014	194	105	299
2015	216	112	328
2016	206	125	331
2017	247	128	375
2018	198	112	310
2019	213	113	326
2020	158	83	241

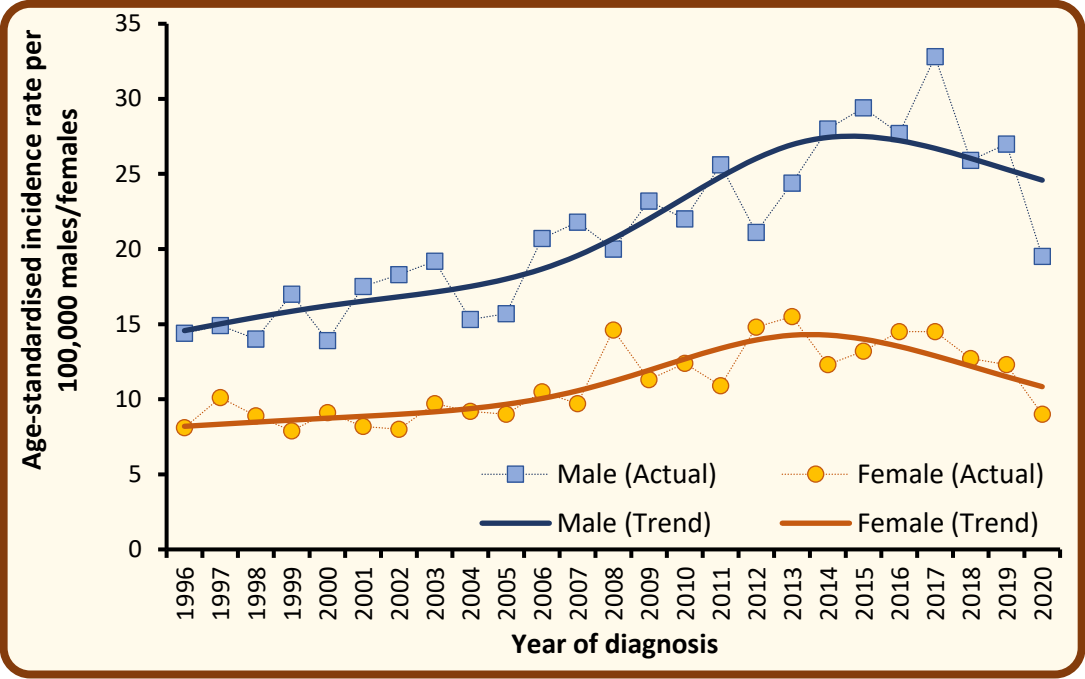


Note: Annual averages have been rounded to the nearest integer. Sums of numbers in table rows or columns may thus differ slightly from the given total.

NMSC: Non-melanoma skin cancer

Trends in age-standardised incidence rates - Kidney cancer, Cases in 1996-2020

- Among males age-standardised incidence rates of kidney cancer increased by 3.1% from 25.7 per 100,000 person years in 2011-2015 to 26.5 cases per 100,000 persons years in 2016-2020. This difference was not statistically significant.
- Among females age-standardised incidence rates of kidney cancer decreased by 6.0% from 13.3 per 100,000 person years in 2011-2015 to 12.5 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 - Kidney cancer, 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:

