Survival of cancer patients in Northern Ireland: 1993-2004

October 2007

N. Ireland Cancer Registry

Queen's University Belfast

CONTENTS

FOREWORD

Survival is a measure of many aspects of cancer care including delays in diagnosis, the standard of treatment, its timeliness and the overall quality of care.

There have been many recent changes to Cancer Services in Northern Ireland; such as advice on alarm symptoms; screening for breast and cervical cancer and the re-organisation of cancer services with the aim of all patients having the highest standards of care irrespective of where they live. These survival statistics provide a window through which we can measure the impact of change and even though the time of follow up is short it is pleasing to note detectable improvements.

This report uses new techniques to analyse survival providing us with more up to date data than previously possible. It highlights the importance of cancer registration which allows the measurement of results on a population basis giving a complete picture and not just those treated in 'centres of excellence'. While measuring improvements, this data also highlights areas where survival has remained unchanged and where we need to concentrate our efforts.

The good news is that survival has improved in both males and females diagnosed from 1997 to 2000 compared with 1993 to 1996. Once again this report emphasises the importance of smoking in the changing patterns of cancer incidence. While lung cancer in men is beginning to decrease, linked with a fall in smoking there is sadly no corresponding decrease among females as they continue to smoke; clearly an area for targeted prevention. Unfortunately smoking levels affect overall survival as tobacco related cancers tend to have poorer survival. Similarly smoking also explains in part the differences in cancer experience linked with social deprivation.

Northern Ireland's inclusion for the first time, in **Eurocare** – a pan-European comparison of survival highlights areas where we are doing well and others where improvements are necessary. Much has been achieved and there is still much to do.

As Chairman of the N. Ireland Cancer Registry I congratulate Dr David Donnelly, Dr Anna Gavin and the Registry team for the huge amount of work compiling this report. It has highlighted our cancer survival improvements and where further improvements are possible.

Prof. Roy Spence OBE MA MD FRCS
Consultant Surgeon
Chairman of Council of Northern Ireland Cancer Registry

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The work of the Northern Ireland Cancer Registry, including the production of this report, is the result of work by the team listed below:

Bernadette Anderson	Finian Bannon	Denise Catney	Linda Caughley
Olwyn Dawson	David Donnelly	Kate Donnelly	Deirdre Fitzpatrick
Donna Floyd	Colin Fox	Wendy Hamill	Anita Jones
Jackie Kelly	Gavin Kennedy	Heather Kinnear	Julie McConnell
Susan McGookin	Richard Middleton	Eamon O'Callaghan	Guilio Napolitano
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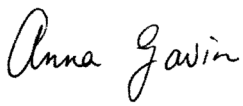
I wish also to record my thanks to the Management Group and Council of the Registry who guide this work.



Dr. Anna Gavin
Director of Northern Ireland Cancer Registry
2007

01: INTRODUCTION

This publication is the third report from the Northern Ireland Cancer Registry (NICR) detailing the survival of cancer patients in Northern Ireland. The first report, produced in 2001, described in detail the survival of patients diagnosed with cancer between 1993 and 1996[1]. Some of the major findings in the report were:

- Females had better survival than men;
- Younger people had better survival than older people;
- Earlier detection improved survival;
- Cell type had a significant effect on lung cancer survival;
- Survival from malignant melanoma and female breast cancer was excellent;
- Survival from lung and male oesophageal cancer was poor.

A comprehensive report of cancer in Northern Ireland produced in 2004[2] included information on cancer survival with comparisons between the periods 1993-1995 and 1996-1999. This showed improvements in survival for cancers of the breast and colon.

Patient survival is one of the best indicators as to the efficiency of diagnostic and treatment methods in a geographic area[3]. This report aims to investigate a range of factors that have the potential to impact on patient survival and thereby allow an assessment of the effectiveness of cancer care in Northern Ireland. The report extends the analysis presented previously to include patients diagnosed with cancer between 2000 and 2004. Survival by sex, age and stage for different periods of diagnosis is investigated where information is available and the number of patients is large enough. Survival for patients who have already survived a given length of time is examined and for the four main cancer sites (colorectal, lung, breast and prostate) investigations into the impact of deprivation and urban/rural factors on survival are conducted.

1.1: The Northern Ireland Cancer Registry

The Northern Ireland Cancer Registry (NICR) is a population-based registry for the 1.7 million people usually resident in Northern Ireland[4]. It was established in May 1994, replacing an older, incomplete, paper based registry, which had been established in 1959. NICR is the principal source of information on cancer in Northern Ireland, holding detailed information on cancer incidence and mortality from 1993 onwards.

The Registry is part of the Centre for Clinical & Population Sciences (CCPS) in the School of Medicine & Dentistry, Queen's University of Belfast (QUB) and is funded by the Department of Health & Social Services and Public Safety, Northern Ireland (DHSSPSNI). The Registry is a member of the UK Association of Cancer Registries (UKACR) and has collaborative working links with the National Cancer Registry of Ireland (NCRI) and the National Cancer Institute USA (NCI). Northern Ireland also has data included in EUROCARE, a study investigating survival variations across the countries of Europe. This report includes data from this study.

1.2: Data Collection Methods

Data on cancer incidence and mortality are available from multiple sources, primarily pathological records, hospital discharges and death registrations from the General Registrar Office (GRO). This data is captured electronically and is collated and quality assured on a regular basis to provide a population-based registry of cancer incidence for Northern Ireland. The alive/dead status of each cancer patient registered is identified by linking the cancer incidence data to the GRO deaths data, an approach known as passive follow-up.

Tumour details are collected on cancer diagnoses according to the International Classification of Diseases, tenth revision[5] (ICD10). The diseases registered include malignant, benign and in-situ neoplasms, and neoplasms of uncertain or unspecified behaviour. For this study records relating to all newly diagnosed malignant cancers and malignant cancer deaths (C00-C97) occurring between 1993 and 2004 were extracted from the Registry. Patients diagnosed with non-melanoma skin cancer (NMSC) (C44) were excluded from any survival analysis of all cancers, as survival from this cancer is excellent.

Patient confidentiality

NICR ensures that the confidentiality of patients is protected at all times. Information released is provided only in aggregate form and complies with the Data Protection Act 1998. All results contained in this report have been checked to ensure that individuals cannot be identified. In the event that cells in tables refer to between 1 and 4 patients the cell is suppressed with a "<5" character.

Deprivation quintiles and urban/rural classification

NICR captures information on the postcode of usual residence for patients diagnosed with cancer. Postcode information on the Registry database is 99.4% complete (excluding patients with NMSC). Using this data each patient is assigned a Local Government District (LGD) and Census Output Area (COA) of usual residence using the 2006 Central Postcode Directory[6] (CPD). In a small number of cases (0.4%) the patient's postcode is not present on the CPD and an LGD or COA cannot be assigned to the patient. In total 1.0% of all patients have an unknown LGD or COA and these patients are excluded from any geographic based analysis.

Patients are assigned a deprivation quintile using the 2005 Northern Ireland Noble economic deprivation measure[7], which assigned a deprivation score to each Census Output Area (COA) in Northern Ireland based upon the economic characteristics of all persons usually resident in that area. For the purposes of this study the COAs were ranked according to this score and divided into quintiles, with quintile 5 containing the fifth of the population resident in the least deprived COAs and quintile 1 containing the fifth of the population resident in the most deprived COAs.

An urban/rural indicator is also applied to each cancer patient based upon postcode of residence using the classification developed for areas in Northern Ireland by the Inter-Departmental Urban-Rural definition group in 2005[8]. This classification uses eight categories ranging from Belfast Metropolitan Urban Area to small villages and open countryside (see appendix 2 for further categories).

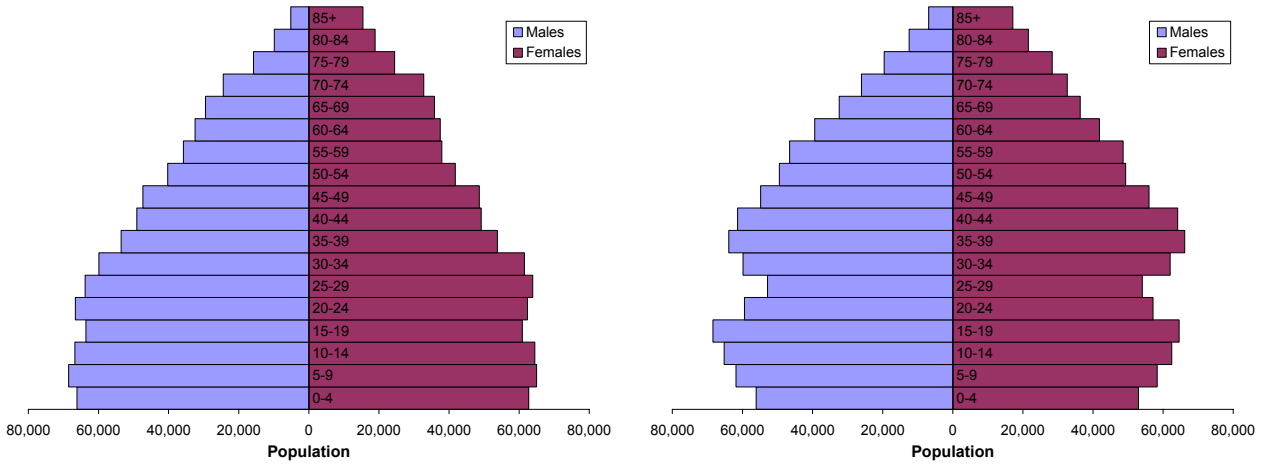
Population data

All population data used in this report is supplied by the Northern Ireland Statistics and Research Agency (NISRA) and comes either from the 2001 Census of Population[9] or the Mid-Year Population Estimates Series[10], which uses the 2001 Census figures along with births, deaths and migration data to provide up to date estimates of the population of Northern Ireland.

These data indicate an increasing and ageing population in Northern Ireland. The population in 2004 was 1,710,322, a 4.6% increase on the 1993 population. Between these two years there was a decrease from 24.1% to 20.9% in the percentage of the population aged under 15 and an increase from 17.2% to 18.4% in the percentage of the population aged 60 and over. (Fig. 1.1)

Figure 1.1: Male and female population by age group: 1993 & 2004

(a) 1993 *(b) 2004*



Source: NISRA (2006)

1.3: Statistical Methods

Incidence and mortality

For each cancer site reported on, the number of newly diagnosed cases (incidence) and number of deaths (mortality) that occurred annually between 1993 and 2004 are presented. However, given that the risk of getting cancer increases greatly with age and that the age distribution of the Northern Ireland population changes over time, trends in cancer incidence and mortality are investigated using age-standardised rates. Age-standardised incidence/mortality rates refer to the number of cancer cases/deaths per 100,000 persons occurring in the population if the population possessed the same age structure as a "standard" population. The European standard population, used in this report, is used throughout the EU and removes the effect that the ageing of the Northern Ireland population has on cancer trends and allows accurate comparisons of cancer rates between EU countries.

The trends in cancer rates are investigated using a log-linear model to fit the available data. The JoinPoint program developed by the US National Cancer Institute[11-12] is used to test for changes in trends during the period and to determine the point in time that any changes may have occurred. The percentage increase/decrease in the age-standardised rate each year (annual percentage change, APC) for each cancer site is calculated and tested for statistical significance.

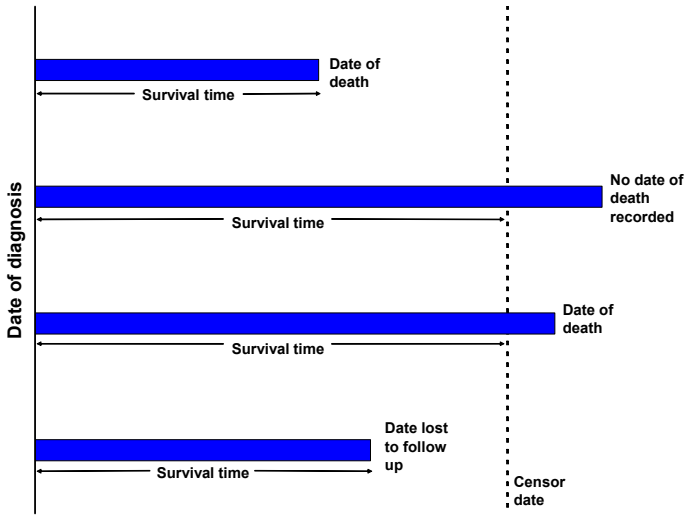
See appendix 2 for full definitions of incidence and mortality statistics.

Survival

Observed survival is the proportion of patients who survive a specified amount of time after the point that they are diagnosed with cancer. It is typically presented as the probability of a group of patients surviving a specified amount of time regardless of the cause of death. The observed survival of a group of patients is determined by first assessing whether each patient in the group is alive or dead at a certain date. This date is known as the censor date, while the alive or dead status of each patient at this time is known as the vital status. If a patient's vital status is unknown at the censor date (e.g. if they have moved abroad) the censor date is changed to be the date that the patients' vital status was last recorded. Such patients are referred to as being lost to follow up. The number of patients recorded as lost to follow up in Northern Ireland is small due to the use of the passive follow up method of data collection.

If the patient has been identified as having died between the date of diagnosis and the censor date the observed survival time is calculated as the difference, in days, between the exact date of diagnosis and the exact date of death as recorded by the GRO. If however the patient is still alive at the censor date the survival time is the difference between the date of diagnosis and the censor date. Such patients are known as "censored" patients and for this report the censor date is 31st December 2004. (Fig. 1.2)

Figure 1.2: Calculation of survival times for different patient scenarios



Observed survival does not take the cause of death into account and deaths due to causes other than cancer may result in a lower survival rate for cancer patients than if deaths due to cancer only were considered. A relative survival rate compensates for this discrepancy by taking the ratio of the observed survival to the expected survival, which is the survival that patients would have experienced if they had not developed cancer. The expected survival is derived from life tables for years 1993 to 2004, produced by the Government Actuary Department[13] (GAD), which are tabulated according to age and sex.

Relative survival rates are given for three diagnosis periods (1993-1996, 1997-2000 & 2001-2003). Depending upon the size of the patient groups and availability of data this analysis is conducted by sex, age, and stage at diagnosis. For some cancers, cell type (e.g. small cell and non-small cell lung cancer) or a more specific cancer site breakdown (e.g. colon and rectal cancers in addition to colorectal cancer as a whole) is included. Survival rates are presented at two yearly intervals for the number of years for which data exists provided that the number of cases remains large enough to support such analysis. Thus

- 1yr, 3yr, 5yr and, for some cancers, 7yr survival rates are presented for 1993-1996;
- 1yr, 3yr and 5yr survival rates are presented for 1997-2000;
- 1yr survival rates are presented for 2001-2003.

Considerable interest exists in variations in survival rates in Northern Ireland with regard to deprivation and urban-rural factors. However, background mortality varies between these areas, thus a separate life table is required for each area to enable determination of relative survival estimates. These are determined for each deprivation quintile and settlement band using the same methodology as that used by GAD[13] which uses deaths data from the GRO[4] and population data from the 2001 Census[9]. Due to the small number of patients involved in such an analysis only the four main cancers are investigated.

Conditional survival, which is the survival of patients who have already survived a given length of time, is also investigated for the major cancer sites. These estimates are determined in the same manner as observed and relative survival with the exception that a point after the date of diagnosis is used as the starting point in the calculation of survival time. Thus for one-year conditional survival (i.e. the proportion of patients who have survived one-year who survive a further period of time), the starting point is exactly one year after the date of diagnosis.

All relative survival rates were calculated using an algorithm written in the STATA statistical package by Dr. Paul Dickman, which uses the Ederer II method[14] to calculate expected survival.

Full definitions of survival statistics are given in appendix 2.

Period analysis

The method of deriving survival results thus far described is known as cohort analysis and is the method widely used by cancer registries in survival analysis. One recognised disadvantage of using this method is that due to the lengthy follow up time required to derive five-year relative and observed survival, it is only possible to report on the survival experience of patients diagnosed 7-8 years in the past.

Period analysis was introduced in 1997 by Brenner & Gefeller[15] as a method for obtaining more up-to-date estimates of survival which can complement those obtained by traditional methods. This approach involves using the year that patients survive to as opposed to the year that they are diagnosed with cancer. This method was further enhanced in 2004 by Brenner & Rachet[16] to solve difficulties involving the amount of follow-up data available. This method, known as hybrid-period analysis, is based on period analysis but also uses data on the patients diagnosed in the year prior to the period under investigation. Thus survival data for patients diagnosed in 2001-2004 can be estimated using the hybrid-period approach by examining both the survival experience of patients who have survived to 2001-2003 and the survival experience of patients diagnosed in 2000. The hybrid-period approach is used in this report but is referred to as period analysis for simplicity.

Data exclusions

All patients are included in the incidence and mortality calculations, however survival calculations are restricted to adults aged 15 to 99 at the time of diagnosis with patients aged 100 and over excluded due to problems with data quality and interpretation of the results[17]. Survival among children aged 0 to 14 is studied and presented separately (Chapter 29).

NICR has a low percentage of registrations that are first notified from death certificates, a measure of high coverage and good data quality as it indicates that complete sets of data are being received from hospitals

and other sources. Registrations made in this manner have their data further supplemented with GP records to obtain a date of diagnosis prior to death. Where this is not possible the date of diagnosis is deemed to be the same as the date of death and the survival time is thus zero. These registrations are known as death certificate only (DCO) registrations and are excluded from any survival analysis, as inclusion of these patients would bias survival rates downward. In total 2.4% of cases registered between 1993 and 2003 were excluded, with 21% of these exclusions being diagnosed with cancer via an autopsy only.

In situations where a patient has multiple tumours only the primary tumour diagnosed is included in the survival analysis. In the event that more than one tumour of different type is diagnosed on the same date, only the most serious tumour is included as this tumour is the more relevant with regard to survival time for that patient. The definition of tumour severity is based upon EUROCARE guidance[18].

Interpretation of results

Uncertainty exists in any quoted rates due to random fluctuations in the number of new cases of cancer and cancer deaths from year to year and from place to place. Incidence, mortality and survival rates in this report are thus all accompanied by 95% confidence intervals to indicate the range in which it is 95% confident that the true value is likely to fall. Rates made up of a small number of observations tend to be less stable and have large confidence intervals, which is of relevance when interpreting the results of low incidence cancers.

Rates for two different time periods or population groups are considered to differ only if the 95% confidence intervals for the two rates do not overlap. This is known as statistical significance and for such differences the p-value is provided. The p-value indicates the probability that any difference observed between two rates is not due to chance. Thus a p-value of 0.001 indicates a 99.9% probability that differences are genuine and not a result of random factors.

In scenarios where a population sub-group is small, survival estimates are considered unreliable. Survival rates based on less than 10 patients are thus excluded from tables but are included in survival curves.

Full definitions of confidence intervals and p-values are given in appendix 2.

1.4: Comparisons with Other Countries

Relative survival rates are available from countries in the British Isles, Australia, New Zealand, Canada and the USA. Sources for data from these countries are given in table 1.1; however caution needs to be exercised when making comparisons between survival rates in Northern Ireland and these countries for a variety of reasons:

- Survival rates in different countries use different diagnostic periods to those in this report. Given that survival rates change over time any differences observed between countries could be the result of differences in the time period being examined as opposed to regional variations.
- In some cases survival rates from other countries only represent a fraction of the population, as the registries do not always cover the entire country.
- Confidence intervals for survival rates from other countries are not always provided. In such an event it cannot be ascertained whether or not differences in survival between countries are statistically significant.
- Different age structures exist in different countries. Given that survival is dependent upon age at diagnosis any differences in survival rates may be a factor of differences in the age distribution of the population.

More accurate comparisons of survival between European countries have been made by the EUROCARE study group by comparing age-standardised relative survival rates for patients diagnosed with cancer. Age-standardised survival rates are determined in the same manner as age-standardised incidence and mortality rates with the European standard cancer population for each cancer site being used as the standard population.

Table 1.1: Latest diagnosis period and source of five-year relative survival rates in other countries

Country	Diagnosis period	Population covered	Source of data
Northern Ireland	1997-2000	100%	Northern Ireland Cancer Registry (NICR)
Scotland	1997-2001	100%	Information Services Department, Scotland (ISD)[19]
England	1998-2001	100%	Office of National Statistics (ONS)[20]
Wales	1995-1999	100%	Welsh Cancer Intelligence & Surveillance Unit (WCISU)[21]
Republic of Ireland	1998-2000	100%	National Cancer Registry, Ireland (NCRI)[22]
USA	1996-2002	26%	National Cancer Institute, USA (NCI)[23]
Canada	1995-1997	100%	Canadian Cancer Society (CCS)[24]
Australia	1992-1997	100%	Australian Institute of Health and Welfare (AIHW)[25]
New Zealand	1994-1999	100%	New Zealand Health Information Service (NZHIS)[26]

The EUROCARE-3 study conducted in 2003[27,28] investigated patients diagnosed with cancer in 1990-1994 with follow up to the end of 1999, while the EUROCARE-4 study conducted in 2007[29] investigated patients diagnosed with cancer in 1995-1999 with follow up to the end of 2003. Northern Ireland was not included in the EUROCARE-3 study due to the unavailability of reliable cancer incidence data prior to 1993; however Northern Ireland was included in the EUROCARE-4 study along with 22 other European countries including England, Wales, Scotland and Republic of Ireland. (Tab. 1.2)

Table 1.2: European countries covered by the EUROCARE-3&4 studies and population coverage by participating cancer registries

Country	Population coverage		Country	Population coverage		Country	Population coverage	
	Eurocare 3	Eurocare 4		Eurocare 3	Eurocare 4		Eurocare 3	Eurocare 4
N. Ireland	N/A	100%	**Estonia**	100%	N/A	**Poland**	6%	9%
England	63%	100%	**Finland**	100%	100%	**Portugal**	11%	43%
Scotland	100%	100%	**France**	6%	17%	**Slovakia**	100%	N/A
Wales	100%	100%	**Germany**	3%	1%	**Slovenia**	100%	100%
Ireland	N/A	100%	**Iceland**	100%	100%	**Spain**	15%	16%
Austria	8%	100%	**Italy**	15%	28%	**Sweden**	100%	100%
Belgium	N/A	58%	**Malta**	100%	100%	**Switzerland**	12%	17%
Czech Rep.	8%	8%	**Netherlands**	24%	34%			
Denmark	100%	100%	**Norway**	100%	100%			

N/A: Not included in EUROCARE study

Source: EUROCARE-3 (2003)[27,28] ; EUROCARE-4 (2007)[29]

The results of the EUROCARE-4 study are presented in this report for each cancer site published by EUROCARE as of October 2007 (lung, breast, prostate, colorectal, ovary, Hodgkin's disease, malignant melanoma). For the remaining cancer sites EUROCARE-3 is used as the basis for comparison, although given that Northern Ireland was not included in this study, the EUROCARE-3 results are compared with age-standardised relative survival rates for patients diagnosed in Northern Ireland during 1993-1996 which have been derived using the same methodology as used by EUROCARE.

Many of the European registries have 100% coverage of the population however a few, such as France, Germany and Spain, only cover a small proportion. Consequently, despite the large sample size, caution should be exercised when interpreting survival differences between Northern Ireland and these countries. (Tab. 1.2)

1.5: Further Information

Further data from the Northern Ireland Cancer Registry is available from:

Northern Ireland Cancer Registry,
Centre for Clinical and Population Sciences,
Mulhouse Building,
Grosvenor Road,
Belfast,
BT12 6BJ

Telephone: 028 9063 2573
Fax: 028 9024 8017
e-mail: nicr@qub.ac.uk
website: www.qub.ac.uk/nicr

02: CANCER IN NORTHERN IRELAND

Cancer is a common disease among the population that results from the breakdown in the normal growth of body cells. The development of cancer is a complex process beginning with alterations to the genes that regulate normal cell growth. These alterations can cause a cell to become cancerous and grow out of control forming a tumour, which can ultimately invade surrounding tissue and cause damage to vital organs in the body.

Whether or not a person develops cancer is primarily down to chance although certain factors such as age, inheritance of particular genes or certain lifestyle factors such as cigarette smoking, excessive alcohol consumption or poor diet can increase the level of risk. A high percentage of the Northern Ireland population either regularly smoke, drink above the recommended alcohol level, or are obese and thus have an elevated risk of developing cancer. (Tab. 2.1)

Table 2.1: Lifestyle factors in Northern Ireland: 2005/06

Lifestyle factor	% of population aged 16 and over	
	Male	Female
Cigarette smoking	25%	27%
Excessive alcohol consumption (above recommended levels)	23%	15%
Obesity	25%	23%
No moderate physical activity lasting 20min at least once per week	22%	23%

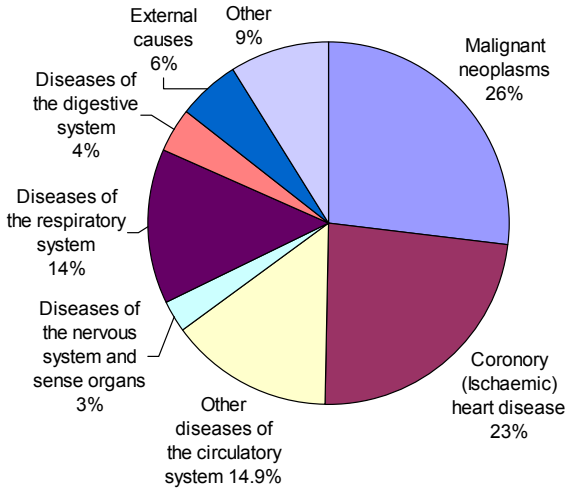
Source: NISRA (2007)[30]

In Northern Ireland one in three of the population develops a cancer by the time they reach 75 years of age. Excluding the rarely fatal non-melanoma skin cancer (NMSC) the risk for both males and females is one in four. The risk of dying from cancer before the age of 75 is lower than that for developing cancer but varies by sex; among males the risk is one in seven while in females it is one in nine.

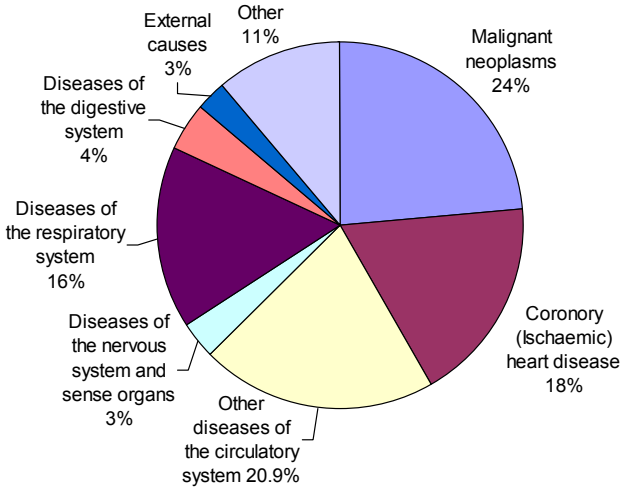
Cancer was responsible for approximately one quarter of all deaths occurring in Northern Ireland between 2000 and 2004. It was the second most common cause of death behind diseases of the circulatory system, which includes coronary heart disease and stroke. On its own, coronary heart disease made up 23% of all male and 18% of all female deaths (2000-2004) and was thus a slightly less common cause of death among both males and females than cancer[4]. (Fig. 2.1)

Figure 2.1: Common causes of death in Northern Ireland (All ages): 2000-2004

(a) Male



(b) Female



Source: GRO (2006)[4]

2.1: Incidence and Mortality

During the period from 1993 to 2004 there were 104,788 cases of cancer diagnosed in Northern Ireland, with 78,233 being cancers other than non-melanoma skin cancer (NMSC). Most of these tumours presented in a single person, however 7,478 of these were second tumours (3,202 excluding NMSC), 621 were third tumours (135 excluding NMSC) and 61 were fourth tumours (8 excluding NMSC). Overall 7.7% of cancer patients diagnosed in the 1993-2004 period had two or more separate tumours. This fell to 4.3% when NMSC is excluded. (Tab. 2.2)

Table 2.2: Multiple primary tumours affecting the same person: 1993-2004

Number of tumours per person	Including NMSC				Excluding NMSC			
	Patients		Tumours		Patients		Tumours	
	Number	% of total	Number	% of total	Number	% of total	Number	% of total
1	89,143	92.26%	89,143	85.07%	71,684	95.72%	71,684	91.63%
2	6,857	7.10%	13,714	13.09%	3,067	4.10%	6,134	7.84%
3	560	0.58%	1,680	1.60%	127	0.17%	381	0.49%
4 or more	61	0.06%	251	0.24%	8	0.01%	34	0.04%
Total	96,621		104,788		74,886		78,233	

Excluding NMSC 49% of newly diagnosed cancer cases occurred in males during 1993-2004, with 3,180 cases diagnosed per year, compared to 3,340 female cases. The larger number of female cases was due to the larger and older female population with the rate of new cases per 100,000 persons being higher in males than females. The total number of cases increased between the start and end of this period by 702 from 6,320 in 1993 to 7,022 in 2004. The increase was greater in females, with an additional 403 cases, compared to the additional 299 cases in males. (Tab. 2.3)

Table 2.3: Cancer incidence and deaths by sex and year of diagnosis/death: 1993-2004

Year of Diagnosis /death	MALE			FEMALE			ALL PERSONS		
	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	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	8,399	6,320	3,618
1994	4,163	3,109	1,849	4,153	3,118	1,755	8,316	6,227	3,604
1995	4,077	3,058	1,842	4,205	3,171	1,644	8,282	6,229	3,486
1996	4,238	3,157	1,840	4,419	3,258	1,682	8,657	6,415	3,522
1997	4,164	3,039	1,840	4,366	3,289	1,742	8,530	6,328	3,582
1998	4,234	3,126	1,920	4,394	3,323	1,731	8,628	6,449	3,651
1999	4,201	3,010	1,789	4,413	3,344	1,746	8,614	6,354	3,535
2000	4,287	3,121	1,757	4,442	3,397	1,790	8,729	6,518	3,547
2001	4,385	3,257	1,918	4,314	3,282	1,734	8,699	6,539	3,652
2002	4,586	3,297	1,898	4,598	3,507	1,753	9,184	6,804	3,651
2003	4,719	3,426	1,894	4,726	3,602	1,829	9,445	7,028	3,723
2004	4,643	3,427	1,926	4,662	3,595	1,808	9,305	7,022	3,734
Annual average	4,318	3,180	1,863	4,414	3,340	1,746	8,732	6,519	3,609

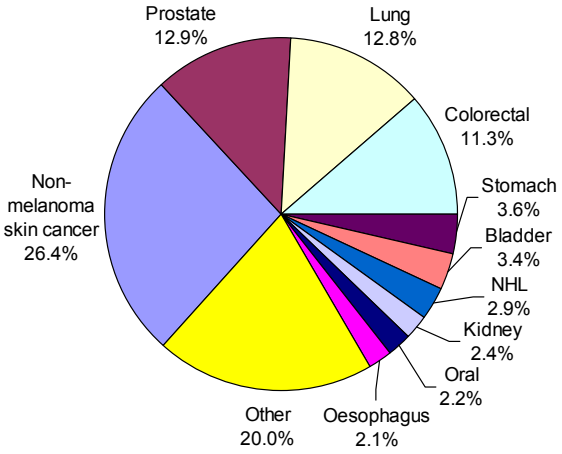
Males made up 52% of the cancer deaths during the twelve-year period with an annual average of 1,863 male deaths and 1,746 female deaths (excluding NMSC). The number of deaths from cancer each year between 1993 and 2004 increased, but to a lesser degree than the number of new cases, with 3,734 deaths in 2004 compared to 3,618 in 1993, an increase of 116. The increase in the number of deaths was greater in females than males, with 71 additional female deaths compared to 45 additional male deaths. (Tab. 2.3)

2.2: Common Cancers

Non-melanoma skin cancer 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 deaths 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. (Fig. 2.2 & 2.3)

Figure 2.2: Common cancer cases diagnosed: 1993-2004

(a) Male



(b) Female

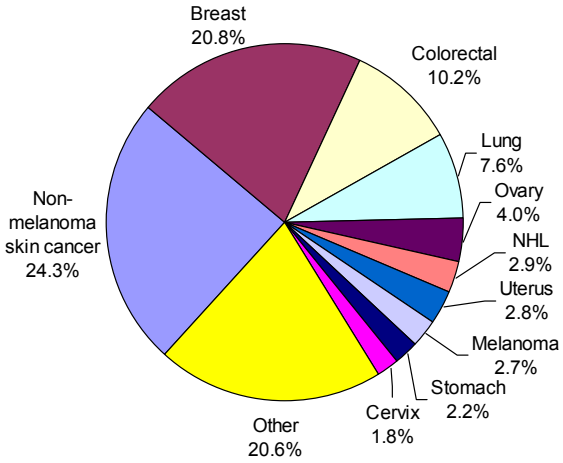
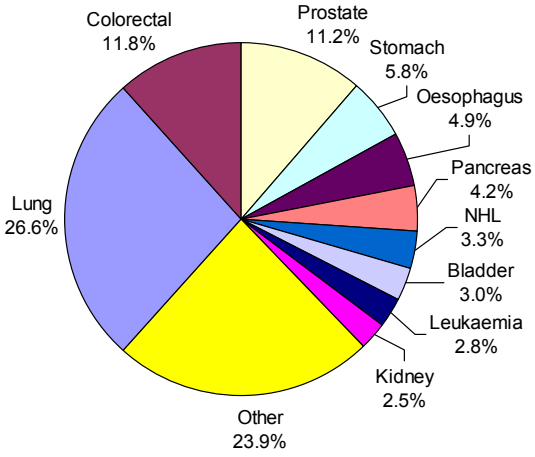
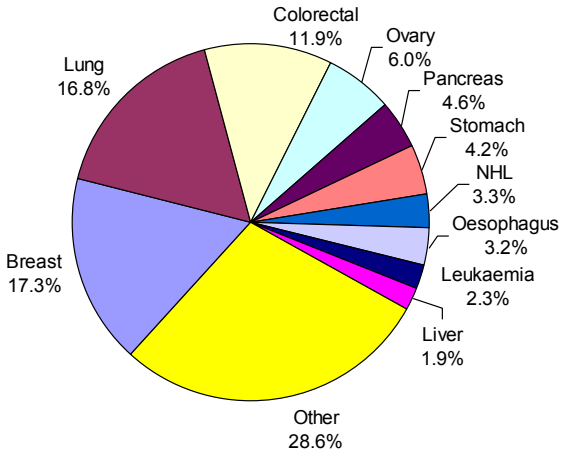


Figure 2.3: Common cancer deaths: 1993-2004

(a) Male



(b) Female



2.3: Age Distribution

Cancer is more common with increasing age. In both males and females new cases during 1993-2004 peaked in the 70 to 74 age group while deaths due to cancer peaked in the 70 to 74 age group for males and 75 to 79 age group for females. The median age at diagnosis for males was 70, while for females the median age at diagnosis was 68. The median age at death for males was two years older than that at diagnosis at 72, while for females it was five years older at 73. (Fig. 2.4 & 2.5)

Figure 2.4: Age distribution of patients diagnosed with cancer (excluding NMSC): 1993-2004

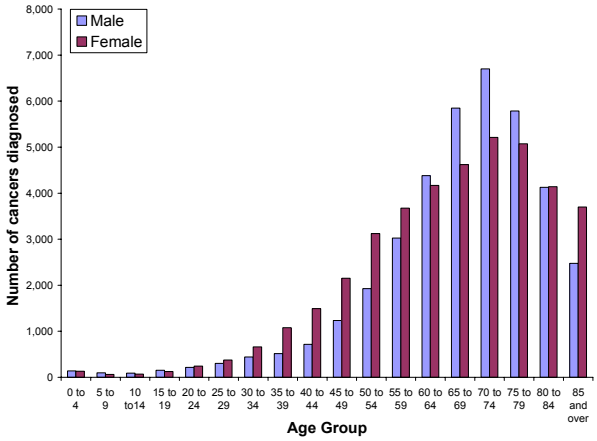
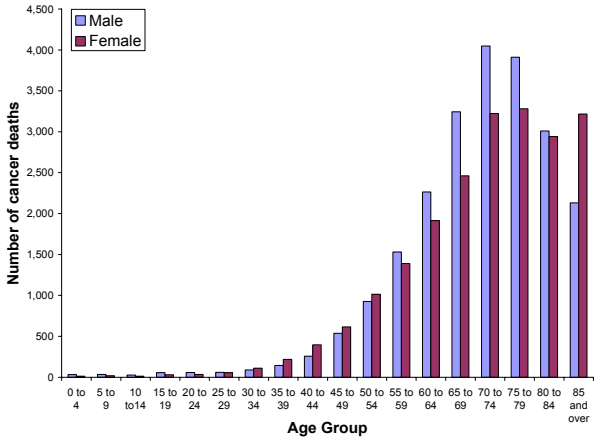


Figure 2.5: Age distribution of cancer deaths (excluding NMSC): 1993-2004



There were on average 49 new cases of cancer diagnosed annually in children (aged 0 to 14) and 12 childhood deaths between 1993 and 2004. This was a small proportion of the total number of cancers (excluding NMSC) registered (boys-0.8%; girls-0.6%) and of cancer deaths (boys-0.4%; girls-0.2%). Among young people aged 15 to 24 there were 61 new cases of cancer each year and 15 cancer deaths. This represented 1.0% and 0.9% of male and female cancers respectively and 0.5% and 0.3% of male and female cancer deaths.

A better measure of the effect of age on cancer diagnosis is provided by age-specific incidence rates. These were seen to increase for both sexes by increasing age with a maximum value of 3,416 cases per 100,000 males and 1,846 cases per 100,000 females, both in the 85 and over age group. The maximum age-specific mortality rate was also seen in the 85 and over age group with 2,941 deaths per 100,000 males and 1,605 deaths per 100,000 females. (Fig. 2.6 & 2.7)

Figure 2.6: Age specific incidence rates for all cancers (excluding NMSC): 1993-2004

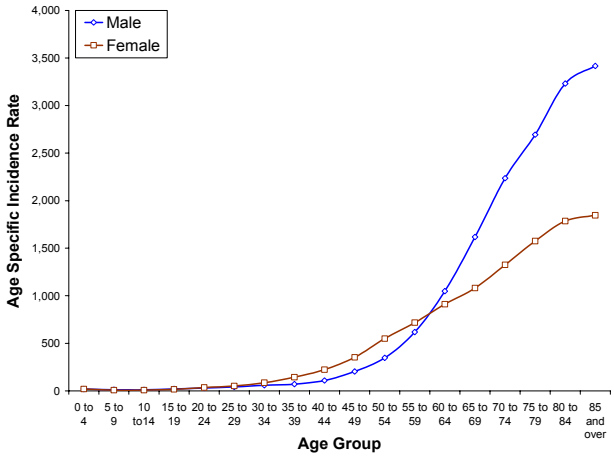
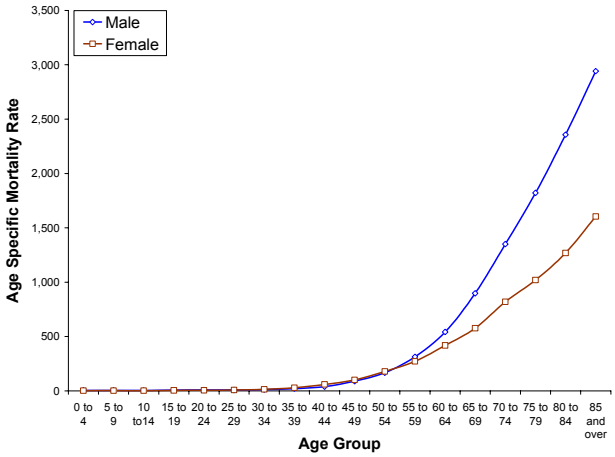
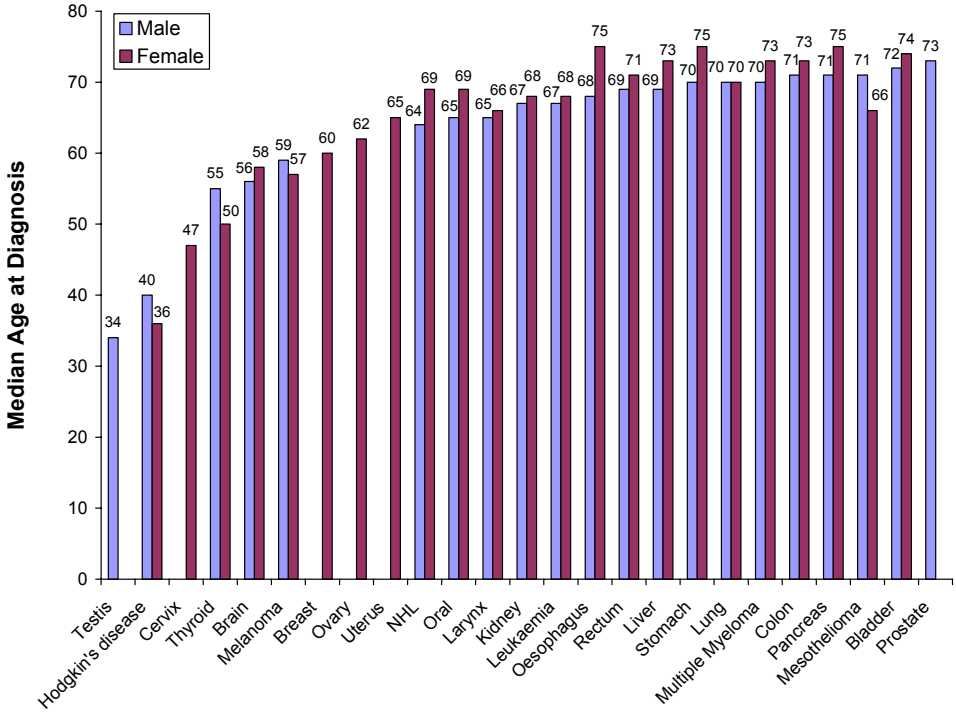


Figure 2.7: Age specific mortality rates for all cancers (excluding NMSC): 1993-2004



The majority of cancers were more common in older than younger persons. A few exceptions to this were testicular cancer, which during 1993-2004, had a median age at diagnosis of 34, Hodgkin's disease, which had a median age at diagnosis of 40 among males and 36 among females, and cervical cancer, which had a median age at diagnosis of 47. Females were usually diagnosed as having cancer later than males. Some exceptions were cancer of the thyroid, Hodgkin's disease, and malignant melanoma. The most common female cancer, breast cancer, had a younger median age at diagnosis of 60 than prostate cancer, the most common male cancer, which had a median age at diagnosis of 73. (Fig. 2.8)

Figure 2.8: Median age at diagnosis by sex and cancer site: 1993-2004



2.4: Geographic Distribution

Age-standardised incidence and deaths due to cancer in the two highly urban areas of Northern Ireland (Belfast metropolitan urban area and Derry urban area[8]) were higher than in Northern Ireland as a whole during 1993-2004. While incidence and deaths from cancer in small towns, villages and open countryside were lower than average, the levels of each in intermediate settlements and medium to large towns were similar to the levels in Northern Ireland as a whole. This pattern is likely linked with factors such as deprivation. (Fig. 2.9)

Focusing on deprivation, levels of new cancer cases and cancer deaths increased by increasing level of deprivation with the 20% most deprived areas in Northern Ireland having significantly higher levels of newly diagnosed cancer and deaths due to cancer compared to Northern Ireland as a whole and, in particular, the most affluent areas. (Fig. 2.9)

Table 2.4 illustrates the geographic distribution throughout Northern Ireland during 1993-2004 of newly diagnosed cancer cases and cancer deaths by Local Government District (LGD). Belfast LGD had the highest number of newly diagnosed cancers and cancer deaths each year due to its higher population. These values were higher than what would be expected if cancer cases and deaths were evenly distributed across Northern Ireland. Derry and Newry & Mourne District Councils also had higher than expected levels of newly diagnosed cancer and cancer deaths. Higher levels of cancer in these areas were driven by high incidence of lung cancer (in Belfast and Derry), stomach cancer (in Belfast and Newry & Mourne) and colorectal cancer (in Derry and Newry & Mourne). This is likely to be linked to higher levels of deprivation and the associated higher levels of tobacco use in these areas.

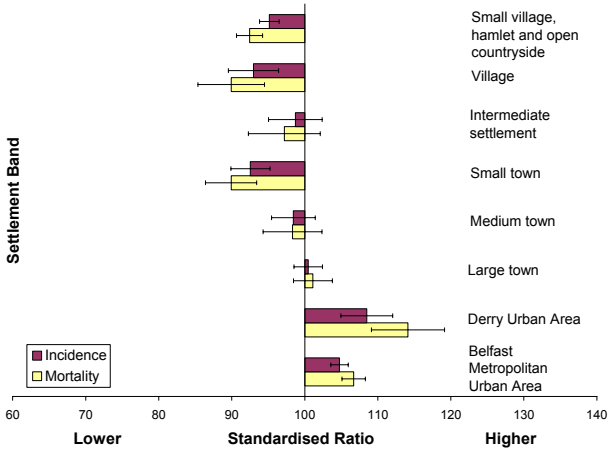
Table 2.4: Standardised incidence and mortality ratios for all cancers (excluding NMSC) by Local Government District: 1993-2004

Local Government District	Average number of cases per year	Standardised Incidence Ratio (95% CI)		Average number of deaths per year	Standardised Mortality Ratio (95% CI)	
Antrim	158	96.8	(92.5,101.2)	88	100.7	(94.6,106.8)
Ards	276	92.6	(89.4,95.7)	158	95.7	(91.4,100.0)
Armagh	194	97.6	(93.7,101.6)	103	94.5	(89.3,99.8)
Ballymena	223	91.8	(88.3,95.2)	126	93.3	(88.6,98.1)
Ballymoney	94	91.0	(85.7,96.3)	51	88.5	(81.5,95.6)
Banbridge	145	95.4	(90.9,99.9)	74	88.2	(82.3,94.0)
Belfast	1,294	109.7	(108.0,111.4)	775	116.0	(113.6,118.4)
Carrickfergus	143	100.3	(95.6,105.1)	82	105.2	(98.6,111.8)
Castlereagh	292	98.3	(95.1,101.6)	160	96.0	(91.7,100.3)
Coleraine	224	99.1	(95.4,102.8)	122	96.3	(91.4,101.3)
Cookstown	102	88.4	(83.5,93.4)	55	86.6	(80.0,93.2)
Craigavon	289	98.1	(94.8,101.4)	150	93.4	(89.1,97.7)
Derry	350	110.6	(107.2,113.9)	198	118.5	(113.8,123.3)
Down	235	98.5	(94.9,102.1)	127	96.1	(91.3,101.0)
Dungannon	167	96.9	(92.6,101.1)	87	92.0	(86.4,97.6)
Fermanagh	221	95.9	(92.3,99.6)	120	92.4	(87.6,97.2)
Larne	136	104.0	(98.9,109.0)	74	102.1	(95.3,108.8)
Limavady	96	95.9	(90.3,101.4)	51	95.1	(87.5,102.6)
Lisburn	366	95.5	(92.6,98.3)	193	92.6	(88.8,96.4)
Magherafelt	129	95.3	(90.6,100.1)	68	91.3	(85.1,97.6)
Moyle	69	103.3	(96.3,110.4)	36	95.7	(86.6,104.7)
Newry & Mourne	317	106.5	(103.2,109.9)	175	108.4	(103.8,113.1)
Newtownabbey	319	100.3	(97.2,103.5)	173	99.2	(94.9,103.4)
North Down	335	95.5	(92.5,98.4)	179	89.4	(85.6,93.2)
Omagh	153	91.4	(87.3,95.6)	77	83.0	(77.7,88.4)
Strabane	127	95.9	(91.1,100.7)	70	97.7	(91.1,104.3)
Unknown	65			38		
Total	6,519	100.0		3,609	100.0	

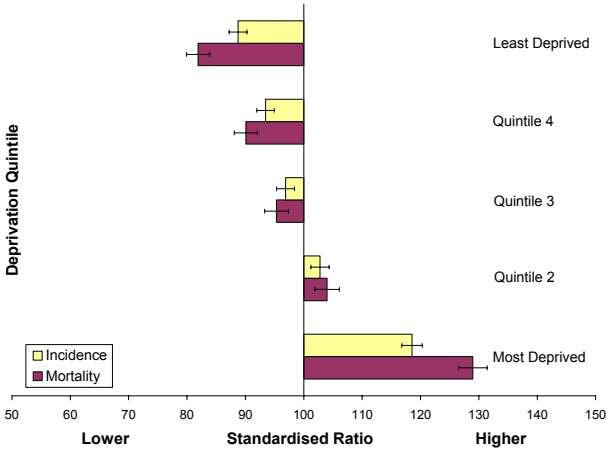
SIRs/SMRs in blue represent significantly lower or higher incidence or mortality than in Northern Ireland as a whole.

