



Survival of Cancer Patients in Northern Ireland: 1993-2004

October 2007

SUMMARY

Patient survival is one of the best indicators as to the efficiency of diagnostic and treatment services in an area. This is a summary of a report on cancer survival which is available in hard copy and from the NICR web-site at www.qub.ac.uk/nicr.

Cancer incidence and deaths (1993-2004)

During 1993-2004 there were on average 4,318 male and 4,414 female cases of cancer diagnosed each year.

Excluding non-melanoma skin cancer (NMSC) there were 1,863 male and 1,746 female deaths from cancer each year.

Multiple tumours

7.7% of cancer patients diagnosed in the 1993-2004 period had two or more separate tumours including NMSC. 4.3% had two or more separate tumours excluding NMSC.

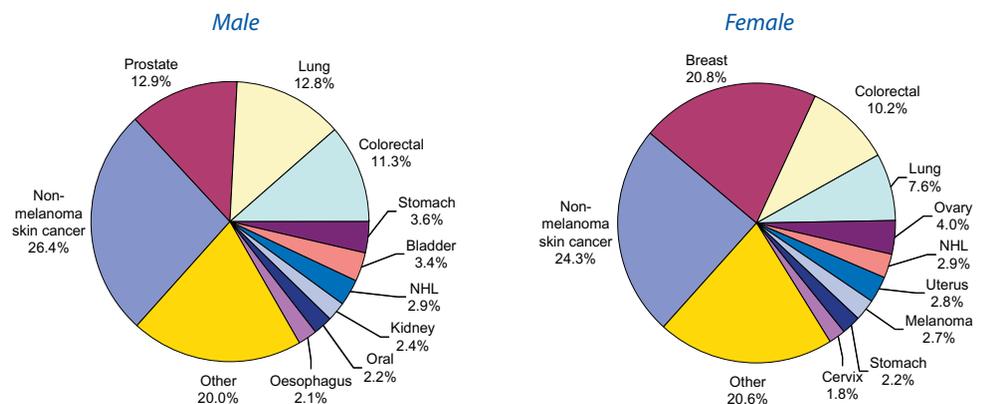
Year of diagnosis/ death	MALE			FEMALE		
	Number of new cases including NMSC	Number of new cases excluding NMSC	Number of deaths excluding NMSC	Number of new cases including NMSC	Number of new cases excluding NMSC	Number of deaths excluding NMSC
1993	4,123	3,128	1,881	4,276	3,192	1,737
1994	4,163	3,109	1,849	4,153	3,118	1,755
1995	4,077	3,058	1,842	4,205	3,171	1,644
1996	4,238	3,157	1,840	4,419	3,258	1,682
1997	4,164	3,039	1,840	4,366	3,289	1,742
1998	4,234	3,126	1,920	4,394	3,323	1,731
1999	4,201	3,010	1,789	4,413	3,344	1,746
2000	4,287	3,121	1,757	4,442	3,397	1,790
2001	4,385	3,257	1,918	4,314	3,282	1,734
2002	4,586	3,297	1,898	4,598	3,507	1,753
2003	4,719	3,426	1,894	4,726	3,602	1,829
2004	4,643	3,427	1,926	4,662	3,595	1,808
Annual average	4,318	3,180	1,863	4,414	3,340	1,746