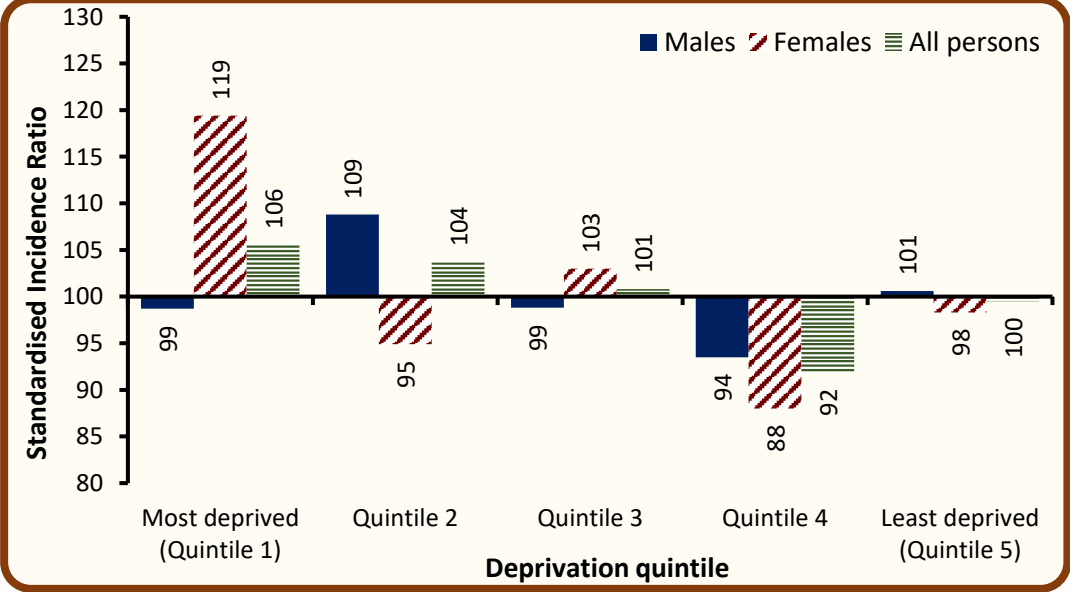
- in the least socio-economically deprived areas did not vary significantly from the NI average.
- in the most socio-economically deprived areas did not vary significantly from the NI average.

Deprivation quintile	Average cases per year		
	Male	Female	Both sexes
Most deprived (Quintile 1)	33	23	56
Quintile 2	44	21	66
Quintile 3	43	24	67
Quintile 4	41	21	62
Least deprived (Quintile 5)	43	23	66
Northern Ireland	204	112	317

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.



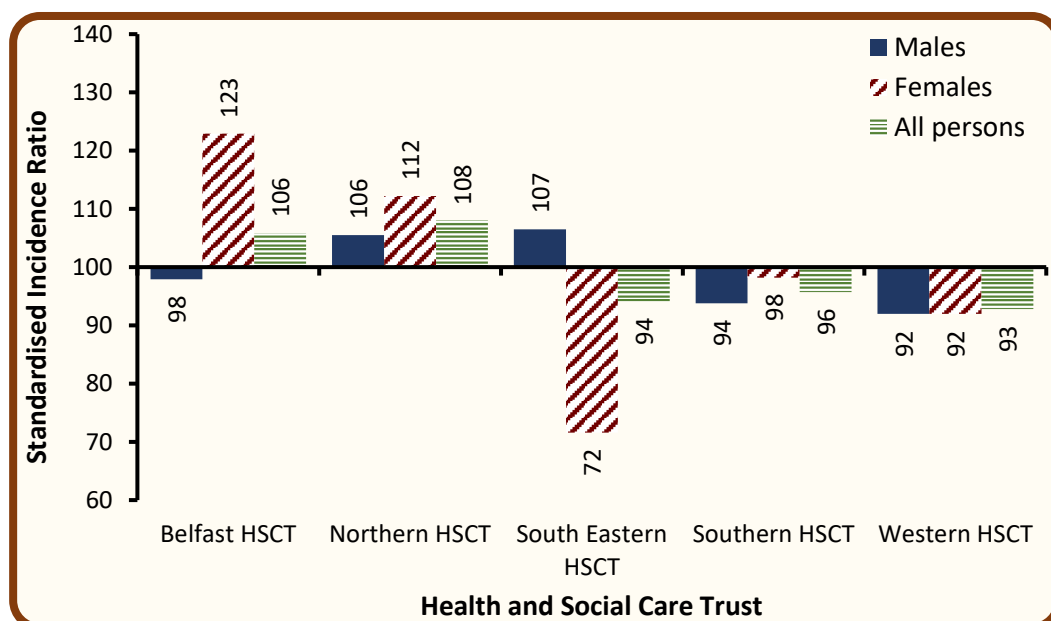
Incidence by Health and Social Care Trust (HSCT) - Kidney cancer, Cases in 2016-2020

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 did not vary significantly from the NI average.