Figure 2.9: Standardised incidence and mortality ratios for all cancers (excluding NMSC) by settlement band and deprivation quintile: 1993-2004

(a) Settlement band



(b) Deprivation quintile



03: ALL CANCERS (Excluding non-melanoma skin cancer) (C00-C97, ex. C44)

KEY FACTS:

- **3,306 male and 3,477 female cases per year between 2000 and 2004 with no significant change in male incidence rates between 1999 and 2004, or female incidence rates between 1993 and 2004;**
- **1,879 male and 1,783 female deaths annually during 2000-2004 with decreasing male (-1.3% p.a.) and female (-0.8% p.a.) mortality rates between 1993 and 2004;**
- **Survival better in females than males (51.2% of females and 39.4% of males alive after five years), with five-year relative survival improving by 3.7% for males and females between 1993-1996 and 1997-2000;**
- **Survival decreased with increasing age with improvement over time for those aged 15-64 and 65-99;**
- **Survival varied significantly by cancer site, ranging from over 90% after five-years for testicular cancer and melanoma to less than 15% after one-year for liver and pancreatic cancer;**
- **Estimates using period analysis suggest that five-year survival will improve further for patients diagnosed in 2001-2004;**
- **Survival worse than in Europe and USA and in England for males but better than in Scotland for females.**

3.1: Incidence and Mortality

Incidence

Excluding non-melanoma skin cancer (NMSC) there were 3,306 male and 3,477 female cases of cancer diagnosed each year in 2000-2004. Despite the greater number of female cases, age-standardised rates were significantly higher in males than females. (Tab. 3.1)

Table 3.1: Incidence and mortality: All cancers excluding NMSC (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	3,306	3,477	1,879	1,783
Percentage of all cancers	73.1%	76.4%	99.6%	99.6%
Median age at diagnosis/death	70	68	72	73
Male to female ratio	1.0:1	-	1.1:1	-
Incidence to mortality ratio	1.8:1	2.0:1	-	-
Crude rate per 100,000 persons	398.9	400.6	226.7	205.4
European age-standardised rate per 100,000 persons (95% CI)	402.2 (396.1,408.4)	346.9 (341.5,352.3)	226.5 (221.9,231.1)	158.8 (155.3,162.3)

Mortality

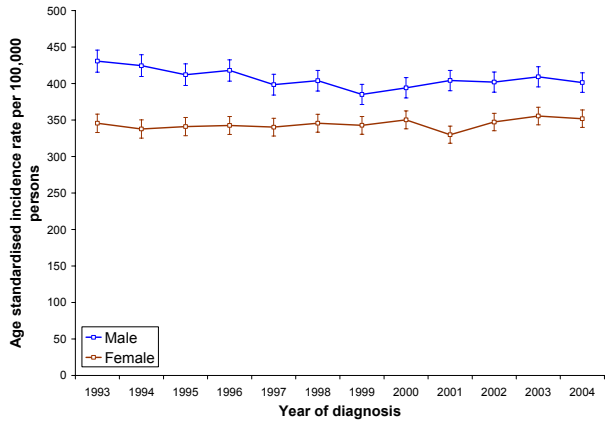
There was an annual average of 1,879 male and 1,783 female deaths in 2000-2004. Given the higher number of female cases, the incidence to mortality ratio was lower among males than females (1.8:1 compared to 2.0:1); a crude indication that survival was lower among males. (Tab. 3.1)

Trends

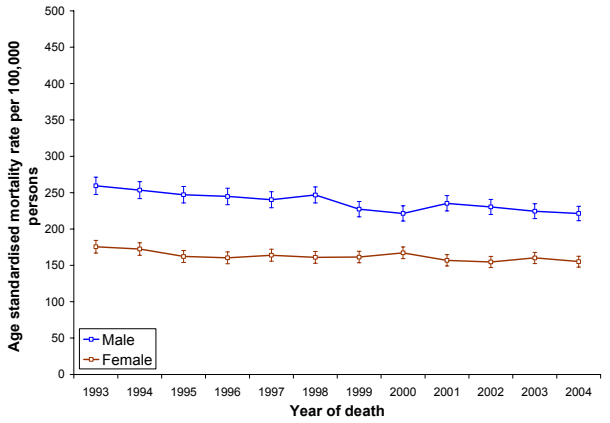
Male incidence rates (EASIR) decreased during 1993-1999 by 1.6% each year (p=0.002). This was followed by a period of no significant change in 1999-2004, although the actual number of cases rose by 86.9 per year. No significant change in female EASIRs occurred in 1993-2004, however, the annual number of cases increased by 40.6 per year due to the ageing of the population. (Fig. 3.1; App. 4&6)

Figure 3.1: Incidence and mortality trends: All cancers excluding NMSC (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



During 1993-2004 there was a downward trend of 1.3% (p<0.001) and 0.8% per year (p=0.003) in male and female mortality rates (EASMR) respectively. However the actual number of deaths increased by a small amount; 4.6 deaths per year for males and 9.2 deaths per year for females. (Fig. 3.1; App. 5&6)

3.2: Relative Survival

One-year relative survival from all cancers (excluding NMSC) was 65.1% for patients diagnosed in 2001-2003 while five-year relative survival was 45.7% for patients diagnosed in 1997-2000. (Tab. 3.2)

Table 3.2: Relative survival from all cancers excluding NMSC by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	55.5%	(54.5%, 56.4%)	64.8%	(64.0%, 65.7%)	60.3%	(59.6%, 60.9%)
	1997-2000	58.1%	(57.1%, 59.0%)	67.0%	(66.1%, 67.8%)	62.8%	(62.1%, 63.4%)
	2001-2003	61.6%	(60.5%, 62.6%)	68.5%	(67.5%, 69.5%)	65.1%	(64.4%, 65.9%)
3-year	**1993-1996**	40.9%	(39.9%, 41.9%)	52.0%	(51.0%, 52.9%)	46.6%	(45.9%, 47.3%)
	1997-2000	43.8%	(42.8%, 44.8%)	55.2%	(54.3%, 56.2%)	49.8%	(49.2%, 50.5%)
5-year	**1993-1996**	35.7%	(34.6%, 36.7%)	47.5%	(46.5%, 48.5%)	41.8%	(41.1%, 42.5%)
	1997-2000	39.4%	(38.3%, 40.4%)	51.2%	(50.2%, 52.2%)	45.7%	(44.9%, 46.4%)
7-year	**1993-1996**	33.2%	(32.1%, 34.3%)	45.1%	(44.0%, 46.1%)	39.4%	(38.6%, 40.1%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	73.2%	(71.9%, 74.5%)	79.7%	(78.7%, 80.7%)	76.8%	(76.0%, 77.6%)
	1997-2000	75.0%	(73.8%, 76.2%)	82.1%	(81.1%, 83.0%)	79.0%	(78.3%, 79.8%)
5-year*	**1993-1996**	63.3%	(61.8%, 64.8%)	72.5%	(71.3%, 73.7%)	68.5%	(67.5%, 69.4%)
	1997-2000	67.0%	(65.5%, 68.4%)	75.8%	(74.7%, 76.9%)	72.0%	(71.1%, 72.9%)
7-year*	**1993-1996**	58.6%	(57.0%, 60.2%)	68.4%	(67.1%, 69.7%)	64.1%	(63.1%, 65.2%)

* from diagnosis

Sex

Relative survival for females from cancer (excluding NMSC) was consistently higher than for males diagnosed during 1993-2003. (Tab. 3.2; Fig. 3.2)

One-year relative survival for patients diagnosed in 2001-2003 with cancer (excluding NMSC) was 61.6% for males compared to 68.5% for females (p<0.001). Five-year relative survival was 39.4% for males diagnosed in 1997-2000 compared to 51.2% of females. (Tab. 3.2; Fig. 3.2)

Figure 3.2: Relative survival from all cancers excluding NMSC by sex and period of diagnosis (1993-2000)

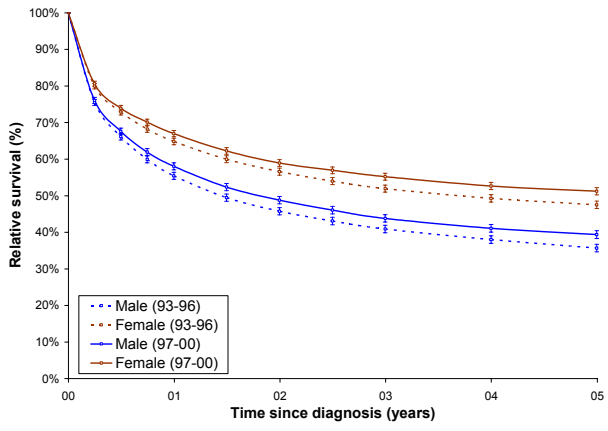
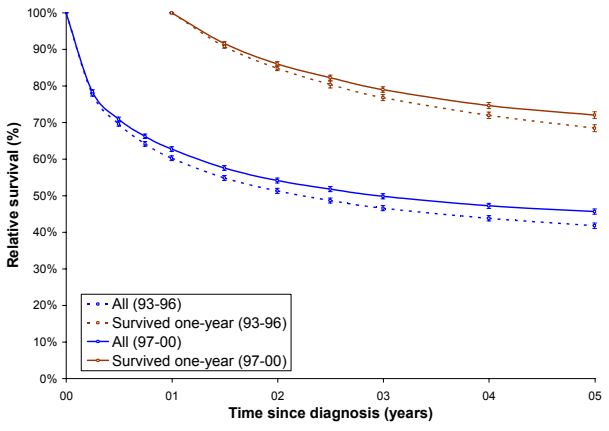


Figure 3.3: Relative survival from all cancers excluding NMSC by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Changes over time

Relative survival from all cancers (excluding NMSC) continuously improved for both males and females diagnosed during 1993-2003. (Tab. 3.2; Fig. 3.2)

One-year relative survival was 61.6% for males diagnosed in 2001-2003 compared to 55.5% for males diagnosed in 1993-1996, a significant increase of 6.1% (p<0.001), while female one-year relative survival increased between 1993-1996 and 2001-2003 by 3.7% (p<0.001) from 64.8% to 68.5%. (Tab. 3.2; Fig. 3.2)

Five-year relative survival improved for males between 1993-1996 and 1997-2000 with an additional 3.7% of male patients surviving five-years from diagnosis (p<0.001). A similar increase was noted for females with a 3.7% increase in five-year relative survival for patients diagnosed in 1997-2000 compared with those diagnosed in 1993-1996 (p<0.001). (Tab. 3.2; Fig. 3.2)

Conditional survival

Five-year relative survival from the date of diagnosis for the sub-group of patients who survived at least one-year from a diagnosis of cancer (excluding NMSC) was 72.0%, while seven-year survival was 64.1%. This conditional survival was significantly higher among females than males (p<0.001). (Tab. 3.2; Fig. 3.3)

Five-year relative survival for these patients improved between 1993-1996 and 1997-2000 by 3.7% (p<0.001) and 3.3% (p<0.001) for males and females respectively. (Tab. 3.2; Fig. 3.3)

Age

For patients diagnosed with cancer (excluding NMSC) relative survival was better among those aged 15-64 than those aged 65-99 (p<0.001). (Tab. 3.3)

Five-year relative survival for both age groups demonstrated improvement over time with 58.3% of 15-64 year olds and 37.0% of 65-99 year olds diagnosed in 1997-2000 surviving five-years compared to 54.2% of 15-64 year olds and 33.5% of 65-99 year olds diagnosed in 1993-1996. (Tab. 3.3)

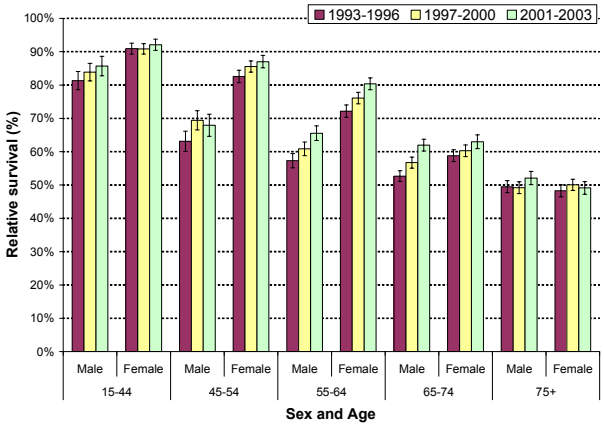
Table 3.3: Relative survival from all cancers excluding NMSC by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	72.9%	(72.0%, 73.8%)	52.1%	(51.2%, 53.0%)
	1997-2000	76.2%	(75.3%, 77.0%)	53.8%	(52.9%, 54.7%)
	2001-2003	78.5%	(77.5%, 79.4%)	56.2%	(55.2%, 57.1%)
5-year	1993-1996	54.2%	(53.1%, 55.3%)	33.5%	(32.5%, 34.4%)
	1997-2000	58.3%	(57.3%, 59.3%)	37.0%	(36.0%, 38.0%)

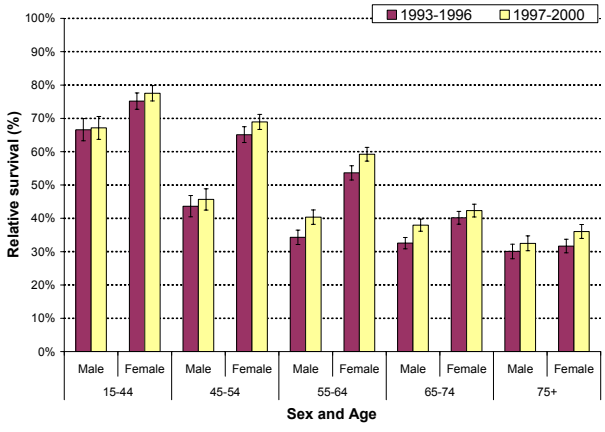
For patients diagnosed in 1997-2000 relative survival decreased among females as age increased (p<0.002) with five-year relative survival ranging from 77.5% among younger (aged 15-44) to 36.1% among older (aged 75 and over) females. Survival among males aged 15-44 was also better than in older age groups. (Fig. 3.4; App. 8)

Figure 3.4: Relative survival from all cancers excluding NMSC by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



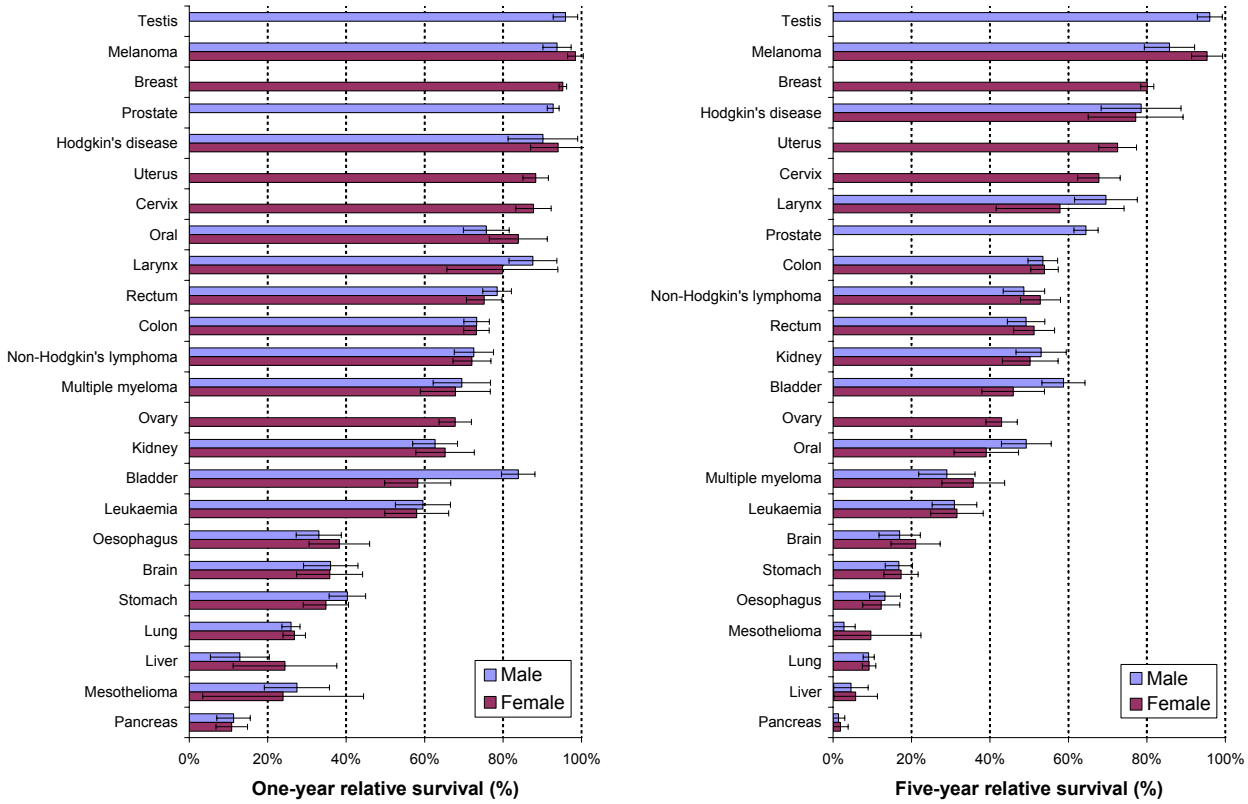
Five-year relative survival among males and females aged 55-64 improved between 1993-1996 and 1997-2000 by 6.0% (p=0.006) and 5.6% (p=0.009) respectively. Improvements in five-year relative survival also occurred for males aged 65-74 (5.3%; p=0.003) and for females aged 75-99 (4.4%; p=0.037). (Fig. 3.4; App. 8)

Cancer site

Relative survival depended greatly upon 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. (Fig. 3.5)

Figure 3.5: Relative survival from all cancers excluding NMSC by sex and cancer site

(a) One-year survival (patients diagnosed in 2000-2003) *(b) Five-year survival (patients diagnosed in 1996-2000)*



3.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) from all cancers excluding NMSC was 59.3% for male and 66.7% for female patients diagnosed between 2001 and 2003. Five-year observed survival was 31.7% for male and 45.1% for female patients diagnosed between 1997 and 2000. (Tab. 3.4)

Table 3.4: Observed survival from all cancers excluding NMSC by sex and period of diagnosis (1993-2003)

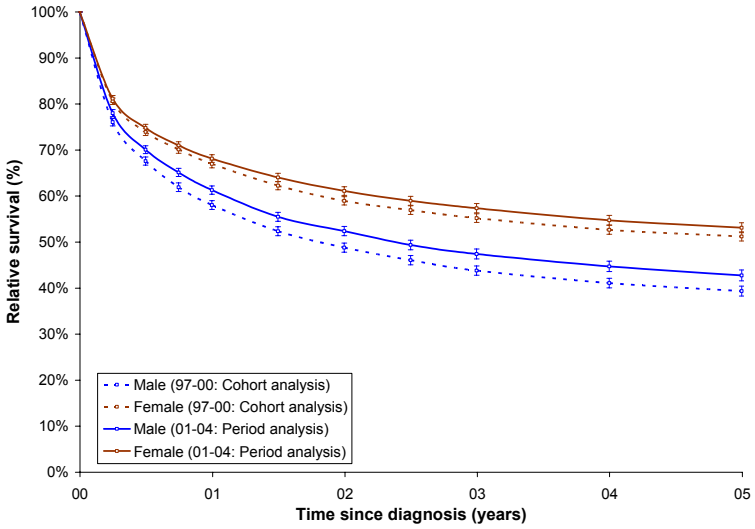
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	53.0%	(52.0%, 53.9%)	63.1%	(62.2%, 63.9%)	58.1%	(57.5%, 58.7%)
	1997-2000	55.6%	(54.7%, 56.5%)	65.2%	(64.4%, 66.0%)	60.6%	(60.0%, 61.3%)
	2001-2003	59.3%	(58.3%, 60.3%)	66.7%	(65.8%, 67.7%)	63.1%	(62.4%, 63.8%)
5-year	1993-1996	28.1%	(27.3%, 28.9%)	41.6%	(40.7%, 42.5%)	35.0%	(34.4%, 35.6%)
	1997-2000	31.7%	(30.8%, 32.5%)	45.1%	(44.2%, 46.0%)	38.7%	(38.1%, 39.3%)

3.4: Period Analysis

Traditional methods for producing five-year relative survival rates (cohort analysis) require five-years worth of follow up data and do not reflect more recent survival experience. More up to date survival rates can however be estimated using period analysis.

Five-year survival from all cancers (excluding NMSC) for males diagnosed in 2001-2004 derived using this approach was 42.8% while for females it was 53.1%. While not directly comparable with results from traditional methods, these estimates represent an improvement in survival for male patients compared to those diagnosed in 1997-2000. Improvements in female survival were not significant, but only by a slight margin. (Fig. 3.6; App. 7)

Figure 3.6: Estimated relative survival (period analysis) from all cancers excluding NMSC for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000



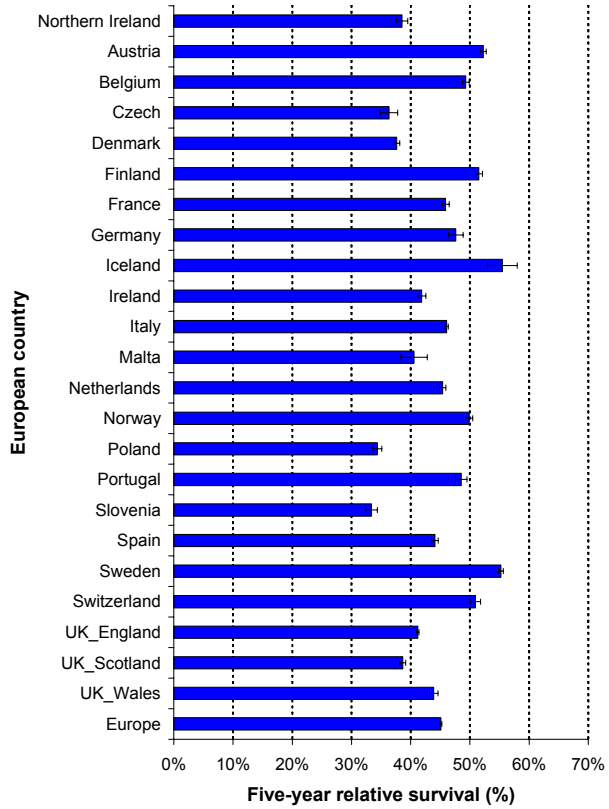
3.5: International Comparisons

EUROCARE-4 study

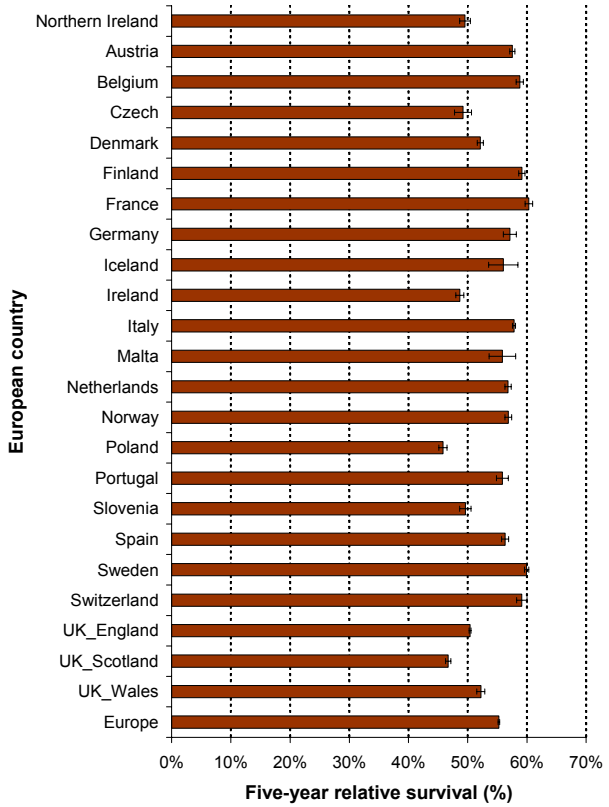
Comparisons with countries included in the EUROCARE-4 study illustrates that Northern Ireland had a lower age-standardised relative survival rate for patients diagnosed in 1995-1999 than Europe for males

Figure 3.7:Comparison of five-year age-standardised relative survival from all cancers excluding NMSC with other European countries

(a) Male



(b) Female



Source:EUROCARE-4 (2007)[29]

and females. For males survival was significantly lower than in England, Ireland and Wales, but was similar to that in Scotland, while for females survival was higher than in Scotland, was similar to England and Ireland but was lower than in Wales. Compared to the other European countries survival in Northern Ireland was lower than most but was higher than in Poland and was similar to that in the Czech Republic. (Fig. 3.7)

Other countries

Male and female five-year relative survival rates for all cancers (excluding NMSC) in Northern Ireland during the late 1990s were considerably lower than in Australia, Canada and the USA. However these differences are likely to be due to a different mix of cancers present in each country than any major difference in other factors effecting survival probability. (Tab. 3.5)

Table 3.5: Five-year relative survival from all cancers excluding NMSC for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	39.4%	51.2%
USA	**1996-2002**	65.3%	64.8%
Canada	**1995-1997**	57.0%	61.5%
Australia	**1992-1997**	56.8%	63.4%
New Zealand	**1994-1999**	-	-

3.6: Summary and Discussion

Rates of new cases of cancer in Northern Ireland are fairly static although the actual number of cases is increasing due to the ageing of the population. Despite this as survival continues to improve mortality rates are decreasing in Northern Ireland along with other countries in the UK[31,32].

Cancer can develop as a result of factors related to environment, lifestyle, and heredity. While our current understanding of the causes of cancer is incomplete, many risk factors that increase the possibility of getting cancer have been identified. These include age, history of cancer in the family, tobacco use, alcohol consumption, lack of balanced diet, lack of physical activity, obesity, exposure to ultraviolet radiation from sunshine or sunbeds, exposure to certain chemicals and gases such as asbestos, benzene or radon gas, exposure to ionising radiation, infections such as human papillomavirus (HPV), treatments such as exposure to oestrogen through Hormone Replacement Therapy (HRT), late or lack of reproduction in females and lack of breast feeding in females. While most people with a particular risk factor for cancer will not contract the disease, the possibility of developing cancer can increase as exposure to a risk factor increases.

Tobacco is a major risk factor in the development of many cancers (e.g. lung, larynx, oesophagus, stomach, pancreas, kidney and bladder). The introduction of smoke-free workplaces in 2007 should reduce exposure to tobacco smoke and thus levels of these cancers. The population must also strive to increase fruit and vegetable consumption, maintain a healthy body weight and take regular exercise to reduce their cancer risk.

Upon developing cancer, survival probability depends upon sex and age but will vary greatly depending upon the type of cancer. Survival is improving over time but further improvements are possible as evidenced by the higher survival rates in other countries. Survival from cancer is improved when the cancer is detected early. The population should be encouraged to use screening services when invited, remain vigilant and seek expert advice about new symptoms and/or changes in their bodies which may indicate cancer.

04: CANCER OF THE LIP, ORAL CAVITY & PHARYNX (C00-C14)

KEY FACTS:

- **90 male and 44 female cases per year between 2000 and 2004 with decreasing male (-3.0% p.a.) and no significant change in female incidence rates between 1993 and 2004;**
- **31 male and 18 female deaths per year between 2000 and 2004 with decreasing male (-2.6% p.a.) and no significant change in female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 49.3% of males and 39.1% of females alive after five years, with one-year survival having improved for females from 64.6% to 83.9% between 1997-2000 and 2001-2003;**
- **Survival better for those aged 15-64 than for those aged 65 and over;**
- **Survival worse than in USA and Canada.**

4.1: Incidence and Mortality

Incidence

Cancer of the lip, oral cavity and pharynx made up 2.2% of male and 1.1% of female cancers between 2000 and 2004. It was more common among males than females with 90 male and 44 female cases each year making it the eleventh most common male cancer and eighteenth most common female cancer. (Tab. 4.1)

Table 4.1: Incidence and mortality: Cancer of the lip, oral cavity & pharynx (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	90	44	31	18
Percentage of all cancers	2.2%	1.1%	1.7%	1.1%
Rank	11	18	14	17
Median age at diagnosis/death	63	66	67	71
Male to female ratio	2.0:1	-	1.8:1	-
Incidence to mortality ratio	2.9:1	2.5:1	-	-
Crude rate per 100,000 persons	10.8	5.1	3.8	2.0
European age-standardised rate per 100,000 persons (95% CI)	11.3 (10.2,12.3)	4.4 (3.8,5.0)	3.9 (3.3,4.5)	1.7 (1.3,2.1)

Mortality

There were 31 male and 18 female deaths per year during 2000 to 2004 making up 1.7% of male and 1.1% of female cancer deaths. It was the fourteenth commonest cause of male cancer death and seventeenth among females. (Tab. 4.1)

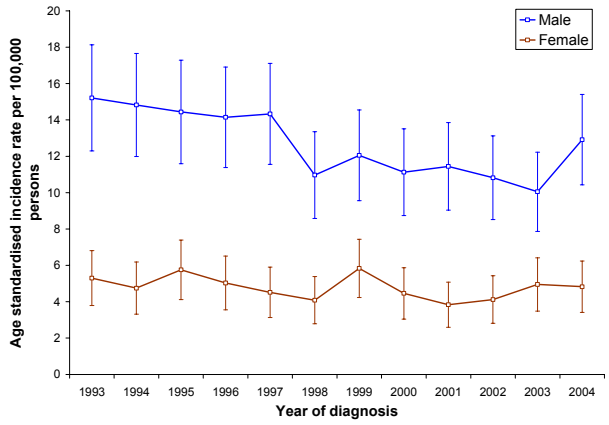
Trends

Male incidence rates (EASIR) for oral cancer fell in 1993-2004 by 3.0% each year (p=0.002) corresponding to a decrease of 1.6 cases per year. Female EASIRs remained unchanged, although the number of cases decreased by an average of 0.6 per year. (Fig. 4.1; App. 4&6)

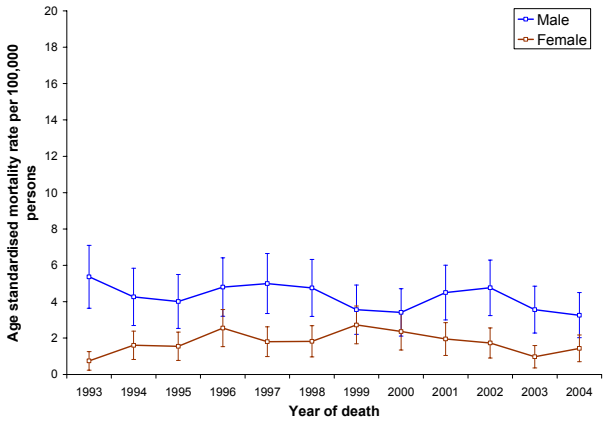
Male mortality rates (EASMR) for cancer of the lip, oral cavity and pharynx fell during 1993-2004 by 2.6% each year (p=0.049) while female EASMRs exhibited no significant trend (p>0.05). Variations in the actual number of deaths for both sexes were small over the twelve-year period. (Fig. 4.1; App. 5&6)

Figure 4.1: Incidence and mortality trends: Cancer of the lip, oral cavity & pharynx (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



4.2: Relative Survival

Relative survival from oral cancer was average with 78.5% of patients diagnosed between 2001 and 2003 surviving one-year and 45.7% diagnosed between 1997 and 2000 surviving five years. (Tab. 4.2)

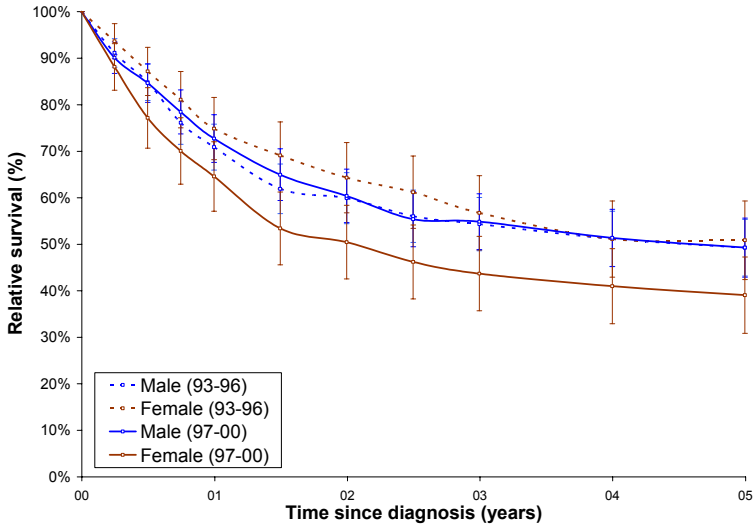
Table 4.2: Relative survival from cancer of the lip, oral cavity & pharynx by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	70.9%	(65.9%, 75.8%)	74.9%	(68.2%, 81.6%)	72.2%	(68.2%, 76.2%)
	1997-2000	72.7%	(67.6%, 77.9%)	64.6%	(57.1%, 72.0%)	69.9%	(65.7%, 74.2%)
	2001-2003	75.7%	(69.9%, 81.5%)	83.9%	(76.5%, 91.3%)	78.5%	(73.9%, 83.1%)
3-year	**1993-1996**	54.3%	(48.6%, 60.1%)	56.7%	(48.8%, 64.7%)	55.1%	(50.5%, 59.8%)
	1997-2000	54.9%	(48.9%, 60.8%)	43.7%	(35.7%, 51.7%)	51.0%	(46.2%, 55.8%)
5-year	**1993-1996**	49.3%	(43.2%, 55.4%)	50.9%	(42.4%, 59.3%)	49.8%	(44.8%, 54.7%)
	1997-2000	49.3%	(42.9%, 55.6%)	39.1%	(30.8%, 47.3%)	45.7%	(40.7%, 50.8%)

Sex

Relative survival from cancer of the lip, oral cavity & pharynx was similar for males and females. For example, 49.3% of males diagnosed in 1997-2000 were alive after five-years compared to 39.1% of females; a difference of 10.2% which was not statistically significant (p>0.05). (Tab. 4.2; Fig. 4.2)

Figure 4.2: Relative survival from cancer of the lip, oral cavity & pharynx by sex and period of diagnosis (1993-2000)



Changes over time

One-year relative survival for female patients diagnosed with cancer of the lip, oral cavity & pharynx improved during 1997-2003 with 64.6% of females diagnosed between 1997-2000 surviving one year compared to 83.9% of females diagnosed between 2001-2003; a statistically significant difference of 19.3% (p=0.011).

There were no statistically significant changes in male one, three or five-year relative survival or in female three or five-year relative survival for patients diagnosed with this cancer between 1993 and 2003 (p>0.05). (Tab. 4.2; Fig. 4.2)

Age

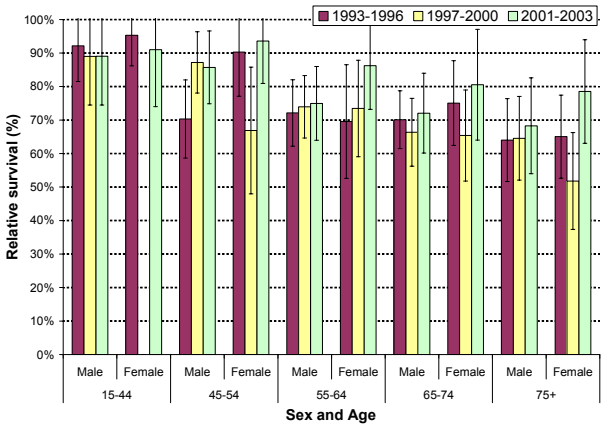
One and five-year relative survival for those aged 15-64 diagnosed with cancer of the lip, oral cavity & pharynx in 1997-2000 was better than for those aged 65-99 (p=0.009). Differences between these age groups for the 1993-1996 and 2001-2003 periods were not significant (p<0.05). There were no significant improvements over time for either age group. (Tab. 4.3)

Table 4.3: Relative survival from cancer of the lip, oral cavity & pharynx by age and period of diagnosis (1993-2003)

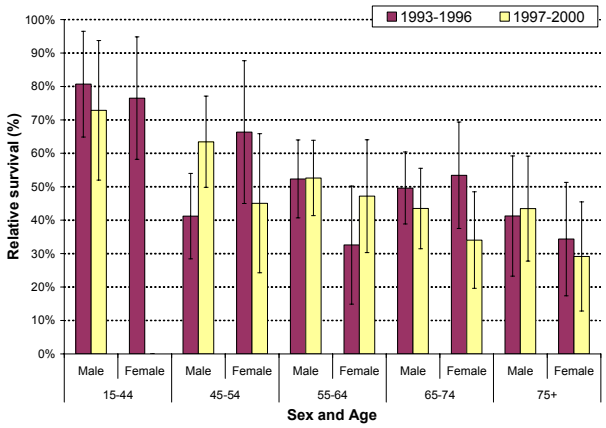
Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	**1993-1996**	77.1%	(71.6%, 82.5%)	68.4%	(62.8%, 74.0%)
	1997-2000	78.2%	(72.8%, 83.7%)	62.8%	(56.5%, 69.0%)
	2001-2003	83.3%	(77.7%, 89.0%)	73.5%	(66.3%, 80.7%)
5-year	**1993-1996**	53.5%	(46.9%, 60.1%)	47.1%	(39.8%, 54.3%)
	1997-2000	56.2%	(49.3%, 63.0%)	36.4%	(29.2%, 43.6%)

Figure 4.3: Relative survival from cancer of the lip, oral cavity & pharynx by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



Note: Missing entries refer to less than 10 persons in that age/sex group

For patients diagnosed in 1993-1996 five-year relative survival was better among males aged 15-44 compared with those aged over 44 (p=0.039). There were no statistically significant changes in relative survival over time for individual male or female age groups during 1993-2003. (Fig. 4.3; App. 8)

4.3: International Comparisons

There is considerable variation in the manner in which most cancer registries produce survival rates for oral cancer with different organisations including different parts of the head and neck. For example the EUROCARE-3 study produces survival estimates on the head and neck excluding the salivary glands. As a consequence only a few international comparisons are possible for this cancer.

Table 4.4: Five-year relative survival from cancer of the lip, oral cavity & pharynx for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	49.3%	39.1%
USA	**1996-2002**	57.6%	61.3%
Canada	**1995-1997**	61.0%	63.0%
Australia	**1992-1997**	-	-
New Zealand	**1994-1999**	-	-

In the USA five-year relative survival was 57.6% for males and 61.3% for females diagnosed between 1996 and 2002 while in Canada five-year relative survival was 61.0% for males and 63.0% for females diagnosed between 1995 and 1997. Both were significantly higher than the five-year relative survival rates in Northern Ireland for persons diagnosed in 1997-2000. (Tab. 4.4)

4.4: Summary and Discussion

Tobacco and excessive alcohol consumption are linked with cancers of the lip, oral cavity and pharynx[33]. Diet can also affect the risk of developing oral cancers with a deficiency in zinc or Vitamin A increasing the risk and a diet high in fresh fruit and vegetables reducing the risk[33]. A weakened immune system, caused for example by medicines taken after an organ transplant, can increase the risk of developing oral cancer[33] and a possible link with human papillomavirus (HPV) has recently been reported[34] although this remains to be proven. Exposure to UV radiation from sunshine or sunbeds is also known to be a risk factor for cancer of the lip[33] while regular exposure to certain chemicals such as wood dust, paint fumes or soot increase the risk of cancer of the mouth, nasal cavity or pharynx[33].

The falling levels of oral cancer in Northern Ireland are likely due to a reduction in the use of tobacco with further reductions possible if tobacco use was further curtailed. Survival in Northern Ireland from the disease is average with no evidence of changes over time.

05: OESOPHAGEAL CANCER (C15)

KEY FACTS:

- **92 male and 59 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **97 male and 56 female deaths per year between 2000 and 2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 13.2% of males and 12.3% of females alive after five years, with five-year survival having improved for males from 5.7% to 13.2% between 1993-1996 and 1997-2000;**
- **One-year survival better for 15-64 year olds than 65-99 years olds but no significant variation in five-year survival;**
- **Similar five-year survival to the rest of the UK, North America and Europe.**

5.1: Incidence and Mortality

Incidence

In 2000-2004 there were 92 male oesophageal cancer cases per year, representing 2.0% of male cancers making it the ninth commonest male cancer. This cancer was less common among females with 59 cases diagnosed annually. It was the fourteenth commonest female cancer making up 1.3% of female cancer cases. (Tab. 5.1)

Table 5.1: Incidence and mortality: Oesophageal cancer (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	92	59	97	56
Percentage of all cancers	2.0%	1.3%	5.1%	3.1%
Rank	9	14	5	8
Median age at diagnosis/death	69	75	69	76
Male to female ratio	1.6:1	-	1.7:1	-
Incidence to mortality ratio	1.0:1	1.1:1	-	-
Crude rate per 100,000 persons	11.1	6.8	11.7	6.4
European age-standardised rate per 100,000 persons (95% CI)	11.4 (10.3,12.4)	5.0 (4.4,5.6)	11.8 (10.7,12.8)	4.5 (4.0,5.1)

Mortality

There were 97 newly diagnosed male oesophageal cancer deaths per year in 2000 -2004. This represented 5.1% of cancer deaths with this cancer the fifth commonest male cancer death. Among females there were 56 deaths per year from oesophageal cancer between 2000 and 2004. It was the eighth commonest female cancer death making up 3.1% of female cancer deaths. (Tab. 5.1)

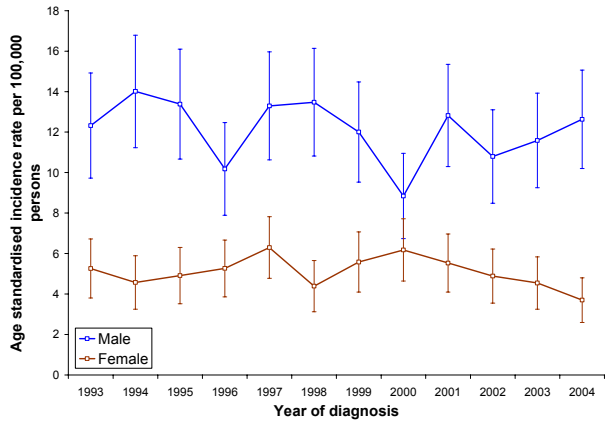
Trends

No significant trends in male or female incidence rates (EASIR) existed for this cancer during 1993-2004 (p>0.05). The number of male and female cases was also fairly static over time. (Fig. 5.1; App. 4&6)

Mortality rates (EASMR) were also static during 1993-2004 (p>0.05), however the number of deaths increased annually among males and females by 1.9 and 0.9 respectively with the exception of the 2002-2004 period which saw a drop of 2.5 deaths per year among females. (Fig. 5.1; App. 5&6)

Figure 5.1: Incidence and mortality trends: Oesophageal cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates

5.2: Relative Survival

Relative survival from cancer of the oesophagus was poor with 35.0% of patients diagnosed in 2001-2003 surviving one-year and 12.8% of patients diagnosed in 1997-2000 surviving five years. (Tab. 5.2)

Table 5.2: Relative survival from oesophageal cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	27.2%	(22.3%, 32.1%)	30.9%	(24.3%, 37.4%)	28.6%	(24.7%, 32.5%)
	1997-2000	35.6%	(30.4%, 40.8%)	29.4%	(23.5%, 35.3%)	33.0%	(29.1%, 37.0%)
	2001-2003	33.0%	(27.3%, 38.8%)	38.3%	(30.6%, 46.0%)	35.0%	(30.4%, 39.6%)
3-year	**1993-1996**	10.0%	(6.6%, 13.4%)	16.1%	(10.7%, 21.6%)	12.3%	(9.3%, 15.2%)
	1997-2000	15.4%	(11.4%, 19.5%)	13.7%	(9.0%, 18.3%)	14.7%	(11.6%, 17.8%)
5-year	**1993-1996**	5.7%	(3.0%, 8.4%)	14.4%	(9.0%, 19.8%)	8.9%	(6.3%, 11.6%)
	1997-2000	13.2%	(9.3%, 17.2%)	12.3%	(7.6%, 17.0%)	12.8%	(9.8%, 15.8%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	36.4%	(25.9%, 47.0%)	51.9%	(38.3%, 65.5%)	42.7%	(34.3%, 51.2%)
	1997-2000	43.2%	(33.8%, 52.6%)	46.2%	(33.4%, 58.9%)	44.2%	(36.7%, 51.8%)
5-year*	**1993-1996**	22.0%	(12.6%, 31.4%)	45.9%	(31.7%, 60.1%)	31.7%	(23.4%, 39.9%)
	1997-2000	36.8%	(27.3%, 46.4%)	41.3%	(27.8%, 54.7%)	38.4%	(30.6%, 46.2%)

* from diagnosis

Sex

For patients diagnosed in 2001-2003 and 1997-2000 relative survival from oesophageal cancer was similar for males and females. In particular five-year relative survival for males diagnosed in 1997-2000 was 13.2% compared to 12.3% for females; a difference of only 0.9% (p>0.05). This differs from the situation for patients diagnosed in 1993-1996 when a difference of 8.7% existed between five-year relative survival for males and females (p=0.036). (Tab. 5.2; Fig.5.2)

Changes over time

There was an improvement in male five-year relative survival for patients diagnosed with cancer of the oesophagus during 1993-2000 with 5.7% of males diagnosed between 1993-1996 surviving five years compared to 13.2% of males diagnosed between 1997-2000 (p=0.027). (Tab. 5.2; Fig. 5.2)

There were no statistically significant changes in female one or five-year relative survival or in male one-year relative survival for patients diagnosed between 1993 and 2003 (p>0.05). (Tab. 5.2; Fig. 5.2)

Figure 5.2: Relative survival from oesophageal cancer by sex and period of diagnosis (1993-2000)

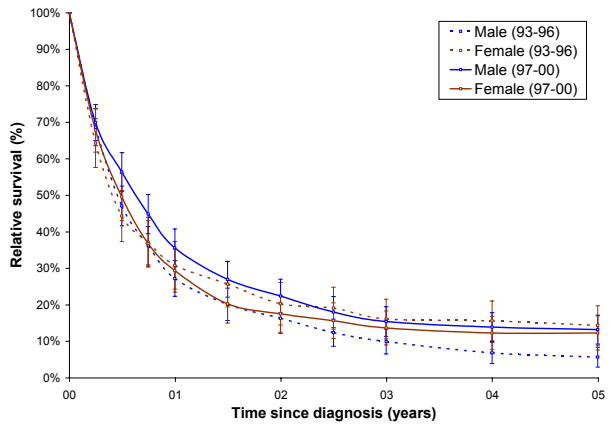
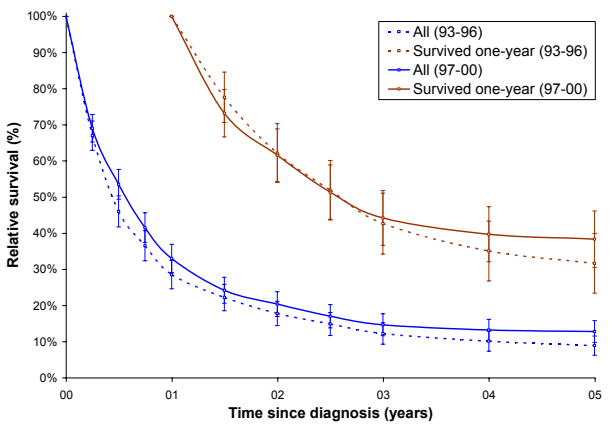


Figure 5.3: Relative survival from oesophageal cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Conditional survival

Five-year relative survival for patients who survived one-year from diagnosis and were diagnosed in 1997-2000 was 38.4%. This conditional survival rate did not vary by sex during this period; however as with all patients this proportion was worse for males than for females diagnosed in 1993-1996 (p=0.048). There were no significant changes over time for conditional survival. (Tab. 5.2; Fig. 5.3)

Age

One-year relative survival for those aged 15-64 diagnosed with oesophageal cancer in 1993-1996 and 2001-2003 was better than for those aged 65-99 (p=0.04).

Differences in five-year relative survival for patients diagnosed during 1993-2000 were not statistically significant (p<0.05). There were also no significant improvements over time for either age group. (Tab. 5.3)

Table 5.3: Relative survival from oesophageal cancer by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	37.0%	(29.7%, 44.3%)	24.6%	(20.0%, 29.1%)
	1997-2000	40.6%	(33.6%, 47.5%)	29.2%	(24.5%, 33.9%)
	2001-2003	47.8%	(39.3%, 56.2%)	29.1%	(23.7%, 34.4%)
5-year	1993-1996	10.4%	(5.7%, 15.1%)	8.3%	(5.0%, 11.6%)
	1997-2000	17.3%	(11.7%, 22.8%)	10.6%	(7.0%, 14.2%)

5.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) from oesophageal cancer was 31.9% for male and 36.8% for female patients diagnosed between 2001 and 2003. Five-year observed survival was 11.3% for male and 9.8% for female patients diagnosed between 1997 and 2000. (Tab. 5.4)

Table 5.4: Observed survival from oesophageal cancer by sex and period of diagnosis (1993-2003)

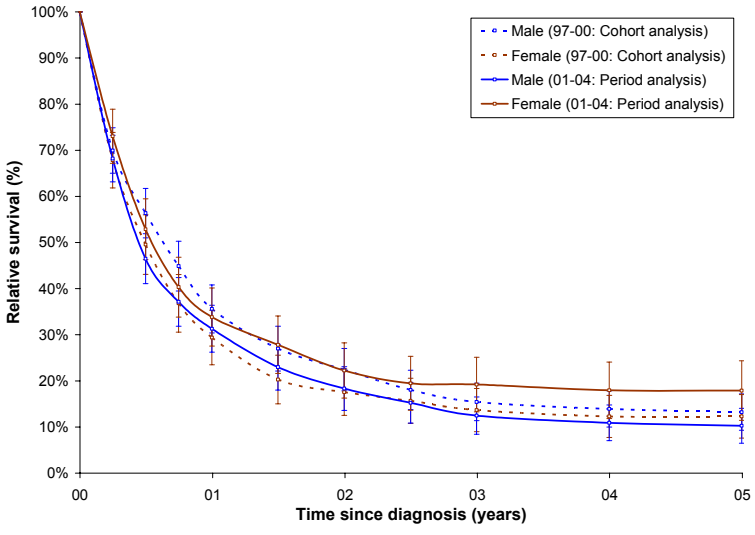
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	26.2%	(21.5%, 30.9%)	29.6%	(23.3%, 35.8%)	27.5%	(23.7%, 31.2%)
	1997-2000	34.3%	(29.3%, 39.3%)	28.1%	(22.4%, 33.8%)	31.7%	(28.0%, 35.5%)
	2001-2003	31.9%	(26.3%, 37.4%)	36.8%	(29.4%, 44.2%)	33.7%	(29.3%, 38.2%)
5-year	1993-1996	4.8%	(2.5%, 7.0%)	11.8%	(7.4%, 16.3%)	7.4%	(5.2%, 9.6%)
	1997-2000	11.3%	(7.9%, 14.6%)	9.8%	(6.1%, 13.6%)	10.7%	(8.2%, 13.2%)

5.4: Period Analysis

Five-year survival from oesophageal cancer for patients diagnosed in 2001-2004 derived using the period analysis approach, in order to reflect more recent survival experiences, was 10.3% for males and 17.9% for females. The difference between males and females was not statistically significant (p<0.05). (Fig. 5.4; App. 7)

Neither estimate constituted a significant change from the actual five-year relative survival of those diagnosed in 1997-2000, although it should be emphasised that the results are not directly comparable. (Fig. 5.4; App. 7)

Figure 5.4: Estimated relative survival (period analysis) from oesophageal cancer for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.

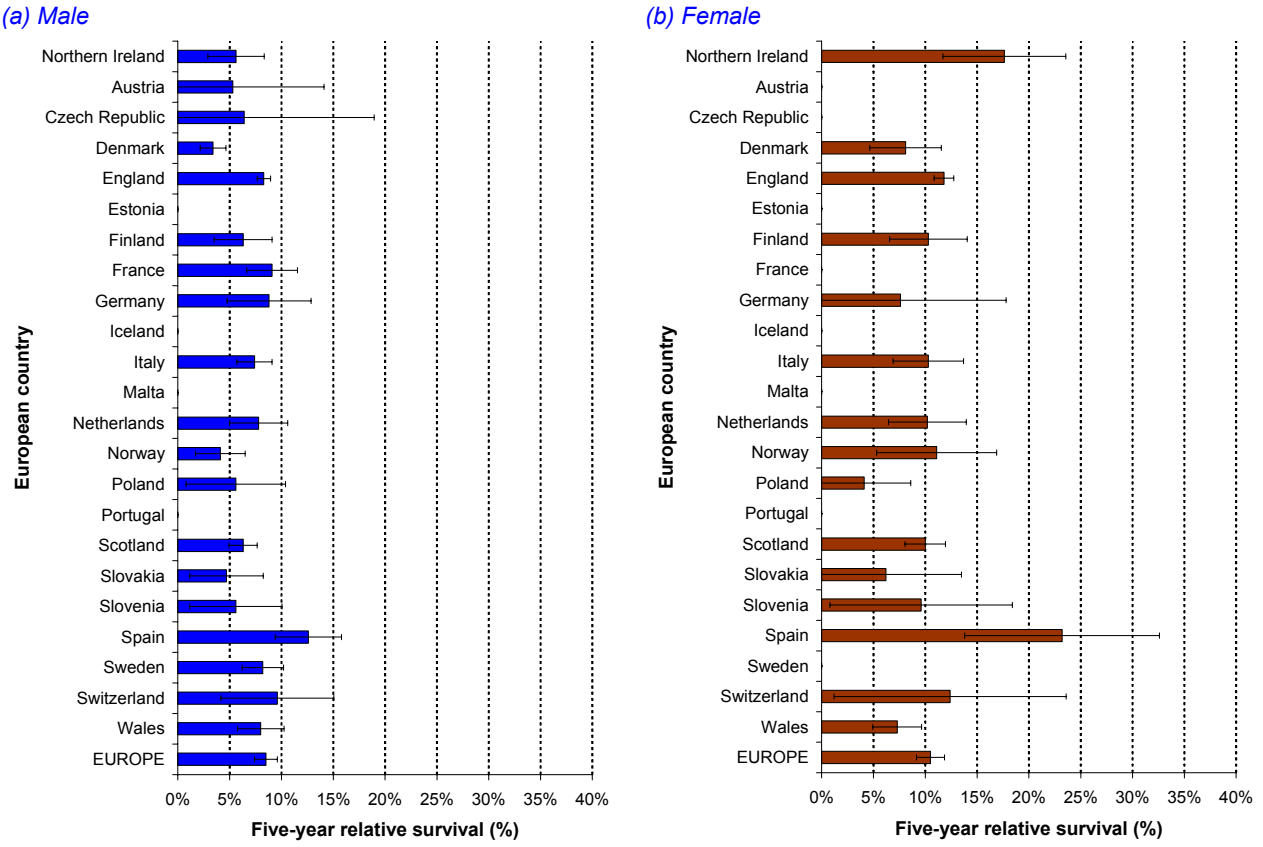


5.5: International Comparisons

EUROCARE-3 study

The five-year age-standardised relative survival rate for males diagnosed with oesophageal cancer between 1993 and 1996 was 5.6% while for females the rate was 17.6%. Based upon the EUROCARE-3 study, for males this was similar to all other European countries with the exception of Spain which had significantly better survival. For females survival in Northern Ireland was better than in Denmark, Poland and Wales. (Fig. 5.5)

Figure 5.5: Comparison of five-year age-standardised relative survival from oesophageal cancer with other European countries



Source: EUROCARE-3 (2003)[27,28]

Other countries

The most recent estimates of five-year survival in Northern Ireland were similar to those from other countries including North America, Canada and New Zealand. (Tab. 5.5)

Table 5.5: Five-year relative survival from oesophageal cancer for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	13.2%	12.3%
USA	**1996-2002**	15.4%	16.0%
Canada	**1995-1997**	12.0%	15.0%
Australia	**1992-1997**	-	-
New Zealand	**1994-1999**	11.1%	13.6%

5.6: Summary and Discussion

Incidence and deaths from oesophageal cancer in Great Britain have been steadily rising over the last 30 years. This has not been the case in Northern Ireland over the last twelve years although this may be due to the shorter period of examination. Rates among males, however, are significantly higher than in females; a similar situation to the rest of the UK which is likely due to lifestyle factors[35].