Cancer incidence and deaths by sex and year of diagnosis: 1993-2004

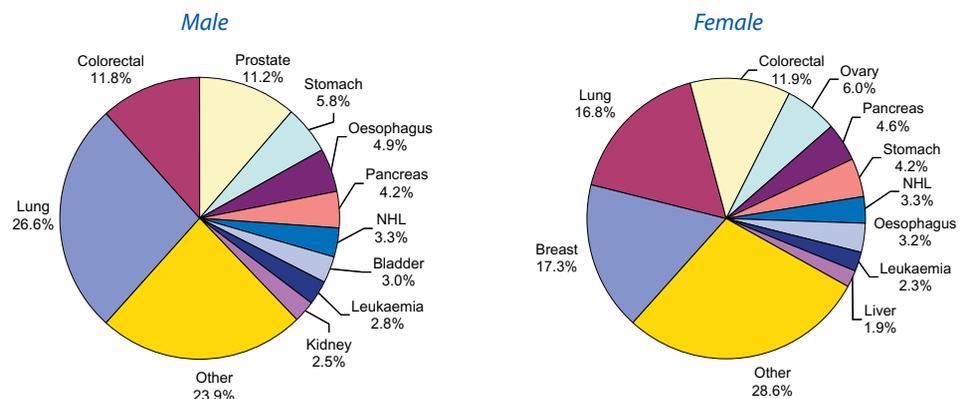
Most common cancers in Northern Ireland

Non-melanoma skin cancer (NMSC) made up 26.4% of all male and 24.3% of all female cancers between 1993 and 2004. Excluding this cancer type the most commonly diagnosed male cancers, in descending order, were prostate, lung and colorectal, while in females they were breast, colorectal and lung. During this period the same cancers (excluding NMSC) were the most common causes of cancer death but in a different order with lung cancer the most common cause of cancer death among males and breast cancer the most common cause of female cancer death.

Cancers diagnosed: 1993-2004



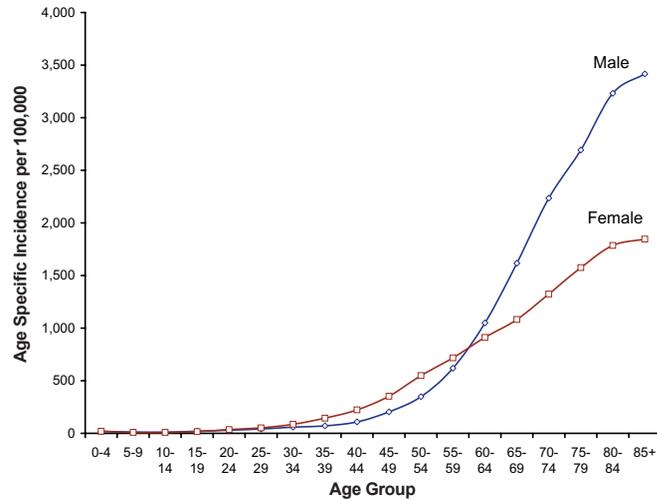
Cancer deaths: 1993-2004



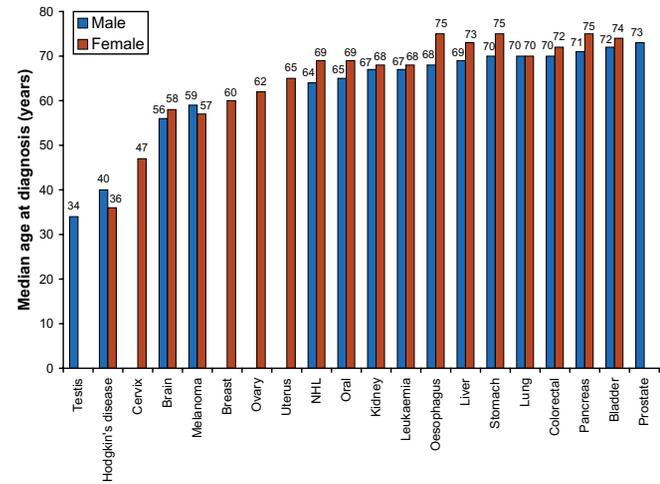
Age and cancer

The biggest risk factor for developing cancer is age with the majority of cancers more common in older than younger persons. A few exceptions to this were testicular cancer, Hodgkin's disease and cervical cancer.