Health and Social Care Trust	Average cases per year		
	Male	Female	Both sexes
Belfast HSCT	35	26	61
Northern HSCT	57	33	91
South Eastern HSCT	45	17	62
Southern HSCT	37	21	57
Western HSCT	30	16	46
Northern Ireland	204	112	317



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.

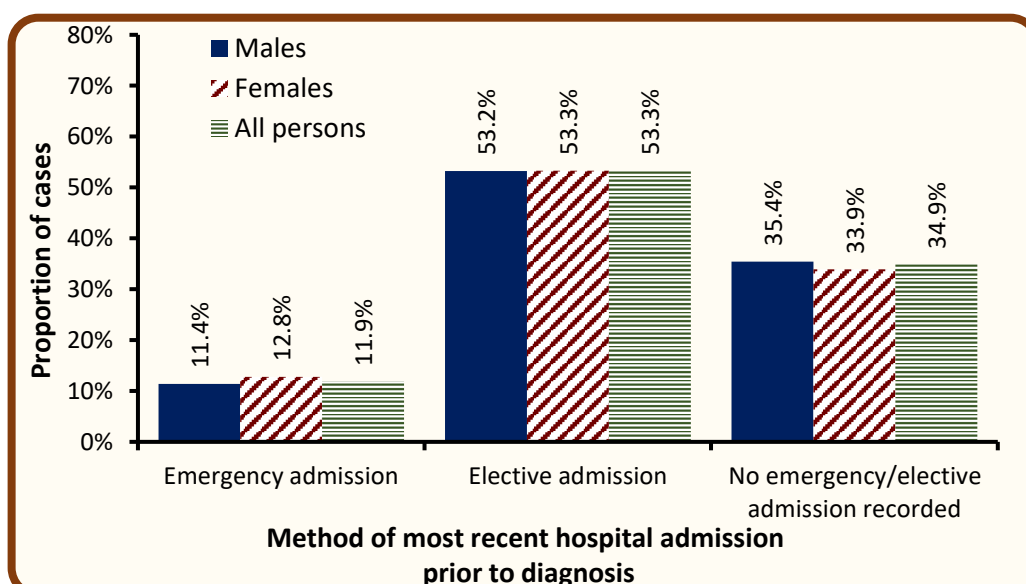
Data for Local Government Districts and Parliamentary Constituencies are available at www.qub.ac.uk/research-centres/nicr

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

During 2016-2020:

- 11.9% of cases had an emergency admission to hospital recorded up to 30 days prior to their cancer diagnosis.
- 11.4% of male cases had an emergency admission up to 30 days prior to diagnosis, compared to 12.8% of female cases.
- In 34.9% 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	23	14	38
Elective admission	109	60	169
No emergency/elective admission recorded	72	38	110
Total	204	112	317



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.