The major risk factors for oesophageal cancer are tobacco and alcohol use. Both of these can interact to give an even higher risk than either on their own with the risk increasing with increased tobacco and alcohol consumption[36]. A diet low in fresh fruit, vegetables and high protein foods resulting in insufficient quantities of zinc and vitamins being ingested also increases the risk of developing this cancer[37]. The consumption of

large quantities of fried, barbecued or roasted meat may increase risk[38] while obesity significantly increases the chances of developing oesophageal cancer[37].

Patients with gastro-oesophageal reflux, including those with Barrett's oesophagus, are at a higher risk of developing adenocarcinoma of the oesophagus[39,40] and human papillomavirus (HPV) is a possible, but as yet unproven, risk[41]. Certain drugs such as aminiphyllines and beta agonists can increase risk by a small amount while aspirin and anti-inflammatory drugs can have a slight protective effect[38]. Regular exposure over long periods of time to certain chemicals such as metal dust, vehicle exhaust, soot, lye or silica dust can increase the risk of developing this cancer[38].

Survival from the disease is poor although improvement has occurred in male survival over the last decade so that male and female survival from the disease is similar. Age has an impact on one-year survival but not on longer term survival although this may be a result of the small number of cases examined. Surgical resection is seen to improve survival probability. Unfortunately not all patients qualify for these procedures due to poor health or advanced disease stage.

06: STOMACH CANCER (C16)

KEY FACTS:

- **148 male and 95 female cases per year between 2000 and 2004 with decreasing male (-2.5% p.a.) and female (-2.2% p.a.) incidence rates between 1993 and 2004;**
- **101 male and 71 female deaths per year between 2000 and 2004 with decreasing male (-3.6% p.a.) and no significant change in female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 16.8% of males and 17.3% of females alive after five years, with no significant change in survival between 1993-1996 and 1997-2000;**
- **Survival better for those aged 15-64 than for those aged 65 and over;**
- **Survival similar to England, but worse than in Europe, USA, Canada and Australia.**

6.1: Incidence and Mortality

Incidence

Stomach cancer was the fifth most common male cancer making up 3.3% of cases with an average of 148 males diagnosed each year during 2000-2004. Stomach cancer was less common among females being the ninth commonest cancer with an average of 95 females diagnosed annually (2.1% of female cancers). (Tab. 6.1)

Table 6.1: Incidence and mortality: Stomach cancer (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	148	95	101	71
Percentage of all cancers	3.3%	2.1%	5.3%	4.0%
Rank	5	9	4	6
Median age at diagnosis/death	71	75	72	77
Male to female ratio	1.6:1	-	1.4:1	-
Incidence to mortality ratio	1.5:1	1.3:1	-	-
Crude rate per 100,000 persons	17.9	10.9	12.2	8.2
European age-standardised rate per 100,000 persons (95% CI)	17.8 (16.5,19.1)	7.9 (7.2,8.7)	12.0 (10.9,13.1)	5.7 (5.1,6.4)

Mortality

Stomach cancer was the fourth most common male cancer death during 2000-2004 with an annual average of 101 male deaths, 5.3% of male cancer deaths. There were 71 stomach cancer deaths each year among females, making it sixth most common cause of female cancer death (4.0% of female cancer deaths). (Tab. 6.1)

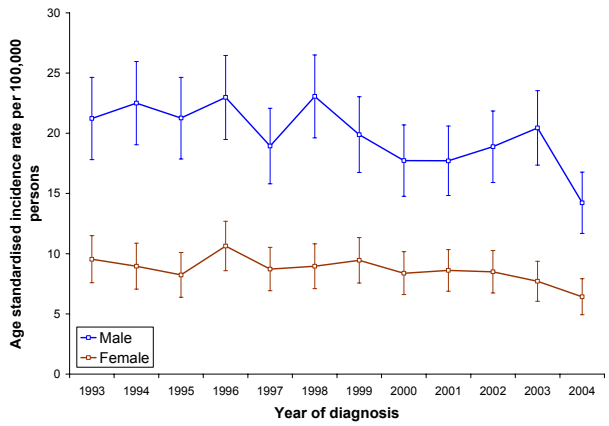
Trends

Male and female incidence rates (EASIR) for stomach cancer fell during 1993-2004 by 2.5% (p=0.015) and 2.2% per year (p=0.021) respectively. The fall in incidence rates corresponded to an annual decrease of 1.5 male and 1.0 female cases. (Fig. 6.1; App. 4&6)

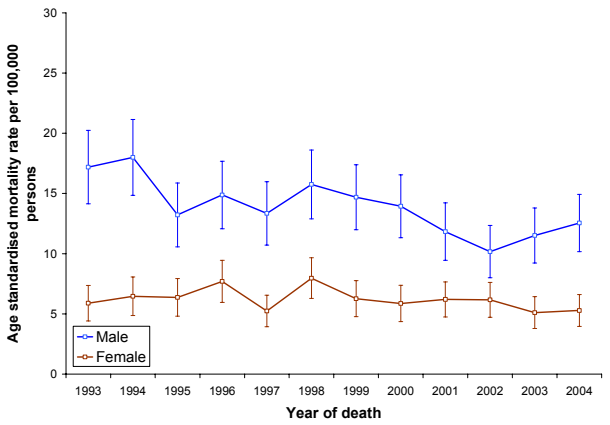
Male mortality rates (EASMR) from stomach cancer decreased during 1993-2004 by 3.6% (p=0.002) each year; an average annual decrease of 2.0 deaths. No significant trend (p>0.05) existed for female EASMRs while the annual change in the number of deaths was close to zero. (Fig. 6.1; App. 5&6)

Figure 6.1: Incidence and mortality trends: Stomach cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



6.2: Relative Survival

One-year relative survival from stomach cancer was 38.3% for patients diagnosed in 2001-2003 while five-year relative survival was 17.0% for patients diagnosed in 1997-2000. (Tab. 6.2)

Table 6.2: Relative survival from stomach cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	38.0%	(34.0%, 42.0%)	32.4%	(27.5%, 37.3%)	35.8%	(32.7%, 39.0%)
	1997-2000	35.9%	(31.9%, 39.9%)	33.3%	(28.3%, 38.3%)	34.9%	(31.8%, 38.0%)
	2001-2003	40.3%	(35.7%, 45.0%)	34.8%	(29.1%, 40.6%)	38.3%	(34.6%, 41.9%)
3-year	**1993-1996**	19.3%	(15.9%, 22.7%)	17.4%	(13.3%, 21.6%)	18.6%	(16.0%, 21.2%)
	1997-2000	20.9%	(17.3%, 24.5%)	18.7%	(14.4%, 22.9%)	20.0%	(17.3%, 22.8%)
5-year	**1993-1996**	15.2%	(11.9%, 18.5%)	14.8%	(10.8%, 18.8%)	15.0%	(12.5%, 17.6%)
	1997-2000	16.8%	(13.3%, 20.3%)	17.3%	(13.0%, 21.7%)	17.0%	(14.3%, 19.7%)
7-year	**1993-1996**	13.7%	(10.3%, 17.0%)	13.3%	(9.3%, 17.2%)	13.5%	(11.0%, 16.1%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	50.5%	(43.4%, 57.7%)	53.5%	(43.7%, 63.2%)	51.5%	(45.8%, 57.3%)
	1997-2000	57.9%	(50.5%, 65.3%)	55.8%	(46.1%, 65.4%)	57.1%	(51.2%, 63.0%)
5-year*	**1993-1996**	39.3%	(31.9%, 46.8%)	45.0%	(34.9%, 55.2%)	41.4%	(35.4%, 47.4%)
	1997-2000	46.3%	(38.3%, 54.3%)	51.5%	(41.2%, 61.8%)	48.2%	(41.9%, 54.6%)
7-year*	**1993-1996**	35.2%	(27.4%, 42.9%)	40.3%	(30.0%, 50.7%)	37.0%	(30.8%, 43.2%)

* from diagnosis

Sex

Among stomach cancer patients diagnosed in 1997-2000 survival was similar for males and females with five-year relative survival 16.8% for males compared to 17.3% for females (p>0.05). (Tab. 6.2; Fig. 6.2)

Changes over time

There were no statistically significant changes in relative survival for patients diagnosed with stomach cancer between 1993 and 2003, with 15.0% of those diagnosed in 1993-1996 alive after five years compared to 17.0% of those diagnosed in 1997-2000 (p>0.05). (Tab. 6.2; Fig. 6.2)

Figure 6.2: Relative survival from stomach cancer by sex and period of diagnosis (1993-2000)

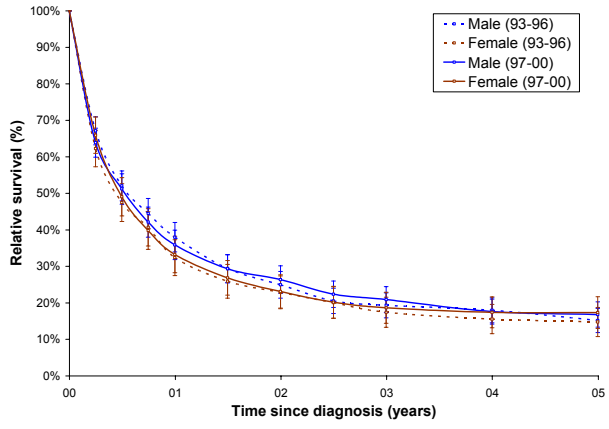
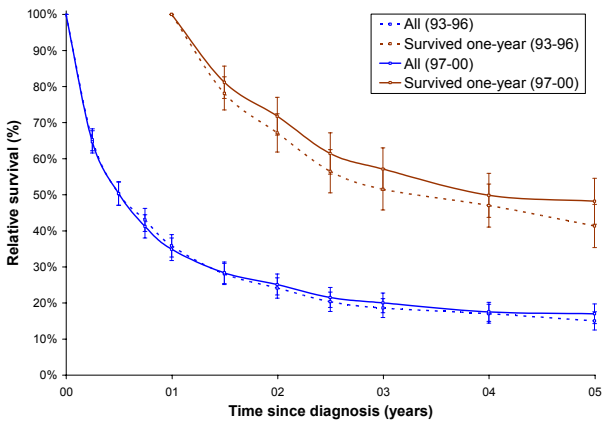


Figure 6.3: Relative survival from stomach cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Conditional survival

34.9% of patients diagnosed with stomach cancer in 1997-2000 were alive one year from diagnosis. Of these patients 48.2% survived a further four years (i.e. five years in total). There were no differences in this conditional survival between males and females or over time during 1993-2003 (p>0.05). (Tab. 6.2; Fig. 6.3)

Age

One-year relative survival was consistently better for those aged 15-64 during 1993-2003 (p=0.021). Additionally for patients diagnosed in 1993-1996 five-year relative survival for those aged 15-64 was 47.8%, which was higher than the 34.7% of those aged 65-99 who survived five-years (p=0.039). (Tab. 6.3)

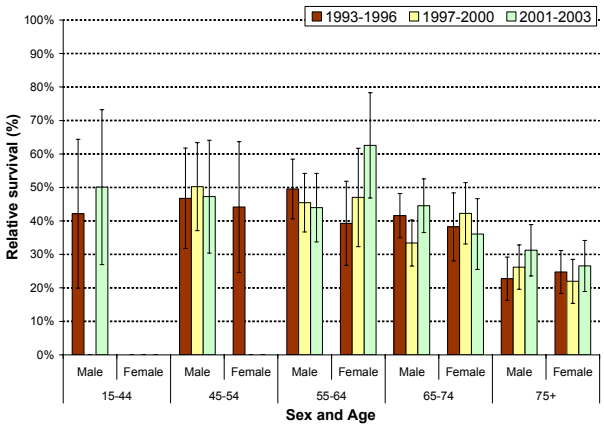
Table 6.3: Relative survival from stomach cancer by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	45.7%	(39.9%, 51.5%)	31.7%	(28.1%, 35.3%)
	1997-2000	46.1%	(40.2%, 52.0%)	30.1%	(26.4%, 33.7%)
	2001-2003	47.8%	(40.8%, 54.8%)	34.7%	(30.5%, 38.9%)
5-year	1993-1996	20.7%	(15.9%, 25.6%)	12.5%	(9.5%, 15.5%)
	1997-2000	18.8%	(14.0%, 23.6%)	16.6%	(13.2%, 20.0%)

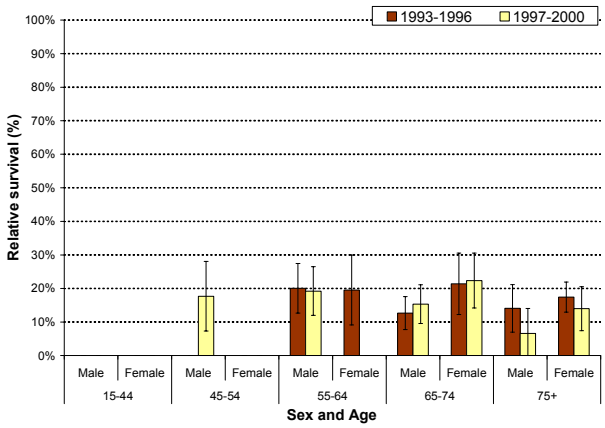
There were no changes in survival for either 15-64 or 65-99 year olds over time (p>0.05) nor were there any statistically significant changes in survival over time for individual male or female age groups during 1993-2003. (Tab. 6.3; Fig. 6.4; App. 8)

Figure 6.4: Relative survival from stomach cancer by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



Note: Missing entries refer to less than 10 persons in that age/sex group

6.3: Observed Survival

Observed survival from stomach cancer, which takes into account deaths from all causes, was very poor with 38.9% of male and 33.5% of female patients diagnosed in 2001-2003 alive after one-year. Five-year observed survival was 13.6% for male and 14.6% for female patients diagnosed in 1997-2000. (Tab. 6.4)

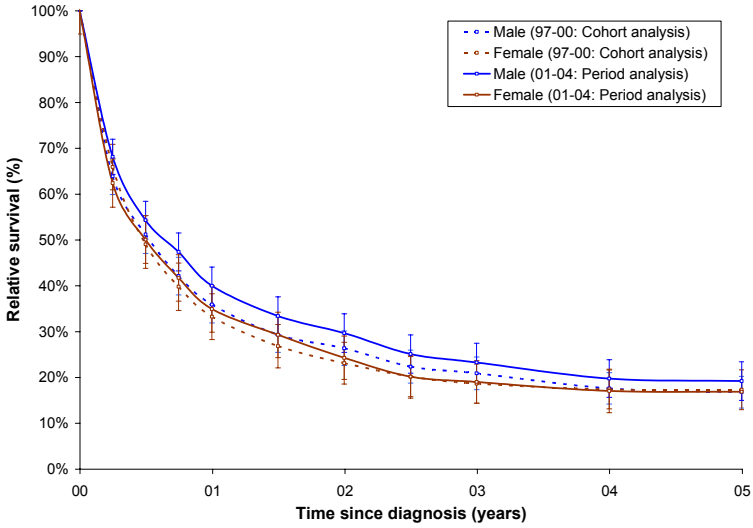
Table 6.4: Observed survival from stomach cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	36.4%	(32.5%, 40.2%)	31.2%	(26.5%, 35.9%)	34.4%	(31.4%, 37.4%)
	1997-2000	34.5%	(30.6%, 38.3%)	32.0%	(27.2%, 36.9%)	33.5%	(30.5%, 36.6%)
	2001-2003	38.9%	(34.4%, 43.4%)	33.5%	(27.9%, 39.0%)	36.8%	(33.3%, 40.3%)
5-year	1993-1996	12.0%	(9.4%, 14.6%)	12.4%	(9.0%, 15.7%)	12.1%	(10.1%, 14.2%)
	1997-2000	13.6%	(10.8%, 16.4%)	14.6%	(10.9%, 18.2%)	13.9%	(11.7%, 16.2%)

6.4: Period Analysis

Five-year survival from stomach cancer for patients diagnosed in 2001-2004 cannot be derived using traditional methods (cohort analysis) but can be estimated using newer techniques (period analysis). Using this method five-year survival from stomach cancer for males diagnosed in 2001-2004 was 19.2% while for females it was 16.9%. This does not represent a significant difference between the two sexes (p>0.05). (Fig. 6.5; App. 7)

Figure 6.5: Estimated relative survival (period analysis) from stomach cancer for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



While not directly comparable the results from the period analysis do not constitute a significant difference from the actual five-year relative survival derived using cohort analysis for patients diagnosed in 1997-2000 (p>0.05). (Fig. 6.5; App. 7)

6.5: International Comparisons

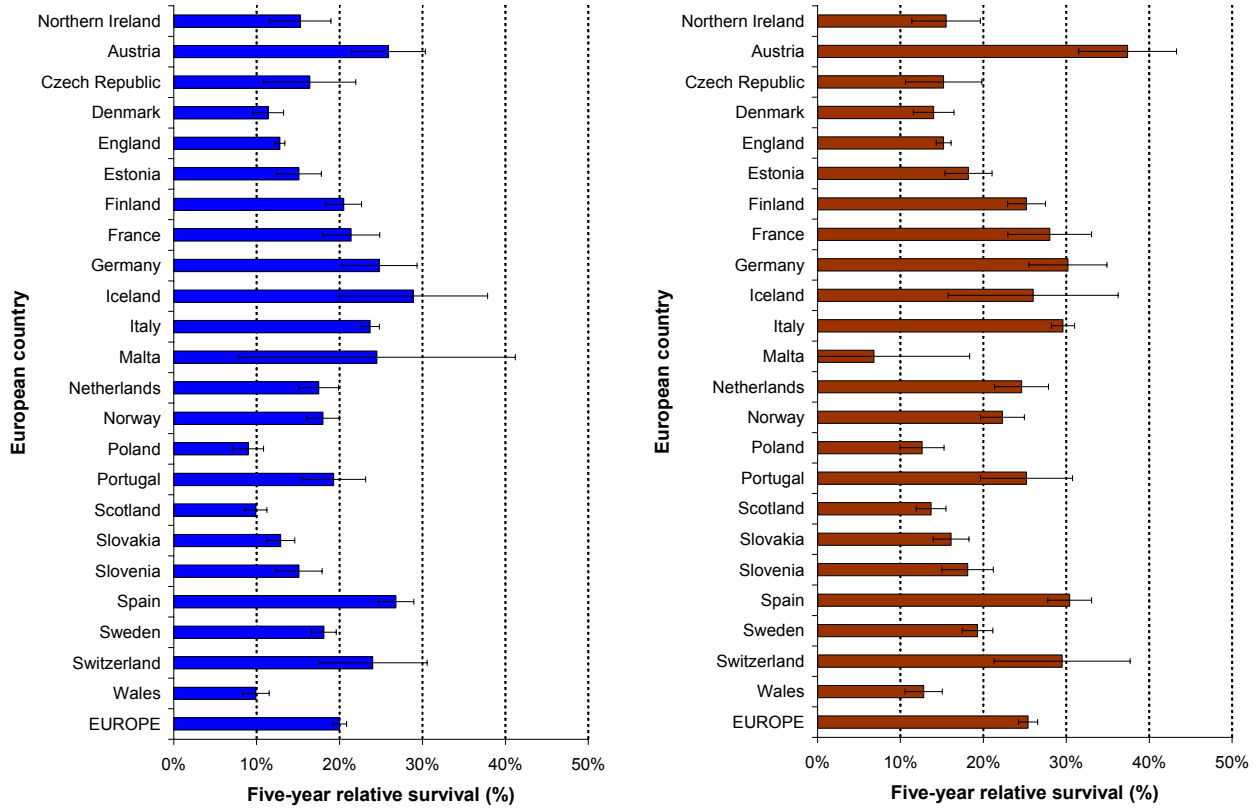
EUROCARE-3 study

The five-year age-standardised relative survival rate for males diagnosed with stomach cancer in 1993-1996 was 15.3%, which was significantly lower than the 20.0% in Europe. For females the five-year age-standardised relative survival rate was 15.5%, which was also significantly lower than the 25.4% in Europe.

Figure 6.6: Comparison of five-year age-standardised relative survival from stomach cancer with other European countries

(a) Male

(b) Female



Source: EUROCARE-3 (2003) [27,28]

A comparison with individual European countries illustrated that survival for males and females from this cancer was significantly lower than many other European countries but was similar to that in England. Male survival from this disease was however better than that found in Scotland and Wales. (Fig. 6.6)

Other countries

More recent studies illustrate survival from this cancer in Northern Ireland was lower than in USA, Canada and Australia, particularly for females. (Tab. 6.5)

Table 6.5: Five-year relative survival from stomach cancer for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	16.8%	17.3%
USA	**1996-2002**	22.7%	25.6%
Canada	**1995-1997**	20.0%	27.0%
Australia	**1992-1997**	22.6%	24.8%
New Zealand	**1994-1999**	19.6%	19.6%

6.6: Summary and Discussion

There is epidemiological evidence of associations between stomach cancer and diets with salty and smoked foods[42] while a diet high in fresh fruit and vegetables is seen to reduce the risk of stomach cancer due to the protective effect of vitamin C on the stomach lining[43]. The consumption of preserved foods which contain N-nitroso compounds, nitrates and nitrites as preservatives may increase the risk of stomach cancer, however further studies are required to confirm this conclusion[42].

Other risk factors that have been shown to be important for this cancer include tobacco use[44] and infection with helicobacter pylori bacteria[45,46]. People with pernicious anaemia have a risk of developing stomach cancer which is 2 to 3 times that of the general population[47] and having atrophic gastritis can also increase risk[42]. The inherited condition, familial adenomatous polyposis (FAP) is associated with an elevated risk[42] as is exposure to ionising radiation[42].

Stomach cancer is decreasing in Northern Ireland for both males and females however survival from the disease is poor with no improvements in prognosis over time. Survival from the disease depends upon age while patients selected for surgery have better survival possibilities.

07: COLORECTAL CANCER (Colon, rectosigmoid junction & anus) (C18-C21)

KEY FACTS:

- **504 male and 439 female cases diagnosed each year during 2000-2004 with an annual decrease of 1.3% in female and no significant change in male incidence rates during 1993-2004;**
- **221 male and 197 female deaths from the disease each year between 2000 and 2004 with an annual decrease of 2.5% in female and no significant change in male mortality rates during 1993-2004;**
- **Incidence higher in Derry, Larne and Newry & Mourne and in the 20% most deprived areas of Northern Ireland; Mortality also higher in Larne and in the 20% most deprived areas;**
- **Five-year survival for patients diagnosed in 1997-2000 was 52.5% with five-year survival having improved by 6.3% for patients diagnosed in 1997-2000 compared to those diagnosed in 1993-1996;**
- **Survival was better for 15-64 year olds than for 65-99 year olds and for patients diagnosed with colorectal cancer at an early stage;**
- **Five-year survival for patients diagnosed at Dukes Stage C increased by 13.1% between 1993-1996 and 1997-2000;**
- **Five-year survival was not related to deprivation or urban/rural factors;**
- **Survival was similar to Europe, the rest of the UK and Ireland but lower than in USA and Canada.**

7.1: Incidence and Mortality

Incidence

Colorectal cancer accounted for 11.1% of male and 9.7% of female cancers diagnosed between 2000 and 2004 with an average of 504 male and 439 female cases per year. It was the fourth most common male cancer and third most common among females. Age-standardised rates of this cancer were 51% higher among males than females. (Tab. 7.1)

Table 7.1: Incidence and mortality: Colorectal cancer (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	504	439	221	197
Percentage of all cancers	11.1%	9.7%	11.7%	11.0%
Rank	4	3	2	3
Median age at diagnosis/death	70	72	72	76
Male to female ratio	1.1:1	-	1.1:1	-
Incidence to mortality ratio	2.3:1	2.2:1	-	-
Crude rate per 100,000 persons	60.8	50.6	26.7	22.7
European age-standardised rate per 100,000 persons (95% CI)	61.5 (59.0,63.9)	40.3 (38.5,42.0)	26.9 (25.3,28.5)	16.5 (15.4,17.6)

Mortality

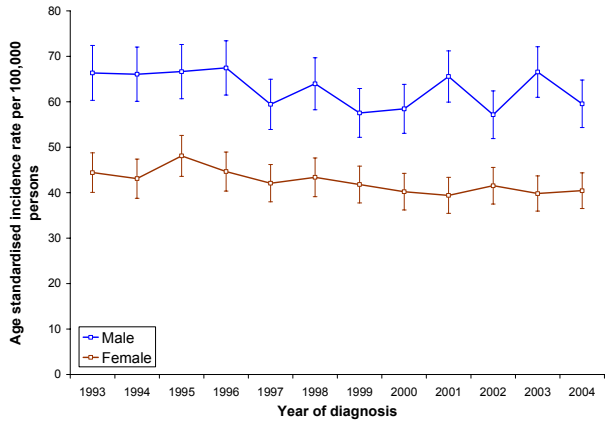
During 2000-2004, there were on average, 221 male and 197 female deaths per year representing 11.7% and 11.0% of all male and female cancer deaths respectively. It was the second most common male cancer death and the third most common female cancer death. (Tab. 7.1)

Trends

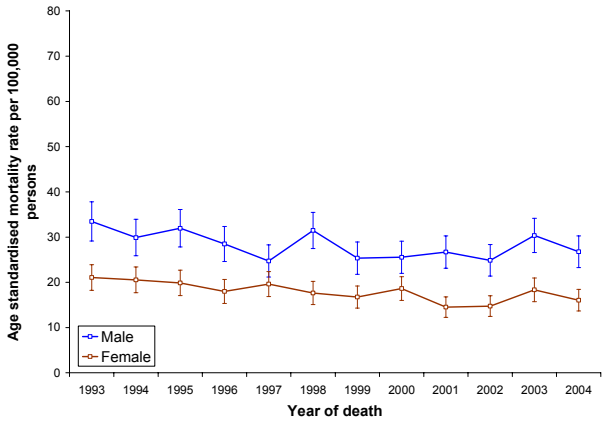
During 1993-2004 male cases of colorectal cancer rose by an average of 3.4 per year, however there was no significant trend in incidence rates (EASIR) (p>0.05). Female cases decreased by an average of 1.7

Figure 7.1: Incidence and mortality trends: Colorectal cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



each year, reflecting an annual decrease of 1.3% in EASIRs (p=0.003). (Fig. 7.1; App. 4&6)

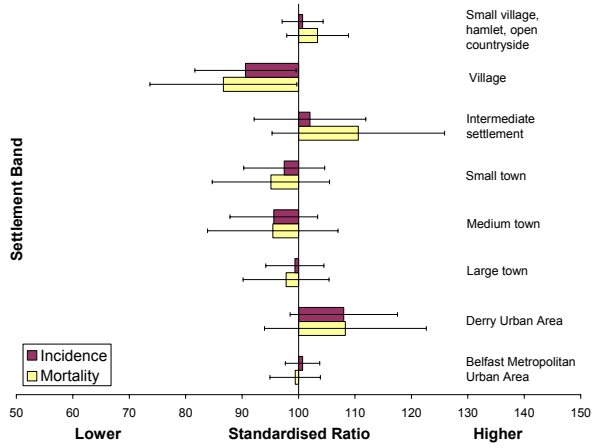
Among males, mortality rates (EASMR) were static (p>0.05) between 1993 and 2004, as were the actual number of deaths. Female EASMRs however decreased by 2.5% per year (p=0.005), which was equivalent to a fall of 3.3 deaths per year. (Fig. 7.1; App. 5&6)

Geographic variation

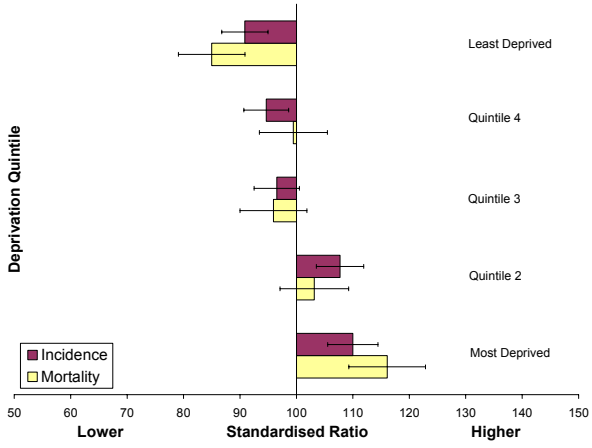
Incidence and mortality from colorectal cancer was higher in the 20% most deprived areas of Northern Ireland than in Northern Ireland as a whole during 1993-2004. However, there was no conclusive relationship between urban/rural factors and incidence and mortality from this disease. (Fig. 7.2)

Figure 7.2: Standardised incidence and mortality ratios for colorectal cancer by settlement band and deprivation quintile: 1993-2004

(a) Settlement band



(b) Deprivation quintile



During 1993-2004 incidence of colorectal cancer was higher in Derry, Larne and Newry & Mourne District Councils than Northern Ireland, with mortality higher in Larne. Lower incidence rates were found in Ards, Carrickfergus and Castlereagh with lower than expected mortality rates in Ards and Craigavon. (Tab. 7.2)

Table 7.2: Standardised incidence and mortality ratios for colorectal cancer by District Council: 1993-2004

Local Government District	Standardised Incidence Ratio (95% CI)		Standardised Mortality Ratio (95% CI)		Local Government District	Standardised Incidence Ratio (95% CI)		Standardised Mortality Ratio (95% CI)	
Antrim	99.4	(87.6, 111.2)	104.0	(85.9, 122.1)	**Down**	106.7	(96.7, 116.7)	97.6	(83.5, 111.7)
Ards	87.5	(79.5, 95.6)	87.0	(75.1, 98.9)	**Dungannon**	98.2	(86.9, 109.5)	103.1	(85.8, 120.4)
Armagh	93.9	(83.6, 104.2)	105.2	(89.0, 121.4)	**Fermanagh**	99.7	(89.8, 109.5)	96.9	(82.6, 111.1)
Ballymena	96.2	(86.8, 105.6)	111.0	(96.1, 125.9)	**Larne**	114.0	(100.1, 127.9)	123.1	(101.7, 144.5)
Ballymoney	107.2	(92.0, 122.4)	107.0	(84.4, 129.6)	**Limavady**	93.1	(78.5, 107.8)	108.1	(84.4, 131.8)
Banbridge	90.5	(79.0, 102.1)	92.8	(75.4, 110.2)	**Lisburn**	98.2	(90.6, 105.8)	95.7	(84.5, 106.9)
Belfast	100.8	(96.5, 105.1)	102.8	(96.4, 109.1)	**Magherafelt**	103.0	(89.9, 116.2)	103.8	(84.2, 123.5)
Carrickfergus	88.2	(76.4, 99.9)	87.9	(70.4, 105.3)	**Moyle**	97.7	(79.7, 115.7)	103.4	(76.1, 130.7)
Castlereagh	87.9	(79.9, 96.0)	94.3	(82.0, 106.7)	**Newry & Mourne**	117.4	(107.9, 126.8)	111.7	(98.0, 125.5)
Coleraine	101.1	(91.2, 111.0)	102.2	(87.4, 116.9)	**Newtownabbey**	107.1	(98.4, 115.8)	100.5	(88.0, 113.0)
Cookstown	89.2	(76.0, 102.5)	82.0	(63.2, 100.8)	**North Down**	98.8	(91.0, 106.7)	91.2	(80.2, 102.2)
Craigavon	95.5	(87.0, 104.0)	87.4	(75.3, 99.6)	**Omagh**	103.2	(91.3, 115.0)	95.1	(78.3, 112.0)
Derry	111.4	(102.4, 120.4)	110.1	(96.6, 123.6)	**Strabane**	103.3	(90.0, 116.6)	104.0	(84.0, 124.0)

SIRs/SMRs in blue represent significantly lower or higher incidence or mortality than in Northern Ireland as a whole.

7.2: Relative Survival

One-year relative survival from colorectal cancer was 74.7% for patients diagnosed in 2001-2003 while five-year relative survival was 52.5% for patients diagnosed in 1997-2000. (Tab. 7.3)

Table 7.3: Relative survival from colorectal cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	71.1%	(68.9%, 73.3%)	69.6%	(67.3%, 71.9%)	70.4%	(68.8%, 72.0%)
	1997-2000	73.9%	(71.7%, 76.2%)	73.7%	(71.4%, 75.9%)	73.8%	(72.2%, 75.4%)
	2001-2003	75.4%	(72.9%, 77.8%)	73.9%	(71.2%, 76.5%)	74.7%	(72.9%, 76.5%)
3-year	**1993-1996**	53.1%	(50.5%, 55.8%)	52.2%	(49.6%, 54.9%)	52.7%	(50.8%, 54.6%)
	1997-2000	57.3%	(54.6%, 60.0%)	58.3%	(55.6%, 60.9%)	57.8%	(55.9%, 59.7%)
5-year	**1993-1996**	46.7%	(43.9%, 49.5%)	45.7%	(42.9%, 48.5%)	46.2%	(44.2%, 48.2%)
	1997-2000	51.9%	(48.9%, 54.8%)	53.1%	(50.2%, 56.0%)	52.5%	(50.4%, 54.6%)
7-year	**1993-1996**	44.1%	(41.1%, 47.1%)	43.6%	(40.6%, 46.6%)	43.9%	(41.8%, 46.0%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	74.1%	(71.3%, 77.0%)	74.3%	(71.4%, 77.1%)	74.2%	(72.2%, 76.2%)
	1997-2000	77.0%	(74.2%, 79.8%)	78.6%	(75.9%, 81.2%)	77.8%	(75.9%, 79.7%)
5-year*	**1993-1996**	64.5%	(61.2%, 67.9%)	64.4%	(61.1%, 67.8%)	64.5%	(62.1%, 66.9%)
	1997-2000	69.2%	(65.9%, 72.6%)	71.2%	(68.0%, 74.4%)	70.2%	(67.9%, 72.5%)
7-year*	**1993-1996**	60.6%	(56.9%, 62.4%)	61.1%	(57.4%, 63.0%)	60.8%	(58.2%, 63.4%)

* from diagnosis

Sex

Relative survival from colorectal cancer was similar for males and females. For example, 51.9% of males diagnosed in 1997-2000 were alive after five years compared to 53.1% of females. (Tab. 7.3; Fig. 7.3)

Changes over time

There was a significant improvement in one-year relative survival for patients diagnosed with colorectal cancer during 1993-2003 with 74.7% of all patients diagnosed between 2001 and 2003 surviving one year compared to 70.4% of all patients diagnosed between 1993 and 1996 (p=0.014).

Figure 7.3: Relative survival from colorectal cancer by sex and period of diagnosis (1993-2000)

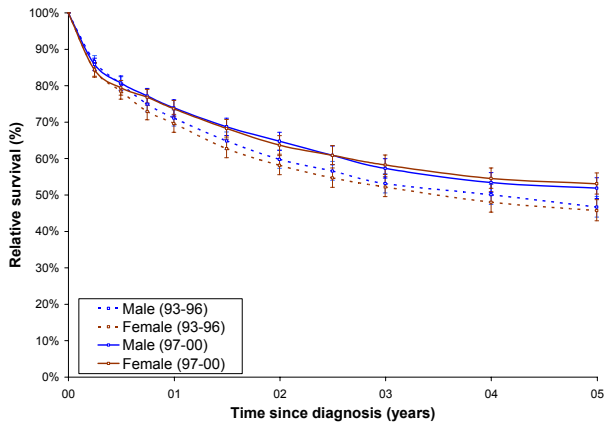
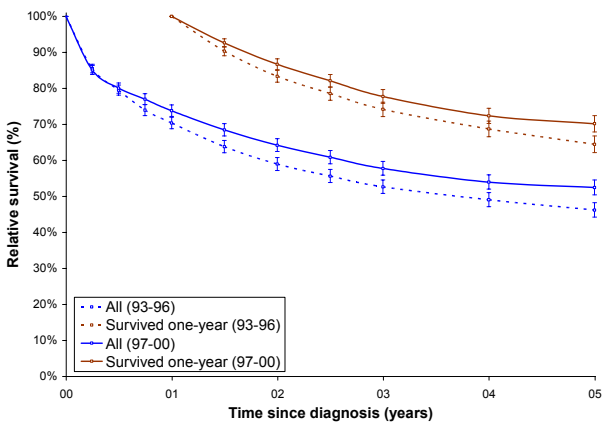


Figure 7.4: Relative survival from colorectal cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Five-year relative survival also improved, with an additional 6.3% of patients surviving five years from a diagnosis during 1997-2000 compared with those diagnosed in 1993-1996 (p=0.003). In particular five-year relative survival increased for female patients from 45.7% to 53.1% (p=0.012) with changes in male survival not statistically significant. (Tab. 7.3; Fig. 7.3)

Conditional survival

For patients diagnosed with colorectal cancer during 1997-2000 who survived at least one year after diagnosis 70.2% were alive five years from original diagnosis, while seven-year relative survival for patients diagnosed between 1993 and 1996 who survived at least one-year after diagnosis was 60.8%. This conditional survival was similar for both males and females (p>0.05). (Tab. 7.3)

Relative survival for a further four years for patients who had already survived one year improved during 1993-2000 from 64.5% for those diagnosed in 1993-1996 to 70.2% for those diagnosed in 1997-2000 (p=0.017). This improvement in conditional survival was significant for females (p=0.044) but not for males (p>0.05). (Tab. 7.3; Fig. 7.4)

Age

Relative survival from colorectal cancer for those aged 15-64 was better than for those aged 65-99, with a 11.5% difference in five-year survival for those diagnosed in 1997-2000 (p<0.001). (Tab. 7.4)

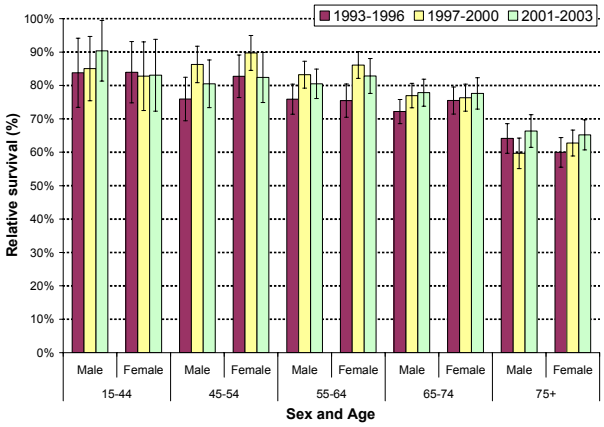
Table 7.4: Relative survival from colorectal cancer by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	77.5%	(74.9%, 80.0%)	67.3%	(65.3%, 69.3%)
	1997-2000	85.4%	(83.2%, 87.6%)	68.4%	(66.3%, 70.5%)
	2001-2003	81.9%	(79.3%, 84.6%)	71.1%	(68.8%, 73.4%)
5-year	1993-1996	50.1%	(47.0%, 53.2%)	44.5%	(42.0%, 47.1%)
	1997-2000	60.3%	(57.2%, 63.5%)	48.8%	(46.1%, 51.5%)

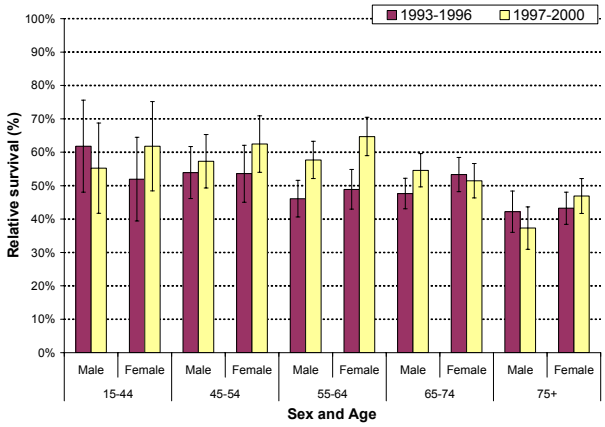
Five-year relative survival for those aged 15-64 improved during 1993-2003 with a 10.2% increase for those diagnosed in 1997-2000 compared to 1993-1996 (p=0.001). In particular, for those aged 55-64 survival improved between 1993-1996 and 1997-2000 by 15.8% for females (p=0.008) and 11.6% for males (p=0.040). (Tab. 7.4; Fig. 7.5)

Figure 7.5: Relative survival from colorectal cancer by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



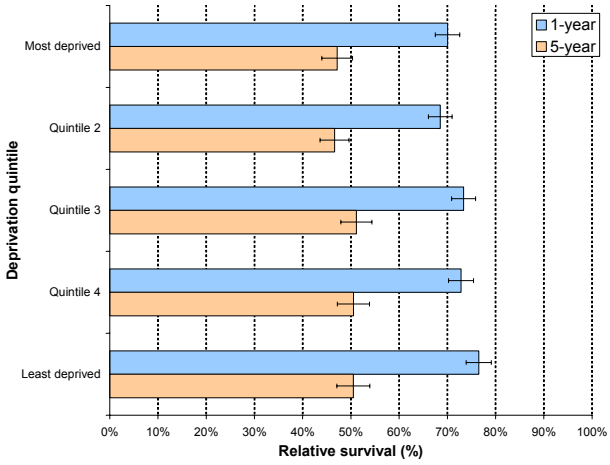
Deprivation and urban/rural factors

For patients diagnosed with colorectal cancer in 1993-2000 one-year relative survival was significantly higher in the 20% least deprived areas of Northern Ireland than in the 20% most deprived (p=0.014) and the 20-40% (quintile 2) most deprived areas (p=0.002). Five-year relative survival for patients resident in the most deprived areas was also slightly lower than for those in the most affluent areas, however these differences were not statistically significant (p>0.05). (Fig. 7.6)

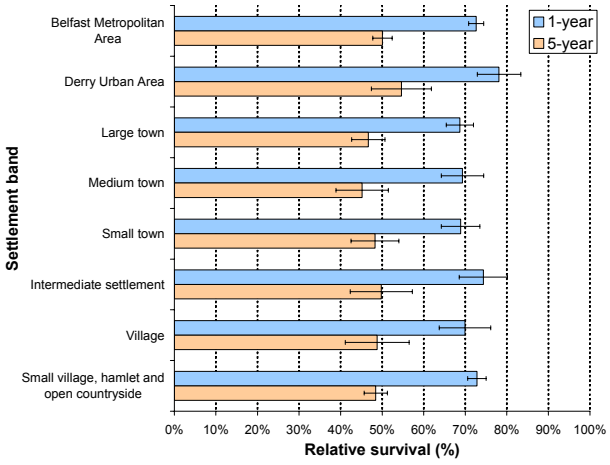
The type of settlement that a patient resided in was not a significant factor in patient survival. (Fig. 7.6)

Figure 7.6: Relative survival from colorectal cancer by deprivation quintile and settlement band (1993-2000)

(a) Deprivation quintile



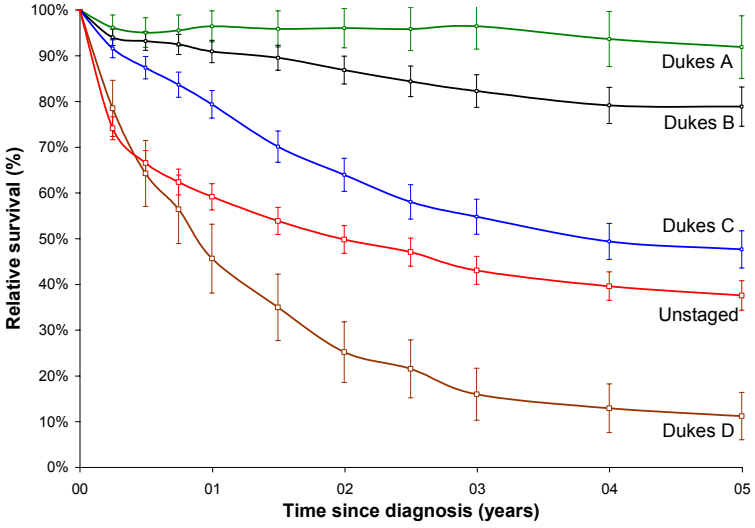
(b) Settlement band



Stage

Relative survival from colorectal cancer decreased with increasing stage during 1993-2003 (see App. 3 for definitions). Five-year relative survival for patients diagnosed with colorectal cancer at Dukes Stage A in 1997-2000 was 91.9% while for those diagnosed at Dukes Stage D five-year relative survival was 11.2%. Slightly over 31% of patients did not have a stage assigned. Survival for these patients was poor with 37.6% surviving five years. (Tab. 7.5)

Figure 7.7: Relative survival from colorectal cancer by stage (1997-2000)



Improvements in survival during 1993-2003 existed for patients diagnosed with colorectal cancer at Dukes Stage C with five-year relative survival increasing from 34.6% for patients diagnosed in 1993-1996 to 47.7% for patients diagnosed in 1997-2000 (p<0.001). (Tab. 7.5; Fig. 7.7)

Table 7.5: Relative survival from colorectal cancer by stage and period of diagnosis (1993-2003)

Period of diagnosis	RELATIVE SURVIVAL (95% CI)				
	Dukes A	Dukes B	Dukes C	Dukes D	Unstaged
1-year					
1993-96	97.8% (94.5%, 101.2%)	92.2% (90.1%, 94.4%)	76.5% (73.4%, 79.6%)	48.8% (42.0%, 55.6%)	51.8% (49.1%, 54.6%)
1997-00	96.5% (93.1%, 99.8%)	91.0% (88.6%, 93.3%)	79.4% (76.4%, 82.4%)	45.7% (38.3%, 53.1%)	59.2% (56.4%, 62.0%)
2001-03	98.3% (95.0%, 101.6%)	94.0% (91.6%, 96.4%)	83.4% (80.4%, 86.4%)	45.4% (39.9%, 51.0%)	57.4% (53.7%, 61.1%)
5-year					
1993-96	93.5% (86.1%, 100.8%)	73.3% (69.2%, 77.4%)	34.6% (30.8%, 38.4%)	15.3% (9.9%, 20.7%)	33.3% (30.3%, 36.2%)
1997-00	91.9% (85.2%, 98.6%)	78.9% (74.7%, 83.1%)	47.7% (43.7%, 51.7%)	11.2% (6.1%, 16.3%)	37.6% (34.5%, 40.8%)

7.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) from colorectal cancer was 72.4% for male and 71.3% for female patients diagnosed between 2001 and 2003. Five-year observed survival was 41.4% for male and 43.9% for female patients diagnosed between 1997 and 2000. (Tab. 7.6)

As with relative survival there were improvements in five-year observed survival for females diagnosed in 1997-2000 compared to 1993-1996 with a rise from 36.9% to 43.9% (p=0.003). Changes in male five-year observed survival were also statistically significant with a rise from 36.2% to 41.4% between the two time periods (p=0.024). (Tab. 7.6)

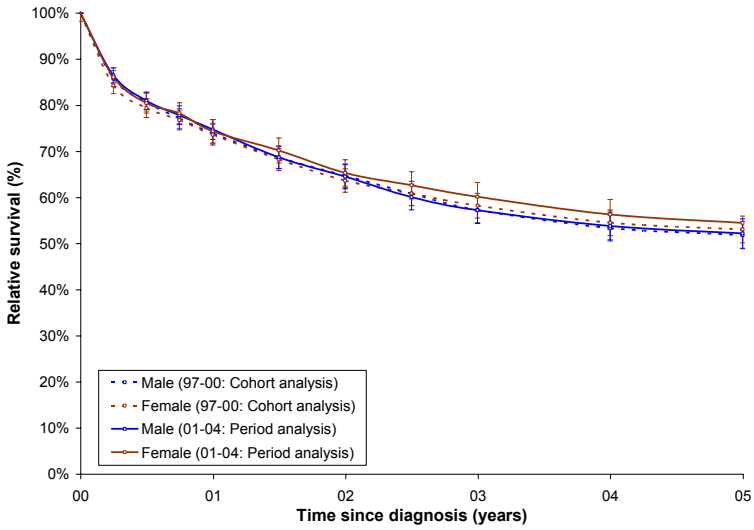
Table 7.6: Observed survival from colorectal cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	67.8%	(65.7%, 69.9%)	67.0%	(64.7%, 69.2%)	67.4%	(65.8%, 68.9%)
	1997-2000	70.8%	(68.6%, 72.9%)	71.1%	(68.9%, 73.2%)	70.9%	(69.4%, 72.4%)
	2001-2003	72.4%	(70.0%, 74.7%)	71.3%	(68.7%, 73.8%)	71.9%	(70.1%, 73.6%)
5-year	1993-1996	36.2%	(34.0%, 38.4%)	36.9%	(34.6%, 39.2%)	36.5%	(34.9%, 38.1%)
	1997-2000	41.4%	(39.0%, 43.7%)	43.9%	(41.5%, 46.3%)	42.6%	(41.0%, 44.3%)

7.4: Period Analysis

Traditional methods for producing five-year relative survival rates (cohort analysis) require five-years worth of follow up data and thus do not reflect more recent survival experience. More up to date survival rates can be estimated using newer techniques such as period analysis.