Age specific incidence rates for all cancers (excluding NMSC): 1993-2004



Median age at diagnosis by sex and cancer site: 1993-2004

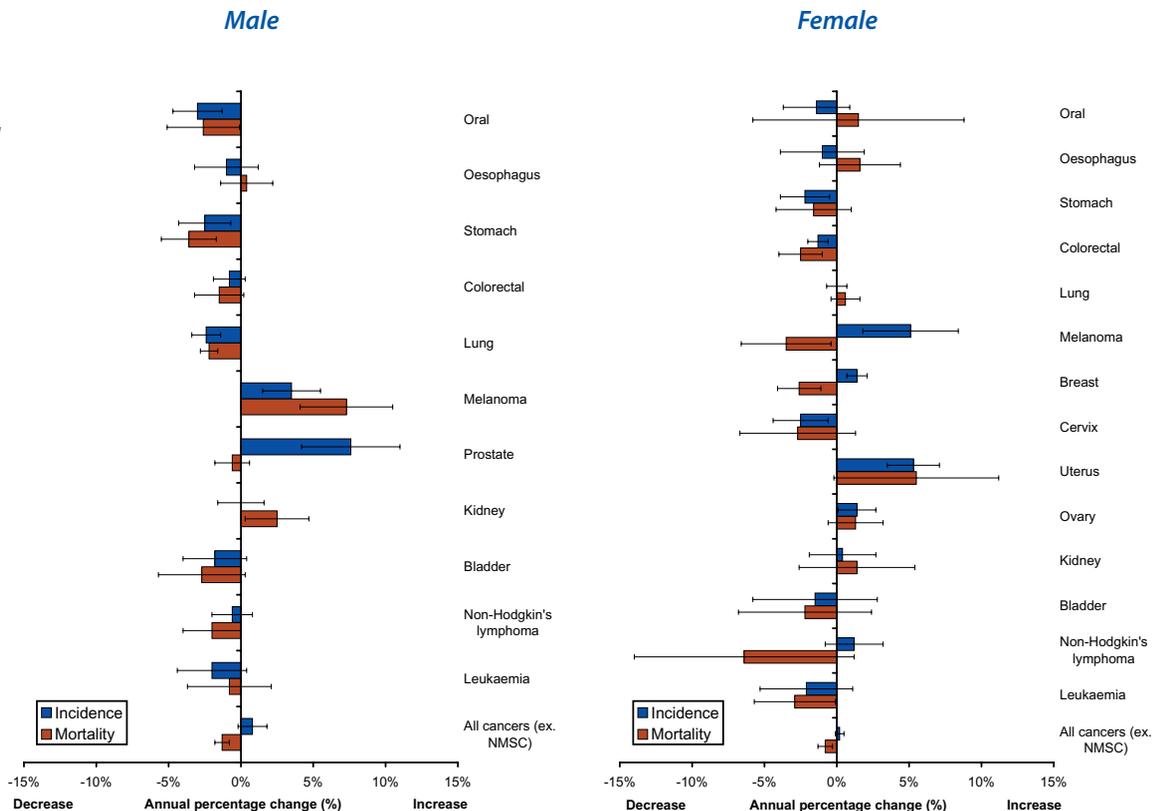


Cancer trends

Among males the incidence and mortality of oral, stomach and lung cancer have decreased. Incidence of prostate cancer has risen due to increased PSA testing, while incidence and mortality from melanoma have increased among males highlighting the need to take care in the sun.

Among females deaths from melanoma, leukaemia, colorectal and breast cancers have fallen as have incidence rates of stomach, cervical and colorectal cancer. Incidence rates of melanoma, breast, uterus, and ovarian cancer have increased among females.