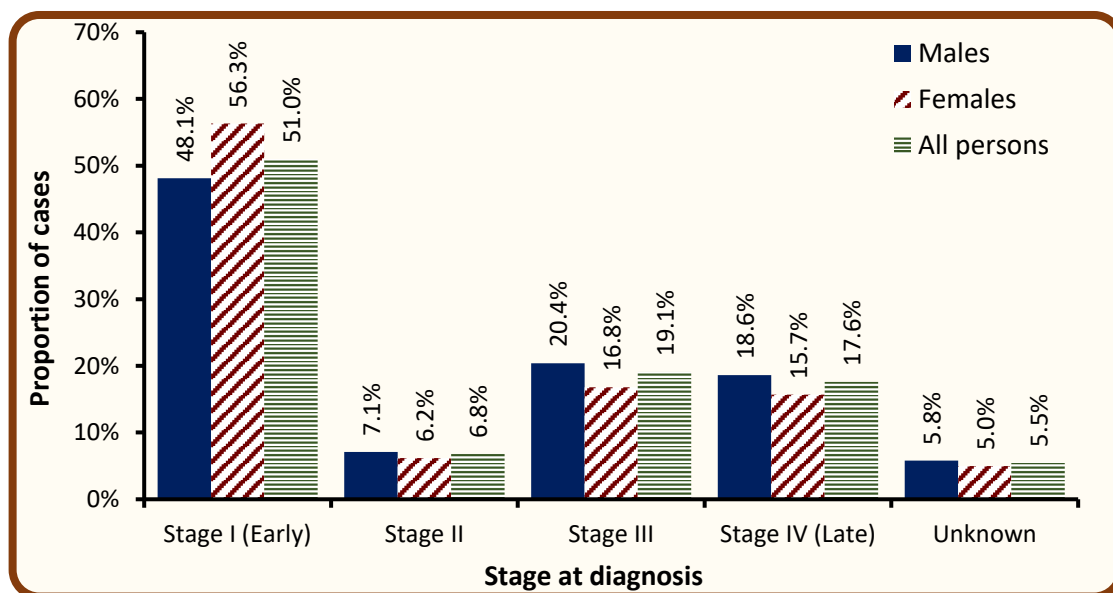
The majority of patients with no inpatient admission recorded prior to diagnosis are likely to have been diagnosed via an outpatient route.

Incidence by stage at diagnosis - Kidney cancer, Cases in 2016-2020

During 2016-2020:

- 94.5% of cases diagnosed had a stage assigned.
- 51.0% of cases were diagnosed at stage I. (54.0% of staged cases)
- 17.6% of cases were diagnosed at stage IV. (18.6% of staged cases)
- Among cases which were staged, 19.7% of male cases were diagnosed at stage IV, compared to 16.5% of female cases.

Stage at diagnosis	Average cases per year		
	Male	Female	Both sexes
Stage I (Early)	98	63	162
Stage II	15	7	22
Stage III	42	19	60
Stage IV (Late)	38	18	56
Unknown	12	6	17
All stages	204	112	317



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).

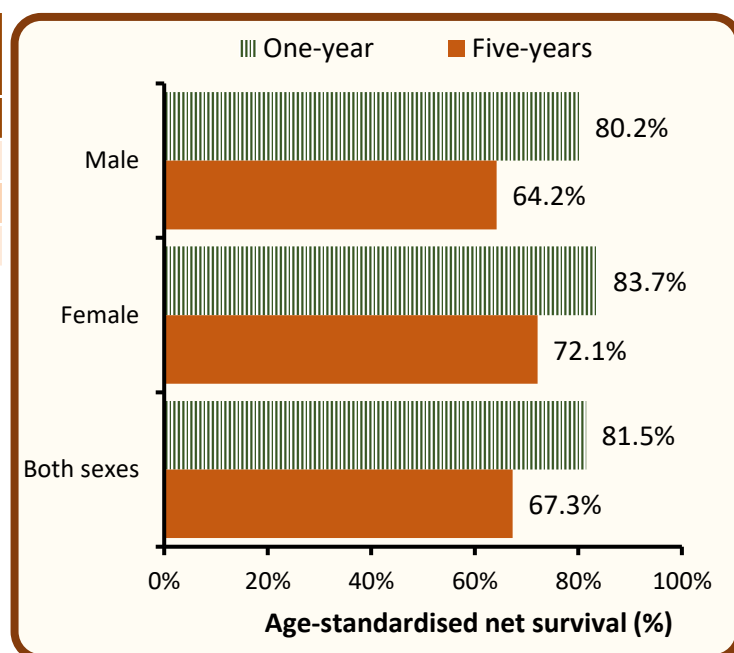
Survival

- 78.9% of patients were alive one year and 58.2% were alive five years from a kidney cancer diagnosis in 2011-2015. (observed survival)
- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 81.5% one year and 67.3% five years from a kidney cancer diagnosis in 2011-2015.
- Five-year survival (ASNS) for kidney cancer patients diagnosed in 2011-2015 was 64.2% among men and 72.1% among women.