Figure 7.8: Estimated relative survival (period analysis) from colorectal cancer for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



Five-year survival from colorectal cancer for males diagnosed in 2001-2004 derived using this approach was 52.2% while for females it was 54.5%. While not directly comparable with results from traditional methods these estimates do not represent an improvement in survival for male or female patients compared to those diagnosed in 1997-2000. Comparisons with 1993-1996 however show improvements in female survival, while increases in male survival did not reach statistical significance only by a slight margin. (Fig. 7.8; App. 7)

7.5: International Comparisons

EUROCARE-4 study

Age-standardised five-year relative survival from colorectal cancer in Northern Ireland during the late 1990s was similar to that in England, Scotland, Ireland, Wales and Europe as a whole. Northern Ireland however had better survival than in the Czech Republic, Poland and Slovenia, with worse survival than in Belgium, Finland, France, Italy, Netherlands, Norway, Sweden and Switzerland for both sexes and for females in Germany and Austria. (Fig. 7.9)

Other countries

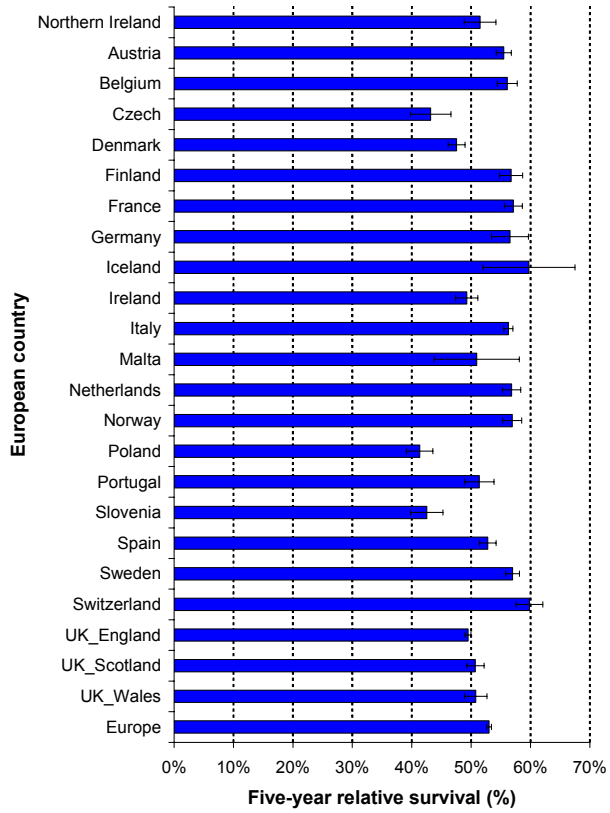
Five-year relative survival in Northern Ireland was significantly lower for patients diagnosed in the late 1990s than for patients resident in USA, Canada and New Zealand. (Tab. 7.7)

Table 7.7: Five-year relative survival from colorectal cancer for various countries

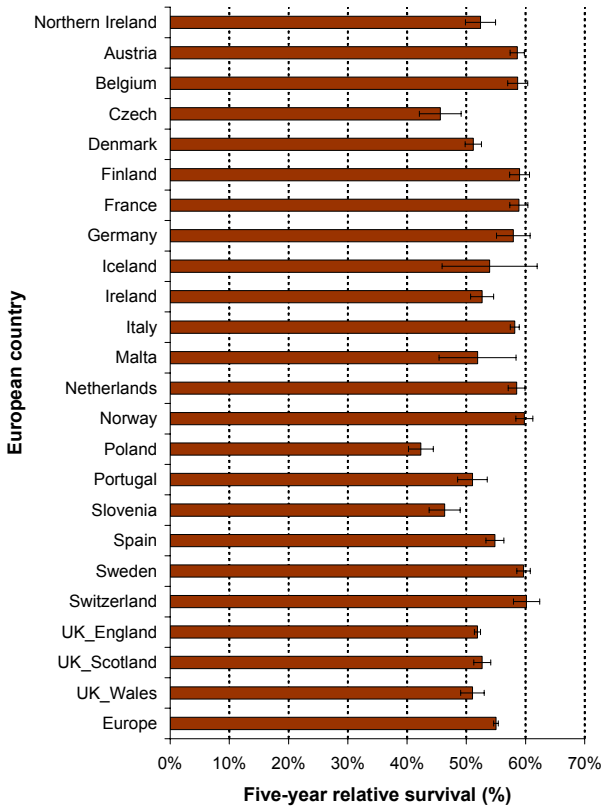
Country	Period of diagnosis	Male	Female
Northern Ireland	1997-2000	51.9%	53.1%
USA	1996-2002	65.0%	63.2%
Canada	1995-1997	59.0%	60.5%
Australia	1992-1997	-	-
New Zealand	1994-1999	58.8%	61.5%

Figure 7.9:Comparison of five-year age-standardised relative survival from colorectal cancer with other European countries

(a) Male



(b) Female



Source:EUROCARE-4 (2007)[29]

7.6: Summary and Discussion

Colorectal cancer is one of the most common cancers in Northern Ireland. Symptoms of the disease include bleeding from the rectum or blood in stools, permanent changes in normal bowel habits, a lump in the right side of the abdomen or rectum, losing weight, abdominal pain or anaemia (low red blood cells)[48].

Evidence exists that diets with less red and processed meat, less carbohydrates and more vegetables and fibre are associated with a reduced risk of bowel cancer[49,50]. Physical exercise has been shown in epidemiological studies to reduce the risk of colon cancer by 40-50%[51,52]. Other high risk groups are those with a strong family history such as having two or more close relatives or one relative aged less than 45 years having been diagnosed with colorectal cancer[53]. Two further inherited conditions; familial adenomatous polyposis (FAP) and hereditary non-polyposis colorectal cancer (HNPCC) also increase the risk of colorectal cancer. FAP accounts for 1% of colorectal cancers and HNPCC accounts for 5% of colorectal cancers[53]. Colon cancers are also more common in people with chronic inflammatory disease of their bowels such as ulcerative colitis and Crohn's disease and among those with diabetes[53]. Hormone replacement therapy (HRT), the contraceptive pill and vitamin D may help protect against this disease[53]. Some studies have shown that non-steroidal anti-inflammatory drugs reduce the risk of both colon and rectal cancer[54].

Rates of new cases and deaths from this disease have fallen over the last twelve years in Northern Ireland while male rates have remained steady. Survival from the disease is moderate at 53% and is steadily improving with further improvement possible as a result of advances in endoscopic technology that allows diagnosis of the disease at an earlier stage. The introduction of colorectal screening in Northern Ireland in 2009 is expected to increase the percentage of colorectal cancers diagnosed at an early stage, thus further improving survival.

Age and stage at diagnosis are major factors in survival from colorectal cancer with the difference in survival between those diagnosed at an early and late stage being very extreme. No link between survival

and urban/rural factors exists but a slight variation in short term survival exists between the most deprived and most affluent areas in Northern Ireland. Differences also exist in survival when compared with other countries including USA; however the rest of the UK exhibits similar survival rates.

08: CANCER OF THE COLON (C18)

KEY FACTS:

- **301 male and 293 female cases per year during 2000-2004 with decreasing male (-1.6% p.a.) and female (-1.9% p.a.) incidence rates between 1993 and 2004;**
- **150 male and 138 female deaths per year in 2000-2004 with decreasing male (-2.4% p.a.) and female (-4.0% p.a.) mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 53.5% of males and 53.9% of females alive after five years with five-year relative survival having improved by 6.8% for all patients between 1993-1996 and 1997-2000;**
- **Survival better for those aged 15-64 than for those aged 65 and over, with five-year relative survival for 15-64 year olds having improved between 1993-1996 and 1997-2000 by 12.8%;**
- **Estimates using period analysis suggest that five-year survival will improve further for females diagnosed in 2001-2004;**
- **Survival similar to England and Scotland, but worse than in USA, Australia, France and Spain.**

8.1: Incidence and Mortality

Incidence

Between 2000 and 2004 there were an average of 301 male and 293 female cases of cancer of the colon diagnosed each year, which represented 6.6% of male and 6.4% of female cancers. (Tab. 8.1)

Mortality

During the same five-year period there were 150 male and 138 female deaths annually as a result of this cancer. This represented 8.0% of male and 7.7% of female cancer deaths. (Tab. 8.1)

Table 8.1: Incidence and mortality: Cancer of the colon (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	301	293	150	138
Percentage of all cancers	6.6%	6.4%	8.0%	7.7%
Median age at diagnosis/death	71	73	72	77
Male to female ratio	1.0:1	-	1.1:1	-
Incidence to mortality ratio	2.0:1	2.1:1	-	-
Crude rate per 100,000 persons	36.3	33.8	18.1	15.9
European age-standardised rate per 100,000 persons (95% CI)	36.4 (34.6,38.3)	26.5 (25.0,27.9)	18.3 (17.0,19.7)	11.3 (10.4,12.2)

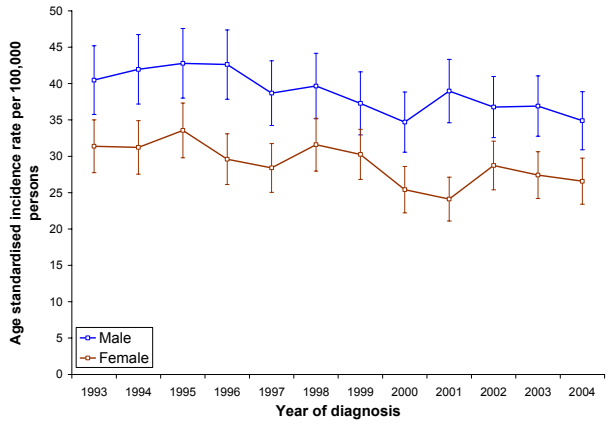
Trends

Incidence rates (EASIR) for cancer of the colon decreased during 1993-2004 for both sexes by 1.6% (p=0.001) for males and 1.9% (p=0.010) for females. Despite the decline in rates the actual number of newly diagnosed male cases remained constant during the period, although the number of female cases decreased by 2.8 cases each year. (Fig. 8.1; App. 4&6)

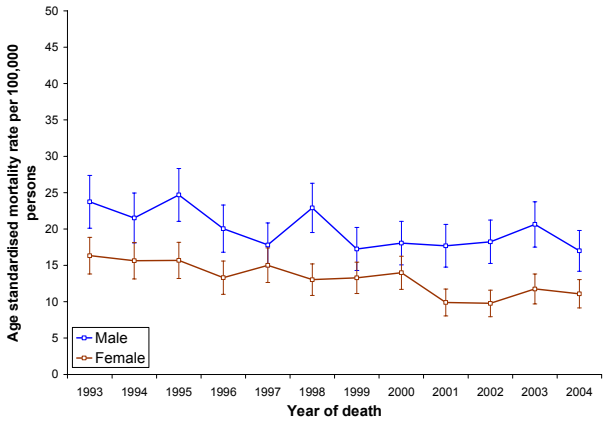
Mortality rates (EASMR) for cancer of the colon also fell during this period by 2.4% (p=0.017) for males and 4.0% (p<0.001) for females. The decrease in rates represented a fall of 1.5 male and 4.2 female deaths each year. (Fig. 8.1; App. 5&6)

Figure 8.1: Incidence and mortality trends: Cancer of the colon (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



8.2: Relative Survival

Relative survival from cancer of the colon was average with 73.2% of patients diagnosed between 2001 and 2003 surviving one-year and 53.7% of patients diagnosed between 1997 and 2000 surviving five years. (Tab. 8.2)

Table 8.2: Relative survival from cancer of the colon by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	70.1%	(67.2%, 72.9%)	67.9%	(65.1%, 70.7%)	69.0%	(67.0%, 71.0%)
	1997-2000	72.5%	(69.6%, 75.3%)	70.9%	(68.1%, 73.6%)	71.6%	(69.6%, 73.6%)
	2001-2003	73.3%	(70.0%, 76.5%)	73.2%	(70.0%, 76.5%)	73.2%	(70.9%, 75.5%)
3-year	**1993-1996**	52.9%	(49.5%, 56.2%)	53.0%	(49.8%, 56.2%)	52.9%	(50.6%, 55.3%)
	1997-2000	57.4%	(53.9%, 60.8%)	57.7%	(54.5%, 60.9%)	57.5%	(55.2%, 59.9%)
5-year	**1993-1996**	46.8%	(43.2%, 50.4%)	47.0%	(43.6%, 50.4%)	46.9%	(44.4%, 49.4%)
	1997-2000	53.5%	(49.7%, 57.2%)	53.9%	(50.4%, 57.4%)	53.7%	(51.1%, 56.3%)
7-year	**1993-1996**	45.7%	(41.7%, 49.6%)	45.1%	(41.4%, 48.7%)	45.4%	(42.7%, 48.1%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	74.9%	(71.3%, 78.5%)	77.2%	(73.8%, 80.6%)	76.1%	(73.6%, 78.6%)
	1997-2000	78.7%	(75.2%, 82.2%)	80.9%	(77.7%, 84.1%)	79.8%	(77.5%, 82.2%)
5-year*	**1993-1996**	65.6%	(61.3%, 69.9%)	67.8%	(63.8%, 71.9%)	66.8%	(63.8%, 69.7%)
	1997-2000	72.9%	(68.6%, 77.1%)	75.1%	(71.3%, 79.0%)	74.0%	(71.2%, 76.9%)
7-year*	**1993-1996**	63.6%	(58.8%, 68.4%)	64.5%	(60.0%, 69.3%)	64.1%	(60.8%, 67.4%)

* from diagnosis

Sex

There were no statistically significant differences in one or five-year relative survival for males and females (p>0.05) diagnosed with cancer of the colon between 1993 and 2003. (Tab. 8.2; Fig. 8.2)

Changes over time

Five-year relative survival improved for all persons between 1993-1996 and 1997-2000 with an additional 6.8% of patients surviving five years from diagnosis (p=0.009). Differences over time for male and female patients considered separately were not statistically significant (p>0.05). (Tab. 8.2; Fig. 8.2)

Figure 8.2: Relative survival from cancer of the colon by sex and period of diagnosis (1993-2000)

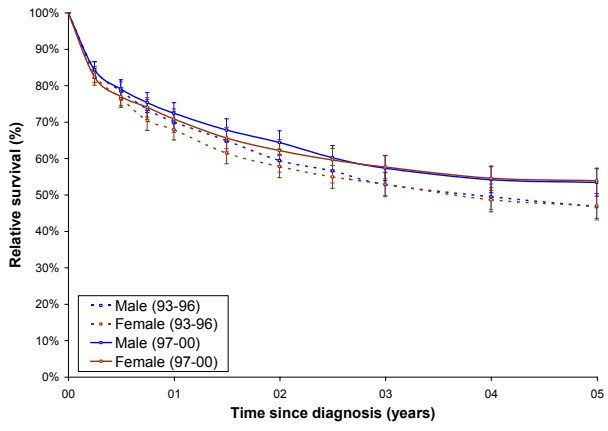
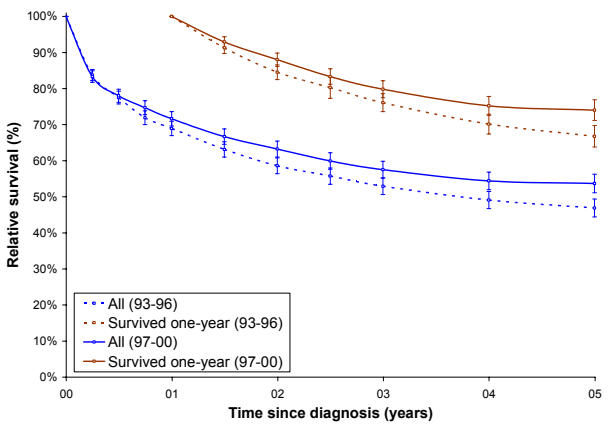


Figure 8.3: Relative survival from cancer of the colon by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Conditional survival

Five-year relative survival for patients who survived one year from diagnosis and were diagnosed in 1997-2000 was 74.0%, an improvement on the 66.8% of those diagnosed in 1993-1996 (p=0.014). Seven-year survival for those diagnosed in 1993-1996 was 64.1%, with neither of these conditional survival rates varying by sex. (Tab. 8.2; Fig. 8.3)

Age

Survival among those aged under 65 was better than those aged 65 and over with 62.8% of patients aged under 65 and diagnosed in 1997-2000 surviving five years compared to 49.8% of those aged 65 and over (p<0.001). (Tab. 8.3)

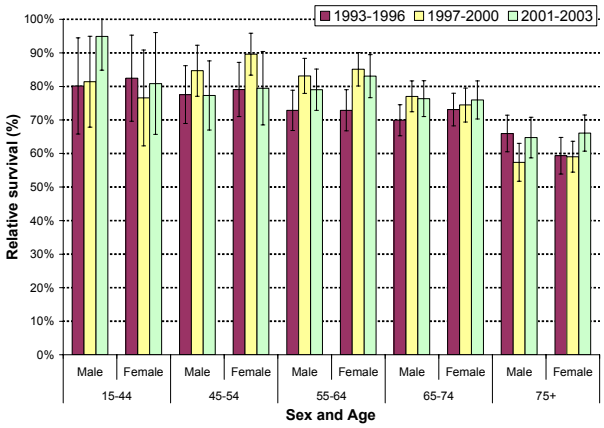
Table 8.3: Relative survival from cancer of the colon by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	75.2%	(71.9%, 78.5%)	66.4%	(63.9%, 68.9%)
	1997-2000	84.4%	(81.6%, 87.3%)	66.0%	(63.5%, 68.6%)
	2001-2003	80.7%	(77.1%, 84.3%)	70.2%	(67.3%, 73.0%)
5-year	1993-1996	50.0%	(46.1%, 53.9%)	45.7%	(42.5%, 48.9%)
	1997-2000	62.8%	(58.9%, 66.7%)	49.8%	(46.5%, 53.0%)

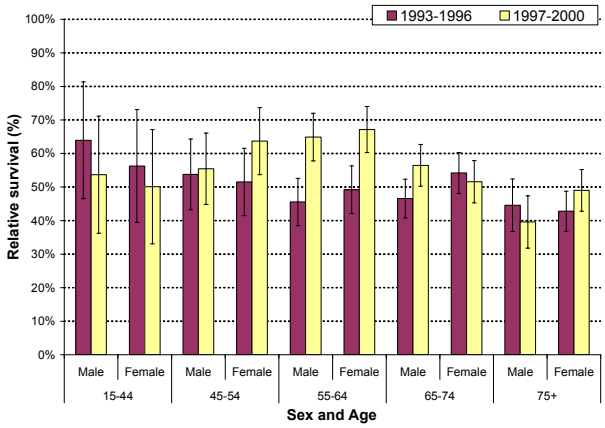
Both one-year and five-year relative survival improved for 15-64 year olds during 1993-1996 and 1997-2000 while there were no statistically significant changes for 65-99 year olds. In particular, for males and females diagnosed in 1997-2000, five-year relative survival among those aged 55-64 was higher than for those diagnosed in 1993-1996 with increases of 19.4% in males (p=0.007) and 17.9% in females (p=0.012). (Tab. 8.3; Fig. 8.4)

Figure 8.4: Relative survival from cancer of the colon by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year

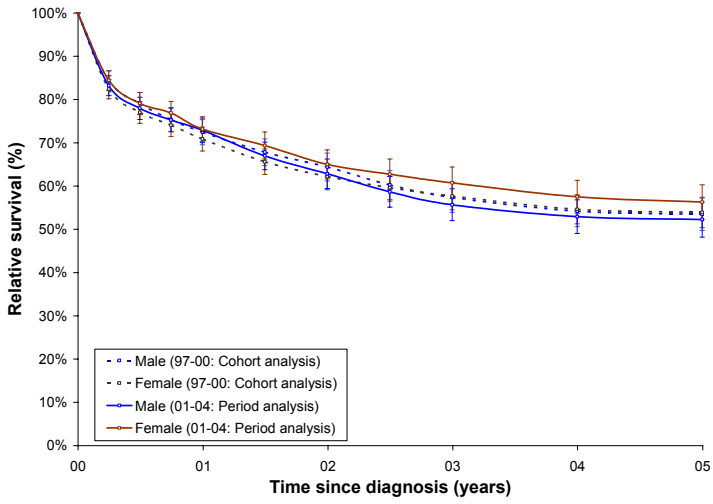


8.3: Period Analysis

Five-year survival for patients diagnosed with cancer of the colon in 2001-2004 cannot be derived using traditional methods (cohort analysis) but can be estimated using newer techniques (period analysis). Using this method five-year survival from this cancer for males diagnosed in 2001-2004 was 52.3% while for females it was 56.3%. This does not represent a significant difference between the two sexes (p>0.05). (Fig. 8.5; App. 7)

Changes in relative survival for males and females diagnosed in 2001-2004 compared with 1997-2000 were not

Figure 8.5: Estimated relative survival (period analysis) from cancer of the colon for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



statistically significant. However compared with 1993-1996 there were improvements in female five-year survival, although increases in male survival were not statistically significant. Caution should be exercised with this result as the methods used to derive the 2001-2004 survival rates are estimates only. (Fig. 8.5; App. 7)

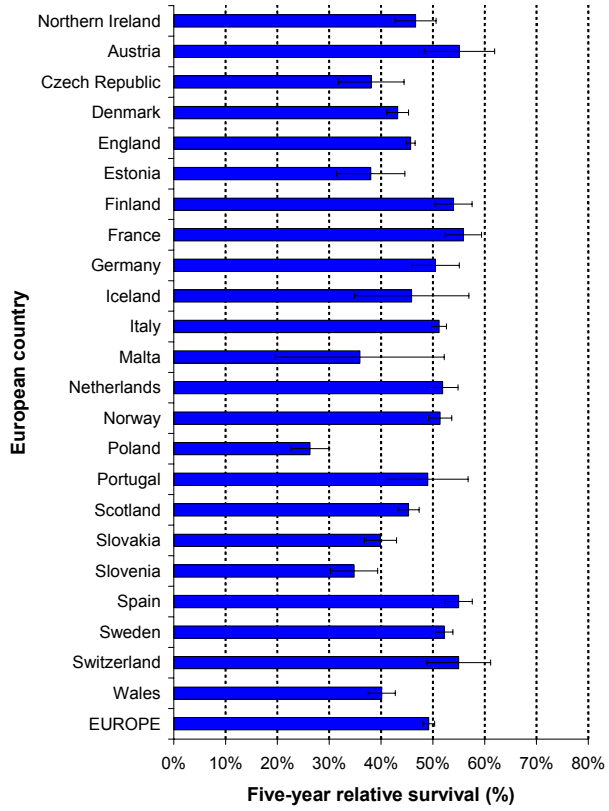
8.4: International Comparisons

EUROCARE-3 study

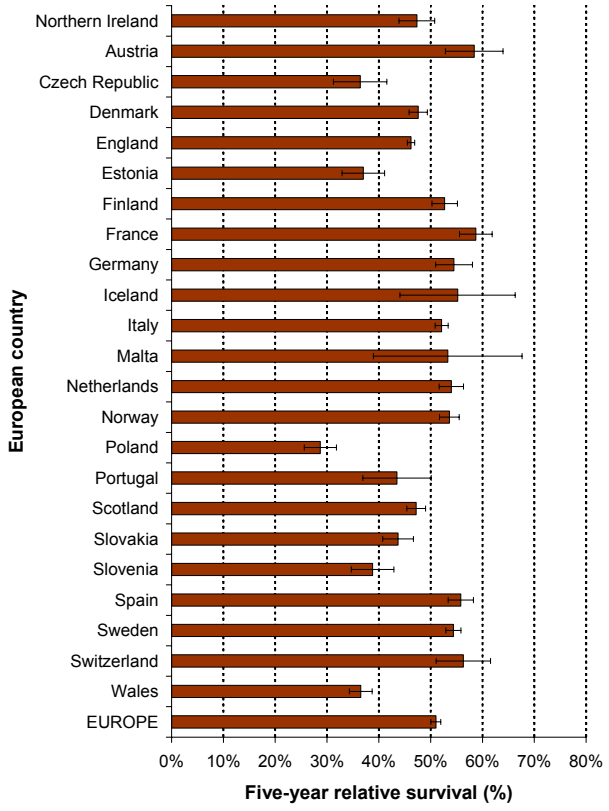
Survival from cancer of the colon in Northern Ireland was similar to the other countries in the UK for patients diagnosed in the early 1990s, with a higher five-year relative survival rate among females than in Wales. Survival in Northern Ireland was similar to that in Europe, however the five-year age-standardised relative survival rate for males was significantly below that of France, Spain and Sweden, while the female rate was significantly below that of nine European countries including France, Germany, Italy and Spain. (Fig. 8.6)

Figure 8.6: Comparison of five-year age-standardised relative survival from cancer of the colon with other European countries

(a) Male



(b) Female



Source: EUROCARE-3 (2003) [27,28]

Other countries

Comparisons between Northern Ireland and other countries illustrate that survival from cancer of the colon was lower in Northern Ireland than in USA and Australia. (Tab. 8.4)

Table 8.4: Five-year relative survival from cancer of the colon for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	53.5%	53.9%
USA	**1996-2002**	65.2%	62.4%
Canada	**1995-1997**	-	-
Australia	**1992-1997**	58.3%	58.7%
New Zealand	**1994-1999**	-	-

8.5: Summary and Discussion

Cancer of the colon makes up 62% of male and 69% of female colorectal cancers in Northern Ireland and is one of the more common cancers. Incidence and mortality rates from this cancer are however falling although due to the ageing of the population the number of cases has remained static.

Survival from the disease in Northern Ireland is moderate with approximately 53% of persons still alive after five-years. Evidence exists of improvements in survival although these improvements occur mostly in those aged 15-64 whose survival is generally better than those aged 65 and over. Survival in Northern Ireland appears to be similar to the rest of the UK but is worse than in many European countries, USA and Canada.

See chapter 7 for information on the risks and causes of cancer of the colon.

09: CANCER OF THE RECTUM, RECTOSIGMOID JUNCTION & ANUS (C19-C21)

KEY FACTS:

- **204 male and 146 newly diagnosed female cases per year between 2000 and 2004 with no significant change in male or female incidence rates during 1993-2004;**
- **71 male and 59 female deaths per year during 2000-2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 49.2% of males and 51.2% of females alive after five years with no significant change in survival between 1993-1996 and 1997-2000;**
- **One-year survival better for those aged 15-64 than for those aged 65 and over;**
- **Survival similar to rest of UK and Europe, but worse than in USA and Australia.**

9.1: Incidence and Mortality

Incidence

The number of cases of cancer of the rectum, rectosigmoid junction and anus between 2000 and 2004 was higher among males than females with 204 male cases (4.5% of all male cancers) diagnosed annually compared to 146 female cases (3.2% of all female cancers). (Tab. 9.1)

Table 9.1: Incidence and mortality: Cancer of the rectum, rectosigmoid junction & anus (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	204	146	71	59
Percentage of all cancers	4.5%	3.2%	3.8%	3.3%
Median age at diagnosis/death	68	71	71	75
Male to female ratio	1.4:1	-	1.2:1	-
Incidence to mortality ratio	2.9:1	2.5:1	-	-
Crude rate per 100,000 persons	24.6	16.8	8.6	6.8
European age-standardised rate per 100,000 persons (95% CI)	25.0 (23.5,26.6)	13.8 (12.8,14.9)	8.5 (7.6,9.4)	5.2 (4.5,5.8)

Mortality

Deaths from cancer of the rectum, rectosigmoid junction and anus made up 3.8% of male and 3.3% of female cancer deaths, with 71 male and 59 female deaths occurring annually during 2000-2004. (Tab. 9.1)

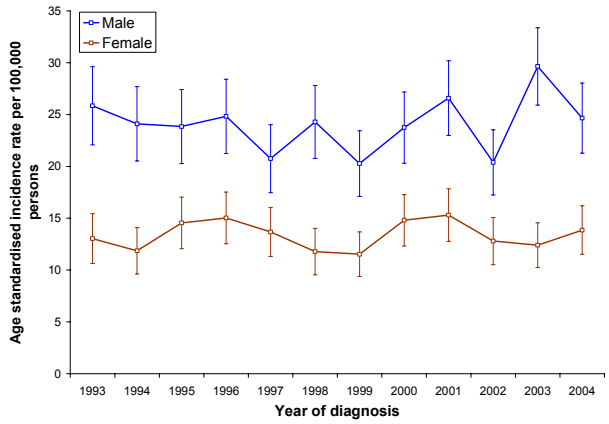
Trends

No significant trends in male or female incidence rates (EASIR) existed for cancer of the rectum, rectosigmoid junction & anus during 1993-2004 (p>0.05). However due to the ageing of the population the number of new cases rose over the 1993-2004 period by 3.4 male and 1.1 female cases each year. (Fig. 9.1; App. 4&6)

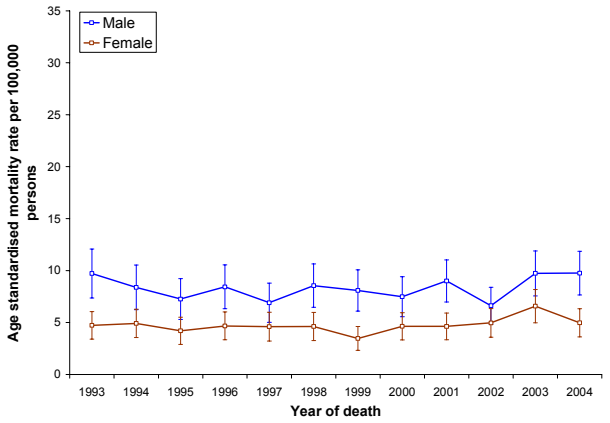
Mortality rates (EASMR) were static in 1993-2004 with the actual number of deaths increasing by 1.6 male and 0.9 female deaths each year. (Fig. 9.1; App. 5&6)

Figure 9.1: Incidence and mortality trends: Cancer of the rectum, rectosigmoid junction & anus (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



9.2: Relative Survival

Relative survival from cancer of the rectum, rectosigmoid junction & anus was 77.1% after one year for patients diagnosed in 2001-2003 and 50.1% after five years for patients diagnosed in 1997-2000. (Tab. 9.2)

Table 9.2: Relative survival from cancer of the rectum, rectosigmoid junction & anus by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	72.9%	(69.3%, 76.5%)	73.6%	(69.6%, 77.7%)	73.2%	(70.5%, 75.9%)
	1997-2000	76.4%	(72.8%, 80.0%)	80.1%	(76.4%, 83.9%)	78.0%	(75.4%, 80.6%)
	2001-2003	78.5%	(74.8%, 82.1%)	75.2%	(70.6%, 79.7%)	77.1%	(74.3%, 80.0%)
3-year	**1993-1996**	53.6%	(49.3%, 57.8%)	50.4%	(45.6%, 55.2%)	52.2%	(49.0%, 55.4%)
	1997-2000	57.3%	(52.9%, 61.6%)	59.6%	(54.7%, 64.4%)	58.3%	(55.0%, 61.5%)
5-year	**1993-1996**	46.6%	(42.0%, 51.1%)	42.8%	(37.8%, 47.8%)	44.9%	(41.6%, 48.3%)
	1997-2000	49.2%	(44.4%, 54.0%)	51.2%	(46.0%, 56.5%)	50.1%	(46.6%, 53.6%)
7-year	**1993-1996**	41.7%	(36.9%, 46.4%)	40.5%	(35.3%, 45.8%)	41.2%	(37.7%, 44.7%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	72.9%	(68.4%, 77.4%)	68.0%	(62.7%, 73.3%)	70.8%	(67.3%, 74.2%)
	1997-2000	74.4%	(69.8%, 78.9%)	73.9%	(69.0%, 78.8%)	74.1%	(70.8%, 77.5%)
5-year*	**1993-1996**	62.9%	(57.6%, 68.1%)	57.2%	(51.3%, 63.1%)	60.4%	(56.5%, 64.3%)
	1997-2000	63.5%	(58.1%, 68.9%)	63.1%	(57.4%, 68.9%)	63.3%	(59.4%, 67.3%)
7-year*	**1993-1996**	56.0%	(50.2%, 61.7%)	53.8%	(47.5%, 60.1%)	55.0%	(50.8%, 59.3%)

* from diagnosis

Sex

There were no statistically significant differences in relative survival between males and females (p>0.05) diagnosed with cancer of the rectum, rectosigmoid junction & anus during 1993-2003. (Tab. 9.2; Fig. 9.2)

Changes over time

There were no statistically significant changes in male or female one or five-year relative survival for patients diagnosed with cancer of the rectum, rectosigmoid junction & anus between 1993 and 2003 (p>0.05). (Tab. 9.2; Fig. 9.2)

Figure 9.2: Relative survival from cancer of the rectum, rectosigmoid junction & anus by sex and period of diagnosis (1993-2000)

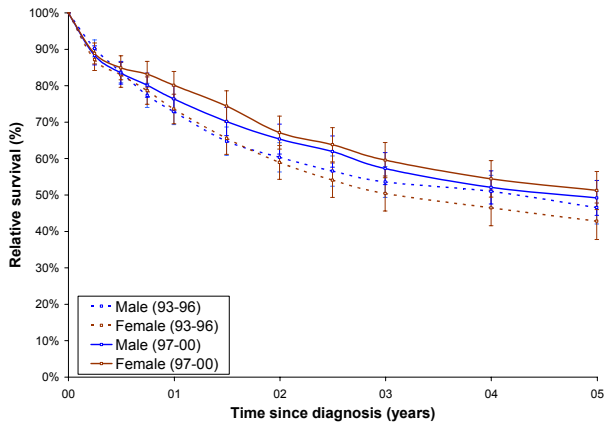
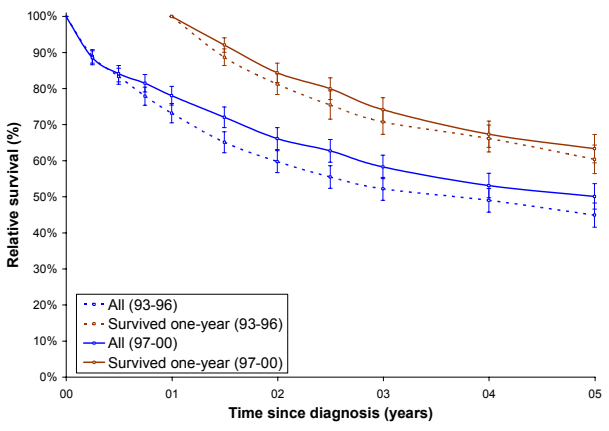


Figure 9.3: Relative survival from cancer of the rectum, rectosigmoid junction & anus by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Conditional survival

For patients diagnosed with cancer of the rectum, rectosigmoid junction & anus in 1997-2000 who were alive one-year after diagnosis 63.3% survived five-years from diagnosis. This proportion did not vary by sex or period of diagnosis (p>0.05). Seven-year survival for patients diagnosed in 1993-1996 who survived at least one-year from diagnosis was 55.0%. (Tab. 9.2; Fig. 9.3)

Age

For patients diagnosed with this cancer between 2001 and 2003 one-year relative survival among those aged 15-64 was 10.4% better than for those aged 65-99 (p=0.009). There was no significant difference in five-year relative survival (p>0.05). (Tab. 9.3)

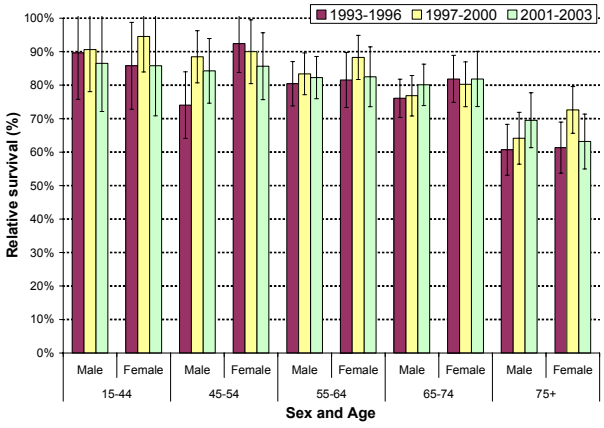
Table 9.3: Relative survival from cancer of the rectum, rectosigmoid junction & anus by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	81.4%	(77.5%, 85.3%)	69.1%	(65.6%, 72.6%)
	1997-2000	87.1%	(83.6%, 90.5%)	73.3%	(69.8%, 76.8%)
	2001-2003	83.5%	(79.6%, 87.4%)	73.1%	(69.2%, 77.0%)
5-year	1993-1996	50.3%	(45.2%, 55.5%)	42.2%	(37.8%, 46.6%)
	1997-2000	56.1%	(50.8%, 61.3%)	46.9%	(42.2%, 51.6%)

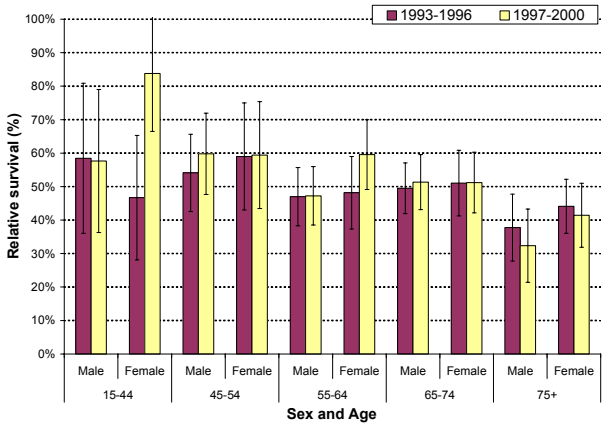
There were no changes in relative survival for either 15-64 or 65-99 year olds over time (p>0.05). However five-year relative survival for females aged 15-44 did improve (p=0.043) between 1993-1996 and 1997-2000 although this was based upon a small number of cases. (Tab. 9.3; Fig. 9.4)

Figure 9.4: Relative survival from cancer of the rectum, rectosigmoid junction & anus by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year

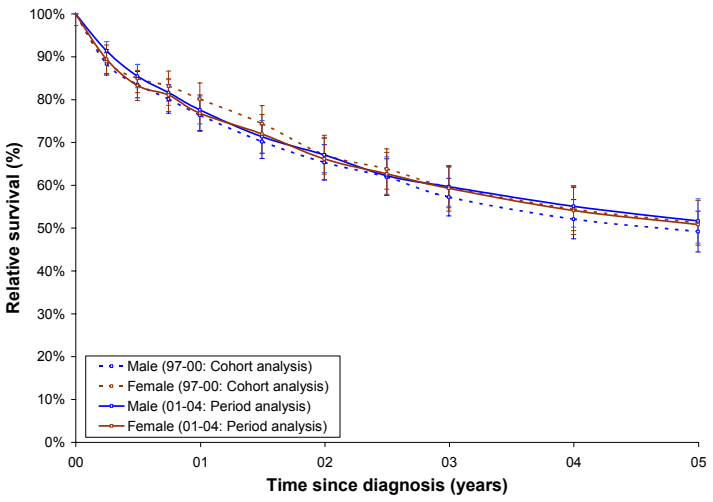


9.3: Period Analysis

Five-year survival from cancer of the rectum, rectosigmoid junction & anus for patients diagnosed in 2001-2004 derived using the period analysis approach to reflect more recent survival experiences, was 51.7% for males and 50.8% for females. The difference between males and females was not statistically significant (p<0.05). (Fig. 9.5; App. 7)

Neither estimate constituted a significant change from the actual five-year relative survival of those diagnosed in 1997-2000, although it should be emphasised that the results are not directly comparable. (Fig. 9.5; App. 7)

Figure 9.5: Estimated relative survival (period analysis) from cancer of the rectum, rectosigmoid junction & anus for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.

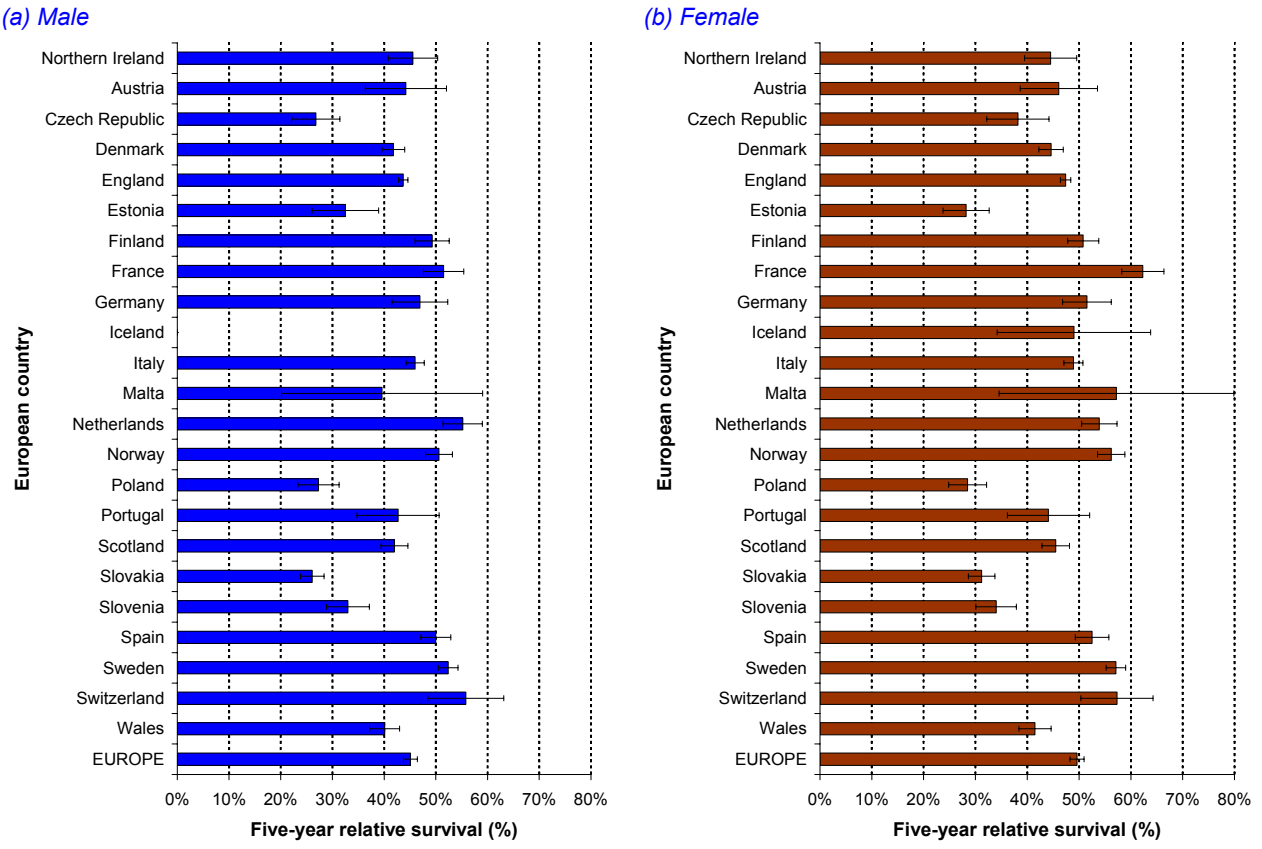


9.4: International Comparisons

EUROCARE-3 study

The five-year age-standardised relative survival rate for males diagnosed in 1993-1996 was 45.6% while for females the rate was 44.5%. For both sexes this was not significantly different than the five-year relative survival rate in Europe. Comparisons between Northern Ireland and other European countries included in the EUROCARE-3 study showed lower survival in Northern Ireland for both males and females than in the Netherlands and Sweden and for females than in France, Spain, Norway and Switzerland. Survival was better in Northern Ireland than in Estonia, Poland, Slovenia and Slovakia. (Fig. 9.6)

Figure 9.6: Comparison of five-year age-standardised relative survival from cancer of the rectum, rectosigmoid junction & anus with other European countries



Source: EUROCARE-3 (2003)[27,28]

Other countries

Survival from cancer of the rectum, rectosigmoid junction and anus was lower in Northern Ireland than in Australia and USA for patients diagnosed with the disease in the late 1990s. (Tab. 9.4)

Table 9.4: Five-year relative survival from cancer of the rectum, rectosigmoid junction & anus for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	49.2%	51.2%
USA	**1996-2002**	64.7%	65.6%
Canada	**1995-1997**	-	-
Australia	**1992-1997**	56.6%	60.6%
New Zealand	**1994-1999**	-	-

9.5: Summary and Discussion

Cancer of the rectum, rectosigmoid junction and anus makes up 38% of male and 31% of female colorectal cancers in Northern Ireland with incidence and mortality rates from this cancer remaining static over time. Survival from the disease in Northern Ireland is moderate at approximately 77% of all persons alive one-year from diagnosis and 50% of persons still alive after five-years. There is little conclusive evidence of improvement in survival over time either by sex or age. Survival in Northern Ireland however appears to be similar to the rest of the UK and most European countries but is worse than in USA and Canada.

See chapter 7 for information on the risks and causes of cancer of the rectum.

10: LIVER CANCER (C22)

KEY FACTS:

- **31 male and 20 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **39 male and 39 female deaths per year between 2000 and 2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 12.9% of males and 24.4% of females alive after one year, with no significant change in survival over time;**
- **Survival in Europe and other countries also poor.**

10.1: Incidence and Mortality

Incidence

Between 2000 and 2004 an average of 31 males and 20 females were diagnosed with liver cancer each year. It was the nineteenth most common male and twentieth most common female cancer representing less than 1% of all cancers for each sex. (Tab. 10.1)

Table 10.1: Incidence and mortality: Liver cancer (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	31	20	39	39
Percentage of all cancers	0.7%	0.4%	2.1%	2.2%
Rank	19	20	13	10
Median age at diagnosis/death	69	72	73	74
Male to female ratio	1.6:1	-	1.0:1	-
Incidence to mortality ratio	0.8:1	0.5:1	-	-
Crude rate per 100,000 persons	3.7	2.3	4.7	4.5
European age-standardised rate per 100,000 persons (95% CI)	3.8 (3.2,4.4)	1.8 (1.5,2.2)	4.7 (4.0,5.3)	3.6 (3.0,4.1)

Mortality

Liver cancer was the thirteenth most common cancer death among males and tenth among females with an average of 39 males and 39 females having died each year during 2000-2004 from the disease. The incidence to mortality ratio for each sex was less than one indicating that more deaths than cases of liver cancer occurred during the period. This can occur when cancers spread from a different part of the body to the liver, with liver cancer thus a secondary cancer that is subsequently accredited as the cause of death. (Tab. 10.1)

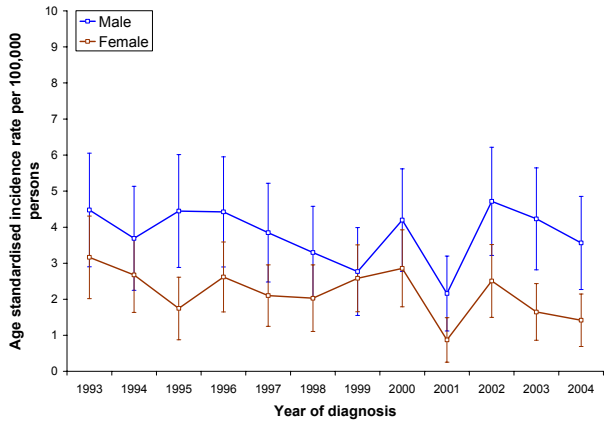
Trends

Trends in both incidence (EASIR) and mortality (EASMR) rates for males and females were not statistically significant (p>0.05). (Fig. 10.1; App. 4, 5&6)

The actual number of cases for males was also static during the period, however the number of females cases dropped by an average of just over one case per year. Deaths from liver cancer were fairly constant over the twelve-year period. (Fig. 10.1; App. 4, 5&6)

Figure 10.1: Incidence and mortality trends: Liver cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates

10.2: Relative Survival

Relative survival from liver cancer was very poor with 16.9% of patients diagnosed between 2001 and 2003 surviving one year and 5.9% of patients diagnosed between 1997 and 2000 surviving three years. Prior to this period 4.2% of persons diagnosed between 1993 and 1996 were alive after five years. Less than 10 persons diagnosed with liver cancer during 1997-2000 survived five-years (Tab. 10.2)

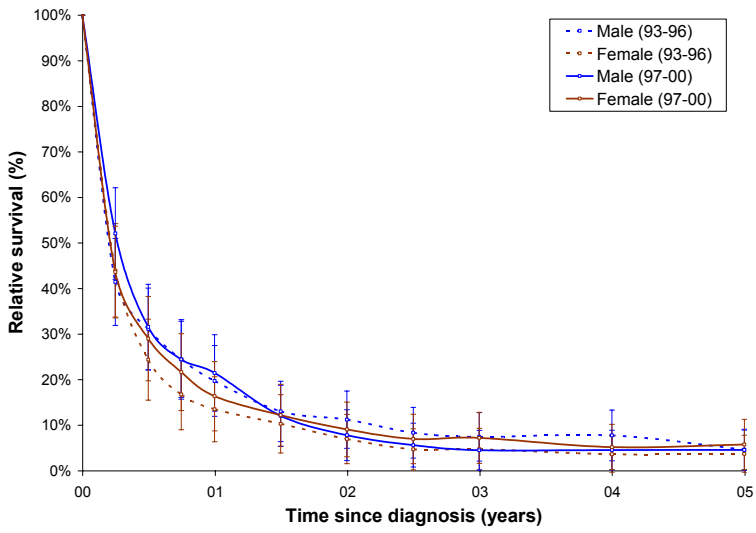
Table 10.2: Relative survival from liver cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)		
		Males	Females	All persons
ALL PATIENTS				
1-year	1993-1996	19.7% (12.0%, 27.5%)	13.5% (6.4%, 20.6%)	16.8% (11.5%, 22.2%)
	1997-2000	21.5% (13.1%, 29.9%)	16.4% (8.8%, 24.0%)	19.0% (13.3%, 24.6%)
	2001-2003	12.9% (5.4%, 20.4%)	24.4% (11.2%, 37.6%)	16.9% (10.1%, 23.6%)
3-year	1993-1996	<10 patients	<10 patients	6.2% (2.6%, 9.7%)
	1997-2000	<10 patients	<10 patients	5.9% (2.3%, 9.4%)
5-year	1993-1996	<10 patients	<10 patients	4.2% (1.2%, 7.3%)
	1997-2000	<10 patients	<10 patients	<10 patients

Sex

There were no significant differences in relative survival from liver cancer between males and females (p>0.05) during 1993-2003. (Tab. 10.2; Fig. 10.2)

Figure 10.2: Relative survival from liver cancer by sex and period of diagnosis (1993-2000)



Changes over time

Relative survival from liver cancer did not vary significantly by period of diagnosis during 1993-2003 (p>0.05). (Tab. 10.2; Fig. 10.2)

10.3: International Comparisons

EUROCARE-3 study

Insufficient data (i.e. less than 10 cases) exists to create a five-year age-standardised relative survival rate for males and females diagnosed between 1993 and 1996 in Northern Ireland. Figure 10.3 illustrates the survival from liver cancer among countries included in the EUROCARE-3 study where sufficient data exists for an analysis of this cancer. Survival from this cancer was poor in all countries with Spain being the only country with survival greater than 10%. (Fig. 10.3)

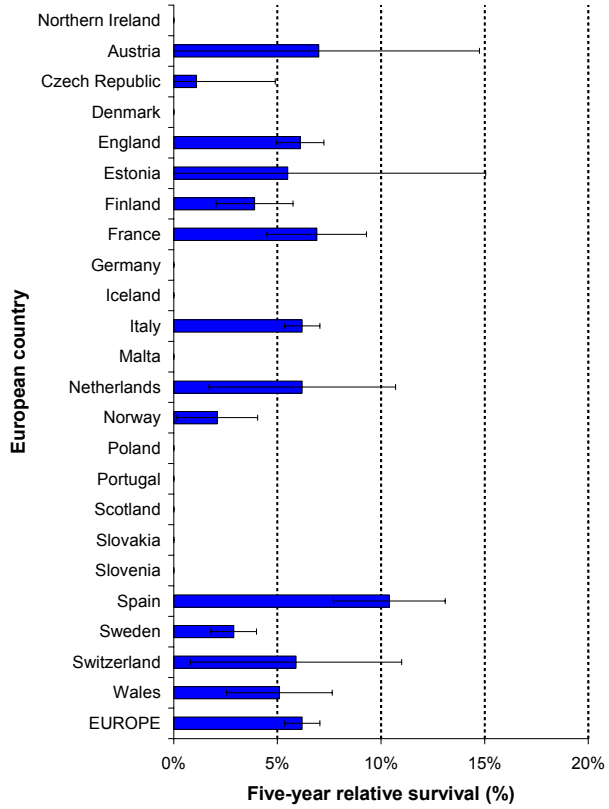
10.4: Summary and Discussion

Liver cancer is one of the less common cancers but has a poor prognosis with 6% of patients surviving three years. Incidence and mortality rates in Northern Ireland are similar to those in the rest of the UK, however while no trend in either has been detected in Northern Ireland, in Great Britain rates of new cases of liver cancer and liver cancer deaths have been increasing since the 1970s[32,35]. Five-year survival rates in England and Wales have improved slightly over the last thirty years but still remain poor[55].