Annual percentage changes in age-standardised rates by sex and cancer site



Geographic variations

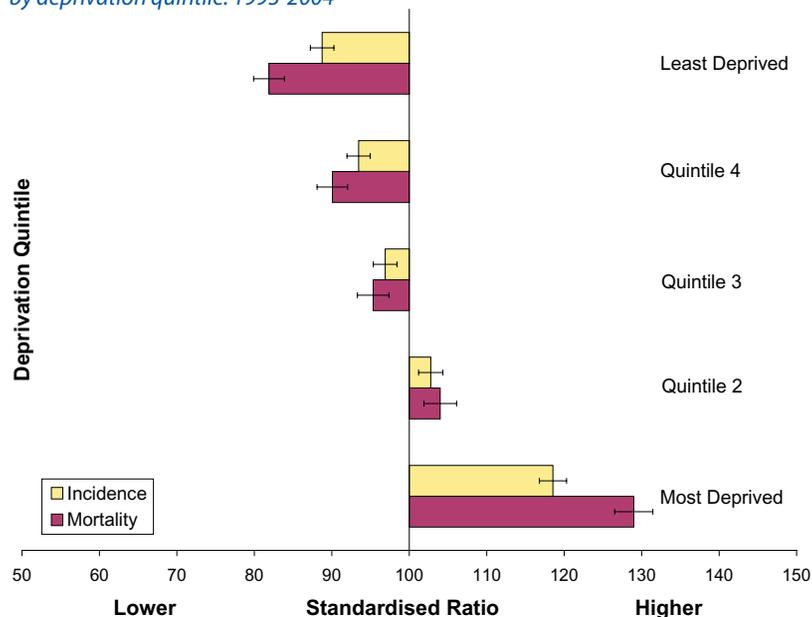
Deprivation

New cancer cases and deaths increased by increasing level of deprivation with the 20% most deprived areas in Northern Ireland having significantly higher levels of cancer. If levels of cancer in Northern Ireland equaled that of the most affluent areas there would be 16% less cancer cases in Northern Ireland each year.

Local Government District

Belfast, Derry and Newry & Mourne District Councils had higher than expected levels of cancer cases and deaths. This was driven by high incidence of lung (in Belfast and Derry), stomach (in Belfast and Newry & Mourne) and colorectal (in Derry and Newry & Mourne) cancer. With the exception of colorectal cancer this is likely linked to higher levels of deprivation and the associated higher levels of tobacco.

Standardised incidence and mortality ratios for all cancers (excluding NMSC) by deprivation quintile: 1993-2004



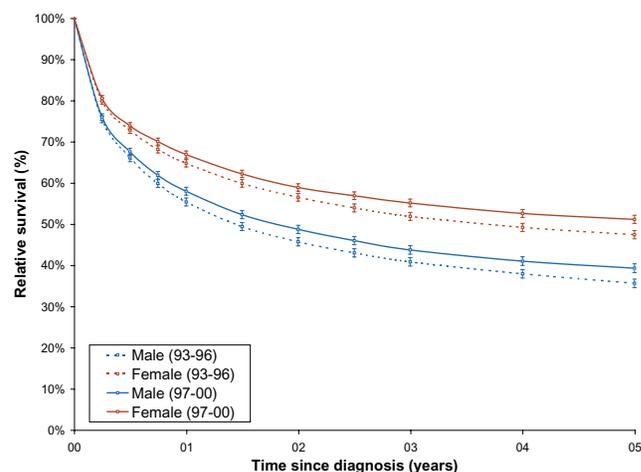
Relative survival from all cancers

The most recent one-year relative survival for the category "all cancers (excluding NMSC)" was 65.1% for patients diagnosed in 2001-2003 while the most up-to-date five-year relative survival estimate was 45.7% for patients diagnosed in 1997-2000.

Relative survival for females for the category "all cancers (excluding NMSC)" was consistently higher than for males.

Relative survival for the category "all cancers (excluding NMSC)" improved for both males and females diagnosed in 1997-2000 compared to 1993-1996.

Relative survival from all cancers excluding NMSC by sex and period of diagnosis (1993-2000)



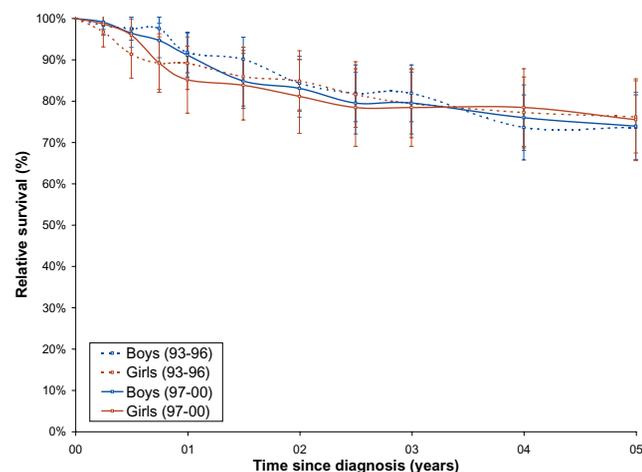
Relative survival and childhood cancer

On average there were 24 cases of cancer (excluding NMSC) per year among boys and 21 among girls (aged 0 to 14) during 2000-2004 with 6 deaths per year among boys and less than 5 among girls.