Gender	Observed survival		Age-standardised net survival	
	One-year	Five-years	One-year	Five-years
Male	77.9%	55.7%	80.2%	64.2%
Female	80.6%	62.2%	83.7%	72.1%
Both sexes	78.9%	58.2%	81.5%	67.3%

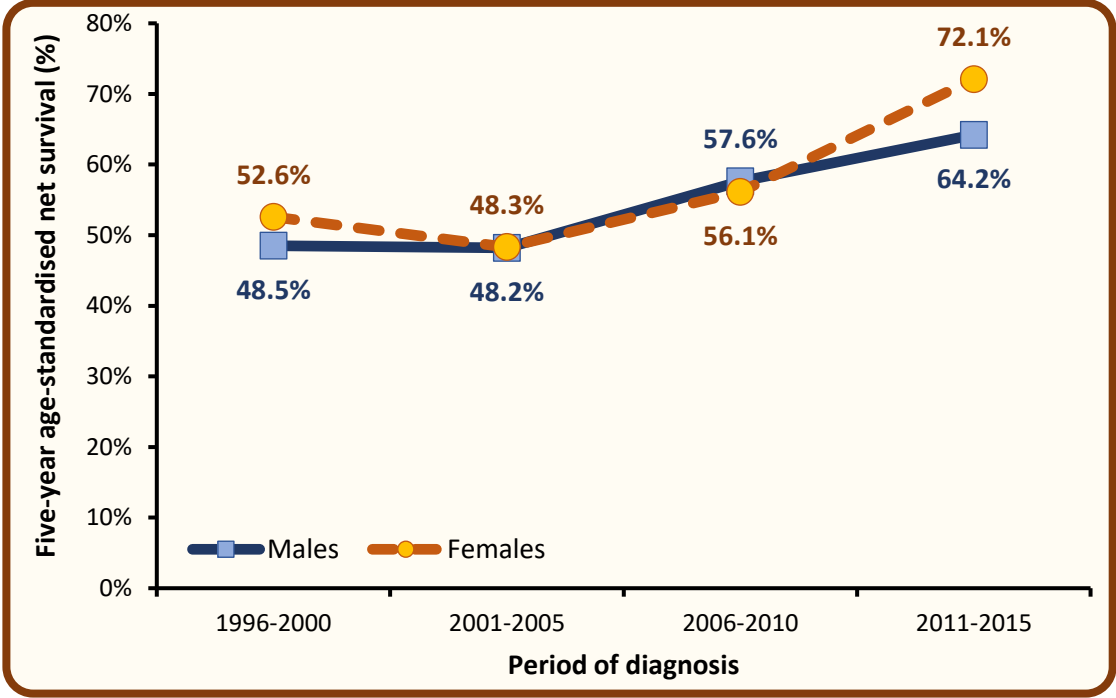
Observed survival is the proportion of patients still alive one/five years after diagnosis. However, in this measure patients may have died from causes unrelated to their cancer.

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.



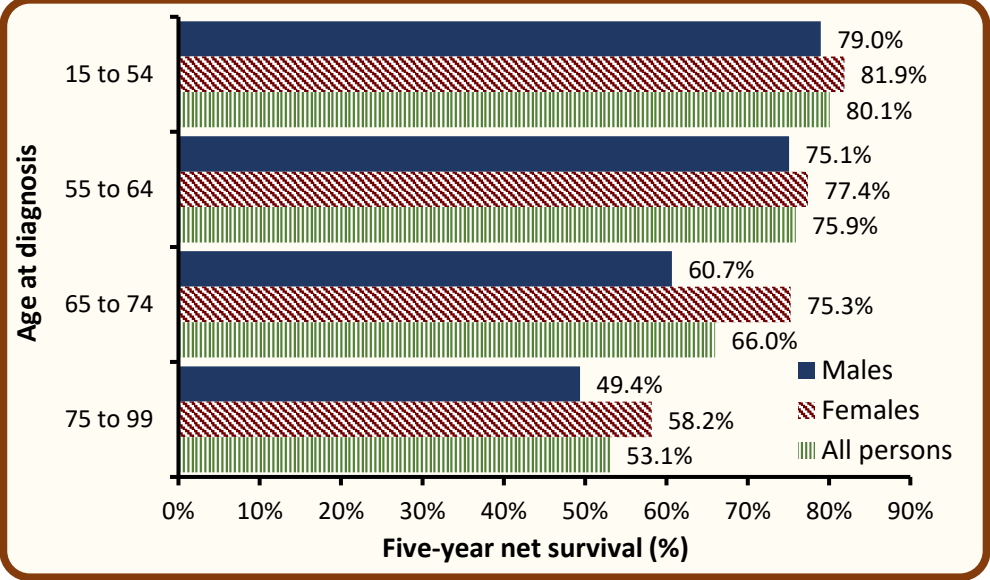
Trends in survival - Kidney cancer, Patients diagnosed in 1996-2015