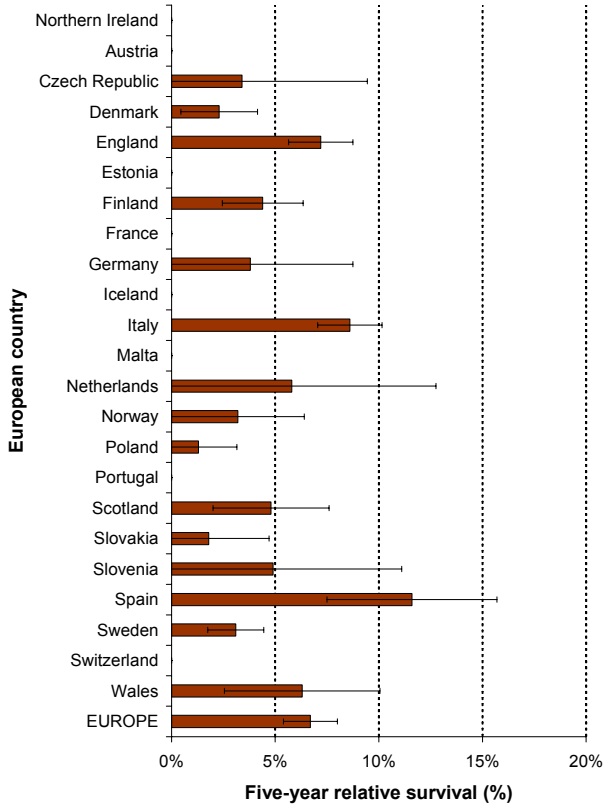
Cirrhosis is the strongest predisposing risk factor of liver cancer which can be caused by liver fluke infection and alcohol[56]. Infection with Hepatitis B or Hepatitis C can also cause liver cancer as it causes cirrhosis,

Figure 10.3: Comparison of five-year age-standardised relative survival from liver cancer with other European countries

(a) Male



(b) Female



Source: EUROCARE-3 (2003) [27,28]
Note: Missing entries due to unavailable data

more so among those who smoke[57]. Vaccination of high-risk individuals for Hepatitis infection reduces the risk of liver cancer.

Aflatoxin B1 which are products of aspergillus fungi and accumulate during storage of grains and peanuts and occur as a food contaminant in hot, humid countries also causes liver cancer[57]. The accumulation of aflatoxin in stored food is not a problem in Northern Ireland.

11: PANCREATIC CANCER (C25)

KEY FACTS:

- **76 male and 84 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **82 male and 89 female deaths per year between 2000 and 2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **No difference in survival between males and females; 11.3% of males and 10.8% of females alive after one year with no change in survival over time;**
- **Survival broadly similar to that in Europe.**

11.1: Incidence and Mortality

Incidence

Pancreatic cancer accounted for 1.7% of male and 1.9% of female cancers diagnosed in 2000-2004. It was the thirteenth most common male cancer with an average of 76 cases diagnosed each year and the tenth most common among females with 84 cases diagnosed annually. (Tab. 11.1)

Table 11.1: Incidence and mortality: Pancreatic cancer (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	76	84	82	89
Percentage of all cancers	1.7%	1.9%	4.4%	5.0%
Rank	13	10	6	5
Median age at diagnosis/death	71	74	72	75
Male to female ratio	0.9:1	-	0.9:1	-
Incidence to mortality ratio	0.9:1	0.9:1	-	-
Crude rate per 100,000 persons	9.1	9.7	9.9	10.2
European age-standardised rate per 100,000 persons (95% CI)	9.2 (8.3,10.1)	7.3 (6.6,8.0)	9.9 (9.0,10.9)	7.4 (6.7,8.2)

Mortality

There was an average of 82 male and 89 female deaths from pancreatic cancer each year during 2000-2004. This represented 4.4% of male and 5.0% of female cancer deaths, with pancreatic cancer the sixth most common male and fifth most common female cancer death. As with liver cancer the incidence to mortality ratio for each sex was less than one with more deaths than cases of pancreatic cancer having occurred. This is a result of cancers other than pancreatic cancer spreading from the primary site to the pancreas, resulting in pancreatic cancer as a secondary cancer that is then recorded as the cause of death if the patient dies. (Tab.11.1)

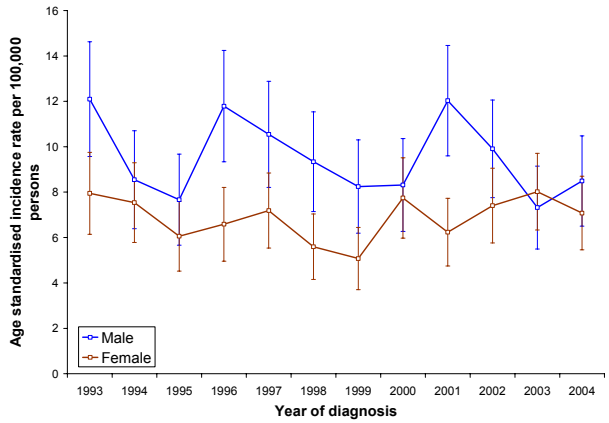
Trends

Incidence rates (EASIR) for pancreatic cancer for both sexes were static in 1993-2004 (p>0.05). Female cases however increased by an average of one per year. (Fig. 11.1; App. 4&6)

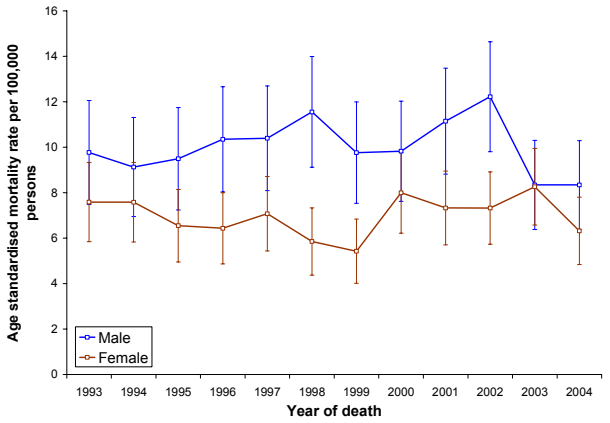
There were no significant trends in mortality rates (EASMR) for this cancer in 1993-2004 (p>0.05), although there was an increase of approximately one death each year for both sexes. (Fig. 11.1; App. 5&6)

Figure 11.1: Incidence and mortality trends: Pancreatic cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



11.2: Relative Survival

Relative survival from pancreatic cancer was very poor with 11.1% of patients diagnosed between 2001 and 2003 surviving one year and 2.5% of patients diagnosed between 1997 and 2000 surviving three years, while less than 10 patients survived five years or more. Prior to this period 2.7% of patients diagnosed in 1993-1996 were alive after five years. (Tab. 11.2)

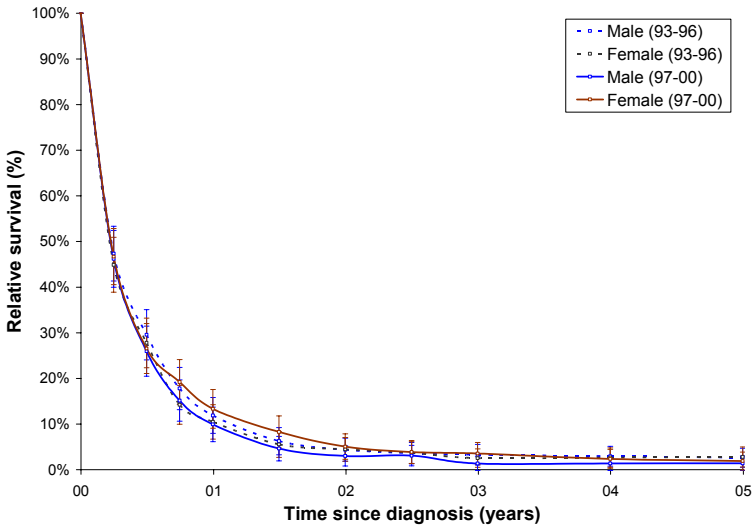
Table 11.2: Relative survival from pancreatic cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)		
		Males	Females	All persons
ALL PATIENTS				
1-year	**1993-1996**	11.9% (7.9%, 15.8%)	10.5% (6.7%, 14.2%)	11.2% (8.5%, 13.9%)
	1997-2000	9.9% (6.1%, 13.7%)	13.3% (9.1%, 17.6%)	11.7% (8.8%, 14.5%)
	2001-2003	11.3% (7.0%, 15.6%)	10.8% (6.8%, 14.9%)	11.1% (8.1%, 14.0%)
3-year	**1993-1996**	<10 patients	<10 patients	2.9% (1.4%, 4.4%)
	1997-2000	<10 patients	<10 patients	2.5% (1.0%, 3.9%)
5-year	**1993-1996**	<10 patients	<10 patients	2.7% (1.2%, 4.2%)
	1997-2000	<10 patients	<10 patients	<10 patients

Sex

There were no statistically significant differences in relative survival for males and females (p>0.05) diagnosed with pancreatic cancer between 1993 and 2003. (Tab. 11.2; Fig. 11.2)

Figure 11.2: Relative survival from pancreatic cancer by sex and period of diagnosis (1993-2000)



Changes over time

There were no statistically significant changes in relative survival for patients diagnosed with pancreatic cancer between 1993 and 2003, with 11.1% of those diagnosed in 2001-2003 alive after one year compared to 11.7% of those diagnosed in 1997-2000 (p>0.05). (Tab. 11.2; Fig. 11.2)

11.3: International Comparisons

EUROCARE-3 study

Less than 10 males and females diagnosed in 1993-1996 in Northern Ireland survived five-years or more. International comparisons can therefore not be made due to lack of information. Figure 11.3 illustrates the situation in Europe in the early 1990s where the five-year relative survival from pancreatic cancer was approximately 4% for males and females. This was broadly similar to the five-year relative survival rate for all persons in Northern Ireland, although this figure is not age-standardised and is therefore not directly comparable. (Fig. 11.3)

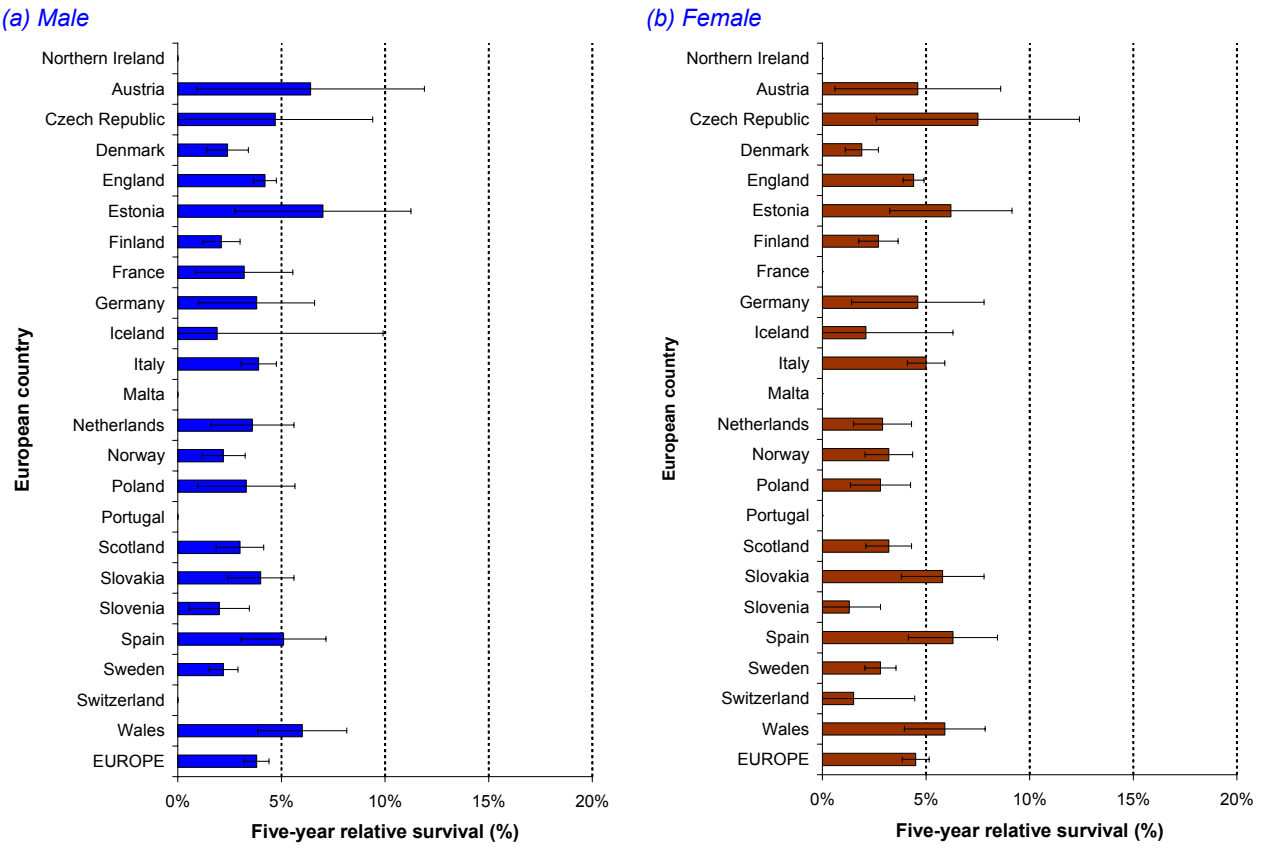
Other countries

Most countries have sufficient cases to allow accurate calculation of five-year relative survival rates for pancreatic cancer. Globally the situation in the late 1990s was poor with the best five-year relative survival rate reported in Canada for females (7.0%). (Tab. 11.3)

Table 11.3: Five-year relative survival from pancreatic cancer for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1993-1996**	2.7%	
USA	**1996-2002**	5.1%	4.9%
Canada	**1995-1997**	6.0%	7.0%
Australia	**1992-1997**	5.4%	5.2%
New Zealand	**1994-1999**	6.0%	4.8%

Figure 11.3: Comparison of five-year age-standardised relative survival from pancreatic cancer with other European countries



Source: EUROCARE-3 (2003)[27,28]

11.4: Summary and Discussion

Levels of pancreatic cancer in Northern Ireland are similar to those in other UK countries[35]. Since the 1970s male incidence rates in the UK have fallen with a drop of 5% between 1997 and 2003. Female rates have remained steady during this period with mortality rates following a similar pattern[31].

Cigarette smoking is associated with 30% of all pancreatic cancers[58] while an unhealthy diet with low levels of fruit and vegetables and high fat and sugar intake can also increase risk[59,60]. Alcohol consumption, low levels of physical exercise and being overweight may increase the risk of developing pancreatic cancer by a small amount although studies are inconclusive and there is further work required in this area[60]. An increased risk may also come from frequent exposure to chlorinated hydrocarbon solvents which are found in paints, glue and dry cleaning solutions[60]. A link has been established between pancreatic cancer and medical conditions such as chronic pancreatitis, diabetes and stomach ulcers[60]. Hereditary diseases such as hereditary pancreatitis also increase risk and a genetic link is suspected in 1 in 10 pancreatic cancer cases[60].

Survival rates in pancreatic cancer patients are low with only 11% surviving one year and 3% surviving five years, a similar situation to that found in other countries. The survival is due to the aggressive nature of the tumour, the usually late detection of the disease and the location of the pancreas in the body, which makes surgical intervention unfeasible in the majority of cases, particularly if the cancer has spread beyond the pancreas. Surgical intervention improves survival over the short term but has little impact on long-term survival. Similarly, improvements in palliative care have improved one-year survival rates since the 1970s in England and Wales but have not had a significant impact on long-term survival[55].

12: CANCER OF THE LARYNX (C32)

KEY FACTS:

- **48 male and 12 female cases per year between 2000 and 2004 with decreasing male (-3.0% p.a.) incidence rates and no significant change in female incidence rates between 1993 and 2004;**
- **16 male and 5 female deaths per year between 2000 and 2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 69.6% of males and 57.9% of females alive after five years with no change in survival between 1993-1996 and 1997-2000;**
- **Survival better than Poland and Slovakia and similar to other European countries, USA and Canada.**

12.1: Incidence and Mortality

Incidence

During 2000-2004 cancer of the larynx was more common in males than females with 48 cases diagnosed per year among males compared to 12 among females. It was the seventeenth commonest cancer among males (1.1% of male cancers), compared to the twenty-second most common cancer among females. (Tab. 12.1)

Table 12.1: Incidence and mortality: Cancer of the larynx (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	48	12	16	5
Percentage of all cancers	1.1%	0.3%	0.9%	0.3%
Rank	17	22	17	21
Median age at diagnosis/death	65	60	70	70
Male to female ratio	3.9:1	-	3.4:1	-
Incidence to mortality ratio	2.9:1	2.6:1	-	-
Crude rate per 100,000 persons	5.8	1.4	2.0	0.6
European age-standardised rate per 100,000 persons (95% CI)	6.1 (5.3,6.8)	1.4 (1.0,1.8)	2.0 (1.6,2.5)	0.5 (0.3,0.7)

Mortality

Male deaths from laryngeal cancer outnumbered female deaths with 16 male compared to 5 female deaths per year. Laryngeal cancer was the seventeenth commonest cause of cancer death among men, making up 0.9% of male cancer deaths, while 0.3% of cancer deaths among females were as a result of this cancer. (Tab. 12.1)

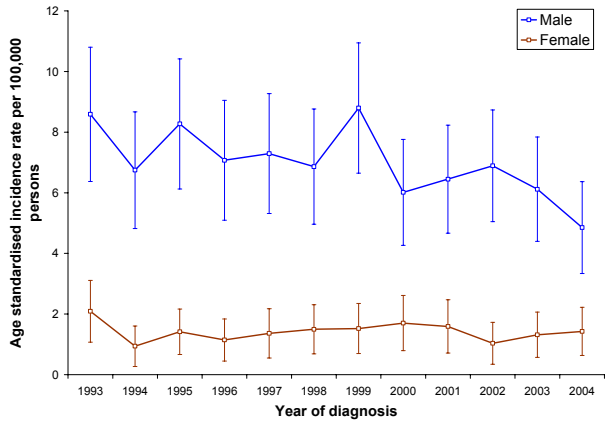
Trends

Male incidence rates (EASIR) for laryngeal cancer decreased during 1993-2004 by 3.0% each year (p=0.017), which corresponded to a decrease of just under one case per year. No significant trend in female EASIRs existed (p>0.05) with the actual number of newly diagnosed cases each year also static. (Fig. 12.1; App. 4&6)

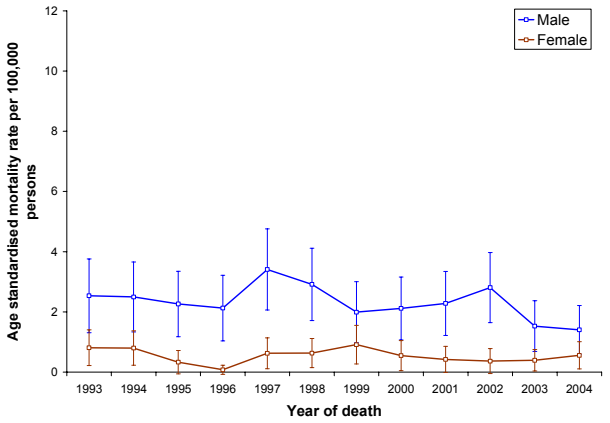
There was no significant trend in male or female mortality rates for cancer of the larynx over the 1993 to 2004 period (p>0.05). The average change in the number of deaths each year was close to zero. (Fig. 12.1; App. 5&6)

Figure 12.1: Incidence and mortality trends: Cancer of the larynx (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



12.2: Relative Survival

Relative survival from cancer of the larynx was good with 86.1% of patients diagnosed between 2001 and 2003 surviving one-year and 67.4% of patients diagnosed between 1997 and 2000 surviving five years. (Tab. 12.2)

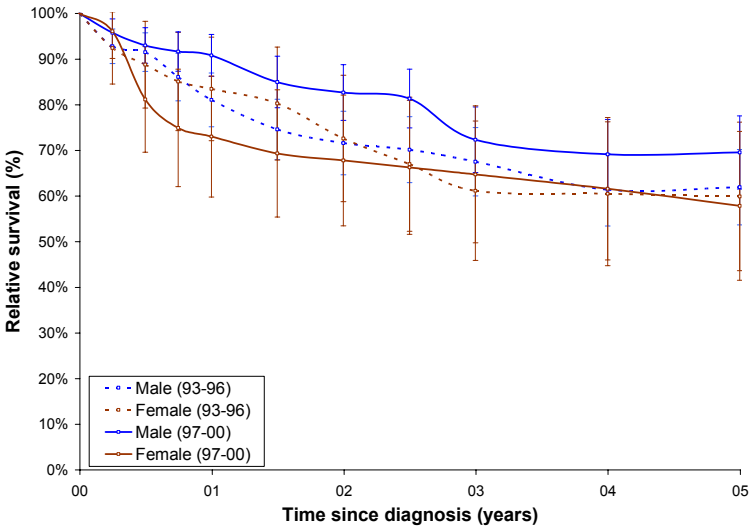
Table 12.2: Relative survival from cancer of the larynx by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	81.1%	(75.2%, 87.0%)	83.5%	(72.1%, 94.8%)	81.6%	(76.3%, 86.8%)
	1997-2000	90.8%	(86.2%, 95.4%)	73.1%	(59.8%, 86.3%)	87.5%	(82.9%, 92.1%)
	2001-2003	87.6%	(81.5%, 93.7%)	79.8%	(65.7%, 94.0%)	86.1%	(80.5%, 91.8%)
3-year	**1993-1996**	67.5%	(60.0%, 75.0%)	61.2%	(45.9%, 76.4%)	66.3%	(59.6%, 73.0%)
	1997-2000	72.4%	(65.2%, 79.6%)	64.8%	(49.8%, 79.8%)	71.0%	(64.5%, 77.5%)
5-year	**1993-1996**	62.0%	(53.7%, 70.2%)	59.9%	(43.7%, 76.2%)	61.6%	(54.2%, 68.9%)
	1997-2000	69.6%	(61.6%, 77.6%)	57.9%	(41.6%, 74.2%)	67.4%	(60.1%, 74.6%)

Sex

There were no statistically significant differences in one or five-year relative survival for males and females (p>0.05) diagnosed with cancer of the larynx between 1993 and 2003. (Tab. 12.2; Fig. 12.2)

Figure 12.2: Relative survival from cancer of the larynx by sex and period of diagnosis (1993-2000)



Changes over time

There were no statistically significant changes in male or female one, three or five-year relative survival for patients diagnosed with laryngeal cancer during 1993-2003 (p>0.05). (Tab. 12.2; Fig. 12.2)

12.3: International Comparisons

EUROCARE-3 study

The five-year age-standardised relative survival rate for males diagnosed in 1993-1996 was 61.9%, while for females the rate was 64.4%. For both sexes this was close to the five-year relative survival rate in Europe. There were no significant differences between Northern Ireland and other European countries detected except for differences with Poland and Slovakia, which had significantly lower male relative survival at 42.4% and 38.5% respectively (Fig. 12.3).

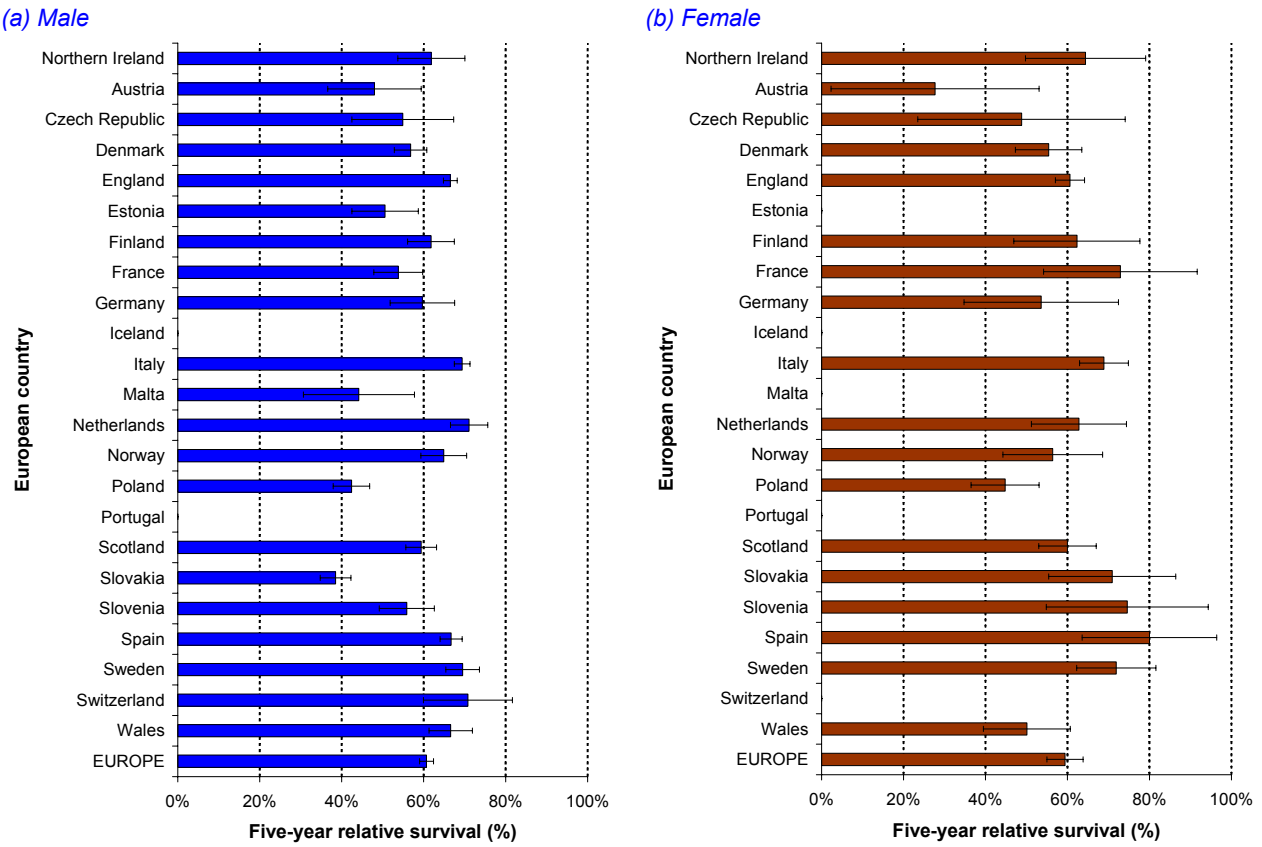
Other countries

Comparisons between Northern Ireland and other countries illustrate that survival was similar in Northern Ireland to that in USA and Canada. (Tab. 12.3)

Table 12.3: Five-year relative survival from cancer of the larynx for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	69.6%	57.9%
USA	**1996-2002**	65.9%	57.6%
Canada	**1995-1997**	68.0%	63.0%
Australia	**1992-1997**	-	-
New Zealand	**1994-1999**	-	-

Figure 12.3: Comparison of five-year age-standardised relative survival from cancer of the larynx with other European countries



Source: EUROCARE-3 (2003) [27,28]

12.4: Summary and Discussion

Laryngeal cancer is a less common cancer that occurs primarily in males. Survival from the disease in Northern Ireland is moderate at approximately 67% of persons still alive after five years, which is comparable to other countries throughout Europe and North America. The situation does not appear to have been improving over time with survival rates remaining at this level during the late 1990s with the number of deaths and female incidence also remaining unchanged. Male incidence rates, however, have fallen over recent years, possibly due to the change in smoking patterns.

Cigarette smoking is one of the major risks associated with cancer of the larynx, with the risk increasing as the length of time a person has smoked increases[61]. Alcohol consumption also increases risk with heavy drinkers having 2-5 times the risk of non drinkers of developing cancer of the larynx[61]. Both smoking and drinking heavily can interact to give an even higher risk than either on their own[61].

Diet can also affect the risk of developing cancer of the larynx with a diet containing insufficient vitamins and minerals increasing the risk and a diet high in fresh fruit and vegetables reducing the risk[61]. A weakened immune system, caused for example by having a medical condition that affects the immune system such as AIDS, can increase the risk of developing laryngeal cancer[61] and a possible link with human papillomavirus (HPV) has recently been reported[61] although this remains to be proven. Regular exposure to certain chemicals such as wood dust, paint fumes or soot also increase the risk of developing this cancer[61].

13: LUNG CANCER (Trachea, bronchus & lung) (C33-C34)

KEY FACTS:

- **539 male and 350 female cases diagnosed each year during 2000-2004 with an annual decrease of 2.4% in male and no significant change in female incidence rates during 1993-2004;**
- **488 male and 314 female deaths from the disease each year between 2000 and 2004 with an annual decrease of 2.2% in male and no significant change in female mortality rates during 1993-2004;**
- **Five-year survival for patients diagnosed in 1997-2000 was 9.1% for males and 9.2% for females with one-year survival having improved by 3.3% for patients diagnosed in 1997-2000 compared to those diagnosed in 1993-1996;**
- **Survival was better for 15-64 year olds than for 65-99 year olds and for patients with non-small cell lung cancer than for patients with small cell lung cancer;**
- **One-year survival improved by 5.1% for patients diagnosed with non-small cell lung cancer during 1993-2003;**
- **Five-year survival was lower in the most deprived areas than the most affluent areas of Northern Ireland;**
- **Period analysis suggests no further improvement for patients diagnosed in 2001-2004;**
- **Survival was lower than in USA, Canada, and Europe but was better than in Scotland for males and England for females.**

13.1: Incidence and Mortality

Incidence

There were on average 539 male and 350 female cases of lung cancer diagnosed each year in 2000-2004. It was the third most common cancer among males and fourth among females representing 11.9% of male and 7.7% of female cancers diagnosed during the five-year period. Age-standardised incidence rates (EASIR) among males were almost twice that of females. (Tab. 13.1)

Table 13.1: Incidence and mortality: Lung cancer (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	539	350	488	314
Percentage of all cancers	11.9%	7.7%	26.0%	17.6%
Rank	3	4	1	1
Median age at diagnosis/death	71	71	72	72
Male to female ratio	1.5:1	-	1.6:1	-
Incidence to mortality ratio	1.1:1	1.1:1	-	-
Crude rate per 100,000 persons	65.1	40.3	58.9	36.2
European age-standardised rate per 100,000 persons (95% CI)	65.1 (62.6,67.6)	33.4 (31.7,35.0)	58.6 (56.3,61.0)	29.0 (27.5,30.5)

Mortality

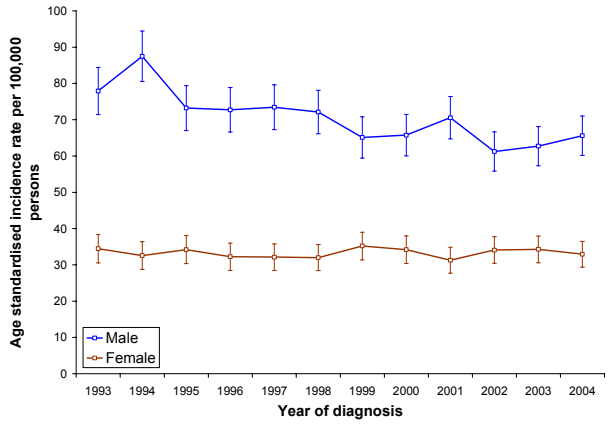
Lung cancer was the leading cause of cancer death among males and females between 2000 and 2004 making up 26.0% of male and 17.6% of female cancer deaths. On average there were 488 male and 314 female deaths per year during this period with age-standardised mortality rates (EASMR) among males also twice that among females. (Tab. 13.1)

Trends

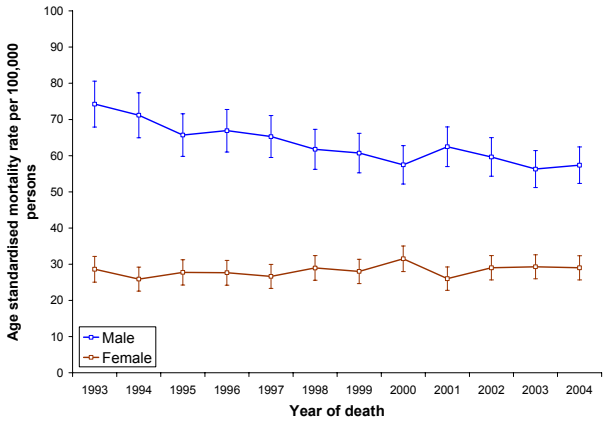
Rates (EASIR) of male lung cancer fell in 1993-2004 by 2.4% per year (p=0.001), reflecting an average

Figure 13.1: Incidence and mortality trends: Lung cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



annual decrease of 4.0 cases per year. Female rates remained unchanged (p>0.05) but due to the ageing of the population the number of cases increased on average by 4.5 each year. (Fig. 13.1; App. 4&6)

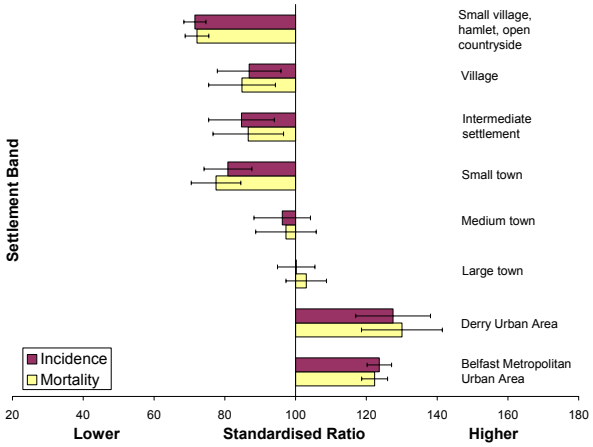
Male mortality rates (EASMR) fell during 1993-2004 by 2.2% each year (p<0.001) representing a decrease of 3.0 deaths per year. No trend existed in female rates, however the number of female deaths increased by an average of 5.9 deaths per year. (Fig. 13.1; App. 5&6)

Geographic variation

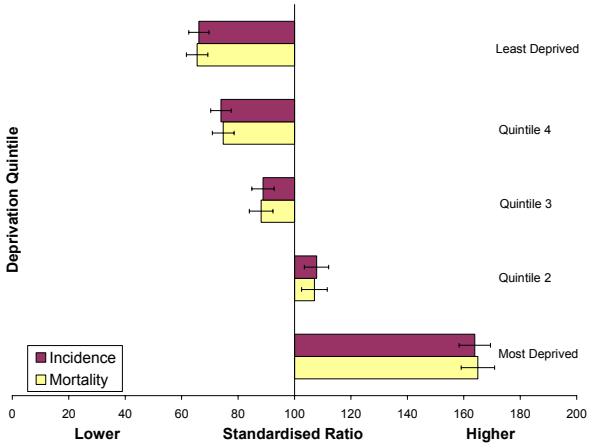
Incidence and mortality from lung cancer was higher in the 40% most deprived areas of Northern Ireland than in Northern Ireland as a whole during 1993-2004. Related to this was higher incidence and mortality from the disease in Belfast Metropolitan Area and Derry Urban Area compared to more rural areas. If lung cancer levels in all areas were the same as in the least deprived areas there would be approximately 300 fewer cases diagnosed annually. (Fig. 13.2)

Figure 13.2: Standardised incidence and mortality ratios for lung cancer by settlement and deprivation category: 1993-2004

(a) Settlement band



(b) Deprivation quintile



Incidence and mortality from lung cancer were higher in Belfast and Derry Local Government Districts than in Northern Ireland as a whole during 1993-2004. Lower rates were found in 14 of the 26 District Councils. (Tab. 13.2)

Table 13.2: Standardised incidence and mortality ratios for lung cancer by District Council: 1993-2004

Local Government District	Standardised Incidence Ratio (95% CI)		Standardised Mortality Ratio (95% CI)		Local Government District	Standardised Incidence Ratio (95% CI)		Standardised Mortality Ratio (95% CI)	
Antrim	105.6	(93.1, 118.1)	105.8	(92.4, 119.2)	**Down**	99.4	(89.4, 109.3)	97.3	(86.9, 107.7)
Ards	93.4	(84.9, 102.0)	95.0	(85.8, 104.2)	**Dungannon**	82.9	(72.2, 93.5)	80.5	(69.4, 91.6)
Armagh	74.0	(64.6, 83.3)	78.1	(67.8, 88.3)	**Fermanagh**	81.5	(72.4, 90.7)	77.4	(68.0, 86.9)
Ballymena	69.1	(61.0, 77.3)	74.0	(65.0, 82.9)	**Larne**	90.6	(77.9, 103.3)	90.8	(77.3, 104.3)
Ballymoney	69.2	(56.7, 81.6)	60.9	(48.5, 73.3)	**Limavady**	73.9	(60.5, 87.3)	73.4	(59.2, 87.6)
Banbridge	76.2	(65.3, 87.1)	74.2	(62.8, 85.7)	**Lisburn**	89.8	(82.3, 97.2)	86.6	(78.8, 94.4)
Belfast	145.1	(139.8, 150.4)	143.6	(138.0, 149.2)	**Magherafelt**	75.7	(64.1, 87.3)	74.1	(61.9, 86.3)
Carrickfergus	113.0	(99.4, 126.6)	110.9	(96.6, 125.3)	**Moyle**	106.0	(86.7, 125.3)	97.5	(77.9, 117.1)
Castlereagh	99.4	(90.7, 108.1)	98.2	(89.0, 107.4)	**Newry & Mourne**	96.5	(87.7, 105.3)	96.9	(87.6, 106.3)
Coleraine	81.5	(72.3, 90.6)	84.8	(74.8, 94.7)	**Newtownabbey**	97.7	(89.3, 106.2)	97.2	(88.2, 106.1)
Cookstown	76.0	(63.5, 88.5)	76.6	(63.3, 90.0)	**North Down**	81.1	(73.8, 88.4)	82.8	(75.0, 90.6)
Craigavon	84.6	(76.4, 92.8)	87.6	(78.7, 96.4)	**Omagh**	72.4	(62.2, 82.6)	72.0	(61.2, 82.8)
Derry	124.6	(114.9, 134.4)	130.1	(119.4, 140.7)	**Strabane**	91.0	(78.3, 103.8)	97.0	(82.9, 111.0)

SIRs/SMRs in blue represent significantly lower or higher incidence or mortality than in Northern Ireland as a whole.

13.2: Relative Survival

Relative survival from lung cancer was poor with 26.3% of patients diagnosed between 2001 and 2003 surviving one year, 9.1% of patients diagnosed between 1997 and 2000 surviving five years and 7.0% of patients diagnosed in 1993-1996 surviving seven years. (Tab. 13.3)

Table 13.3: Relative survival from lung cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	22.9%	(21.1%, 24.7%)	26.0%	(23.4%, 28.5%)	24.0%	(22.5%, 25.5%)
	1997-2000	27.2%	(25.2%, 29.2%)	27.3%	(24.8%, 29.8%)	27.3%	(25.7%, 28.8%)
	2001-2003	25.9%	(23.6%, 28.3%)	26.8%	(23.9%, 29.6%)	26.3%	(24.5%, 28.1%)
3-year	**1993-1996**	9.3%	(7.9%, 10.6%)	11.6%	(9.7%, 13.5%)	10.1%	(9.0%, 11.2%)
	1997-2000	11.6%	(10.1%, 13.1%)	12.0%	(10.1%, 13.8%)	11.7%	(10.6%, 12.9%)
5-year	**1993-1996**	6.9%	(5.7%, 8.1%)	9.1%	(7.4%, 10.9%)	7.7%	(6.7%, 8.7%)
	1997-2000	9.1%	(7.7%, 10.5%)	9.2%	(7.5%, 10.9%)	9.1%	(8.0%, 10.2%)
7-year	**1993-1996**	6.4%	(5.1%, 7.6%)	8.0%	(6.3%, 9.8%)	7.0%	(6.0%, 8.0%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	39.9%	(35.2%, 44.6%)	44.4%	(38.6%, 50.3%)	41.7%	(38.0%, 45.4%)
	1997-2000	42.3%	(37.8%, 46.8%)	43.5%	(38.0%, 49.1%)	42.8%	(39.3%, 46.3%)
5-year*	**1993-1996**	29.4%	(24.8%, 33.9%)	34.9%	(29.1%, 40.7%)	31.6%	(28.0%, 35.2%)
	1997-2000	33.0%	(28.4%, 37.6%)	33.3%	(27.8%, 38.7%)	33.1%	(29.6%, 36.6%)
7-year*	**1993-1996**	27.1%	(22.4%, 31.7%)	30.5%	(24.7%, 36.3%)	28.4%	(24.8%, 32.1%)

* from diagnosis

Sex

For patients diagnosed between 1993 and 2003 with lung cancer there was no significant difference in survival between males and females. For example five-year relative survival for males diagnosed in 1997-2000 was 9.1% compared to 9.2% for females. (Tab. 13.3; Fig. 13.3)

Changes over time

One-year relative survival for all persons improved for patients diagnosed in 1993-1996 compared with those diagnosed in 1997-2000, with an increase of 3.3% in those surviving one-year (p=0.036). This increase was driven primarily by a 4.3% increase in male one-year survival (p=0.028), with no significant change in female survival occurring between the two time periods. (Tab. 13.3; Fig. 13.3)

Figure 13.3: Relative survival from lung cancer by sex and period of diagnosis (1993-2000)

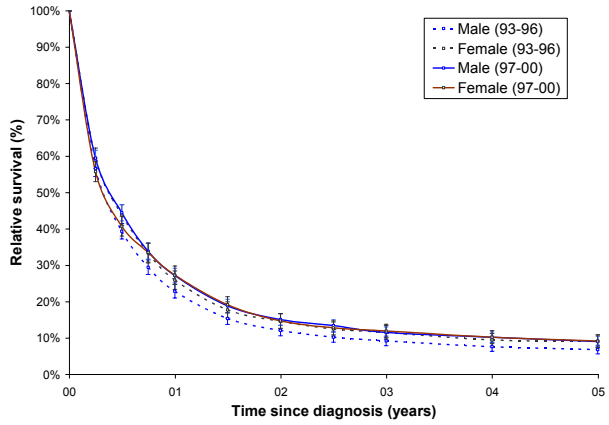
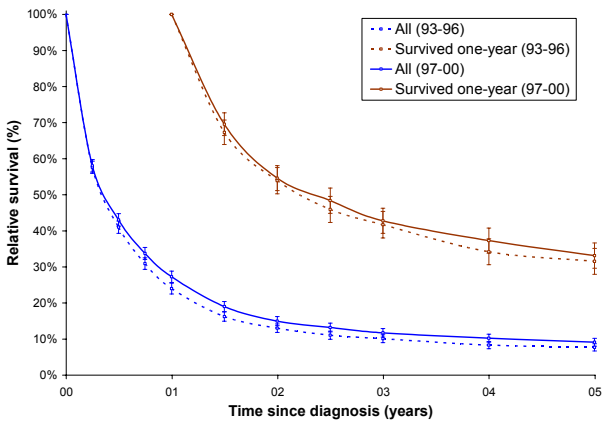


Figure 13.4: Relative survival from lung cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



There were no statistically significant changes over time in male or female five-year relative survival for patients diagnosed with lung cancer during 1993-2003 (p>0.05). (Tab. 13.3; Fig. 13.3)

Conditional survival

27.3% of patients diagnosed with lung cancer in 1997-2000 were alive one-year from diagnosis. Of these patients 33.1% survived a further four years (i.e. five-years in total). There were no differences in this conditional survival between sexes or over time during 1993-2003 (p>0.05). (Tab. 13.3; Fig. 13.4)

Age

Relative survival from lung cancer during 1993-2003 was higher for those aged 15-64 than 65-99. The difference in five-year relative survival between the two age groups for those diagnosed in 1997-2000 was 3.8% (p=0.028). (Tab. 13.4)

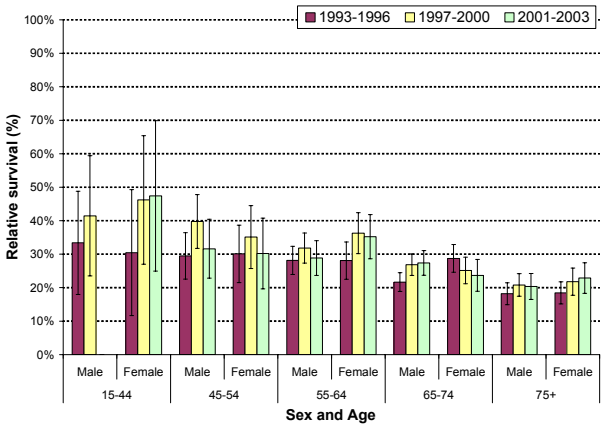
Table 13.4: Relative survival from lung cancer by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	28.8%	(26.0%, 31.6%)	21.8%	(20.1%, 23.6%)
	1997-2000	35.2%	(32.1%, 38.2%)	23.9%	(22.1%, 25.7%)
	2001-2003	31.9%	(28.5%, 35.3%)	23.9%	(21.8%, 26.0%)
5-year	1993-1996	10.1%	(8.2%, 12.0%)	6.5%	(5.4%, 7.7%)
	1997-2000	11.8%	(9.7%, 14.0%)	8.0%	(6.7%, 9.3%)

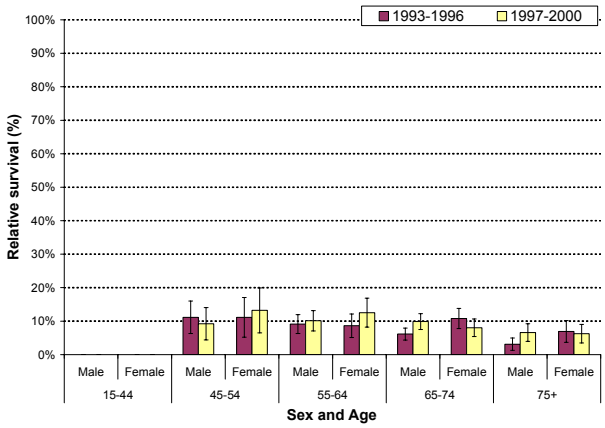
One-year relative survival for those aged 15-64 increased from 28.8% for those diagnosed in 1993-1996 to 35.2% for those diagnosed in 1997-2000 (p=0.031). Changes in survival for those aged 65-99 were not statistically significant (p>0.05) nor were any changes in specific male and female age groups. (Tab. 13.4; Fig. 13.5; App. 8)

Figure 13.5: Relative survival from lung cancer by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



Note: Missing entries refer to less than 10 persons in that age/sex group

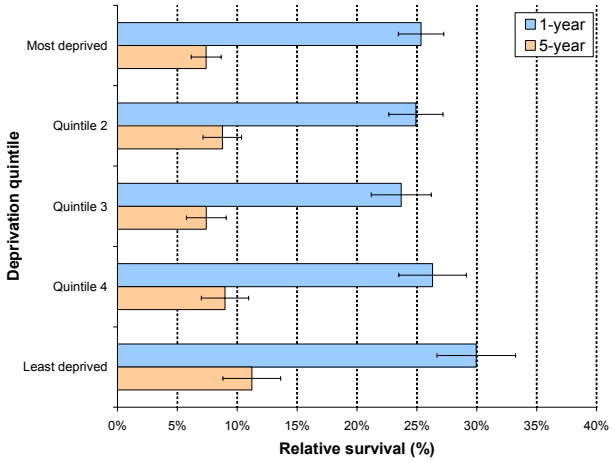
Deprivation and urban/rural factors

Deprivation has been shown in section 13.1 (Fig. 13.2b) to be associated with lung cancer risk. Deprivation is also a factor in lung cancer survival with five-year relative survival for patients diagnosed with lung cancer during 1993-2000 who resided in the 20% most affluent areas in Northern Ireland being 11.2% compared to 7.4% for those who resided in the 20% most deprived areas in Northern Ireland (p=0.040). If survival rates in all areas equated to those in the most affluent areas, approximately 25 additional persons diagnosed annually would survive at least five-years. (Fig. 13.6)

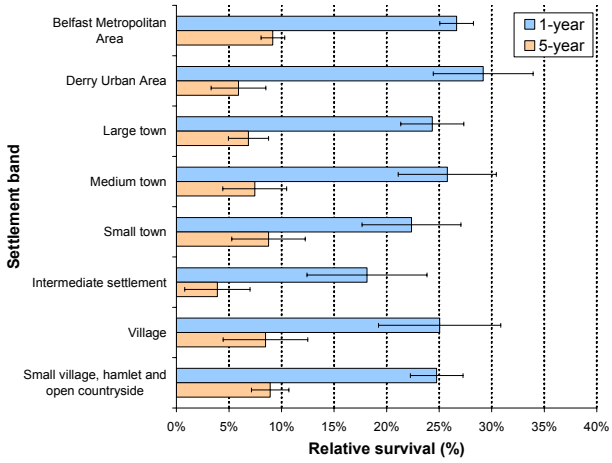
Variations in one and five-year relative survival from lung cancer also existed between different settlement types. In particular five-year relative survival in intermediate settlements was very low at 3.9%, which was significantly lower than the 9.2% in Belfast Metropolitan Area (p=0.015) and the 8.9% in the most rural areas of Northern Ireland (p=0.044). (Fig. 13.6)

Figure 13.6: Relative survival from lung cancer by deprivation quintile and settlement band (1993-2000)

(a) Deprivation quintile



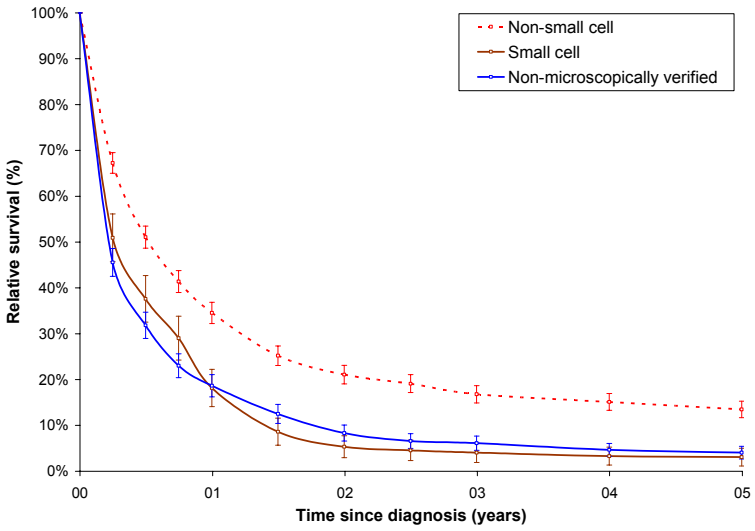
(b) Settlement band



Cell type

50% of patients diagnosed with lung cancer in 1993-2003 were recorded as having non-small cell lung cancer (NSCLC) with a further 11% with small-cell lung cancer (SCLC). The remainder had a cancer type that was not microscopically verified (NMV). Relative survival from lung cancer depended upon the cell-type with relative survival for patients diagnosed with NSCLC being higher than for those diagnosed with SCLC. (Tab. 13.5; Fig. 13.7)