Relative survival was similar for boys and girls with 74.0% of boys and 75.5% of girls alive after five years. There was no significant change in survival for children between 1993-1996 and 1997-2000.

Survival varied depending upon cancer site with survival from leukaemia better (79.5% after five years) than survival from brain cancer (57.4% after five years).

Relative survival from childhood cancer (ages 0 to 14) by sex and period of diagnosis (1993-2000)



Relative survival by cancer site

Relative survival depends greatly on cancer site, with survival ranging from over 90% after five years for testicular cancer to less than 15% after one year for pancreatic cancer.

Survival was highest among male cancer patients with testicular cancer, malignant melanoma, prostate cancer and Hodgkin's disease and female patients with malignant melanoma, breast cancer, Hodgkin's disease and cancer of the uterus. The poorest prognosis was among patients with mesothelioma, lung, liver and pancreatic cancer.

Relative survival by sex, cancer site and year of diagnosis: 1993-2004

CANCER SITE	FIVE-YEAR RELATIVE SURVIVAL (95% CI)					
	Male			Female		
	93-96	97-00	01-04*	93-96	97-00	01-04*
All cancers excluding NMSC	35.7%†	39.4%†	42.8%†	47.5%†	51.2%†	53.1%
Lip, oral cavity & pharynx	49.3%	49.3%	53.9%	50.9%	39.1%	57.1%
Oesophagus	5.7%†	13.2%†	10.3%	14.4%	12.3%	17.9%
Stomach	15.2%	16.8%	19.2%	14.8%	17.3%	16.9%
Colorectal	46.7%	51.9%	52.2%	45.7%†	53.1%†	54.5%
Larynx	62.0%	69.6%	76.6%	59.9%	57.9%	56.6%
Lung	6.9%	9.1%	8.1%	9.1%	9.2%	10.1%
Malignant melanoma	86.5%	85.8%	82.0%	91.5%	95.3%	96.7%
Breast	-	-	-	75.5%	80.1%	81.6%
Cervix	-	-	-	61.8%	67.8%	69.7%
Uterus	-	-	-	66.1%	72.5%	75.2%
Ovary	-	-	-	41.6%	43.0%	43.6%
Prostate	55.6%†	64.5%†	72.2%†	-	-	-
Testis	92.4%	96.0%	94.0%	-	-	-
Kidney	50.1%	53.0%	48.9%	51.1%	50.3%	55.1%
Bladder	57.5%	58.7%	59.3%	41.5%	45.9%	47.2%
Brain	12.5%	17.0%	20.2%	18.2%	21.0%	20.5%
Hodgkin's disease	71.3%	78.5%	83.8%	77.9%	77.1%	74.7%
Non-Hodgkin's lymphoma	46.2%	48.6%	53.4%	45.9%†	52.9%	57.5%†
Multiple myeloma	21.8%	29.0%	36.8%	23.8%	35.7%	36.6%
Leukaemia	30.0%	31.0%	37.9%	36.0%	31.6%	36.1%

* Estimated using period analysis; † Results in blue indicate significant improvement in survival between consecutive periods of diagnosis.