- Among men five-year survival (ASNS) from kidney cancer increased from 57.6% in 2006-2010 to 64.2% in 2011-2015. This difference was not statistically significant.
- Among women five-year survival (ASNS) from kidney cancer increased from 56.1% in 2006-2010 to 72.1% in 2011-2015. This difference was statistically significant.



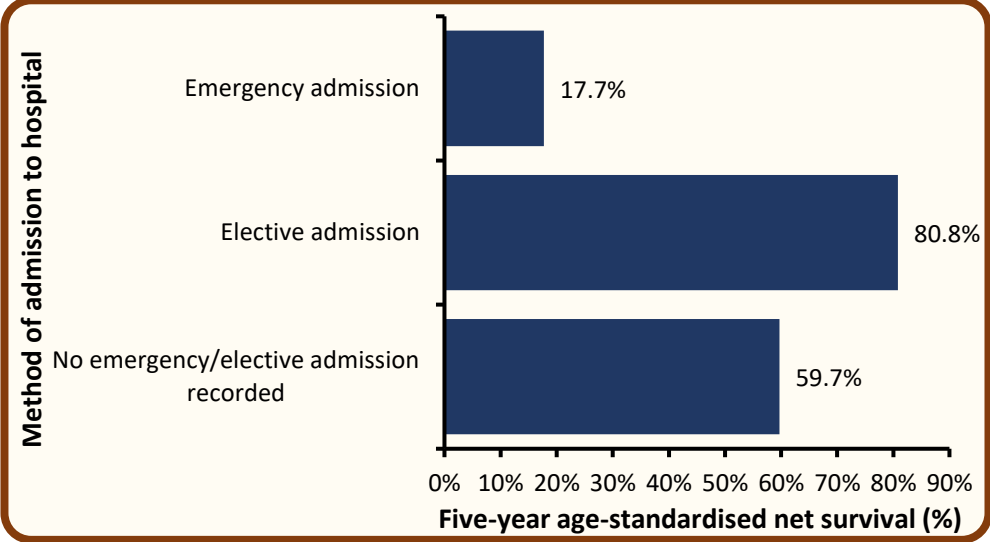
Survival by age at diagnosis - Kidney cancer, Patients diagnosed in 2011-2015

- Survival from kidney cancer 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 80.1% among patients aged 15 to 54 at diagnosis to 53.1% among those aged 75 and over.
- Five-year net survival among patients aged 75 and over was 49.4% for men and 58.2% for women.