Figure 13.7: Relative survival from lung cancer by cell type (1997-2000)



One-year relative survival improved for patients diagnosed with NSCLC during 1993-2003 with an increase from 30.7% for patients diagnosed between 1993 and 1996 to 35.7% for patients diagnosed between 2000 and 2003 (p=0.050). No further changes in one or five-year relative survival were statistically significant. (Tab. 13.5; Fig. 13.7)

Table 13.5: Relative survival from lung cancer by cell type and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Non-small cell lung cancer		Small cell lung cancer		Non-microscopically verified	
1-year	1993-1996	30.7%	(28.5%, 32.9%)	20.7%	(16.6%, 24.8%)	14.5%	(12.4%, 16.7%)
	1997-2000	34.5%	(32.3%, 36.8%)	18.2%	(14.2%, 22.1%)	18.6%	(16.3%, 21.0%)
	2001-2003	35.7%	(32.9%, 38.6%)	26.2%	(20.8%, 31.6%)	15.9%	(13.6%, 18.2%)
5-year	1993-1996	11.1%	(9.5%, 12.7%)	3.6%	(1.6%, 5.6%)	3.6%	(2.4%, 4.9%)
	1997-2000	13.5%	(11.7%, 15.2%)	3.1%	(1.2%, 5.0%)	4.1%	(2.7%, 5.4%)

13.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) from lung cancer was 25.0% for male and 26.1% for female patients diagnosed between 2001 and 2003. Five-year observed survival was 7.4% for male and 8.0% for female patients diagnosed between 1997 and 2000. (Tab. 13.6)

Table 13.6: Observed survival from lung cancer by sex and period of diagnosis (1993-2003)

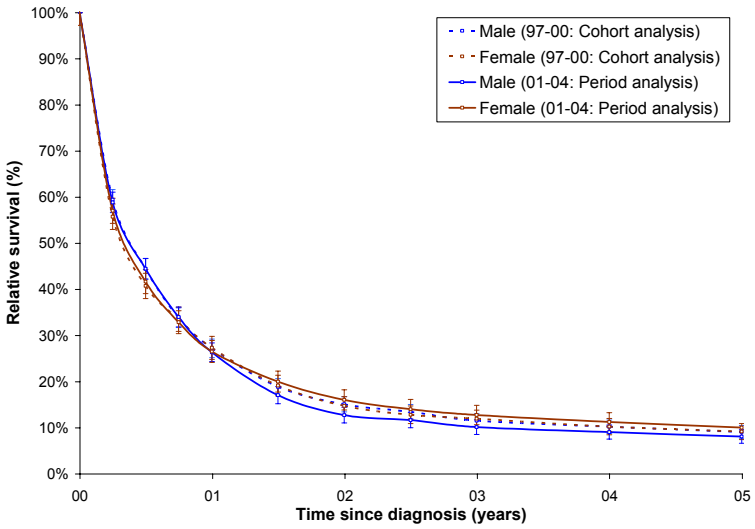
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	21.9%	(20.2%, 23.7%)	25.3%	(22.8%, 27.7%)	23.1%	(21.7%, 24.6%)
	1997-2000	26.1%	(24.2%, 28.1%)	26.6%	(24.2%, 29.0%)	26.3%	(24.8%, 27.8%)
	2001-2003	25.0%	(22.8%, 27.2%)	26.1%	(23.3%, 28.9%)	25.4%	(23.7%, 27.2%)
5-year	1993-1996	5.6%	(4.6%, 6.5%)	8.0%	(6.4%, 9.5%)	6.4%	(5.6%, 7.3%)
	1997-2000	7.4%	(6.2%, 8.6%)	8.0%	(6.5%, 9.5%)	7.6%	(6.7%, 8.6%)

13.4: Period Analysis

Five-year survival from lung cancer for patients diagnosed in 2001-2004 cannot be derived using traditional methods (cohort analysis) but can be estimated using newer techniques (period analysis). Using this method five-year survival from lung cancer for males diagnosed in 2001-2004 was 8.1% while for females it was 10.1%. This does not represent a significant difference between the two sexes (p>0.05). (Fig. 13.8; App. 7)

While not directly comparable to the cohort analysis this does not constitute a significant difference from five-year relative survival for patients diagnosed in 1997-2000 (p>0.05). (Fig. 13.8; App. 7)

Figure 13.8: Estimated relative survival (period analysis) from lung cancer for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



13.5: International Comparisons

EUROCARE-4 study

For males and females relative survival was significantly lower in Northern Ireland than in Europe during 1995-1999. This difference was driven by significantly lower survival in Northern Ireland than in Austria, Belgium, France, and Italy for both sexes, than in Germany and the Netherlands for males and than in Switzerland for females. Male survival was better in Northern Ireland than in Scotland while female survival was better than in England and Denmark. (Fig. 13.9)

Other countries

Five-year relative survival from lung cancer in Northern Ireland for those diagnosed in 1997-2000 for both males and females was lower than that in USA, Canada and Australia but was similar to that in New Zealand. (Tab. 13.7)

Table 13.7: Five-year relative survival from lung cancer for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	9.1%	9.2%
USA	**1996-2002**	13.1%	17.2%
Canada	**1995-1997**	14.5%	17.5%
Australia	**1992-1997**	11.0%	14.0%
New Zealand	**1994-1999**	9.5%	11.1%

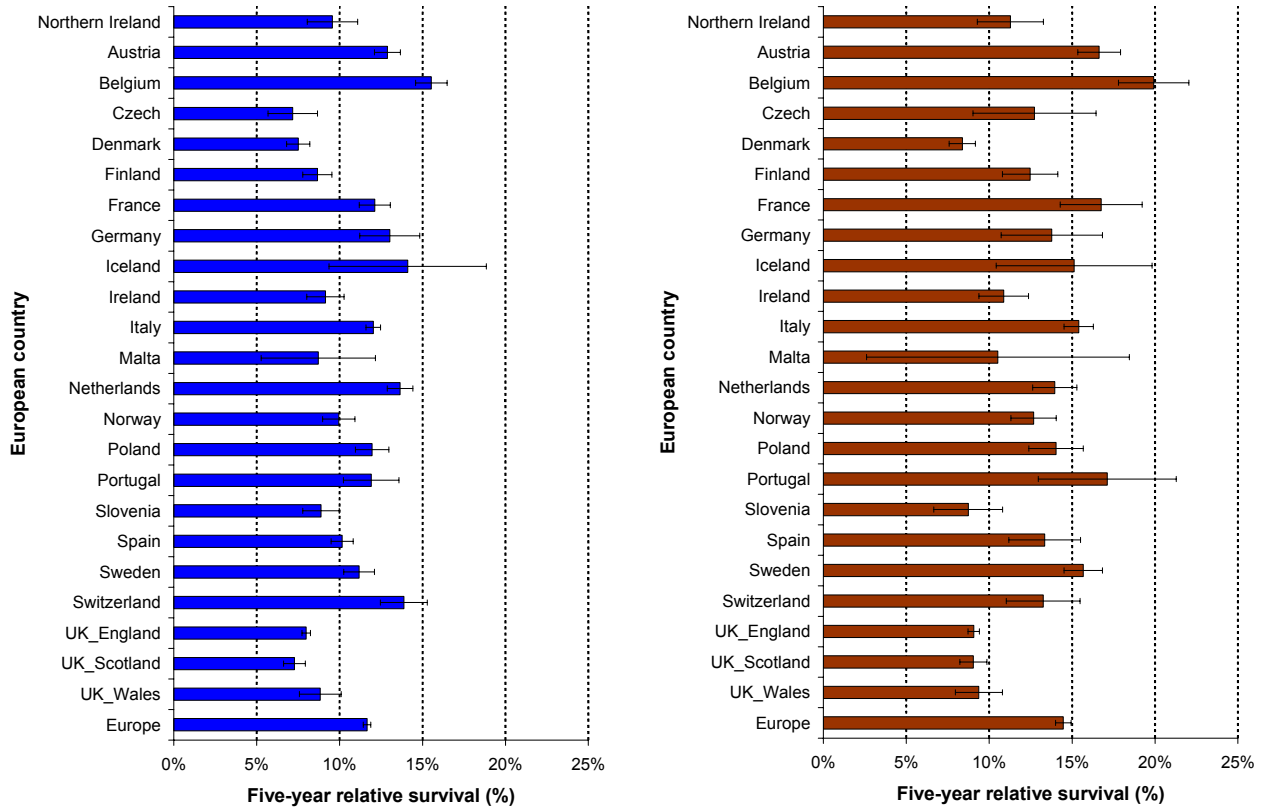
13.6: Summary and Discussion

Lung cancer is one of the most common cancers in Northern Ireland and is the leading cause of cancer death in both males and females. The most common symptoms of lung cancer include frequent coughing, shortness of breath, coughing up phlegm with signs of blood in it, an ache or pain when breathing or coughing, loss of appetite, fatigue and weight loss[62].

Cigarette smoking is implicated in more than 90% of lung cancer cases, with the length of time that a person has smoked being the most important factor[63,64]. The number of cigarettes smoked per day and the

Figure 13.9:Comparison of five-year age-standardised relative survival from lung cancer with other European countries

(a) Male *(b) Female*



Source:EUROCARE-4 (2007)[29]

type of cigarette (e.g. filtered or low tar) are also secondary factors. Breathing in secondhand cigarette smoke also increases the risk of developing lung cancer but not as much as first-hand smoking[65]. Other factors associated with lung cancer are exposure to asbestos, radon gas and industrial products such as arsenic, zinc, nickel, uranium, chromium and polycyclic hydrocarbons[66]. Past lung diseases that have caused scarring of the lung, such as tuberculosis, also increase the risk of getting lung cancer[63].

Survival from the disease is very poor with less than 10% of patients surviving five years or more. However, this can depend on many different factors such as age and type of lung cancer with survival better for younger patients and for patients with non-small cell lung cancer as opposed to small-cell lung cancer.

14: MALIGNANT MELANOMA (C43)

KEY FACTS:

- **92 male and 133 female cases per year between 2000 and 2004 with increasing male and female incidence rates (+3.5% p.a. for males during 1993-2004 and +5.1% p.a. for females during 1998-2004);**
- **20 male and 16 female deaths per year with increasing male (+7.3% p.a.) and decreasing female (-3.5% p.a.) mortality rates between 1993 and 2004;**
- **Five–year survival similar in males and females: 85.8% for males and 95.3% for females diagnosed between 1997 and 2000, with no significant change in survival between 1993-1996 and 1997-2000;**
- **No significant difference in survival by age, however survival worse for patients diagnosed at an advanced stage;**
- **Period analysis suggests that five-year survival for patients diagnosed in 2001-2004 was better for females than men;**
- **Survival better than in Europe and England and Wales but similar to Scotland, USA, and Australia.**

14.1: Incidence and Mortality

Incidence

Malignant melanoma was the tenth commonest male cancer in 2000-2004 with an annual average of 92 cases making up 2.0% of all male cases. It was more frequent among females with an average of 133 females diagnosed annually with the disease in 2000-2004. This made up 2.9% of female cancers and was the eighth commonest female cancer during the five-year period. (Tab. 14.1)

Table 14.1: Incidence and mortality: Malignant melanoma (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	92	133	20	16
Percentage of all cancers	2.0%	2.9%	1.0%	0.9%
Rank	10	8	16	18
Median age at diagnosis/death	60	59	63	74
Male to female ratio	0.7:1	-	1.2:1	-
Incidence to mortality ratio	4.7:1	8.1:1	-	-
Crude rate per 100,000 persons	11.1	15.3	2.4	1.9
European age-standardised rate per 100,000 persons (95% CI)	11.4 (10.3,12.4)	14.1 (13.0,15.2)	2.5 (2.0,3.0)	1.5 (1.1,1.8)

Mortality

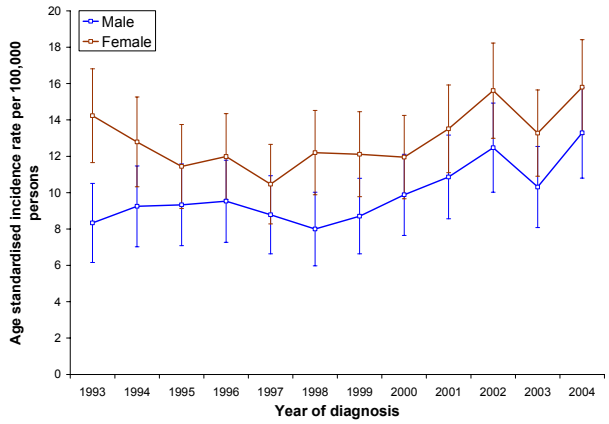
Mortality from malignant melanoma was higher among males than females with 20 male and 16 female deaths per year during 2000 to 2004. It was the sixteenth commonest cause of cancer death among males and eighteenth among females. (Tab. 14.1)

Trends

Incidence rates (EASIR) for malignant melanoma among males increased between 1993 and 2004 by 3.5% each year (p=0.003) while there was no significant change in EASIRs for females in 1993-1998. Since that time female incidence rates have increased by 5.1% each year (p=0.008). Increases in rates corresponded to an average increase of 3.8 male cases each year in 1993-2004 and 6.1 female cases each year in 1998-2004. (Fig. 14.1; App. 4&6)

Figure 14.1: Incidence and mortality trends: Malignant melanoma (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates

Male mortality rates (EASMR) for malignant melanoma increased annually during 1993-2004 by 7.3% (p<0.001). Female EASMRs decreased during the period by 3.5% each year (p=0.030). This represented an average of one additional male death each year while the number of female deaths remained fairly constant during the twelve-year period. (Fig. 14.1; App. 5&6)

14.2: Relative Survival

Relative survival from malignant melanoma was excellent with one-year relative survival for patients diagnosed in 2001-2003 being 96.6% and five-year relative survival being 91.8% for patients diagnosed between 1997 and 2000. (Tab. 14.2)

Table 14.2: Relative survival from malignant melanoma by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	97.1%	(94.3%, 100.0%)	98.1%	(96.3%, 100.0%)	97.8%	(96.2%, 99.3%)
	1997-2000	95.9%	(92.7%, 99.1%)	97.2%	(95.0%, 99.3%)	96.7%	(94.9%, 98.5%)
	2001-2003	93.7%	(90.1%, 97.3%)	98.4%	(96.5%, 100.4%)	96.6%	(94.7%, 98.4%)
3-year	**1993-1996**	88.5%	(83.4%, 93.6%)	93.1%	(89.8%, 96.5%)	91.4%	(88.6%, 94.3%)
	1997-2000	89.9%	(84.9%, 95.0%)	93.9%	(90.5%, 97.3%)	92.4%	(89.5%, 95.3%)
5-year	**1993-1996**	86.5%	(80.6%, 92.4%)	91.5%	(87.5%, 95.5%)	89.7%	(86.3%, 93.0%)
	1997-2000	85.8%	(79.4%, 92.2%)	95.3%	(91.4%, 99.3%)	91.8%	(88.3%, 95.2%)
7-year	**1993-1996**	82.9%	(76.2%, 89.7%)	91.8%	(87.4%, 96.3%)	88.6%	(84.8%, 92.3%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	90.8%	(86.3%, 95.3%)	94.6%	(91.7%, 97.4%)	93.2%	(90.7%, 95.6%)
	1997-2000	93.4%	(89.1%, 97.7%)	96.2%	(93.4%, 99.0%)	95.2%	(92.8%, 97.5%)
5-year*	**1993-1996**	88.2%	(82.8%, 93.7%)	92.5%	(88.9%, 96.2%)	90.9%	(87.9%, 94.0%)
	1997-2000	88.7%	(82.8%, 94.6%)	97.3%	(93.9%, 100.7%)	94.1%	(91.0%, 97.2%)
7-year*	**1993-1996**	84.4%	(78.0%, 90.8%)	92.5%	(88.3%, 96.6%)	89.5%	(86.0%, 93.0%)

* from diagnosis

Sex

There were no statistically significant differences in one or five-year relative survival for males and females (p>0.05) diagnosed with malignant melanoma between 1993 and 2003. (Tab. 14.2; Fig. 14.2)

Figure 14.2: Relative survival from malignant melanoma by sex and period of diagnosis (1993-2000)

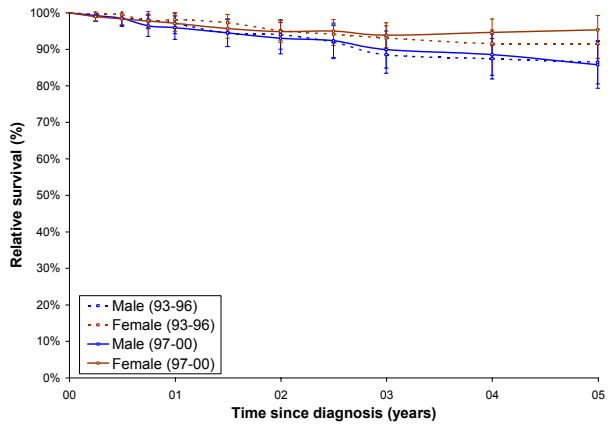
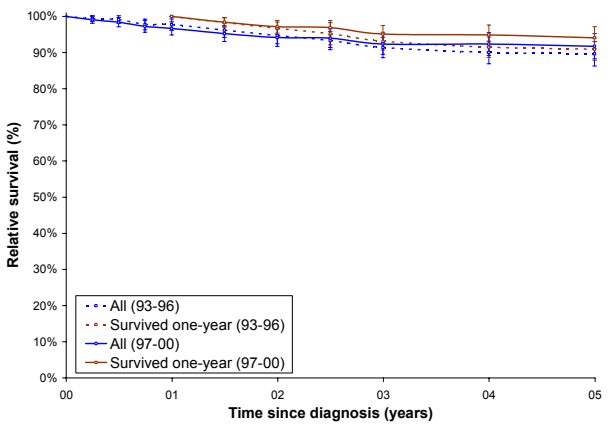


Figure 14.3: Relative survival from malignant melanoma by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Changes over time

There were no statistically significant changes in male or female one, three or five-year relative survival for patients diagnosed with malignant melanoma between 1993 and 2003 (p>0.05) with 89.7% of those diagnosed in 1993-1996 alive after five years compared to 91.8% of those diagnosed in 1997-2000 (p>0.05). (Tab. 14.2; Fig. 14.2)

Conditional survival

For patients diagnosed with malignant melanoma during 1997-2000 who survived at least one-year after diagnosis 94.1% were alive five-years from original diagnosis, while seven-year survival for patients diagnosed between 1993 and 1996 who survived at least one-year after diagnosis was 89.5%. There were no significant differences in conditional survival by sex or period of diagnosis. (Tab. 14.2; Fig. 14.3)

Age

Age was not a significant factor in survival from malignant melanoma with over 96% of patients diagnosed in 2001-2003 aged 15-64 and 65-99 surviving one year. (Tab. 14.3)

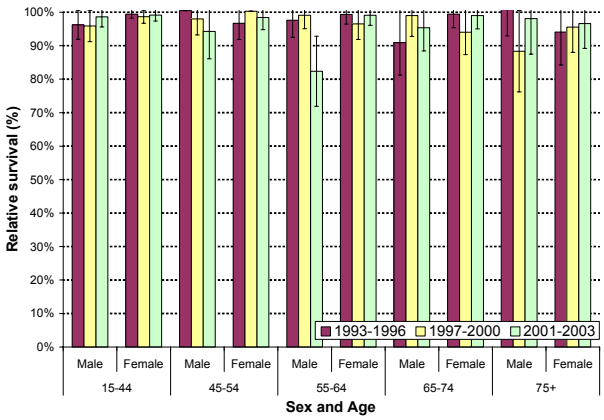
Table 14.3: Relative survival from malignant melanoma by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	98.4%	(97.2%, 99.7%)	96.4%	(92.4%, 100.4%)
	1997-2000	98.0%	(96.6%, 99.5%)	94.3%	(90.1%, 98.6%)
	2001-2003	96.1%	(94.1%, 98.2%)	97.2%	(93.7%, 100.8%)
5-year	1993-1996	92.9%	(90.2%, 95.6%)	82.7%	(73.8%, 91.7%)
	1997-2000	91.6%	(88.7%, 94.6%)	92.9%	(84.2%, 101.6%)

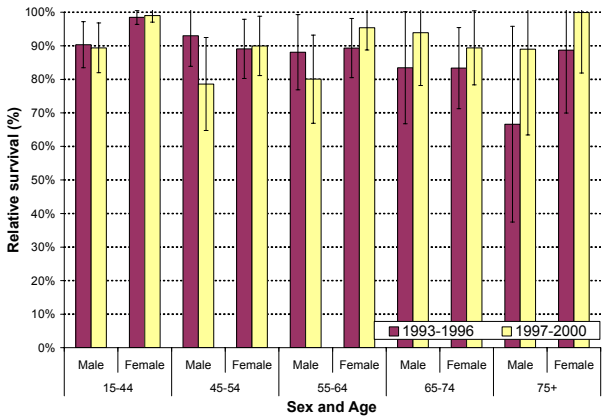
One-year relative survival for males aged 55-64 decreased from 99.3% to 82.4% for those diagnosed in 1997-2000 compared to 2001-2003 (p=0.024). No other changes over time were statistically significant (p>0.05). (Tab. 14.3; Fig. 14.4)

Figure 14.4: Relative survival from malignant melanoma by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



Stage

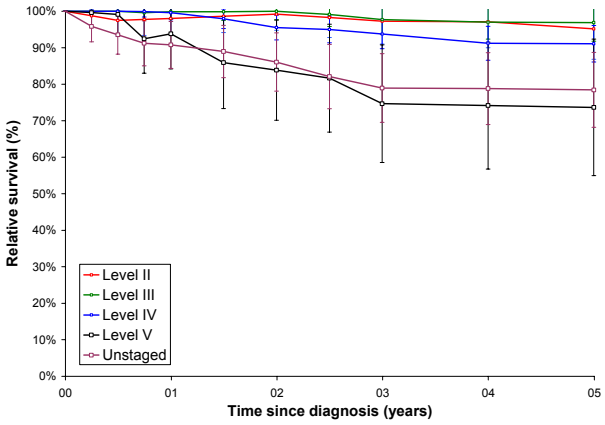
Survival from malignant melanoma was excellent for patients diagnosed at an early stage (Clark's level II/III or Breslow depth less than 1.5mm). Survival for patients diagnosed at a more advanced stage (Breslow depth greater than 3.00mm) was significantly worse than for those diagnosed at earlier stages. (Tab. 14.4; Fig. 14.5)

Table 14.4: Relative survival from malignant melanoma by stage at diagnosis (1993-2000)

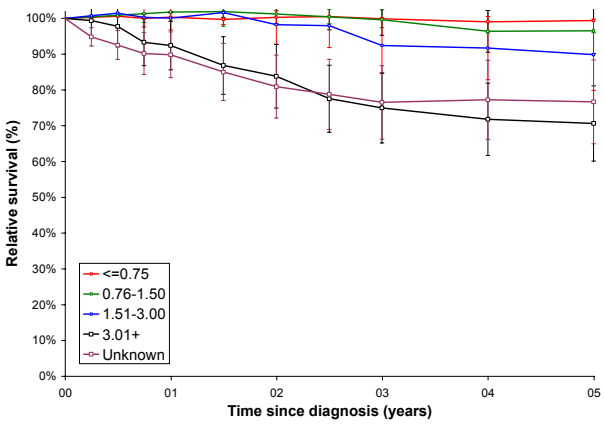
	RELATIVE SURVIVAL (95% CI)							
Clark's level	1-year		5-year		Breslow depth	1-year		5-year	
Level II	98.0%	(93.7%,102.3%)	95.2%	(87.0%,103.3%)	<0.75	100.3%	(99.2%,101.5%)	99.4%	(96.1%,102.7%)
Level III	99.9%	(98.0%,101.7%)	96.9%	(91.9%,101.9%)	0.75-1.50	101.8%	(101.8%,101.8%)	96.5%	(90.3%,102.7%)
Level IV	99.6%	(97.7%,101.4%)	91.1%	(86.2%,96.0%)	1.51-3.00	100.1%	(96.8%,103.3%)	89.9%	(80.1%,99.6%)
Level V	93.8%	(84.4%,103.2%)	73.7%	(55.3%,92.0%)	3.01+	92.4%	(86.2%,98.7%)	70.7%	(59.2%,82.1%)
Unstaged	90.8%	(84.5%,97.1%)	78.5%	(68.4%,88.5%)	Unknown	89.8%	(83.2%,96.5%)	76.7%	(66.4%,87.0%)

Figure 14.5: Relative survival from malignant melanoma by stage at diagnosis (1993-2000)

(a) Clark's level



(b) Breslow depth



14.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) from malignant melanoma was 91.2% for male and 96.1% for female patients diagnosed between 2001 and 2003. Five-year observed survival was 73.4% for male and 84.2% for female patients diagnosed between 1997 and 2000, a significant difference of 10.8% (p=0.019). (Tab. 14.5)

Table 14.5: Observed survival from malignant melanoma by sex and period of diagnosis (1993-2003)

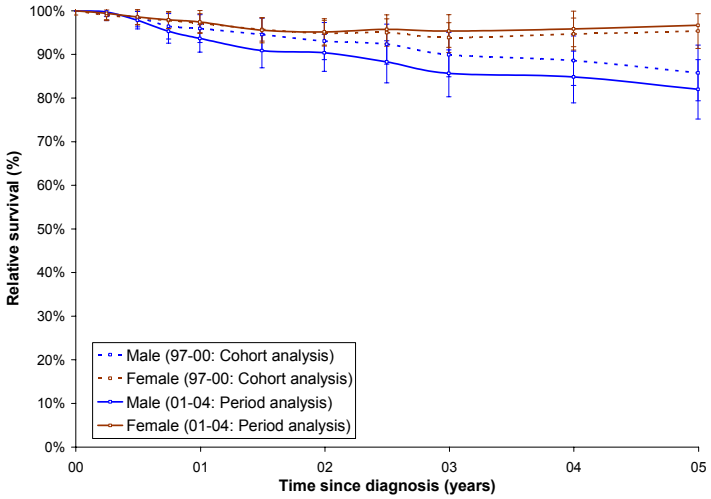
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	94.6%	(91.8%, 97.3%)	96.1%	(94.2%, 97.9%)	95.5%	(94.0%, 97.0%)
	1997-2000	93.1%	(90.0%, 96.1%)	94.8%	(92.7%, 96.9%)	94.1%	(92.4%, 95.9%)
	2001-2003	91.2%	(87.7%, 94.7%)	96.1%	(94.2%, 98.0%)	94.2%	(92.4%, 96.0%)
5-year	1993-1996	76.0%	(70.8%, 81.2%)	82.4%	(78.8%, 86.0%)	80.0%	(77.0%, 83.0%)
	1997-2000	73.4%	(68.0%, 78.9%)	84.2%	(80.7%, 87.7%)	80.1%	(77.1%, 83.2%)

14.4: Period Analysis

Five-year relative survival from malignant melanoma for patients diagnosed in 2001-2004 derived using the period analysis approach, in order to reflect more recent survival experiences, was 82.0% for males and 96.7% for females illustrating significantly better survival among females than males (p<0.05). (Fig. 14.6; App. 7)

Neither estimate constituted a significant change from the actual five-year relative survival of those diagnosed in 1997-2000, although it should be emphasised that the results are not directly comparable. (Fig. 14.6; App. 7)

Figure 14.6: Estimated relative survival (period analysis) from malignant melanoma for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



14.5: International Comparisons

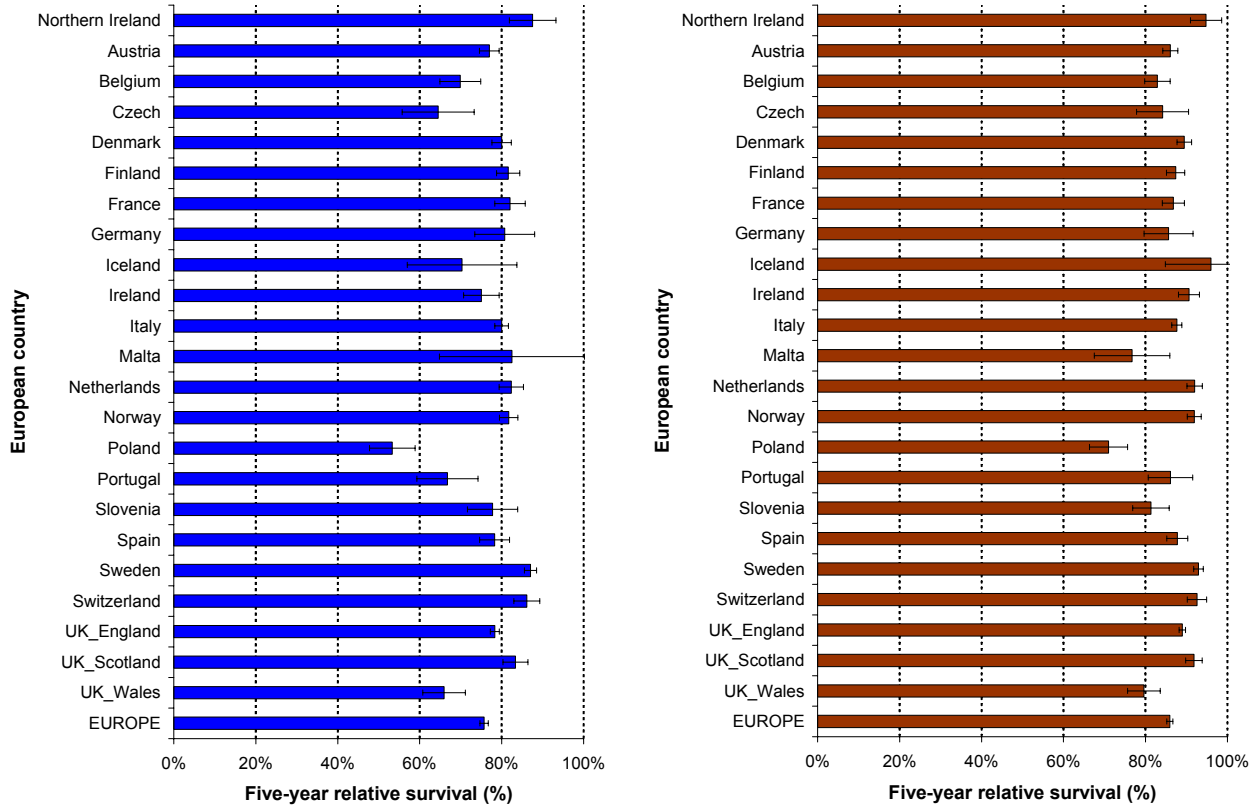
EUROCARE-4 study

Based upon the age-standardised results of the EUROCARE-4 study survival for males and females diagnosed in Northern Ireland with malignant melanoma in the late 1990s was higher than in Europe as a

Figure 14.7:Comparison of five-year age-standardised relative survival from malignant melanoma with other European countries

(a) Male

(b) Female



Source:EUROCARE-4 (2007)[29]

whole and than in many individual European countries including England, Wales, Italy, Spain, Poland, Austria, Czech Republic and Belgium. Male survival was also significantly higher in Northern Ireland than in Ireland and Portugal with male and female survival similar to that in Scotland. (Fig. 14.7)

Other countries

Comparisons between Northern Ireland and other countries illustrate that survival was good in Northern Ireland being equivalent to that in USA, Australia, Canada and New Zealand. (Tab. 14.6)

Table 14.6: Five-year relative survival from malignant melanoma for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	85.8%	95.3%
USA	**1996-2002**	90.1%	93.1%
Canada	**1995-1997**	87.0%	93.0%
Australia	**1992-1997**	90.0%	94.6%
New Zealand	**1994-1999**	89.2%	94.3%

14.6: Summary and Discussion

Melanoma is a form of skin cancer, which in the majority of cases is caused by excessive exposure to the Sun. Melanoma usually presents as moles or lesions on the skin that can be seen to be changing size, shape or colour, are itchy or painful, bleed or are inflammed.

A reduction in the risk of developing this skin cancer can be achieved by spending time in the shade between 11am and 3pm, making sure you never burn, covering up with T shirt, hat and sunglasses and using factor 15+ sunscreen[67]. The use of sunbeds also causes malignant melanoma, with sunbed tans not providing any additional protection from sun exposure[67].

The level of risk of developing skin cancer through over exposure to the sun or sunbeds depends upon skin type, with those with fairer skin being more at risk[67]. The number of moles on the skin also affects the risk of developing malignant melanoma, with the risk increasing as the number of moles increases[67]. A weakened immune system, some skin conditions (solar keratosis, xeroderma pigmentosum, Gorlin's syndrome) or severe burns and skin ulcers can also increase risk[67].

Melanoma in Northern Ireland is increasing as is mortality from the disease among males although deaths from the disease among females are decreasing. Survival from the disease is excellent for all age groups but depends greatly upon the stage at which the disease is diagnosed.

15: MESOTHELIOMA (C45)

KEY FACTS:

- **44 male and 5 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **41 male and 5 female deaths per year between 2000 and 2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **Survival very poor with 9.6% of all persons alive after three years, and no significant change in survival over time;**
- **Similar survival to USA.**

15.1: Incidence and Mortality

Incidence

Mesothelioma was a cancer predominantly found in males with an average of 44 males and 5 females diagnosed with mesothelioma each year between 2000 and 2004. It was the eighteenth most common male cancer making up 1.0% of all male cancers but was not in the top 20 of female cancers with only 0.1% of female cancers being of this type. (Tab. 15.1)

Table 15.1: Incidence and mortality: Mesothelioma (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	44	5	41	5
Percentage of all cancers	1.0%	0.1%	2.2%	0.3%
Rank	17	23	12	22
Median age at diagnosis/death	71	70	72	70
Male to female ratio	8.5:1	-	8.8:1	-
Incidence to mortality ratio	1.1:1	1.1:1	-	-
Crude rate per 100,000 persons	5.3	0.6	4.9	0.5
European age-standardised rate per 100,000 persons (95% CI)	5.4 (4.7,6.1)	0.5 (0.3,0.7)	4.9 (4.2,5.5)	0.5 (0.3,0.7)

Mortality

On average 41 males died each year from mesothelioma representing 2.2% of all male cancer deaths. It was the twelfth commonest cause of male cancer death and the twenty-second most common cause of female cancer death. (Tab. 15.1)

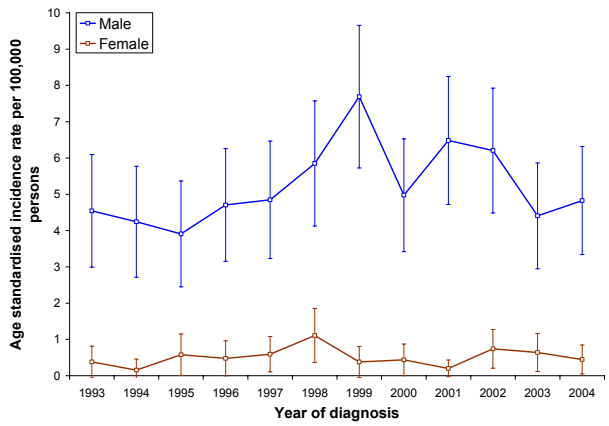
Trends

No statistically significant trend in male incidence or mortality rates for mesothelioma existed between 1993 and 2004 (p>0.05). Due to the ageing of the population however the actual number of cases increased by 1.4 each year, while the number of deaths increased by 1.7 each year during the twelve-year period. (Fig. 15.1; App. 4,5&6)

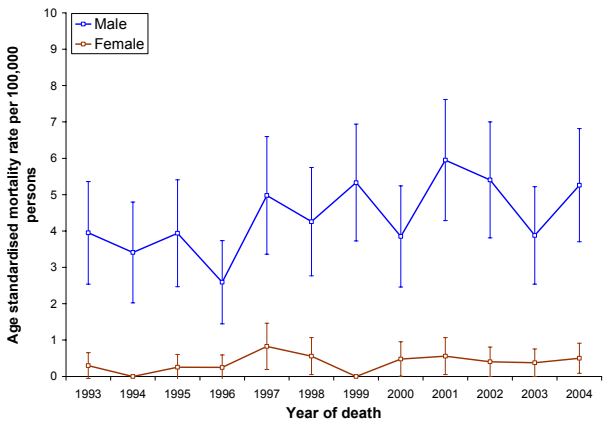
Female incidence and mortality rates for this cancer remained in a steady state (p>0.05), with no statistically significant trends during this period. The annual change in the number of new cases and deaths also remained close to zero. (Fig. 15.1; App. 4,5&6)

Figure 15.1: Incidence and mortality trends: Mesothelioma (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



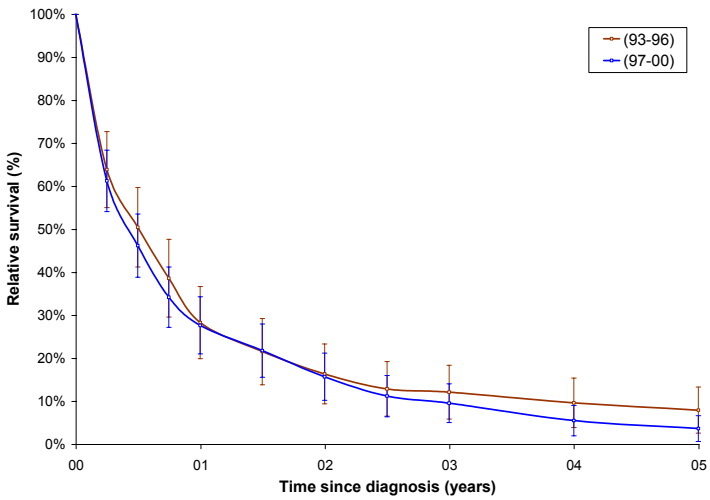
15.2: Relative Survival

Relative survival from mesothelioma was very poor with 27.0% of patients diagnosed in 2001-2003 surviving one year and 9.6% of patients diagnosed in 1997-2000 surviving three years. Less than 10 patients diagnosed between 1997 and 2000 survived five years. (Tab. 15.2)

Table 15.2: Relative survival from mesothelioma by period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)	
		All persons	
1-year	1993-1996	28.4%	(20.0%, 36.7%)
	1997-2000	27.7%	(21.1%, 34.4%)
	2001-2003	27.0%	(19.3%, 34.7%)
3-year	1993-1996	12.2%	(5.9%, 18.4%)
	1997-2000	9.6%	(5.1%, 14.1%)
5-year	1993-1996	8.0%	(2.6%, 13.4%)
	1997-2000	-	-

Figure 15.2: Relative survival from mesothelioma by period of diagnosis (1993-2000)



Changes over time

There was no statistically significant change in either one or three-year relative survival for patients diagnosed with mesothelioma between 1993 and 2003. (Tab. 15.2; Fig. 15.2)

15.3: International Comparisons

Most cancer registries do not regularly produce survival rates for mesothelioma as it is a rare cancer, nor were survival probabilities for this cancer included in the EUROCARE study. However five-year relative survival in the USA was 9.2% for all persons diagnosed between 1996 and 2002. This was slightly higher than the 8.0% five-year relative survival rate in Northern Ireland for all persons diagnosed between 1993 and 1996. This difference was not statistically significant at the 95% level.

15.4: Summary and Discussion

Mesothelioma is a rare cancer that occurs primarily in the lining of the lungs or abdomen. The odds of developing this form of cancer are over 1 in 400. This risk varies significantly by gender, with the majority of mesothelioma cases being diagnosed in males.

The majority of cases of mesothelioma are caused by exposure to asbestos with between 70% and 80% of persons diagnosed with this cancer indicating that they have previous contact with asbestos. The risk increases depending upon the level of exposure and the age at which exposure occurred, with exposure at earlier ages increasing the risk[68].

Despite the reduction of the use of asbestos in Northern Ireland, incidence and mortality rates have yet to fall by a significant amount; in fact in Great Britain mortality from mesothelioma has been increasing since the 1960s. This is likely to be due to the long delay (approximately 15-40 years) between exposure to asbestos and the development of mesothelioma[68]. Given the wide use of asbestos in industry until the 1980s deaths from mesothelioma are expected to continue to increase in Great Britain until 2015, at which point a rapid decline should occur[69].

Survival from mesothelioma is very poor at 10% after three years. This is similar to the situation in the USA and is due in part to symptoms of mesothelioma presenting late when the disease is already at an advanced stage and difficult to treat[70].

16: BREAST CANCER (Females only) (C50)

KEY FACTS:

- **996 cases diagnosed each year during 2000-2004 with an annual increase in incidence rates of 1.4% during 1993-2004;**
- **297 deaths each year during 2000-2004 with an annual decrease in mortality rates of 2.6% during 1993-2004;**
- **Five-year survival for patients diagnosed in 1997-2000 was 80.1% with five-year survival having improved by 4.6% for patients diagnosed in 1997-2000 compared to those diagnosed in 1993-1996;**
- **Survival was better for 15-64 year olds than for 65-99 year olds and for patients with stage I and II breast cancer than for patients with stage III and IV breast cancer;**
- **One-year survival increased for stage II patients but decreased for unstaged patients from 1997-2000 to 2001-2003;**
- **Five-year survival was lower in the most deprived areas than the most affluent areas of Northern Ireland;**
- **Survival was similar to that in Europe and the rest of the UK, better than in Ireland but lower than in France, Italy, USA, Canada and Australia.**

16.1: Incidence and Mortality

Incidence

There were an average of 996 female cases of breast cancer diagnosed each year between 2000 and 2004. It was the second leading cause of female cancer (behind non-melanoma skin cancer) making up 21.9% of all female cancers. (Tab. 16.1)

Table 16.1: Incidence and mortality: Breast cancer (2000-2004)

	Incidence	Mortality
Number of cases/deaths per year	996	297
Percentage of all cancers	21.9%	16.6%
Rank	2	2
Median age at diagnosis/death	60	69
Incidence to mortality ratio	3.4:1	-
Crude rate per 100,000 persons	114.8	34.2
European age-standardised rate per 100,000 persons (95% CI)	108.6 (105.5,111.7)	28.7 (27.2,30.2)

Mortality

Deaths from breast cancer averaged 297 per year during 2000-2004, representing 16.6% of all female cancer deaths. Breast cancer was the second most common cause of female cancer death. (Tab. 16.1)

Trends

Incidence rates (EASIR) for breast cancer increased during 1993-2004 by 1.4% each year (p=0.002). This represented an annual increase of 23.8 cases during the twelve-year period. (Fig. 16.1; App. 4&6)

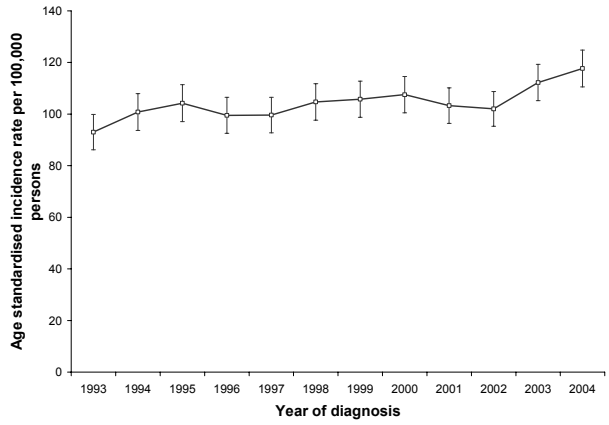
Mortality rates (EASMR) for breast cancer decreased during 1993-2004 with an annual percentage change of -2.6% (p=0.003), equivalent to an annual decrease of just under 3 deaths. (Fig. 16.1; App. 5&6)

Geographic variation

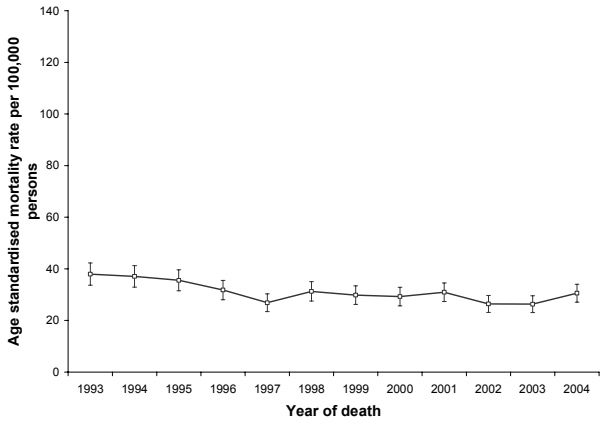
There was no significant relationship between deprivation, as defined by the 2005 Noble economic deprivation measure[7], and incidence or mortality from breast cancer during 1993-2004. This differs from

Figure 16.1: Incidence and mortality trends: Breast cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates

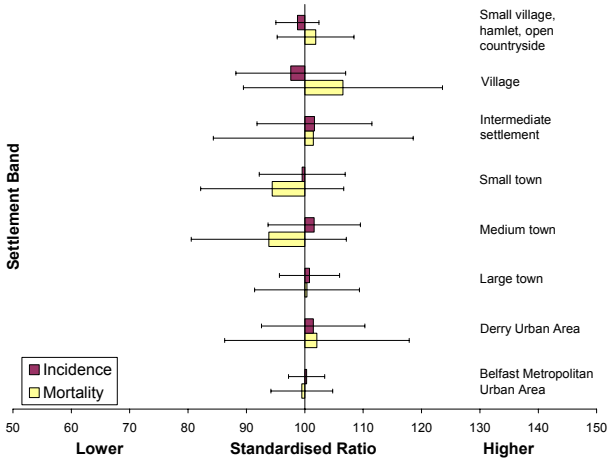


previous studies[2] based on the 2001 Noble economic deprivation measure which showed higher levels of breast cancer in the most affluent areas of Northern Ireland. (Fig. 16.2)

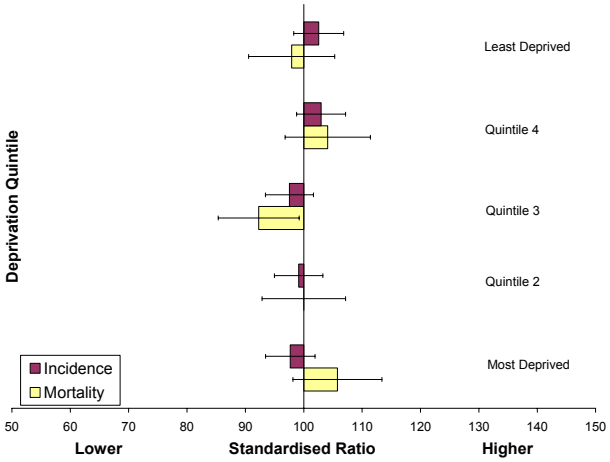
There was no conclusive relationship between urban/rural factors and incidence and mortality from this disease. (Fig. 16.2)

Figure 16.2: Standardised incidence and mortality ratios for breast cancer by settlement and deprivation category: 1993-2004

(a) Settlement band



(b) Deprivation quintile



New cases of female breast cancer were higher than expected in Newry & Mourne Local Government District than in Northern Ireland as a whole during 1993-2004. Lower incidence rates were found in Cookstown and Lisburn. With the exception of lower mortality rates in Cookstown, there was no significant variation in mortality by District Council during 1993-2004. (Tab. 16.2)

Table 16.2: Standardised incidence and mortality ratios for breast cancer by District Council: 1993-2004

Local Government District	Standardised Incidence Ratio (95% CI)		Standardised Mortality Ratio (95% CI)		Local Government District	Standardised Incidence Ratio (95% CI)		Standardised Mortality Ratio (95% CI)	
Antrim	95.6	(84.3, 107.0)	109.4	(87.9, 131.0)	**Down**	98.7	(89.0, 108.4)	106.9	(89.4, 124.5)
Ards	100.1	(91.5, 108.8)	102.2	(86.9, 117.5)	**Dungannon**	105.6	(93.7, 117.4)	100.2	(79.9, 120.4)
Armagh	101.6	(90.8, 112.4)	98.6	(80.0, 117.1)	**Fermanagh**	100.4	(90.2, 110.7)	99.9	(82.2, 117.6)
Ballymena	94.6	(85.2, 104.0)	94.2	(77.9, 110.5)	**Larne**	103.3	(89.8, 116.7)	93.3	(71.1, 115.4)
Ballymoney	93.4	(79.0, 107.9)	89.0	(64.3, 113.7)	**Limavady**	107.7	(92.2, 123.2)	102.4	(75.4, 129.5)
Banbridge	102.6	(90.3, 115.0)	99.3	(78.0, 120.7)	**Lisburn**	92.3	(85.0, 99.5)	93.9	(81.1, 106.7)
Belfast	97.9	(93.6, 102.3)	99.3	(91.8, 106.7)	**Magherafelt**	103.4	(90.1, 116.8)	101.8	(78.4, 125.1)
Carrickfergus	93.5	(81.4, 105.5)	89.5	(68.8, 110.2)	**Moyle**	100.2	(81.4, 119.0)	82.1	(52.7, 111.4)
Castlereagh	105.2	(96.2, 114.2)	97.5	(82.5, 112.5)	**Newry & Mourne**	109.3	(100.2, 118.4)	115.9	(99.4, 132.4)
Coleraine	100.9	(90.9, 111.0)	102.6	(85.1, 120.2)	**Newtownabbey**	105.8	(97.2, 114.4)	112.0	(96.5, 127.5)
Cookstown	78.4	(65.9, 91.0)	75.5	(53.9, 97.1)	**North Down**	107.4	(99.1, 115.7)	95.4	(82.0, 108.8)
Craigavon	99.5	(90.9, 108.2)	104.0	(88.5, 119.5)	**Omagh**	97.6	(86.0, 109.2)	88.8	(69.4, 108.3)
Derry	104.5	(96.1, 112.9)	114.1	(98.4, 129.8)	**Strabane**	88.9	(76.4, 101.3)	80.9	(59.9, 101.9)

SIRs/SMRs in blue represent significantly lower or higher incidence or mortality than in Northern Ireland as a whole.