Relative survival and gender

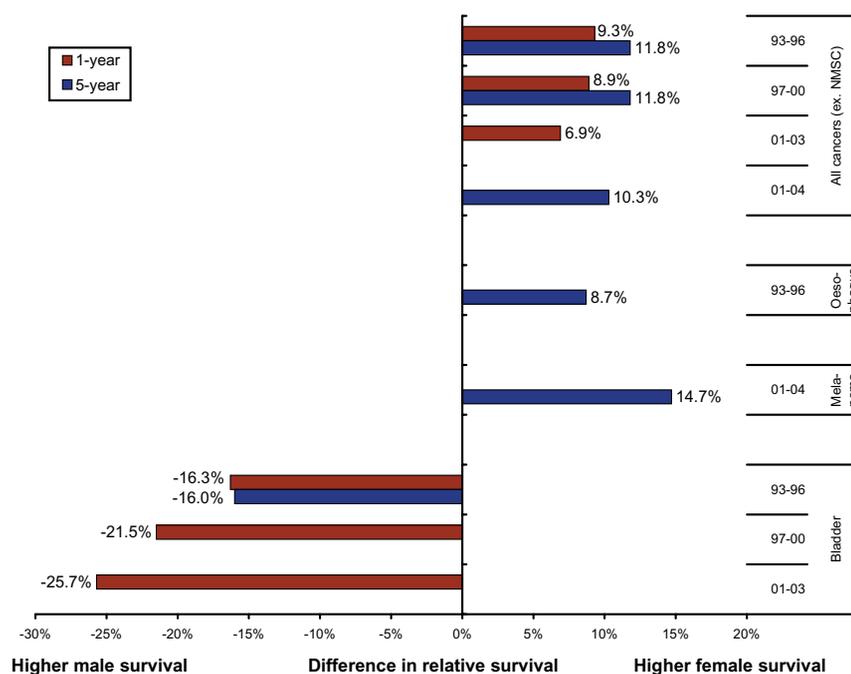
Overall relative survival was significantly better among females than males. This is due to males having a higher percentage of cancers which have poor survival, such as lung cancer. Additionally, the more common female cancers (e.g. breast cancer) have higher survival than prostate cancer.

For some specific cancers, female survival was higher than for males:

- In 1993-1996 there was an 8.7% difference between five-year relative survival for males and females with oesophageal cancer. This difference was not apparent in later periods.
- Five-year relative survival from melanoma for patients diagnosed in 2001-2004 (period analysis estimates) was 14.7% better for females than males.

In contrast however, relative survival from bladder cancer was better among males than females with 83.9% of males compared to 58.2% of females diagnosed in 2001-2003 alive after one year.

Significant differences between female and male relative survival during 1993-2004



Improvements in relative survival

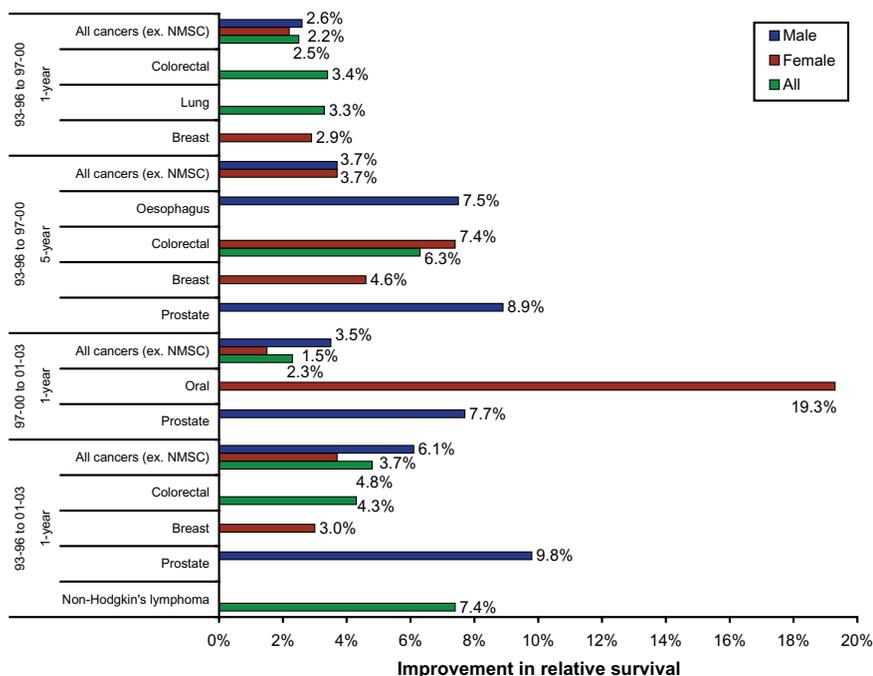
During 1993-2003 there was significant and continuous improvement in both one and five-year relative survival for the category "all cancers (excluding NMSC)".