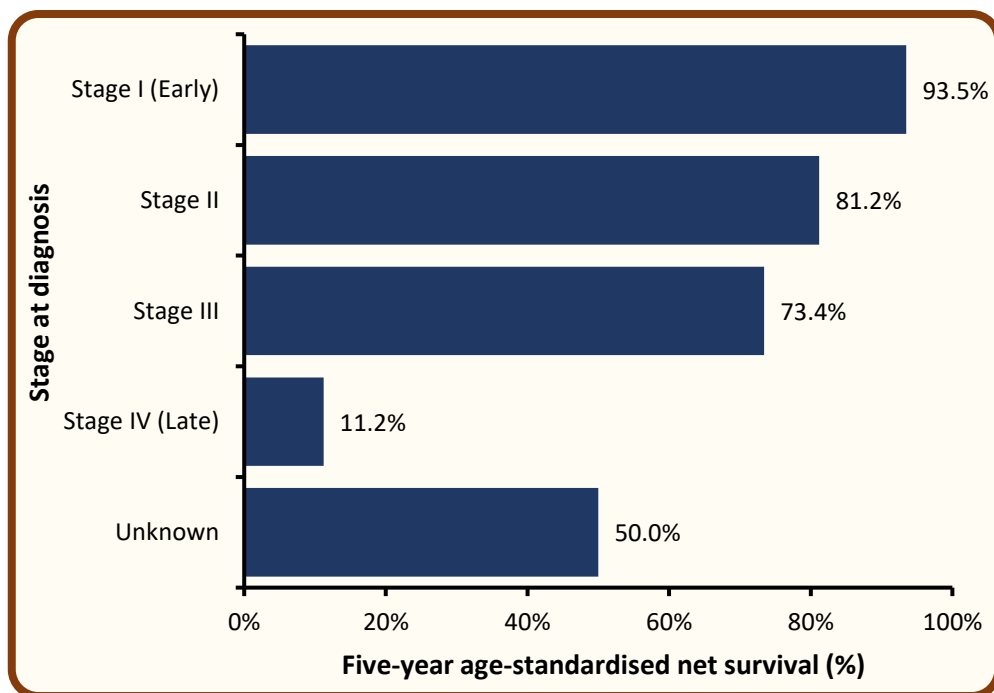
Survival by method of most recent admission to hospital - Kidney cancer, Patients diagnosed in 2011-2015

- Five-year survival (ASNS) among kidney cancer patients who had an emergency admission to hospital up to 30 days prior to their cancer diagnosis was 17.7% compared to 80.8% among those with elective admissions and 59.7% among those who had no hospital admissions recorded up to 30 days prior to diagnosis.



Survival by stage at diagnosis - Kidney cancer, Patients diagnosed in 2011-2015

- Stage at diagnosis is one of the most important factors in kidney cancer survival with five-year survival decreasing as stage increases.
- Five-year survival (ASNS) ranged from 93.5% for early stage (stage I) disease to 11.2% for late stage (stage IV) disease.
- Five-year survival (ASNS) for unstaged cancer was 50.0%.



Prevalence

- At the end of 2020, there were 2,419 people (Males: 1,446; Females: 973) living with kidney cancer who had been diagnosed with the disease during 1996-2020.
- Of these, 59.8% were male, 34.6% were aged 75 and over, and 8.3% had been diagnosed in the previous year.

25-year prevalence refers to the number of cancer survivors who were alive at the end of 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	98	51	149	29	22	51	127	73	200
1-5 years	411	229	640	160	115	275	571	344	915
5-10 years	289	190	479	127	110	237	416	300	716
10-25 years	189	126	315	143	130	273	332	256	588
0-25 years	987	596	1,583	459	377	836	1,446	973	2,419

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

- Among males the number of survivors from kidney cancer who had been diagnosed within the previous ten years increased by 27.2% from 876 survivors in 2015 to 1,114 survivors in 2020.
- Among females the number of survivors from kidney cancer who had been diagnosed within the previous ten years increased by 21.7% from 589 survivors in 2015 to 717 survivors in 2020.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Male	628	677	735	805	876	961	1,025	1,089	1,141	1,114
Female	404	459	511	544	589	629	686	707	726	717
Both sexes	1,032	1,136	1,246	1,349	1,465	1,590	1,711	1,796	1,867	1,831

Mortality

- During 2016-2020 there were 71 male and 38 female deaths from kidney cancer each year.
- Kidney cancer made up 3.0% of all male, and 1.8% of all female cancer deaths (ex NMSC).