16.2: Relative Survival

Relative survival from breast cancer was good with 95.2% of patients diagnosed between 2001 and 2003 surviving one year and 80.1% of patients diagnosed during 1997-2000 surviving five years. (Tab. 16.3)

Changes over time

There was a significant improvement of 4.6% in five-year relative survival for breast cancer between 1993-1996 and 1997-2000 (p=0.010). One-year relative survival for females diagnosed with breast cancer also

improved during 1993-2003 with 95.2% of females diagnosed between 2001 and 2003 surviving one year compared to 92.2% of females diagnosed between 1993 and 1996 (p=0.003). (Tab. 16.3; Fig. 16.3)

Table 16.3: Relative survival from breast cancer by period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		ALL PATIENTS		PATIENTS SURVIVING AT LEAST ONE YEAR	
1-year*	1993-1996	92.2%	(91.2%, 93.3%)		
	1997-2000	95.1%	(94.2%, 95.9%)		
	2001-2003	95.2%	(94.3%, 96.2%)		
3-year*	1993-1996	81.3%	(79.7%, 82.9%)	87.8%	(86.5%, 89.2%)
	1997-2000	85.0%	(83.6%, 86.5%)	89.1%	(87.9%, 90.3%)
5-year*	1993-1996	75.5%	(73.7%, 77.4%)	81.2%	(79.5%, 82.9%)
	1997-2000	80.1%	(78.4%, 81.8%)	83.6%	(82.1%, 85.2%)
7-year*	1993-1996	71.5%	(69.5%, 73.5%)	76.6%	(74.6%, 78.5%)

* from diagnosis

Conditional survival

For female patients diagnosed with breast cancer during 1997-2000 who survived at least one-year after diagnosis 83.6% were alive five years from original diagnosis, while seven-year survival for patients diagnosed between 1993 and 1996 who survived at least one year after diagnosis was 76.6%. This proportion did not change significantly over time. (Tab. 16.3; Fig. 16.4)

Figure 16.3: Relative survival from breast cancer by period of diagnosis (1993-2000)

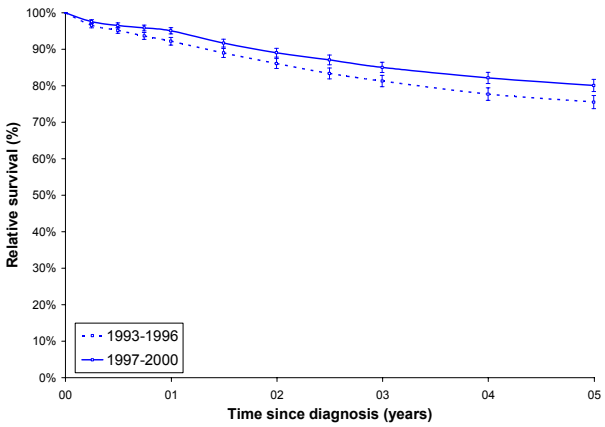
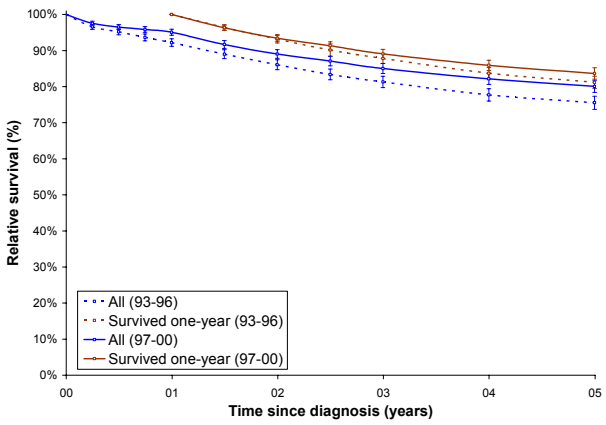


Figure 16.4: Relative survival from breast cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Age

Age was a significant factor in breast cancer survival with five-year relative survival for females aged 15-64 diagnosed with the disease during 1997-2000 being 10.7% higher than those aged 65-99 (p<0.001). Additionally one-year relative survival for those aged 75+ was significantly worse than for those aged 65-74 during each period of analysis from 1993 to 2003. (Tab. 16.4; Fig. 16.5)

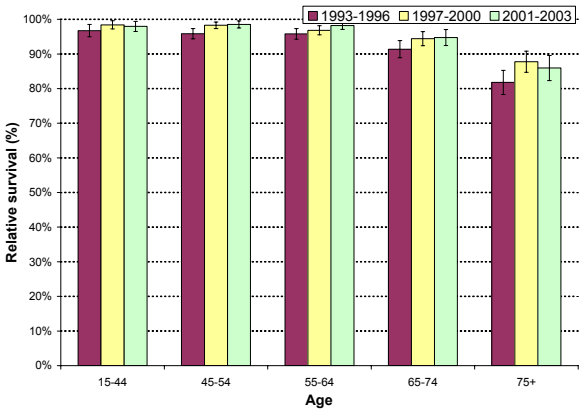
Table 16.4: Relative survival from breast cancer by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	96.0%	(95.1%, 96.9%)	86.4%	(84.2%, 88.6%)
	1997-2000	97.8%	(97.1%, 98.4%)	91.0%	(89.1%, 92.8%)
	2001-2003	98.3%	(97.6%, 98.9%)	90.1%	(87.8%, 92.3%)
5-year	1993-1996	79.9%	(78.0%, 81.8%)	68.6%	(65.0%, 72.2%)
	1997-2000	84.2%	(82.5%, 85.9%)	73.5%	(70.0%, 77.0%)

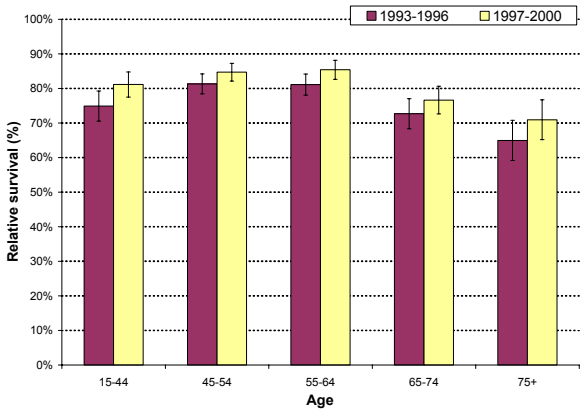
One-year relative survival improved for both 15-64 and 65-99 year olds from 1993-1996 to 1997-2000 (p<0.033). Five-year relative survival also improved significantly for those aged 15-64 with 79.9% of those diagnosed in 1993-1996 surviving five-years compared to 84.2% of those diagnosed in 1997-2000 (p=0.020). (Tab. 16.4; Fig. 16.5)

Figure 16.5: Relative survival from breast cancer by age and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



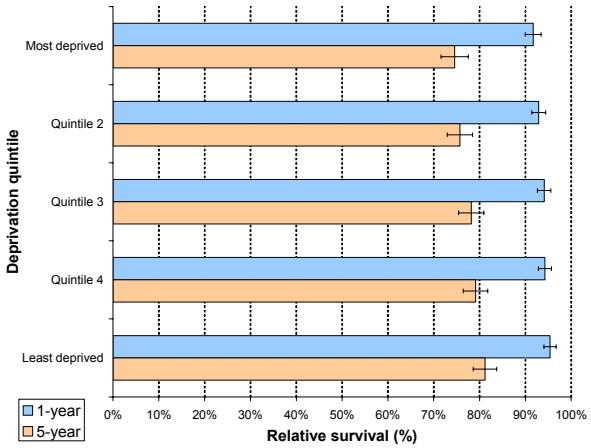
Deprivation and urban/rural factors

Five-year relative survival from breast cancer increased with increasing affluence during 1993-2000 with five-year relative survival for patients who resided in the 20% most affluent areas in Northern Ireland being 81.3% compared to 74.6% for those who resided in the 20% most deprived areas in Northern Ireland (p=0.016). (Fig. 16.6)

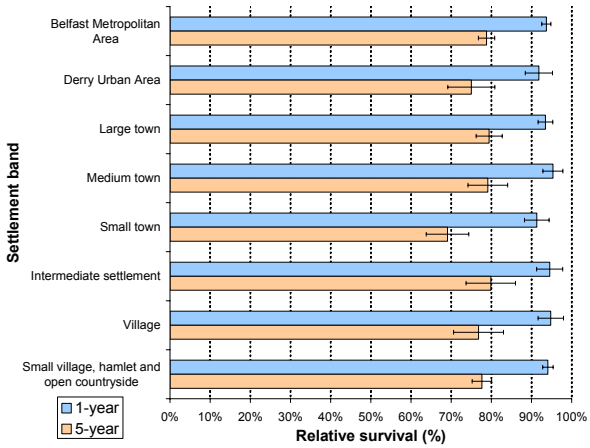
Variations in one and five-year relative survival from breast cancer also existed between different settlement types with five-year relative survival in small towns at 69.2%, which was significantly lower than the 78.9% in Belfast Metropolitan Area (p=0.010) and the 77.6% in the most rural areas of Northern Ireland (p=0.033). (Fig. 16.6)

Figure 16.6: Relative survival from breast cancer by deprivation quintile and settlement band (1993-2000)

(a) Deprivation quintile



(b) Settlement band



Stage

Relative survival from breast cancer decreased significantly with increasing stage at diagnosis during 1993-2003. Five-year relative survival for patients diagnosed with breast cancer at Stage I in 1997-2000 was

Table 16.5: Relative survival from breast cancer by stage and period of diagnosis (1993-2003)

Period of Diagnosis	RELATIVE SURVIVAL (95% CI)							
	Stage I		Stage II		Stage III		Unstaged	
1-year								
1993-1996	99.4%	(98.3%,100.5%)	96.5%	(95.1%,97.9%)	86.4%	(81.6%,91.2%)	88.3%	(86.3%,90.3%)
1997-2000	100.5%	(100.0%,101.1%)	98.6%	(97.7%,99.6%)	90.8%	(86.2%,95.3%)	88.2%	(86.1%,90.3%)
2001-2003	100.3%	(99.8%,100.9%)	100.3%	(99.6%,101.0%)	93.5%	(90.7%,96.4%)	82.1%	(78.1%,86.1%)
5-year								
1993-1996	98.6%	(96.3%,100.8%)	78.9%	(75.8%,81.9%)	50.6%	(43.3%,58.0%)	68.3%	(65.1%,71.4%)
1997-2000	96.3%	(94.2%,98.5%)	81.5%	(78.8%,84.2%)	55.0%	(46.9%,63.2%)	70.7%	(67.5%,74.0%)

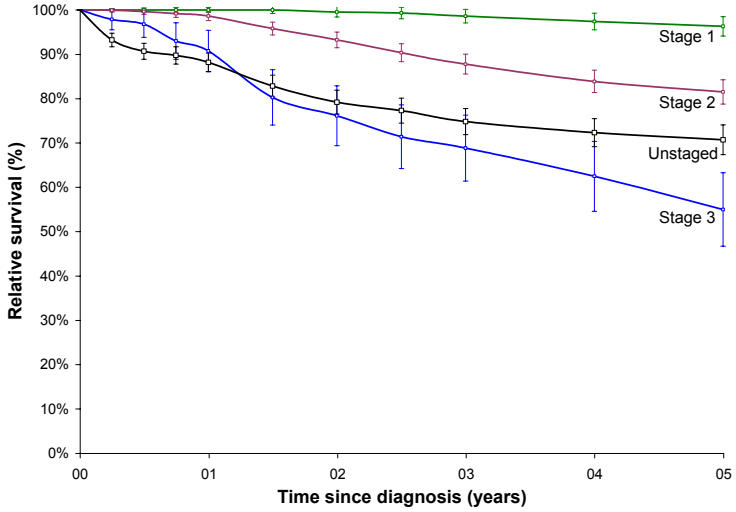
Note: Stage IV omitted from table due to insufficient number of cases

96.3% compared to 55.0% for Stage III. Less than 10 patients diagnosed at stage IV survived five years although the number of cases diagnosed at this stage was small. (Tab.16.5; Fig.16.7)

32% of patients diagnosed in 1997-2000 did not have a stage assigned. Survival for these patients was average with 88.2% surviving one-year and 70.7% surviving five-years. (Tab.16.5; Fig.16.7)

There were no significant improvements in five-year relative survival by stage during 1993-2003, however one-year relative survival increased for those with stage II disease but decreased for unstaged patients between 1997-2000 and 2001-2003. (Tab. 16.5)

Figure 16.7: Relative survival from breast cancer by stage (1997-2000)



16.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) was 93.3% for female patients diagnosed with breast cancer between 2001 and 2003. Five-year observed survival was 71.7% for female patients diagnosed between 1997 and 2000. (Tab. 16.6)

Table 16.6: Observed survival from breast cancer by sex and period of diagnosis (1993-2003)

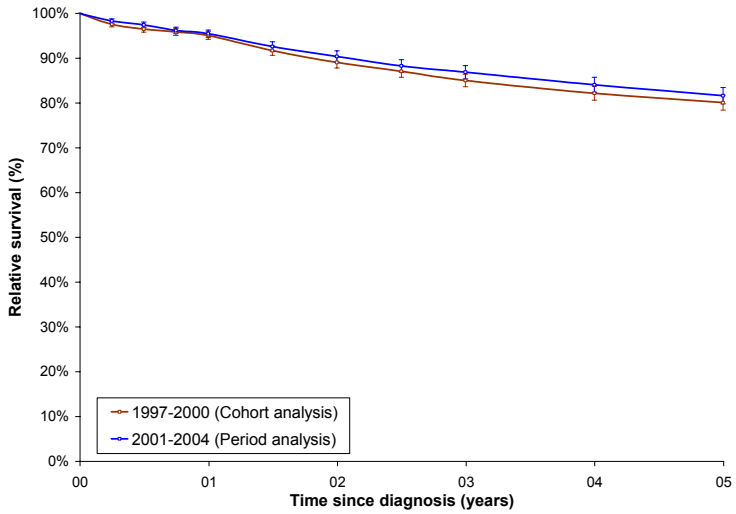
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)	
1-year	1993-1996	90.2%	(89.2%, 91.2%)
	1997-2000	93.0%	(92.2%, 93.8%)
	2001-2003	93.3%	(92.4%, 94.2%)
5-year	1993-1996	67.5%	(65.9%, 69.1%)
	1997-2000	71.7%	(70.2%, 73.2%)

16.4: Period Analysis

Traditional methods for producing five-year relative survival rates (cohort analysis) require five-years worth of follow up data and thus do not reflect more recent survival experience. More up to date survival rates can be estimated using newer techniques such as period analysis.

Five-year survival from breast cancer for females diagnosed in 2001-2004 derived using this approach was 81.6%. Caution should be exercised in the interpretation of these figures, as they are not directly comparable with results from traditional methods, however no significant changes in survival compared to patients diagnosed in 1997-2000 are apparent (p>0.05). (Fig. 16.8)

Figure 16.8: Estimated relative survival (period analysis) from breast cancer for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



16.5: International Comparisons

EUROCARE-4 study

For females diagnosed with breast cancer in Northern Ireland during 1995-1999 the five-year age-standardised survival rate was 77.4% which was similar to the rate in Europe of 78.9%. There was

considerable variation in five-year survival among the individual European countries; consequently survival in Northern Ireland was higher than in some European countries, such as the Czech Republic, Ireland, Poland and Slovenia, while it was similar to that in other countries, such as the rest of UK, Germany and Spain, and was lower than in others, such as Finland, France, Norway, Sweden, Switzerland, Italy and the Netherlands. (Fig. 16.9)

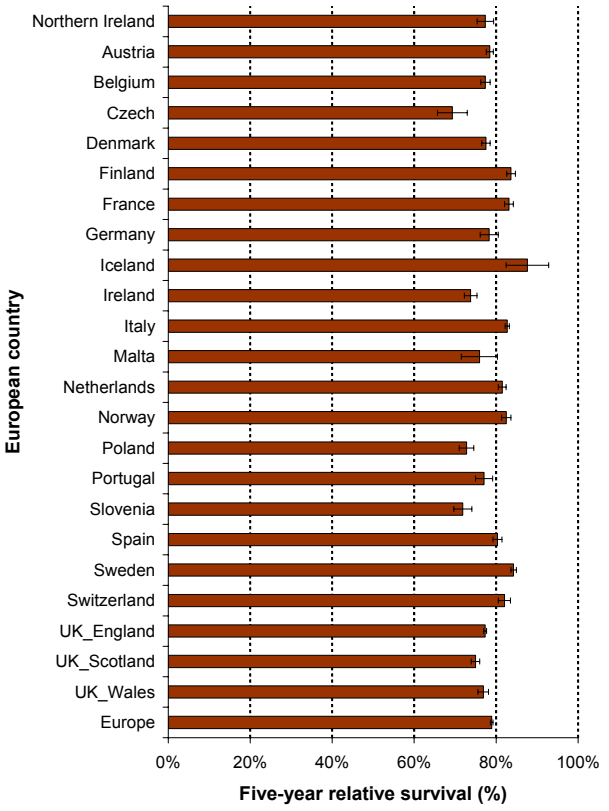
Other countries

For patients diagnosed with breast cancer during the late 1990s survival in Northern Ireland was similar to that in New Zealand but was significantly ($p<0.05$) lower than in USA, Canada and Australia. (Tab. 16.7)

Table 16.7: Five-year relative survival from breast cancer for various countries

Country	Period of diagnosis	
Northern Ireland	**1997-2000**	80.1%
USA	**1996-2002**	88.5%
Canada	**1995-1997**	86.0%
Australia	**1992-1997**	84.0%
New Zealand	**1994-1999**	81.7%

Figure 16.9:Comparison of five-year age-standardised relative survival from breast cancer with other European countries



Source:EUROCARE-4 (2007)[29]

16.6: Summary and Discussion

Breast cancer in Northern Ireland has been increasing, which is likely due to increased detection with the breast screening program and ongoing changes in lifestyle. However breast cancer mortality is decreasing due to better treatment and earlier detection, which has resulted in a 5% improvement in five-year survival from this disease over recent years. Relative survival from this disease was 80% after five-years for patients diagnosed in 1997-2000 which is similar to Europe as a whole but is lower than some European countries and USA. Various factors influence five-year survival including age, stage at diagnosis and area of residence. Part of the explanation for these differences, such as those with Republic of Ireland, may lie in availability and uptake of breast screening which allows earlier detection, thereby increasing survival.

Increasing age is the most important risk factor for breast cancer. Personal histories of breast cancer can also increase the risk of developing a second breast cancer although the use of tamoxifen can reduce this risk[71]. Additionally a significant family history, such as having a mother diagnosed with breast cancer before age 40 or having two or more close relatives on the same side diagnosed with breast cancer, may result in an increased risk of developing the disease[71]. Approximately 5% of breast cancers are inherited via faulty genes, usually BRCA1 or BRCA2, the presence of which can significantly increase the lifetime risk of developing breast cancer. The presence of these faulty genes can be detected and are accompanied by a strong family history of breast cancer[71].

Reproductive history is related to the risk of developing breast cancer. An early menarche (first period), late menopause, late first birth or nulliparity (never giving birth) all increase the risk of getting breast cancer[71,72]. The use of breast-feeding can have a protective effect[73]. Exposure to oestrogen through Hormone Replacement Therapy can also increase breast cancer risk[71]. There is some evidence that obesity in post-menopausal women contributes to an increased risk[74], while 4-5 hours of exercise per week may have a protective effect against breast cancer although evidence is not conclusive[75]. Alcohol consumption is related to breast cancer, with women who do not drink having a lower risk of developing breast cancer compared to those who do. The greater the amount of alcohol consumed per week, the greater the risk of breast cancer[76].

17: CERVICAL CANCER (C53)

KEY FACTS:

- **78 cases each year during 2000-2004 with an annual decrease in incidence rates of 2.5% during 1993-2004;**
- **29 deaths each year between 2000 and 2004 with no change in mortality rates during 1993-2004;**
- **Five-year survival for patients diagnosed in 1997-2000 was 67.8% with no significant change in five-year survival for patients diagnosed in 1997-2000 compared to those diagnosed in 1993-1996;**
- **Survival was better for 15-64 year olds than for 65-99 year olds and for patients with stage I cervical cancer than for patients with stage II, III and IV cervical cancer;**
- **Survival was lower than in England, USA, Canada and Australia.**

17.1: Incidence and Mortality

Incidence

Including micro invasive cancers, cervical cancer was the eleventh most common female cancer diagnosed between 2000 and 2004 making up 1.7% of all female cancer cases. There were 78 cases diagnosed per year during this period with a median age at diagnosis of 44. It had the second youngest median age at diagnosis of the female cancers. (Tab. 17.1)

Table 17.1: Incidence and mortality: Cervical cancer (2000-2004)

	Incidence	Mortality
Number of cases/deaths per year	78	29
Percentage of all cancers	1.7%	1.6%
Rank	11	14
Median age at diagnosis/death	44	64
Incidence to mortality ratio	2.7:1	-
Crude rate per 100,000 persons	9.0	3.4
European age-standardised rate per 100,000 persons (95% CI)	8.7 (7.9,9.6)	3.0 (2.5,3.5)

Mortality

Twenty-nine deaths from cervical cancer occurred each year between 2000 and 2004. This represented 1.6% of all female cancer deaths and was ranked fourteenth as a cause of cancer mortality among females. (Tab. 17.1)

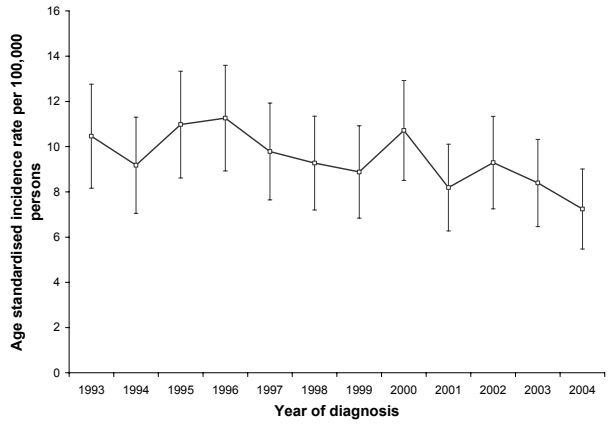
Trends

Incidence rates (EASIR) for cervical cancer decreased between 1993 and 2004 by 2.5% each year (p=0.014). Mortality rates (EASMR) however remained static during this period. (Fig. 17.1; App. 4, 5&6)

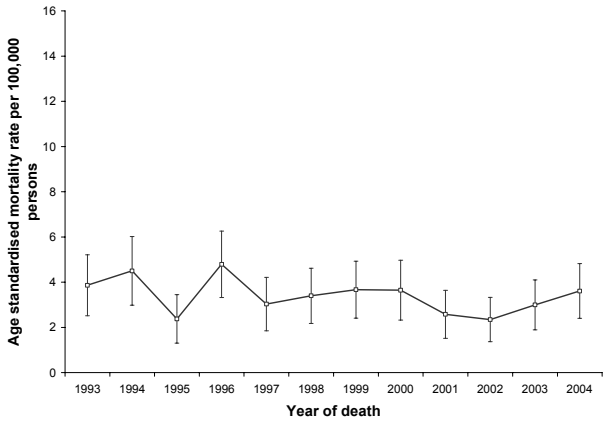
Both the annual number of newly diagnosed cases and the number of deaths dropped each year by an average of 1.0 case and 0.3 deaths during the twelve-year period. (Fig. 17.1; App. 4, 5&6)

Figure 17.1: Incidence and mortality trends: Cervical cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



17.2: Relative Survival

Relative survival from cervical cancer was good with 87.8% of patients diagnosed in 2001-2003 surviving one year and 67.8% of patients diagnosed in 1997-2000 surviving five years. (Tab. 17.2)

Changes over time

There was no statistically significant change in either one or five-year relative survival for patients diagnosed with cervical cancer between 1993 and 2003. (Tab. 17.2; Fig. 17.2)

Conditional survival

Five-year relative survival for cervical cancer patients who survived one year from a diagnosis in 1997-2000 was 80.7% while seven-year survival for those diagnosed in 1993-1996 was 71.9%. This conditional survival rate did not vary significantly by period of diagnosis (p>0.05). (Tab. 17.2; Fig. 17.3)

Table 17.2: Relative survival from cervical cancer by period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		ALL PATIENTS		PATIENTS SURVIVING AT LEAST ONE YEAR	
1-year*	1993-1996	83.1%	(78.9%, 87.3%)		
	1997-2000	83.8%	(79.7%, 87.9%)		
	2001-2003	87.8%	(83.3%, 92.2%)		
3-year*	1993-1996	67.8%	(62.6%, 73.1%)	81.5%	(76.7%, 86.3%)
	1997-2000	73.0%	(68.0%, 78.0%)	87.0%	(82.8%, 91.2%)
5-year*	1993-1996	61.8%	(56.3%, 67.3%)	74.2%	(68.7%, 79.7%)
	1997-2000	67.8%	(62.3%, 73.2%)	80.7%	(75.6%, 85.8%)
7-year*	1993-1996	59.9%	(54.3%, 65.6%)	71.9%	(66.2%, 77.6%)

* from diagnosis

Figure 17.2: Relative survival from cervical cancer by period of diagnosis (1993-2000)

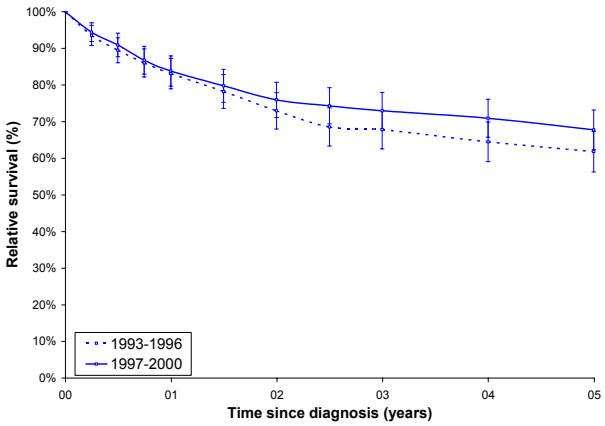
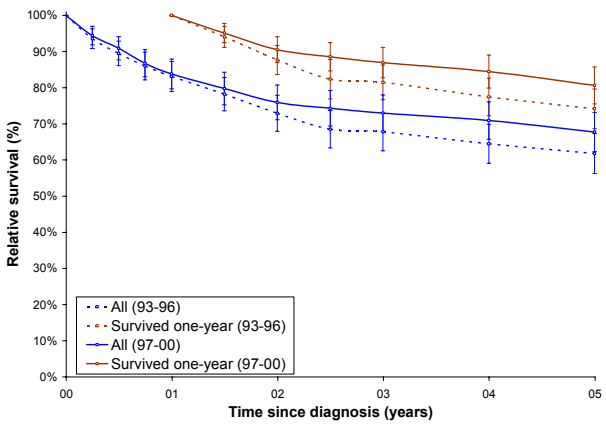


Figure 17.3: Relative survival from cervical cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Age

Relative survival from cervical cancer was better for patients aged 15-64 than 65-99, with the difference 32.1% for those diagnosed in 1997-2000 and surviving five-years. In particular five-year relative survival for patients aged 15-44 diagnosed in 1997-2000 was 82.0% compared to 56.7% for those aged 65-74. (Tab. 17.3; Fig. 17.4; App. 8)

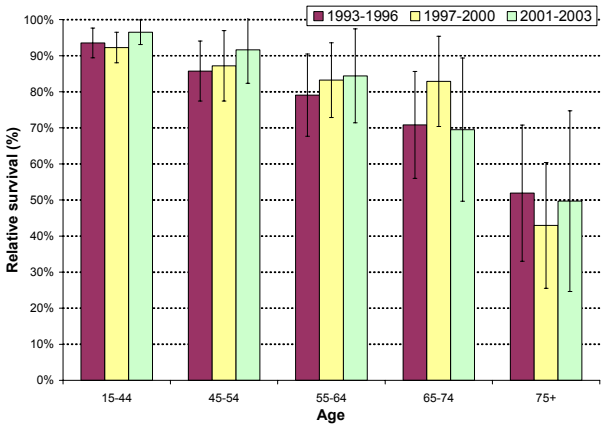
Table 17.3: Relative survival from cervical cancer by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	88.6%	(84.7%, 92.5%)	62.6%	(50.6%, 74.5%)
	1997-2000	89.5%	(85.7%, 93.3%)	64.0%	(52.4%, 75.6%)
	2001-2003	93.5%	(89.8%, 97.2%)	61.0%	(45.0%, 77.0%)
5-year	1993-1996	70.8%	(65.1%, 76.5%)	26.4%	(14.6%, 38.2%)
	1997-2000	74.7%	(69.2%, 80.3%)	42.6%	(29.3%, 55.8%)

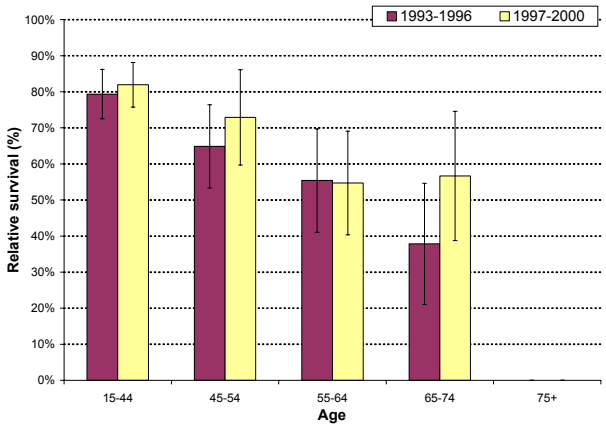
There were no significant changes in relative survival for either 15-64 or 65-99 year olds over time (p>0.05). (Tab. 17.3; Fig. 17.4)

Figure 17.4: Relative survival from cervical cancer by age and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



Note: Missing entries refer to less than 10 persons in that age/sex group

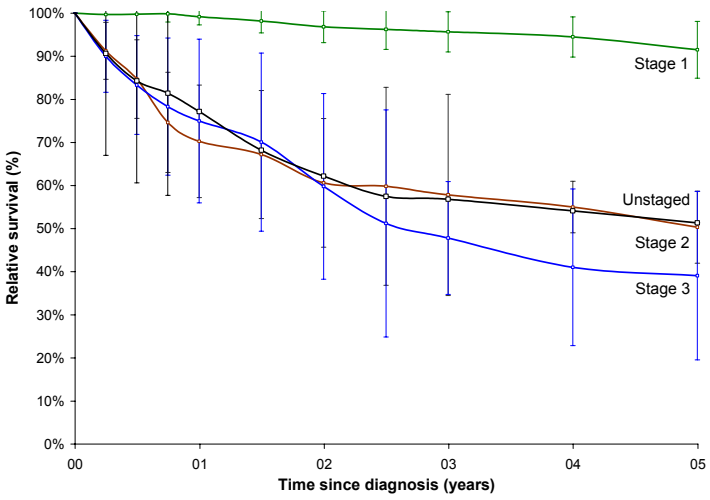
Stage

Patients diagnosed with Stage I cervical cancer during 1993-2000 had a significantly higher survival probability than for those diagnosed at a later stage (p<0.001). Those diagnosed at stage II and III had similar survival, however one-year relative survival from stage IV disease was significantly lower with less than 10 patients surviving one-year. However the number of patients diagnosed at this stage was small. (Tab. 17.4; Fig. 17.5)

Table 17.4: Relative survival from cervical cancer by stage (1993-2000)

Survival time and stage	RELATIVE SURVIVAL (95% CI)	
1-year		
Stage I	99.2%	(97.9%, 100.5%)
Stage II	70.3%	(60.5%, 80.0%)
Stage III	75.0%	(63.6%, 86.4%)
Stage IV	-	-
Unstaged	77.2%	(71.6%, 82.8%)
5-year		
Stage I	91.5%	(87.7%, 95.3%)
Stage II	50.4%	(39.1%, 61.6%)
Stage III	39.1%	(26.0%, 52.2%)
Stage IV	-	-
Unstaged	51.3%	(44.5%, 58.2%)

Figure 17.5: Relative survival from cervical cancer by stage (1993-2000)



17.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) was 87.2% for patients diagnosed with cervical cancer between 2001 and 2003. Five-year observed survival was 65.4% for patients diagnosed between 1997 and 2000. (Tab. 17.5)

Table 17.5: Observed survival from cervical cancer by sex and period of diagnosis (1993-2003)

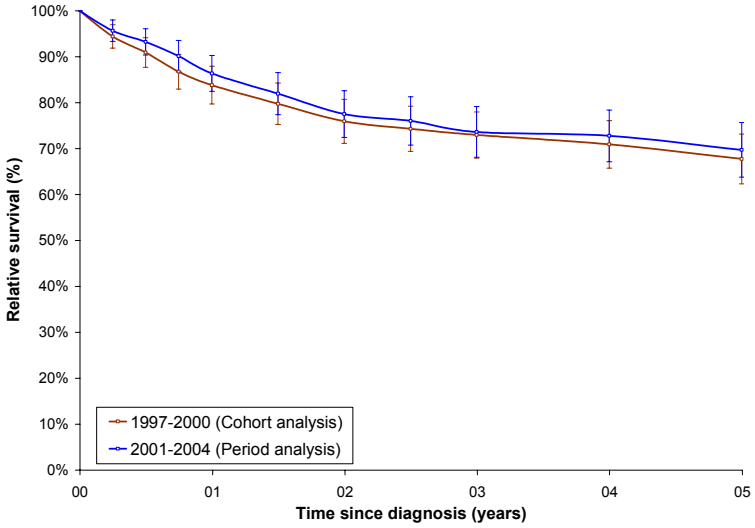
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)	
1-year	**1993-1996**	82.3%	(78.2%, 86.4%)
	1997-2000	83.1%	(79.0%, 87.2%)
	2001-2003	87.2%	(82.7%, 91.6%)
5-year	**1993-1996**	59.5%	(54.1%, 64.8%)
	1997-2000	65.4%	(60.1%, 70.6%)

17.4: Period Analysis

Five-year relative survival from cervical cancer for patients diagnosed in 2001-2004 cannot be derived using traditional methods (cohort analysis) but can be estimated using newer techniques such as period analysis.

Five-year relative survival from cervical cancer for patients diagnosed in 2001-2004 derived using this approach was 69.7%. This estimate did not constitute a significant change from the actual five-year relative survival of those diagnosed in 1997-2000, although it should be emphasised that the results are not directly comparable. (Fig. 17.6; App. 7)

Figure 17.6: Estimated relative survival (period analysis) from cervical cancer for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



17.5: International Comparisons

EUROCARE-3 study

The five-year age-standardised relative survival rate for females diagnosed with cervical cancer between 1993 and 1996 was 57.7%, which was significantly lower than that in many European countries but not Europe as a whole. The European countries that illustrated higher survival were Denmark, England, France, Italy, Netherlands, Norway, Spain and Sweden. Survival from this disease was however better than that found in Poland. (Fig. 17.7)

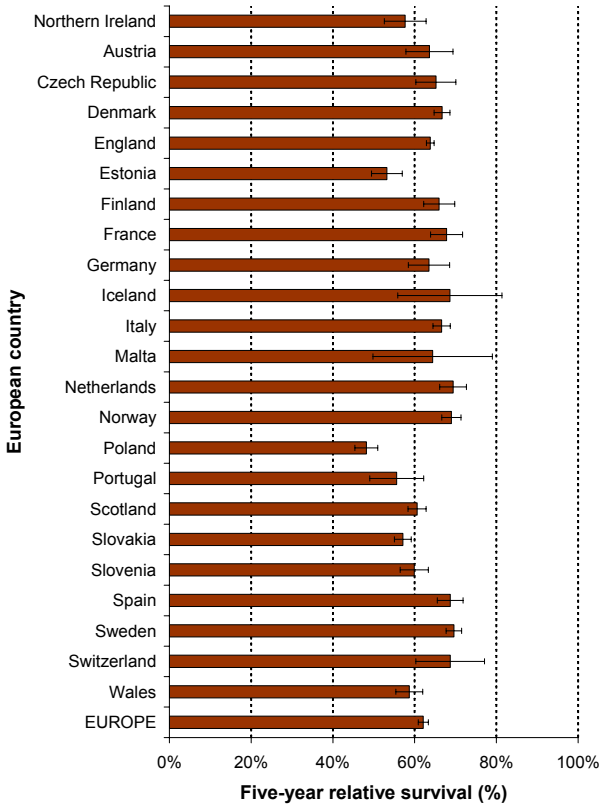
Other countries

Five-year relative survival rates in Northern Ireland were similar to those in New Zealand for females diagnosed with cervical cancer in the late 1990s. Australia, Canada and USA had slightly higher survival rates. (Tab. 17.6)

Table 17.6: Five-year relative survival from cervical cancer for various countries

Country	Period of diagnosis	
Northern Ireland	**1997-2000**	80.1%
USA	**1996-2002**	88.5%
Canada	**1995-1997**	86.0%
Australia	**1992-1997**	84.0%
New Zealand	**1994-1999**	81.7%

Figure 17.7:Comparison of five-year age-standardised relative survival from cervical cancer with other European countries



Source: EUROCARE-3 (2003) [27,28]

17.6: Summary and Discussion

The rate of new cases of cervical cancer in Northern Ireland has steadily decreased over the last 12 years possibly due to lifestyle factors and screening programs which identify cervical cancer before it becomes malignant. Survival from the disease is good but depends upon age and the stage at which the disease is diagnosed.

Infection with human papillomavirus (HPV), especially types 16 and 18, pose a high risk for the development of cervical cancer[77]. However most HPV infections will not progress to cervical cancer and the new HPV vaccine promises a further reduction in the development of cervical cancer as a result of this virus[78]. Sexual activity is indirectly related to the chance of developing cervical cancer as increased activity increases the possibility of contracting HPV or other sexually transmitted diseases[78].

Cigarette smoking and poor diet are also linked to an increased risk of developing cervical cancer, although both factors only increase the risk directly by a small amount, they can increase the risk by a larger margin in combination with HPV[79]. Use of the contraceptive pill is also a possible risk factor, although the increase in risk is small[78,80].

18: CANCER OF THE UTERUS (C54)

KEY FACTS:

- **155 cases diagnosed each year during 2000-2004 with an annual increase in incidence rates of 5.3% during 1993-2004;**
- **20 deaths from the disease each year between 2000 and 2004 with no change in mortality rates during 1993-2004;**
- **Five-year survival for patients diagnosed in 1997-2000 was 72.5% with no significant change in five-year survival for patients diagnosed in 1997-2000 compared to those diagnosed in 1993-1996;**
- **Survival was better for 15-64 year olds than for 65-99 year olds;**
- **Survival was lower than in Europe, England, USA and Australia.**

18.1: Incidence and Mortality

Incidence

Cancer of the uterus represented 3.4% of all female cancer cases diagnosed between 2000 and 2004 and was the sixth most common female cancer during this period. On average 155 cases were diagnosed each year with a median age at diagnosis of 64. (Tab. 18.1)

Table 18.1: Incidence and mortality: Cancer of the uterus (2000-2004)

	Incidence	Mortality
Number of cases/deaths per year	155	20
Percentage of all cancers	3.4%	1.1%
Rank	6	16
Median age at diagnosis/death	64	75
Incidence to mortality ratio	7.9:1	-
Crude rate per 100,000 persons	17.9	2.3
European age-standardised rate per 100,000 persons (95% CI)	16.7 (15.5,17.9)	1.7 (1.4,2.1)

Mortality

Cancer of the uterus was the sixteenth commonest cause of female cancer death between 2000 and 2004 with 20 deaths per year, 1.1% of the total number of female deaths due to cancer. (Tab. 18.1)

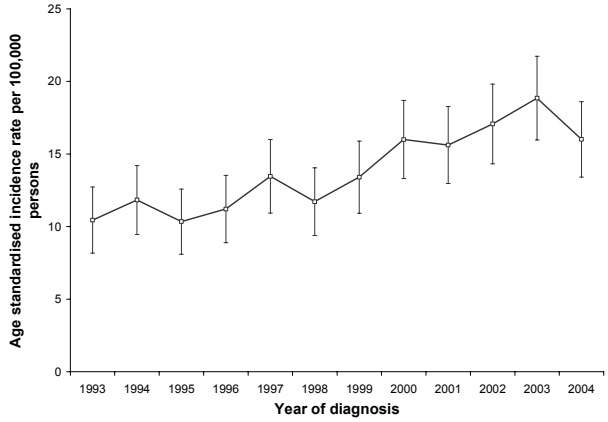
Trends

Incidence rates (EASIR) for cancer of the uterus increased during the 1993 to 2004 period by 5.3% each year ($p<0.001$) from 10.4 to 16.0 cases per 100,000 females, corresponding to an annual increase of 7.6 cases. (Fig. 18.1; App. 4&6)

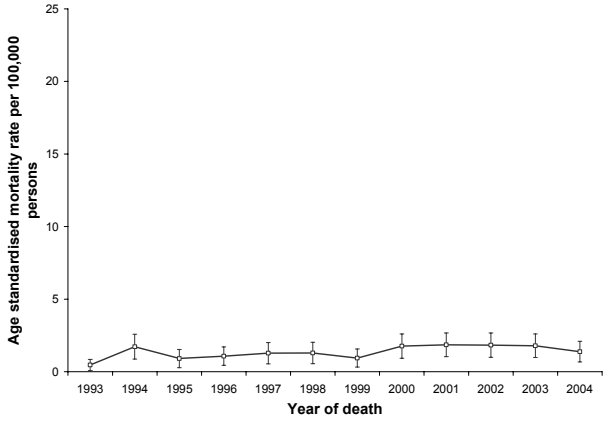
There was no significant change in mortality rates (EASMR) during 1993 to 2004 ($p=0.058$). However there was an annual increase of one additional death per year from this cancer during 1993-2004. (Fig. 18.1; App. 5&6)

Figure 18.1: Incidence and mortality trends: Cancer of the uterus (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



18.2: Relative Survival

Relative survival from cancer of the uterus was good with one-year relative survival 88.3% for patients diagnosed in 2001-2003, while five-year relative survival was 72.5% for patients diagnosed in 1997-2000. (Tab. 18.2)

Changes over time

There was no statistically significant change in relative survival for patients diagnosed with cancer of the uterus between 1993 and 2003. (Tab. 18.2; Fig. 18.2)

Conditional survival

Five-year relative survival from the date of diagnosis for cancer of the uterus for the sub-group of patients who survived at least one-year from diagnosis was 82.3%, while seven-year survival was 78.3%. There were no significant changes over time in this conditional survival (p>0.05). (Tab.18.2; Fig. 18.3)

Table 18.2: Relative survival from cancer of the uterus by period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		ALL PATIENTS		PATIENTS SURVIVING AT LEAST ONE YEAR	
1-year*	1993-1996	83.7%	(79.6%, 87.8%)		
	1997-2000	87.6%	(84.3%, 90.9%)		
	2001-2003	88.3%	(85.1%, 91.6%)		
3-year*	1993-1996	69.9%	(64.7%, 75.2%)	83.2%	(78.5%, 88.0%)
	1997-2000	75.5%	(71.1%, 79.9%)	85.9%	(82.1%, 89.8%)
5-year*	1993-1996	66.1%	(60.4%, 71.8%)	78.3%	(72.7%, 83.9%)
	1997-2000	72.5%	(67.7%, 77.3%)	82.3%	(77.8%, 86.8%)
7-year*	1993-1996	66.3%	(60.3%, 72.3%)	78.3%	(72.3%, 84.2%)

* from diagnosis

Figure 18.2: Relative survival from cancer of the uterus by period of diagnosis (1993-2000)

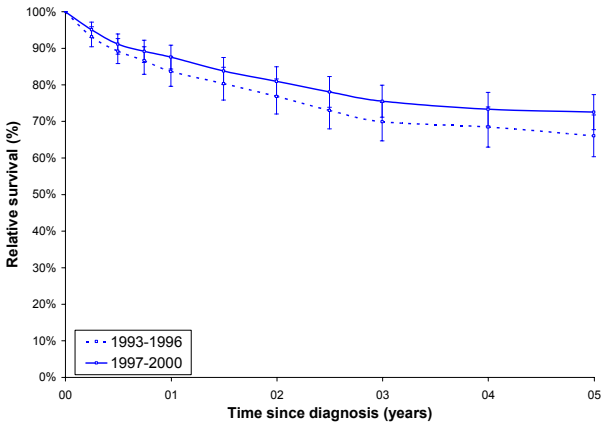
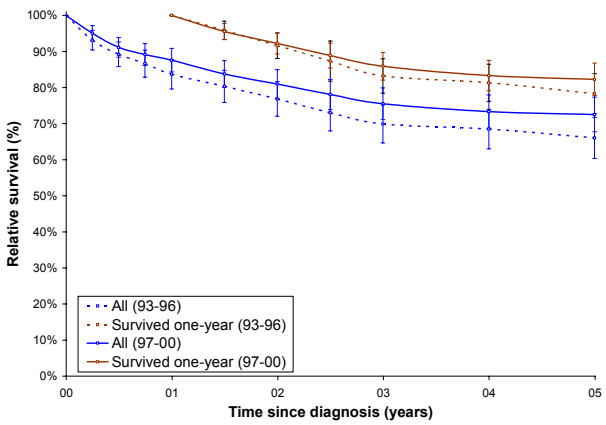


Figure 18.3: Relative survival from cancer of the uterus by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Age

Survival from cancer of the uterus depended upon age in 1993-2003 with relative survival better for those aged 15-64 than 65-99 (p<0.001). In particular relative survival was higher for those aged 15-44 than 65-74 (p=0.014) and 75+ (p=0.003), and decreased significantly between those aged 55-64 and 65-74 (p=0.022). (Tab. 18.3; Fig. 18.4)

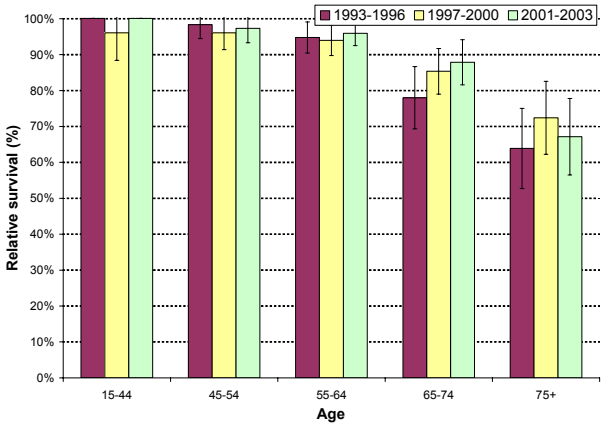
Table 18.3: Relative survival from cancer of the uterus by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	96.1%	(93.0%, 99.2%)	71.4%	(64.4%, 78.5%)
	1997-2000	94.9%	(91.9%, 97.9%)	80.1%	(74.5%, 85.8%)
	2001-2003	96.6%	(94.1%, 99.1%)	79.0%	(73.0%, 85.0%)
5-year	1993-1996	83.8%	(77.7%, 89.8%)	47.8%	(38.9%, 56.7%)
	1997-2000	84.9%	(79.7%, 90.0%)	59.6%	(51.7%, 67.4%)

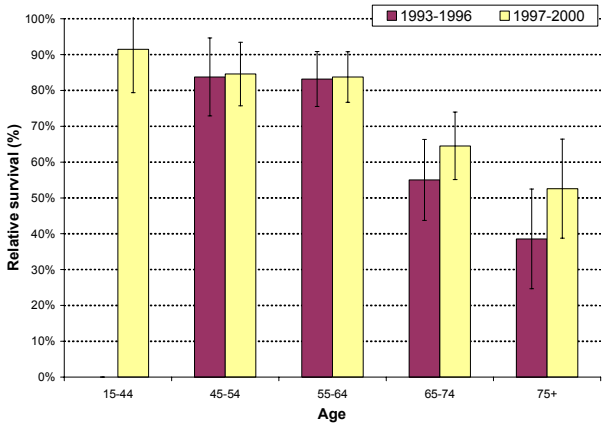
There was no significant change in relative survival over time for either age group. (Tab.18.3; Fig.18.4)

Figure 18.4: Relative survival from cancer of the uterus by age and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



Note: Missing entries refer to less than 10 persons in that age/sex group

18.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) was 86.6% for patients diagnosed with cancer of the uterus between 2001 and 2003. Five-year observed survival was 66.0% for patients diagnosed between 1997 and 2000. (Tab. 18.4)

Table 18.4: Observed survival from cancer of the uterus by sex and period of diagnosis (1993-2003)

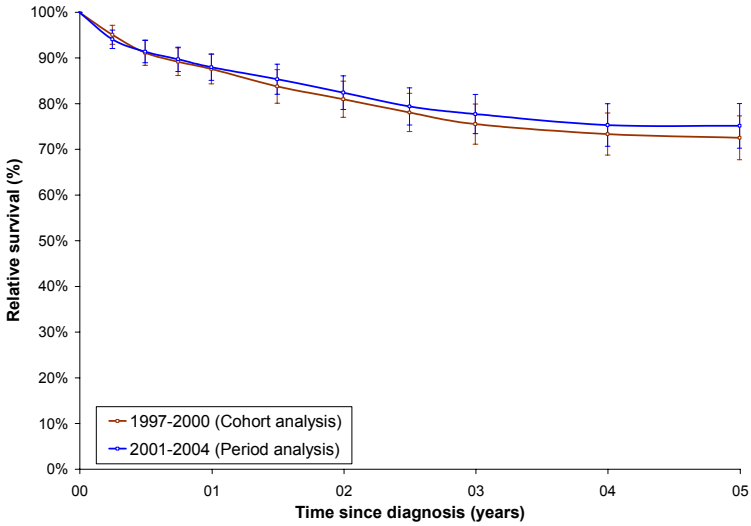
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)	
1-year	1993-1996	81.7%	(77.7%, 85.7%)
	1997-2000	85.8%	(82.7%, 89.0%)
	2001-2003	86.6%	(83.4%, 89.8%)
5-year	1993-1996	58.9%	(53.8%, 64.0%)
	1997-2000	66.0%	(61.6%, 70.3%)

18.4: Period Analysis

Five-year relative survival for patients diagnosed in 2001-2004 with cancer of the uterus, derived using the period analysis approach in order to reflect more recent survival experiences, was 75.2%. (Fig. 18.5; App. 7)

This did not constitute a significant change from the actual five-year relative survival of those diagnosed in 1997-2000, although it should be emphasised that the results are not directly comparable due to the different methods used. (Fig. 18.5; App. 7)

Figure 18.5: Estimated relative survival (period analysis) from cancer of the uterus for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000



18.5: International Comparisons

EUROCARE-3 study

For females diagnosed in 1993-1996 the five-year age-standardised survival rate for cancer of the uterus was 65.1%. This was significantly lower than the equivalent survival rate of 76.0% in Europe, which was derived as part of the EUROCARE-3 study. The majority of European countries contributed to this difference with survival in Northern Ireland being similar only to Czech Republic, Estonia, Iceland, Malta, Poland and Slovakia. The largest difference was with Austria where survival was almost 20% better than in Northern Ireland. (Fig. 18.6)

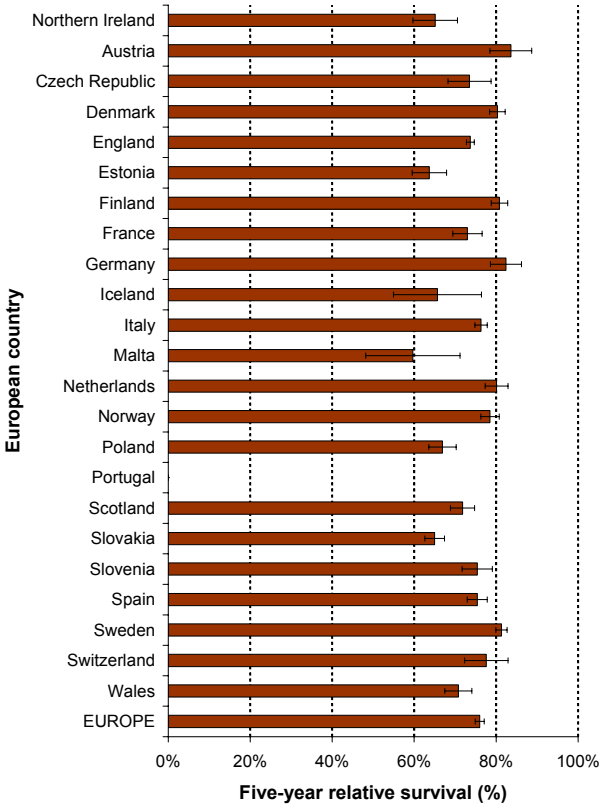
Other countries

Five-year relative survival rates in Northern Ireland were similar to those in New Zealand for females diagnosed with cancer of the uterus in the late 1990s. Australia, Canada and USA had slightly higher survival rates. (Tab. 18.5)

Table 18.5: Five-year relative survival from cancer of the uterus for various countries

Country	Period of diagnosis	
Northern Ireland	**1997-2000**	80.1%
USA	**1996-2002**	88.5%
Canada	**1995-1997**	86.0%
Australia	**1992-1997**	84.0%
New Zealand	**1994-1999**	81.7%

Figure 18.6:Comparison of five-year age-standardised relative survival from cancer of the uterus with other European countries



Source: EUROCARE-3 (2003) [27,28]

18.6: Summary and Discussion

Cancer of the uterus has steadily increased in Northern Ireland over the last twelve years, a trend also observed in the rest of the UK[35]. The exact reasons for this increase are unknown although attention has focused on changes in lifestyle. Females who are obese and/or have a diet high in fat have a higher risk of developing cancer of the body of the uterus than females who have a healthy weight and/or a balanced diet[81,82].