One-year relative survival improved between 1993-1996 and 2001-2003 for all patients with non-Hodgkin's lymphoma or colorectal cancer, for females with oral or breast cancer and for males with prostate cancer. Between 1993-1996 and 1997-2000 one-year relative survival also improved for lung cancer.

Five-year relative survival also improved between 1993-1996 and 1997-2000 for males with oesophageal or prostate cancer and females with colorectal or breast cancer.

There were no cancers for which survival rates decreased.

Significant improvements in relative survival during 1993-2003



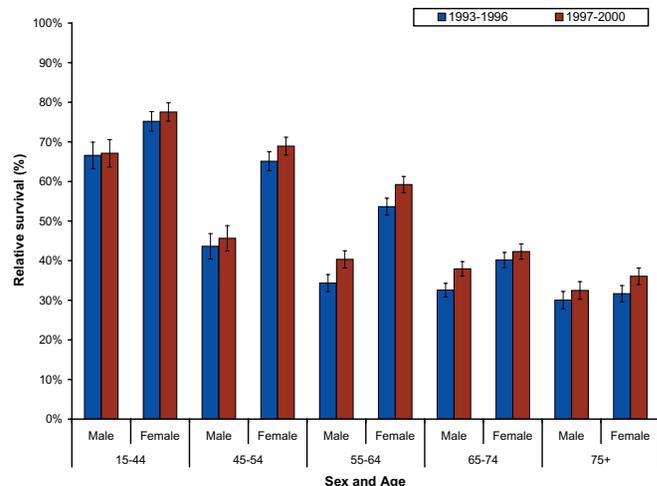
Relative survival and age

Relative survival for all cancers (excluding NMSC) depended upon age. In particular for all cancer sites, except melanoma, one-year relative survival among 15-64 year olds was significantly higher than for 65-99 year olds.

Relative survival improved significantly between 1993-1996 and 1997-2000 for males and females aged 55-64, for males aged 65-74 and for females aged 75-99.

For all ages survival for females was better than for males.

Five-year relative survival from all cancers excluding NMSC by age, sex and period of diagnosis: 1993-2000

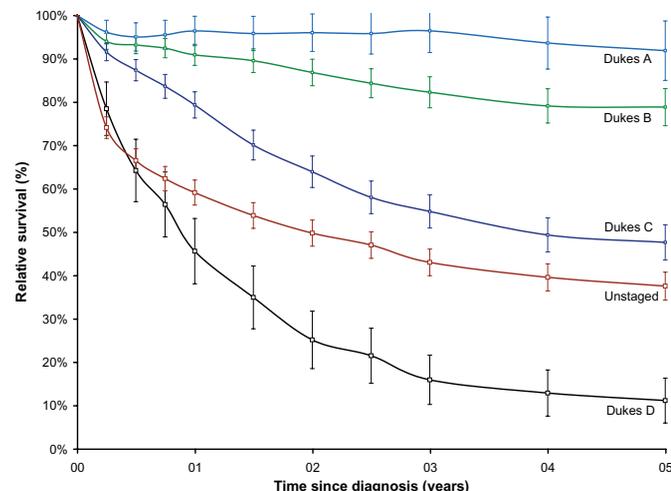


Relative survival and stage

Relative survival for cancers which had a stage recorded (colorectal, breast, cervix, ovary, melanoma) decreased with increasing stage.

For example, five-year relative survival for colorectal cancer at Dukes Stage A in 1997-2000 was 91.9% compared to 11.2% for Dukes Stage D.

Relative survival from colorectal cancer by stage: 1997-2000



Relative survival and deprivation

There were significant differences in five-year relative survival between the 20% most affluent areas of Northern Ireland compared to the 20% most deprived for lung and breast cancers.

One-year relative survival differed between the two area types for colorectal cancer while there was no significant difference for prostate cancer.

Significant differences in relative survival between the 20% most affluent and 20% most deprived areas of Northern Ireland: 1993-2000

	Colorectal	Lung	Breast	Prostate
1-year	6.4%	-	3.7%	-
5-year	-	3.8%	6.6%	-

International comparisons

Relative survival estimates for most cancers in Northern Ireland were similar to those in England but with survival better for female lung, melanoma and female kidney cancer and lower for cervical, uterus, prostate and bladder cancers.