Deaths by age at death - Kidney cancer, Deaths in 2016-2020

- The median age at death during 2016-2020 was 74 for men and 77 for women.
- Risk of death from kidney cancer was strongly related to patient age, with 47.9% of men and 55.3% of women aged 75 years or more at time of death.
- 8.3% of kidney cancer deaths occurred among those aged under 55.

Age at death	Average deaths per year		
	Male	Female	Both sexes
0 - 54	6	2	9
55 - 64	11	4	16
65 - 74	19	10	30
75 +	34	21	55
All ages	71	38	109

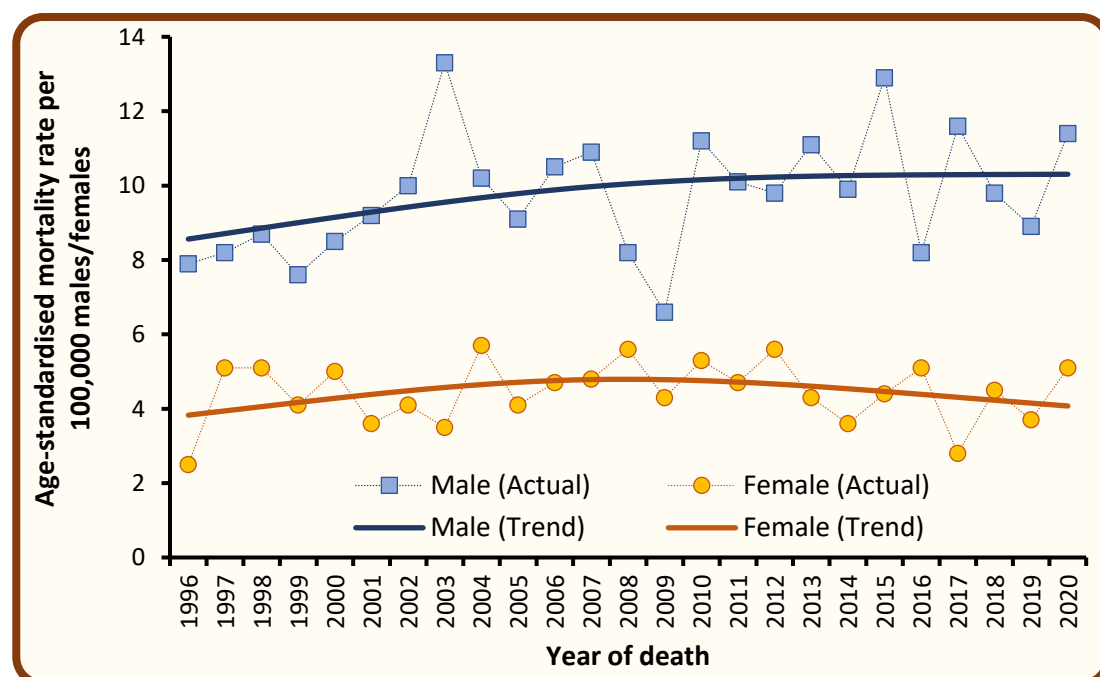
Deaths by year of death - Kidney cancer, Deaths in 2011-2020

- Among males the number of deaths from kidney cancer increased by 4.4% from an annual average of 68 deaths in 2011-2015 to 71 deaths in 2016-2020.
- Among females the number of deaths from kidney cancer increased by 2.7% from an annual average of 37 deaths in 2011-2015 to 38 deaths in 2016-2020.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Male	61	61	73	64	81	52	83	73	64	83
Female	38	45	36	30	38	44	25	40	34	48
Both sexes	99	106	109	94	119	96	108	113	98	131

Trends in age-standardised mortality rates - Kidney cancer, Deaths in 1996-2020

- Among males age-standardised mortality rates from kidney cancer decreased by 7.4% between 2011-2015 and 2016-2020 from 10.8 to 10.0 deaths per 100,000 persons years. This difference was not statistically significant.
- Among females age-standardised mortality rates from kidney cancer decreased by 6.7% between 2011-2015 and 2016-2020 from 4.5 to 4.2 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).

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 EUROCORE, 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.