Compared to Europe, survival in Northern Ireland for stomach, lung, prostate, uterine and bladder cancer was poor. However survival from melanoma was higher than the European average.

Comparison of age-standardised relative survival in Northern Ireland with other European countries – Results from the EUROCARE-3&4 studies for survival of cancer patients diagnosed in 1990-1994 and 1995-1999

"H"- Relative survival significantly higher in NI,
 "L"- Relative survival significantly lower in NI,
 "-"- No significant difference, "NA"- Data not available.
 III - EUROCARE-3 result for patients diagnosed in 1990-1994;
 IV- EUROCARE-4 result for patients diagnosed in 1995-1999.

		England	Scotland	Wales	Ireland	Europe	France	Germany	Italy	Netherlands	Spain
All ^{IV}	M	L	-	L	L	L	L	L	L	L	L
	F	-	H	L	-	L	L	L	L	L	L
Oesophagus ^{III}	M	-	-	-	NA	-	-	-	-	-	L
	F	-	-	H	NA	-	-	-	-	-	-
Stomach ^{III}	M	-	H	H	NA	L	-	L	L	-	L
	F	-	-	-	NA	L	L	L	L	L	L
Colorectal ^{IV}	M	-	-	-	-	-	L	-	L	L	-
	F	-	-	-	-	-	L	L	L	L	-
Lung ^{IV}	M	-	H	-	-	L	L	L	L	L	-
	F	H	-	-	-	L	L	-	L	-	-
Melanoma ^{IV}	M	H	-	H	H	H	-	-	H	-	H
	F	H	-	H	-	H	H	-	H	-	H
Breast ^{IV}	F	-	-	-	H	-	L	-	L	L	-
Cervix ^{III}	F	L	-	-	NA	-	L	-	L	L	L
Uterus ^{III}	F	L	-	-	NA	L	-	L	L	L	L
Ovary ^{IV}	F	-	-	-	-	-	-	-	-	-	-
Prostate ^{IV}	M	L	L	L	L	L	L	L	L	L	L
Kidney ^{III}	M	-	H	H	NA	-	L	-	L	-	-
	F	H	H	H	NA	-	L	L	-	-	-
Bladder ^{III}	M	L	L	L	NA	L	L	L	L	L	L
	F	L	L	L	NA	L	L	L	L	L	L
NHL ^{III}	M	-	-	-	NA	-	-	-	-	-	L
	F	-	-	-	NA	-	-	L	-	-	-
Leukaemia ^{III}	M	-	-	-	NA	-	L	-	-	-	L
	F	-	-	-	NA	-	L	-	-	-	-

Why the variations in survival by country?

Differences in cancer survival between geographic areas may be due to several factors:

(i) Variations in levels of risk factors.

For example, tobacco use is a major risk factor for many cancers including lung, mouth, oesophagus, stomach, kidney, bladder, liver and cervix¹. Unfortunately survival from many of these cancers is very poor and overall cancer survival will be lowered if there are a high proportion of these cancers in the population. Tobacco also causes other serious diseases, e.g. heart disease and strokes; the existence of these comorbidities are also likely to independently reduce survival.

(ii) Variations in delays in the population seeking advice for symptoms which may be due to cancer.

Changes such as the appearance of a lump, a mole, a sore which doesn't heal, difficulty swallowing or changes in bowel habit may indicate the occurrence of cancer. It is important to have such changes investigated as soon as possible as survival is usually improved by early detection.

(iii) Variations in service provision which include:

- the existence of screening programmes for breast, cervical or bowel cancer;
- prompt access to modern diagnostic services;
- decisions about patient's treatment made at multidisciplinary meetings;
- prompt access to evidence based treatment, delivered by trained specialists who have regular audits of their work and where participation in clinical trials is encouraged.

Cancer services in Northern Ireland have been reviewed to achieve the goals above.

¹ International Agency for Research on cancer, 2002. "Tobacco smoke and involuntary smoking"

Further Information

Further data from the Northern Ireland Cancer Registry is available from the Registry website: www.qub.ac.uk/nicr, and

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