Reproductive and menstrual history is also related to the development of cancer of the uterus. Having children is considered to be protective with the risk of endometrial cancer decreasing as the number of children given birth to increases[81]. A late menopause, early first period, irregular periods or longer than usual periods all increase risk[81]. The use of the contraceptive pill however has a protective effect[81].

The use of Hormone Replacement Therapy (HRT) has been linked to a rise in endometrial cancer[81], as has the use of tamoxifen, although the benefits in preventing breast cancer outweigh the risk caused by its use[81,83]. Endometrial hyperplasia and polycystic ovary syndrome are also linked to an increased risk of developing cancer of the uterus[81]. Family history is also a factor as the inheritance of a faulty HNPCC (hereditary non-polyposis colorectal cancer) gene can increase the risk of developing several types of cancer including endometrial cancer[81].

Survival from the disease is good but is highly dependent upon the age of the patient with persons over 65 fairing much worse than those under 65. Survival is better in other countries than in Northern Ireland suggesting that room for improvement exists. This may be achieved by increased awareness of the disease as treatment is more effective when the disease is identified at an early stage.

19: OVARIAN CANCER (C56)

KEY FACTS:

- **191 newly diagnosed cases per year between 2000 and 2004 with incidence rates increasing by 1.4% each year between 1993 and 2004;**
- **116 deaths per year between 2000 and 2004 with no significant change in mortality rates between 1993 and 2004;**
- **Survival average with 43.0% of females alive after five years with no significant change in survival between 1993-1996 and 1997-2000;**
- **Survival better for those aged 15-64 than for those aged 65 and over with survival high for stage I disease but very poor for stage IV disease;**
- **Survival similar to rest of UK, Ireland, Europe and USA.**

19.1: Incidence and Mortality

Incidence

Ovarian cancer made up 4.2% of female cancers diagnosed between 2000 and 2004 and was the fifth most common female cancer. There were on average 191 cases diagnosed per year with a median age at diagnosis of 63. (Tab. 19.1)

Mortality

There were on average 116 deaths per year from ovarian cancer between 2000 and 2004. These deaths made up 6.5% of all female cancer deaths with ovarian cancer being the fourth most common cause of female cancer death. The median age at death was nine years later than at diagnosis. (Tab. 19.1)

Table 19.1: Incidence and mortality: Ovarian cancer (2000-2004)

	Incidence	Mortality
Number of cases/deaths per year	191	116
Percentage of all cancers	4.2%	6.5%
Rank	5	4
Median age at diagnosis/death	63	71
Incidence to mortality ratio	1.6:1	-
Crude rate per 100,000 persons	22.0	13.4
European age-standardised rate per 100,000 persons (95% CI)	20.1 (18.8,21.5)	11.1 (10.1,12.0)

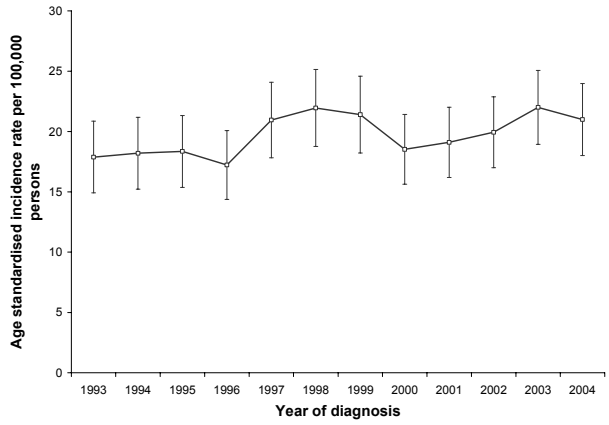
Trends

Incidence rates (EASIR) for ovarian cancer increased between 1993 and 2004 by 1.4% each year (p=0.044) from 17.9 to 21.0 cases per 100,000 females. This represented an annual increase of 5.0 cases each year. (Fig. 19.1; App. 4&6)

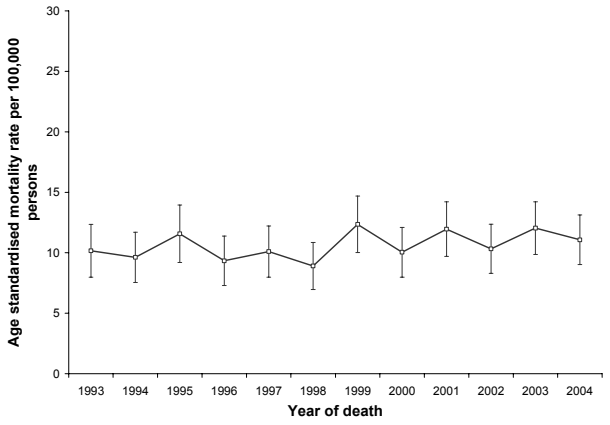
Mortality rates (EASMR) remained static during the period (p>0.05). Despite this the number of deaths was seen to increase by 3.4 per year during 1993-2004. (Fig. 19.1; App. 5&6)

Figure 19.1: Incidence and mortality trends: Ovarian cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



19.2: Relative Survival

Relative survival from ovarian cancer was average with 67.8% of females diagnosed in 2001-2003 surviving one year and 43.0% of patients diagnosed in 1997-2000 surviving five years. (Tab. 19.2)

Changes over time

There was no statistically significant change in relative survival for patients diagnosed with ovarian cancer during 1993-2003. (Tab. 19.2; Fig. 19.2)

Conditional survival

67.4% of patients diagnosed with ovarian cancer in 1997-2000 were alive one-year from diagnosis. Of these patients 63.4% survived a further four years (i.e. five years in total). There were no changes in this conditional survival over time during 1993-2003 (p>0.05). (Tab. 19.2; Fig. 19.3)

Table 19.2: Relative survival from ovarian cancer by period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		ALL PATIENTS		PATIENTS SURVIVING AT LEAST ONE YEAR	
1-year*	1993-1996	65.9%	(61.9%, 69.9%)		
	1997-2000	67.4%	(63.8%, 71.0%)		
	2001-2003	67.8%	(63.7%, 71.9%)		
3-year*	1993-1996	46.1%	(41.9%, 50.4%)	69.6%	(64.7%, 74.5%)
	1997-2000	50.1%	(46.1%, 54.0%)	74.0%	(69.8%, 78.3%)
5-year*	1993-1996	41.6%	(37.3%, 45.9%)	62.6%	(57.3%, 67.9%)
	1997-2000	43.0%	(39.0%, 47.0%)	63.4%	(58.6%, 68.2%)
7-year*	1993-1996	38.5%	(34.2%, 42.9%)	57.9%	(52.3%, 63.4%)

* from diagnosis

Figure 19.2: Relative survival from ovarian cancer by period of diagnosis (1993-2000)

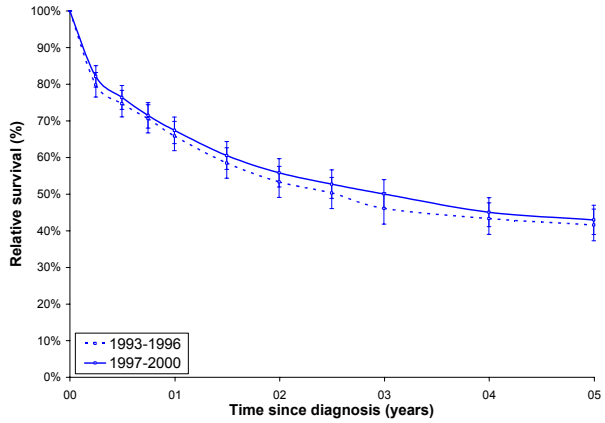
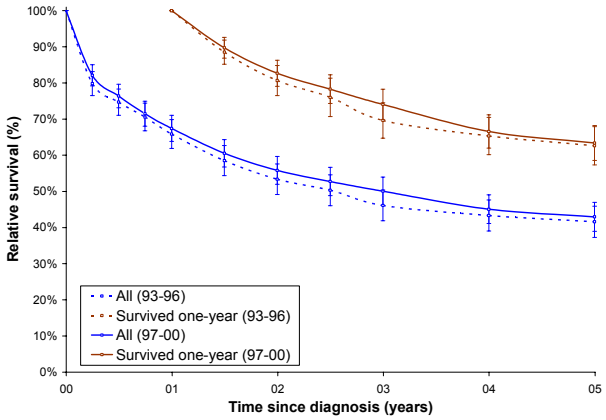


Figure 19.3: Relative survival from ovarian cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Age

Relative survival from ovarian cancer was better for patients aged 15-64 than 65-99, with the difference in five-year relative survival being 17.8% for those diagnosed in 1997-2000 (p=0.002). In particular five-year relative survival for patients aged 15-44 was 73.2%, which dropped to 24.6% for those aged 75 and over diagnosed in 1997-2000 (p<0.001). (Tab. 19.3; Fig. 19.4)

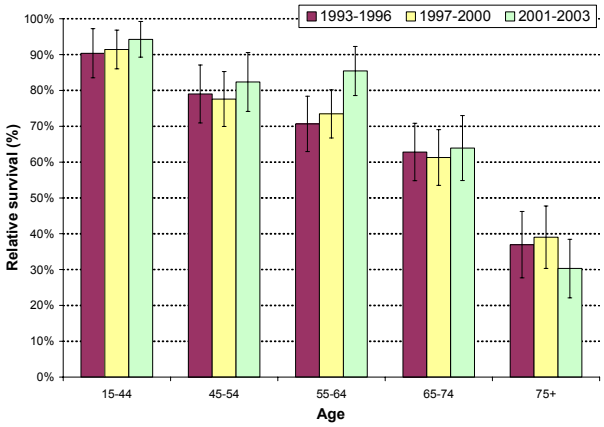
Table 19.3: Relative survival from ovarian cancer by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	78.0%	(73.3%, 82.7%)	51.6%	(45.3%, 57.8%)
	1997-2000	79.5%	(75.4%, 83.5%)	51.2%	(45.2%, 57.1%)
	2001-2003	87.3%	(83.3%, 91.2%)	45.8%	(39.4%, 52.2%)
5-year	1993-1996	53.6%	(47.9%, 59.3%)	27.1%	(21.0%, 33.3%)
	1997-2000	50.6%	(45.5%, 55.7%)	32.8%	(26.5%, 39.0%)

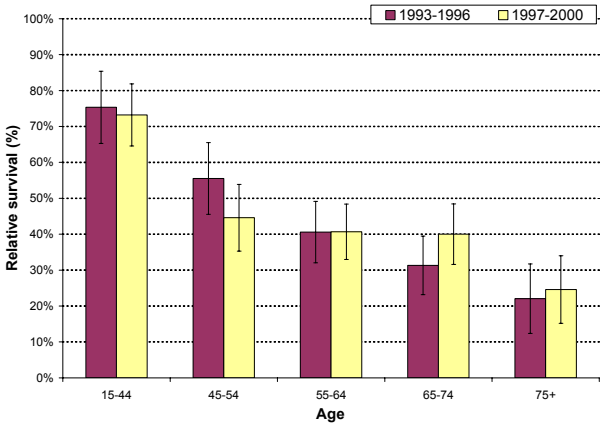
There was no significant change in five-year relative survival over time for patients aged 15-64 or 65-99 (p<0.05), however one-year relative survival increased for 15-64 year olds from 78.0% for patients diagnosed in 1993-1996 to 87.3% for patients diagnosed in 2000-2003 (p=0.036). (Tab. 19.3)

Figure 19.4: Relative survival from ovarian cancer by age and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



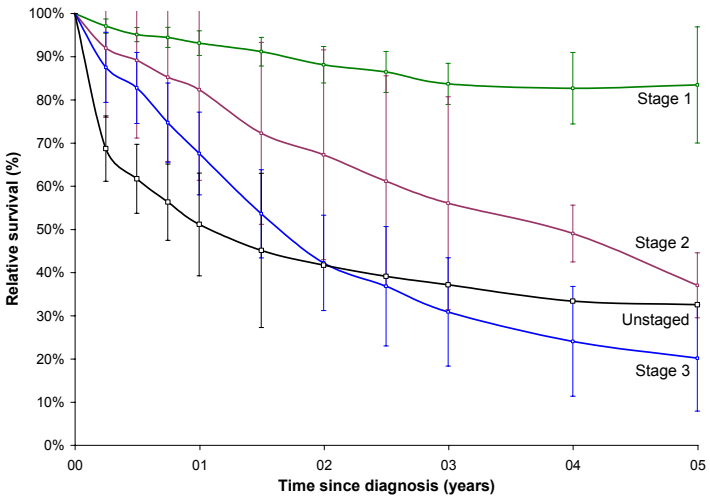
Stage

Patients diagnosed with stage I ovarian cancer during 1993-2000 had a significantly higher survival probability than for those diagnosed at stage II, III or IV ($p<0.001$). Survival for patients with no stage assigned was poor with five-year relative survival 32.6% for patients diagnosed in 1993-2000. (Tab. 19.4; Fig. 19.5)

Table 19.4: Relative survival from ovarian cancer by stage (1993-2000)

Survival time and stage	RELATIVE SURVIVAL (95% CI)	
1-year		
Stage I	93.1%	(90.0%, 96.3%)
Stage II	82.4%	(74.5%, 90.3%)
Stage III	67.6%	(61.3%, 73.9%)
Stage IV	55.9%	(37.6%, 74.2%)
Unstaged	51.2%	(47.1%, 55.2%)
5-year		
Stage I	83.5%	(78.3%, 88.6%)
Stage II	37.1%	(26.9%, 47.2%)
Stage III	20.2%	(14.6%, 25.8%)
Stage IV	-	
Unstaged	32.6%	(28.6%, 36.6%)

Figure 19.5: Relative survival from ovarian cancer by stage (1993-2000)



19.3: Observed Survival

Observed survival from ovarian cancer, which takes into account deaths from all causes, was moderate with 66.6% of patients diagnosed in 2001-2003 alive after one year. Five-year observed survival was 39.7% for patients diagnosed in 1997-2000. (Tab. 19.5)

Table 19.5: Observed survival from ovarian cancer by sex and period of diagnosis (1993-2003)

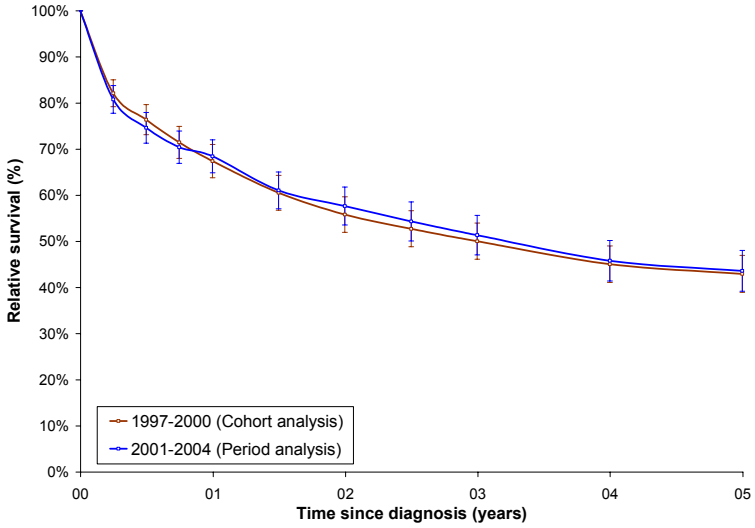
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)	
1-year	**1993-1996**	64.7%	(60.8%, 68.6%)
	1997-2000	66.3%	(62.7%, 69.8%)
	2001-2003	66.6%	(62.6%, 70.6%)
5-year	**1993-1996**	38.3%	(34.3%, 42.3%)
	1997-2000	39.7%	(36.0%, 43.4%)

19.4: Period Analysis

Traditional methods (cohort analysis) for producing five-year relative survival rates do not reflect more recent survival experience due to the length of follow up required. However more up to date survival rates can be estimated using newer techniques such as period analysis.

Five-year survival from ovarian cancer for patients diagnosed in 2001-2004 derived using this approach was 43.6%. While not directly comparable with results from traditional methods, this estimate indicates that there was no significant change in survival compared to patients diagnosed in 1997-2000 (p>0.05). (Fig. 19.6; App. 7)

Figure 19.6: Estimated relative survival (period analysis) from ovarian cancer for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



19.5: International Comparisons

EUROCARE-4 study

The European age-standardised five-year relative survival rate diagnosed in Northern Ireland with ovarian cancer during 1995-1999 was 34.0%, which was similar to the 36.3% for European females. Survival in Northern Ireland was similar to most other European countries but was lower than in Austria and Sweden. (Fig. 19.7)

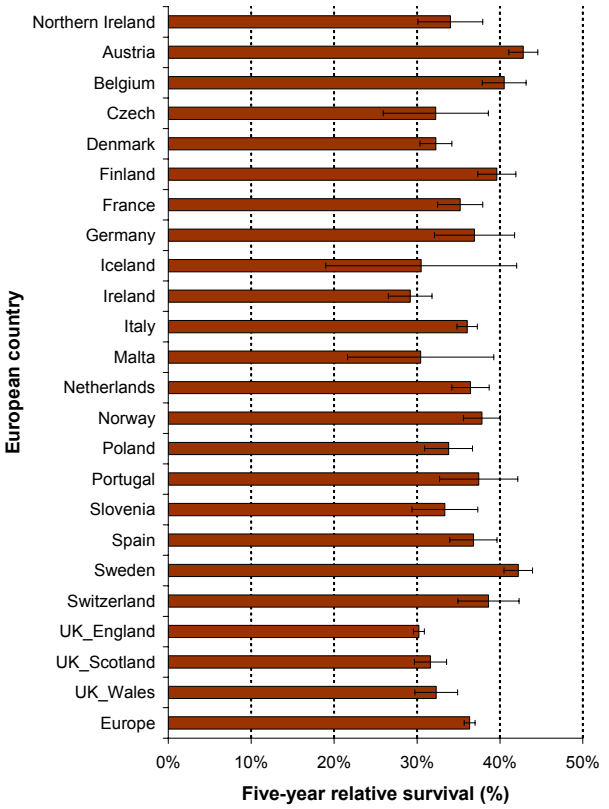
Other countries

More recent studies showed five-year survival rates from ovarian cancer in Northern Ireland to be significantly higher than survival in Canada. Survival in USA, Australia and New Zealand was similar to that in Northern Ireland. (Tab. 19.6)

Table 19.6: Five-year relative survival from ovarian cancer for various countries

Country	Period of diagnosis	
Northern Ireland	**1997-2000**	43.0%
USA	**1996-2002**	44.7%
Canada	**1995-1997**	38.0%
Australia	**1992-1997**	42.0%
New Zealand	**1994-1999**	46.3%

Figure 19.7:Comparison of five-year age-standardised relative survival from ovarian cancer with other European countries



Source:EUROCARE-4 (2007)[29]

19.6: Summary and Discussion

Ovarian cancer is one of the most common female cancers, the rates of which are gradually increasing in Northern Ireland. Survival from the disease is average at about 43% after five-years. This however varies considerably depending upon age and stage at diagnosis.

Ovulatory history influences the risk of developing ovarian cancer, with the risk decreasing with the number of pregnancies and being lower among those breast-feeding children[84]. Being infertile or undergoing fertility treatment can increase the risk of developing ovarian cancer although having a hysterectomy, tubal ligation or using the contraceptive pill can lower the risk[84,85,86]. Females who have had an early first period or late menopause have a slightly elevated risk of developing cancer of the ovary[84].

About 1 in 20 ovarian cancers have a link to family history due to genetic factors associated with the BRCA1 gene, which can be screened for[84,87].

20: PROSTATE CANCER (C61)

KEY FACTS:

- **656 cases each year during 2000-2004 with an annual increase in incidence rates of 7.6% during 1999-2004;**
- **215 deaths from the disease each year between 2000 and 2004 with no change in rates during 1993-2004;**
- **Survival was average with 64.5% of males diagnosed in 1997-2000 alive after five years with survival having improved by 8.9% compared to those diagnosed in 1993-1996;**
- **One-year survival was better for 15-64 year olds than for 65-99 year olds; Five-year survival improved for 65-99 year olds between 1993-1996 and 1997-2000;**
- **No difference in survival by deprivation quintile or between urban and rural areas;**
- **Survival estimates using period analysis suggest that five-year survival will increase for males diagnosed in 2001-2004;**
- **Survival lower than in the rest of UK and Ireland, Europe, USA, Australia, Canada and New Zealand.**

20.1: Incidence and Mortality

Incidence

Between 2000 and 2004 there were on average 656 cases of prostate cancer diagnosed each year. It was the second most common male cancer (after non-melanoma skin cancer) with 14.5% of all cancer cases diagnosed being prostate cancer. (Tab. 20.1)

Table 20.1: Incidence and mortality: Prostate cancer (2000-2004)

	Incidence	Mortality
Number of cases/deaths per year	656	215
Percentage of all cancers	14.5%	11.4%
Rank	2	3
Median age at diagnosis/death	71	79
Incidence to mortality ratio	3.1:1	-
Crude rate per 100,000 persons	79.1	25.9
European age-standardised rate per 100,000 persons (95% CI)	79.4 (76.7,82.1)	25.5 (24.0,27.1)

Mortality

Prostate cancer was the third most common male death representing 11.4% of all male cancer deaths with an average of 215 deaths per year. (Tab. 20.1)

Trends

During 1993-1999 there was no significant change in incidence rates (EASIR) for prostate cancer ($p<0.05$) with the number of new cases increasing by 2.4 each year. However between 1999 and 2004 EASIRs increased annually by 7.6% ($p=0.001$), representing an annual increase of 54.3 cases. (Fig. 20.1; App. 4&6)

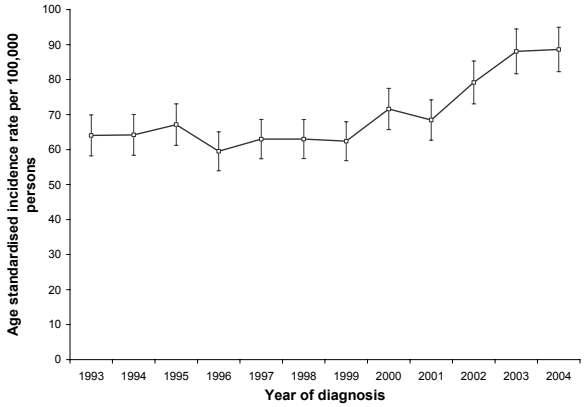
Mortality rates (EASMR) remained static during 1993-2004 with no significant trend during the twelve-year period ($p>0.05$). However, the actual number of deaths increased by an average of 1.9 each year. (Fig. 20.1; App. 5&6)

Geographic variation

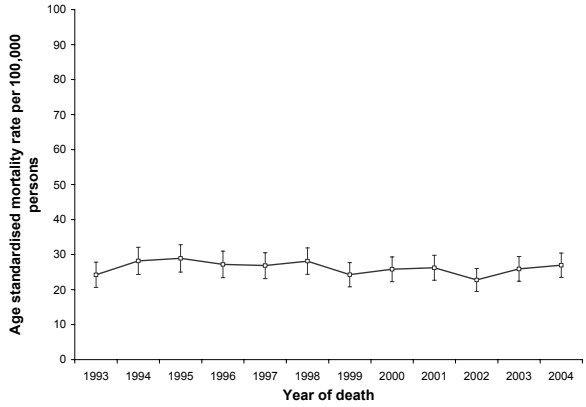
There was no significant relationship between deprivation, as defined by the 2005 Noble economic deprivation measure[7], and incidence or mortality from prostate cancer during 1993-2004. This differs from

Figure 20.1: Incidence and mortality trends: Prostate cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates

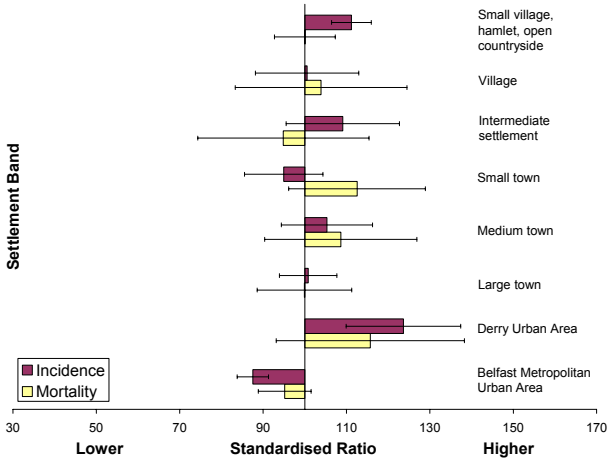


previous studies[2] based on the 2001 Noble economic deprivation measure which showed higher levels of prostate cancer in the most affluent areas. (Fig. 20.2)

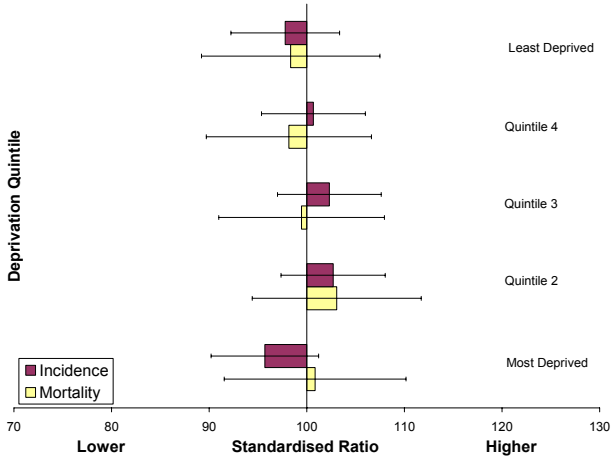
Incidence of prostate cancer were higher in Derry Urban Area and small villages and open countryside during 1993-2004 while lower levels were present in Belfast Metropolitan Area. There was no significant relationship between urban/rural factors and mortality from the disease. (Fig. 20.2)

Figure 20.2: Standardised incidence and mortality ratios for prostate cancer by settlement and deprivation category: 1993-2004

(a) Settlement band



(b) Deprivation quintile



Cases of prostate cancer were higher than expected in Banbridge, Derry, Fermanagh, Moyle, Omagh and Strabane District Councils than in Northern Ireland as a whole in 1993-2004. Lower incidence rates were found in Ards, Belfast and Newtownabbey. Higher mortality rates were present in Fermanagh and Derry while lower than expected mortality rates were present in Belfast, Craigavon and North Down. (Tab. 20.2)

Table 20.2: Standardised incidence and mortality ratios for prostate cancer by District Council: 1993-2004

Local Government District	Standardised Incidence Ratio (95% CI)		Standardised Mortality Ratio (95% CI)		Local Government District	Standardised Incidence Ratio (95% CI)		Standardised Mortality Ratio (95% CI)	
Antrim	93.7	(78.8, 108.7)	101.9	(76.1, 127.7)	**Down**	112.1	(98.8, 125.3)	108.4	(87.3, 129.4)
Ards	83.8	(73.6, 94.0)	90.4	(73.2, 107.6)	**Dungannon**	99.7	(85.1, 114.3)	85.0	(62.9, 107.1)
Armagh	111.9	(97.4, 126.4)	92.2	(70.8, 113.7)	**Fermanagh**	119.2	(105.8, 132.5)	122.3	(100.8, 143.8)
Ballymena	101.4	(89.0, 113.8)	106.7	(86.1, 127.3)	**Larne**	86.2	(70.5, 101.9)	104.6	(76.2, 133.1)
Ballymoney	86.9	(69.4, 104.4)	106.2	(74.8, 137.6)	**Limavady**	118.6	(97.4, 139.8)	130.3	(93.8, 166.8)
Banbridge	120.1	(102.9, 137.3)	101.0	(75.4, 126.5)	**Lisburn**	105.2	(94.8, 115.6)	114.2	(96.3, 132.1)
Belfast	83.4	(78.2, 88.7)	89.8	(81.1, 98.5)	**Magherafelt**	91.6	(76.0, 107.2)	81.0	(57.3, 104.7)
Carrickfergus	98.1	(81.8, 114.4)	130.7	(99.6, 161.7)	**Moyle**	131.0	(104.3, 157.6)	134.1	(90.9, 177.4)
Castlereagh	93.5	(82.8, 104.2)	89.2	(72.3, 106.2)	**Newry & Mourne**	98.1	(86.9, 109.3)	91.8	(74.0, 109.7)
Coleraine	109.9	(96.4, 123.3)	118.4	(95.8, 141.1)	**Newtownabbey**	85.5	(75.4, 95.6)	106.2	(87.3, 125.0)
Cookstown	101.9	(84.0, 119.9)	110.9	(80.8, 141.1)	**North Down**	91.1	(81.3, 101.0)	82.2	(67.4, 96.9)
Craigavon	107.5	(95.6, 119.3)	81.5	(64.5, 98.5)	**Omagh**	130.1	(113.3, 146.9)	101.4	(77.6, 125.1)
Derry	127.4	(114.6, 140.3)	128.3	(106.6, 150.1)	**Strabane**	120.8	(102.5, 139.1)	86.9	(61.5, 112.3)

SIRs/SMRs in blue represent significantly lower or higher incidence or mortality than in Northern Ireland as a whole.

20.2: Relative Survival

One-year relative survival from prostate cancer was 92.8% for patients diagnosed in 2001-2003 while five-year relative survival was 64.5% for patients diagnosed in 1997-2000. (Tab. 20.3)

Changes over time

There was a significant improvement in relative survival for males diagnosed with prostate cancer during 1993-2003 with one-year relative survival increasing from 83.0% for males diagnosed in 1993-1996 to 92.8% for males diagnosed in 2001-2003 (p<0.001). Five-year relative survival also increased between 1993-1996 and 1997-2000 with an additional 8.9% of males surviving five-years from diagnosis (p=0.006). (Tab. 20.3; Fig. 20.3)

Table 20.3: Relative survival from prostate cancer by period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		ALL PATIENTS		PATIENTS SURVIVING AT LEAST ONE YEAR	
1-year*	1993-1996	83.0%	(81.0%, 85.1%)		
	1997-2000	85.1%	(83.2%, 87.0%)		
	2001-2003	92.8%	(91.2%, 94.3%)		
3-year*	1993-1996	65.9%	(63.0%, 68.7%)	78.4%	(75.6%, 81.1%)
	1997-2000	72.3%	(69.7%, 74.9%)	84.3%	(81.9%, 86.7%)
5-year*	1993-1996	55.6%	(52.4%, 58.8%)	65.3%	(61.9%, 68.7%)
	1997-2000	64.5%	(61.4%, 67.6%)	74.4%	(71.3%, 77.6%)
7-year*	1993-1996	50.0%	(46.4%, 53.5%)	58.1%	(54.2%, 62.0%)

* from diagnosis

Conditional survival

Five-year relative survival for prostate cancer patients who survived one-year from diagnosis and were diagnosed in 1997-2000 was 74.4% while seven-year survival for those diagnosed in 1993-1996 was 58.1%. This conditional survival rate improved over time with a 9.1% increase in five-year survival from 1993-1996 to 1997-2000 (p=0.006). (Tab. 20.3; Fig. 20.4)

Figure 20.3: Relative survival from prostate cancer by period of diagnosis (1993-2000)

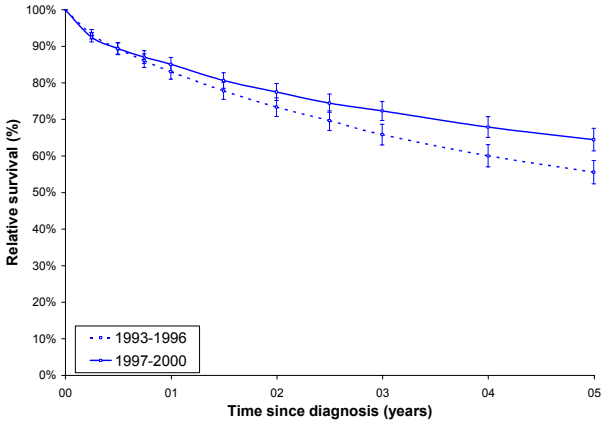
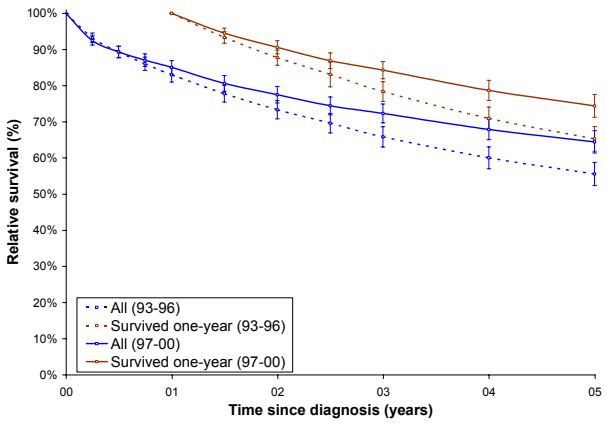


Figure 20.4: Relative survival from prostate cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Age

One-year relative survival from prostate cancer was higher for those aged 15-64 than 65-99 during 1993-2003. In particular one-year relative survival for those aged 85+ was significantly lower than other age groups. Differences in five-year relative survival were not statistically significant. (Tab. 20.4; Fig. 20.5)

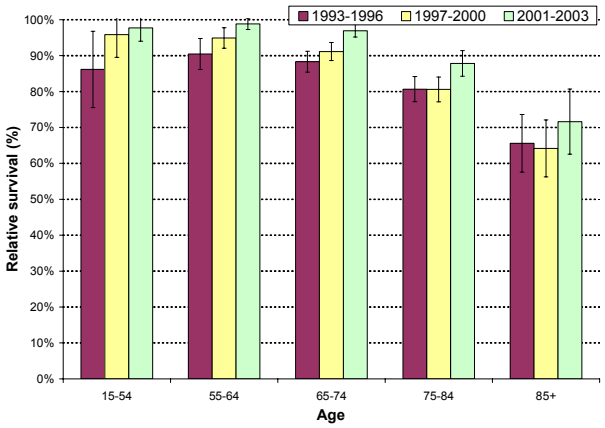
Table 20.4: Relative survival from prostate cancer by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	89.7%	(85.7%, 93.7%)	81.9%	(79.7%, 84.2%)
	1997-2000	95.0%	(92.4%, 97.6%)	83.0%	(80.8%, 85.2%)
	2001-2003	98.7%	(97.2%, 100.1%)	91.0%	(89.0%, 92.9%)
5-year	1993-1996	60.7%	(54.0%, 67.4%)	54.8%	(51.1%, 58.4%)
	1997-2000	72.0%	(66.4%, 77.5%)	63.0%	(59.4%, 66.5%)

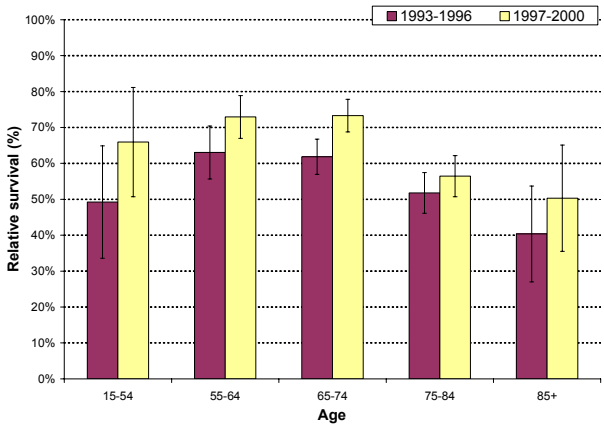
Five-year relative survival for 65-99 year olds increased during the two periods by 8.2% (p=0.025), which was driven primarily by increases in the 65-74 age group (p=0.018). Improvements in one-year relative survival were also apparent in the 55-64, 65-74 and 75-84 age groups. (Tab. 20.4; Fig. 20.5)

Figure 20.5: Relative survival from prostate cancer by age and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



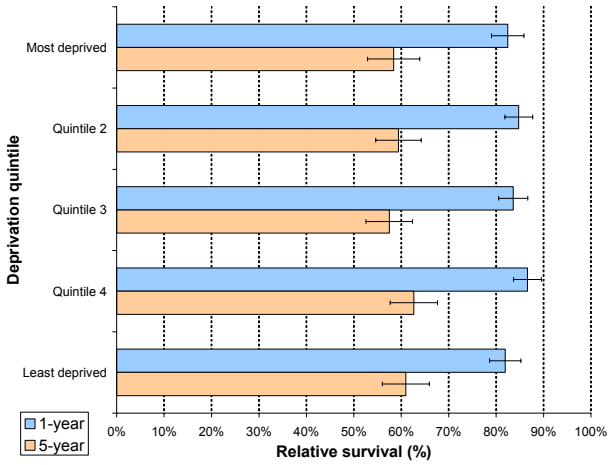
Deprivation and urban/rural factors

Relative survival from prostate cancer during 1993-2000 did not vary significantly by level of deprivation with five-year relative survival for patients who resided in the 20% most affluent areas in Northern Ireland being 61.0% compared to 58.4% for those who resided in the 20% most deprived areas in Northern Ireland (p>0.05). (Fig. 20.6)

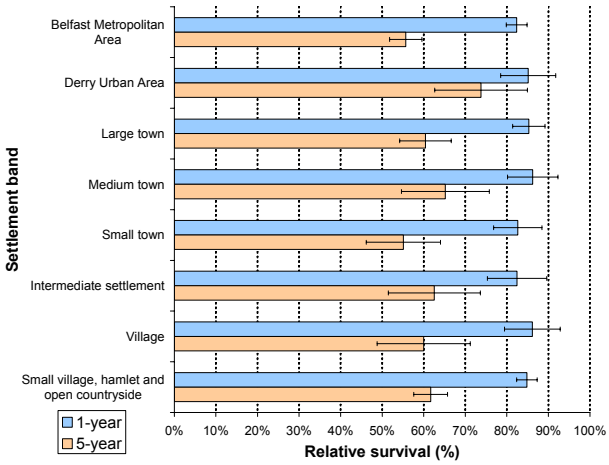
The majority of variations in one and five-year relative survival from prostate cancer between different settlement types were not statistically significant. However five-year relative survival in Derry Urban Area was significantly higher than in Belfast Metropolitan Area (p=0.018). (Fig. 20.6)

Figure 20.6: Relative survival from prostate cancer by deprivation quintile and settlement band (1993-2000)

(a) Deprivation quintile



(b) Settlement band



20.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) was 88.5% for patients diagnosed with prostate cancer in 2001-2003. Five-year observed survival was 47.1% for patients diagnosed in 1997-2000. (Tab. 20.5)

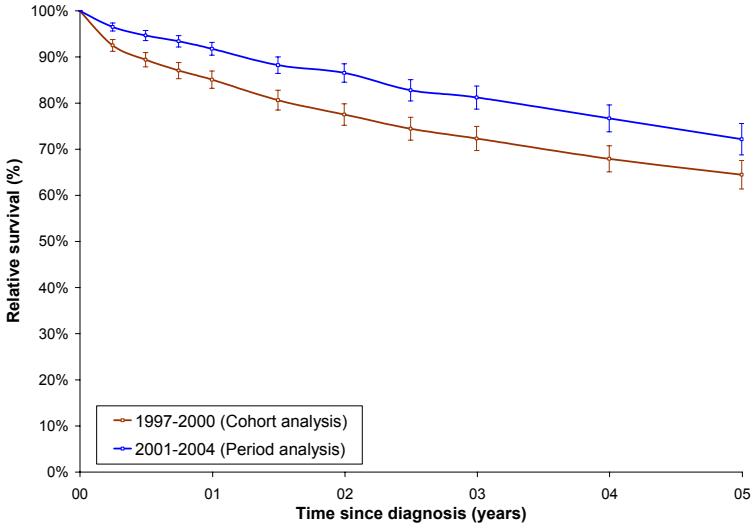
Table 20.5: Observed survival from prostate cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)	
1-year	1993-1996	77.5%	(75.6%, 79.5%)
	1997-2000	80.0%	(78.2%, 81.8%)
	2001-2003	88.5%	(87.0%, 89.9%)
5-year	1993-1996	38.6%	(36.4%, 40.8%)
	1997-2000	47.1%	(44.8%, 49.3%)

20.4: Period Analysis

Five-year relative survival from prostate cancer for patients diagnosed in 2001-2004 cannot be derived using traditional methods (cohort analysis) but can be estimated using newer techniques such as period analysis. Using this method five-year relative survival from prostate cancer for males diagnosed in 2001-2004 was 72.2%. While not directly comparable to the cohort analysis this would constitute a significant improvement of 7.7% compared to the five-year relative survival for patients diagnosed in 1997-2000 (p>0.05). (Fig.20.7; App.7)

Figure 20.7: Estimated relative survival (period analysis) from prostate cancer for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.

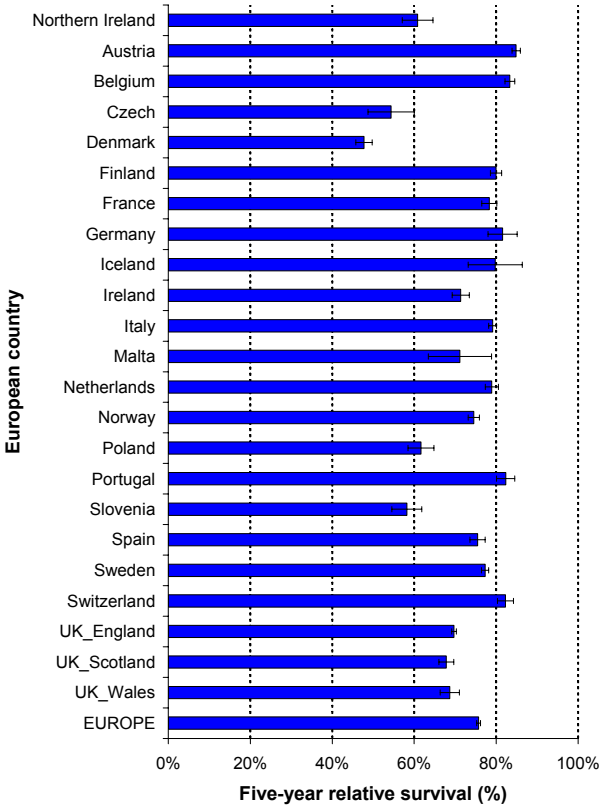


20.5: International Comparisons

EUROCARE-4 study

Based upon age-standardised five-year relative survival estimates, for patients diagnosed in 1995-1999 with prostate cancer, relative survival in Europe was higher than that in Northern Ireland by 14.9%. The biggest differences (more than 20%) between Northern Ireland and individual European countries were with Austria, Belgium, Germany, Portugal and Switzerland. Survival was also lower than that in the rest of the UK and Ireland by between 7-11%. Survival in Northern Ireland from this disease was higher than in Denmark and similar to Slovenia and Poland. (Fig. 20.8)

Figure 20.8: Comparison of five-year age-standardised relative survival from prostate cancer with other European countries



Source:EUROCARE-4 (2007)[29]

Other countries

For patients diagnosed with prostate cancer during the late 1990s survival in Northern Ireland was significantly (p<0.05) lower than in USA, Canada, New Zealand and Australia. (Tab. 20.6)

Table 20.6: Five-year relative survival from prostate cancer for various countries

Country	Period of diagnosis	
Northern Ireland	**1997-2000**	64.5%
USA	**1996-2002**	99.9%
Canada	**1995-1997**	91.0%
Australia	**1992-1997**	82.7%
New Zealand	**1994-1999**	85.5%

20.6: Summary and Discussion

Family history is a strong risk factor in the development of prostate cancer, with the risk for males with a relative diagnosed with the disease being twice that of an average male. This risk increases to three times the average if the relative is a brother and increases to four times the average if a father, brother or son

was diagnosed before age 60[88]. A strong family history of breast cancer is also an indication of an increased risk as it may indicate the presence of the faulty BRCA1 gene which can cause prostate cancer in men[88]. Other known, but relatively weak risk factors for prostate cancer are black ethnic race[88], radiation exposure[88] and a diet with high animal fat consumption[89] and low levels of selenium[88].

Levels of prostate cancer in Northern Ireland have increased considerably since 1999 due to the increase in the use of PSA testing. Mortality rates have however remained static during the last twelve years while five-year survival rates have increased. The later is a result of the introduction of PSA testing with diagnosis being made at a point much closer to when the cancer first developed. This has the effect of increasing survival time from the date of diagnosis to death; however the actual time from the development of cancer to death may not have changed. The variation in the use of PSA testing throughout different countries may partially explain the considerable variation in survival rates throughout the world. For example PSA testing has been widespread in other parts of the UK and Europe for a longer period of time than in Northern Ireland. As a result a higher proportion of prostate cancers were detected at an earlier stage in these countries. Given that early cancers have a much better prognosis, overall survival for patients in these areas, diagnosed during the late 1990s, was higher than in Northern Ireland.

21: TESTICULAR CANCER (C62)

KEY FACTS:

- **60 newly diagnosed cases per year between 2000 and 2004 with no significant change in incidence rates between 1993 and 2004;**
- **Less than 5 deaths from the disease each year between 2000 and 2004 with no significant change in mortality rates between 1993 and 2004;**
- **Survival excellent with 96.0% of males alive after five years, but no significant change in survival between 1993-1996 and 1997-2000;**
- **Similar survival to England, Europe, USA, Canada, New Zealand and Australia.**

21.1: Incidence and Mortality

Incidence

Between 2000 and 2004 there was an average of 60 males diagnosed each year with testicular cancer representing 1.3% of all newly diagnosed male cancers making it the fifteenth most common male cancer. The median age at diagnosis for this cancer was 35, which was younger than for any other cancer. (Tab. 21.1)

Table 21.1: Incidence and mortality: Testicular cancer (2000-2004)

	Incidence	Mortality
Number of cases/deaths per year	60	<5
Percentage of all cancers	1.3%	-
Rank	15	22
Median age at diagnosis/death	35	28
Crude rate per 100,000 persons	7.2	-
European age-standardised rate per 100,000 persons (95% CI)	7.2 (6.3,8.0)	- -

Mortality

Testicular cancer was the twenty-second most common cause of male cancer death with less than five male deaths occurring annually from 2000 to 2004 as a result of the disease. (Tab. 21.1)

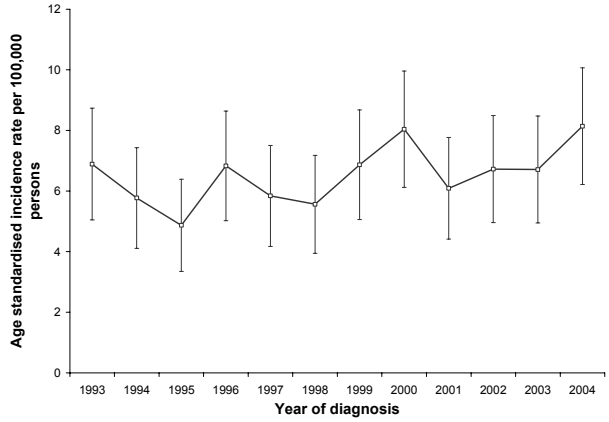
Trends

Incidence rates (EASIR) varied considerably during 1993-2004, with no significant trend during the twelve-year period (p=0.083) although the number of cases increased annually by an average of 1.4. (Fig. 21.1; App. 4&6)

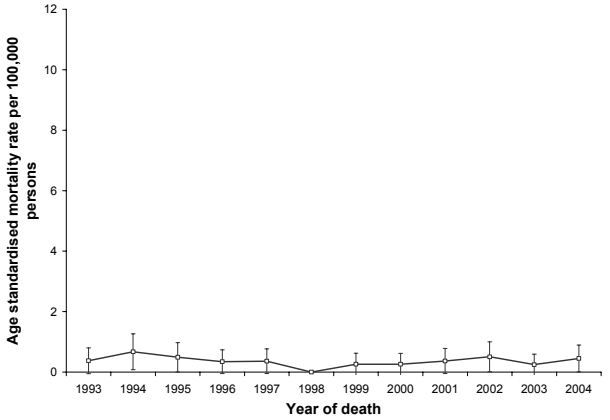
No significant trend existed for mortality rates (EASMR) between 1993 and 2004 (p>0.05), with the annual change in the number of deaths remaining static over time. (Fig. 21.1; App. 5&6)

Figure 21.1: Incidence and mortality trends: Testicular cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



21.2: Relative Survival

Relative survival from testicular cancer was excellent with 95.9% of patients diagnosed between 2001 and 2003 surviving one year and 96.0% of patients diagnosed between 1997 and 2000 surviving five years. (Tab. 21.2)

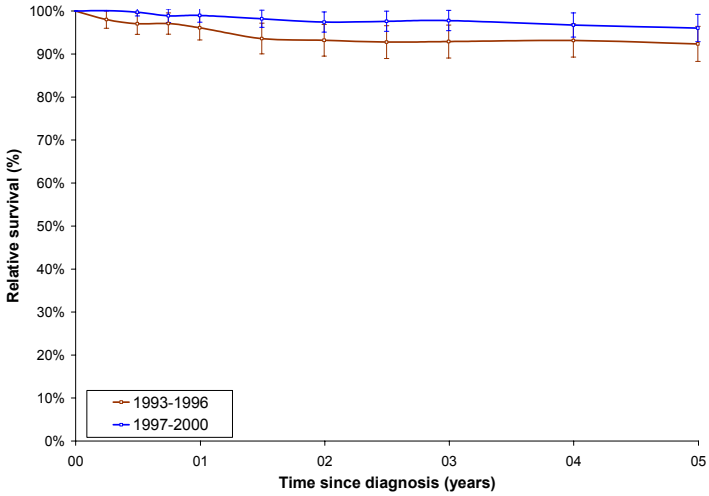
Changes over time

There was no statistically significant change in either one or five-year relative survival for patients diagnosed with testicular cancer between 1993 and 2003. (Tab. 21.2; Fig. 21.2)

Table 21.2: Relative survival from testicular cancer by period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)	
1-year	1993-1996	96.1%	(93.3%, 98.9%)
	1997-2000	99.0%	(97.4%, 100.5%)
	2001-2003	95.9%	(92.8%, 99.0%)
3-year	1993-1996	92.9%	(89.1%, 96.7%)
	1997-2000	97.8%	(95.4%, 100.1%)
5-year	1993-1996	92.4%	(88.3%, 96.4%)
	1997-2000	96.0%	(92.8%, 99.2%)

Figure 21.2: Relative survival from testicular cancer by period of diagnosis (1993-2000)

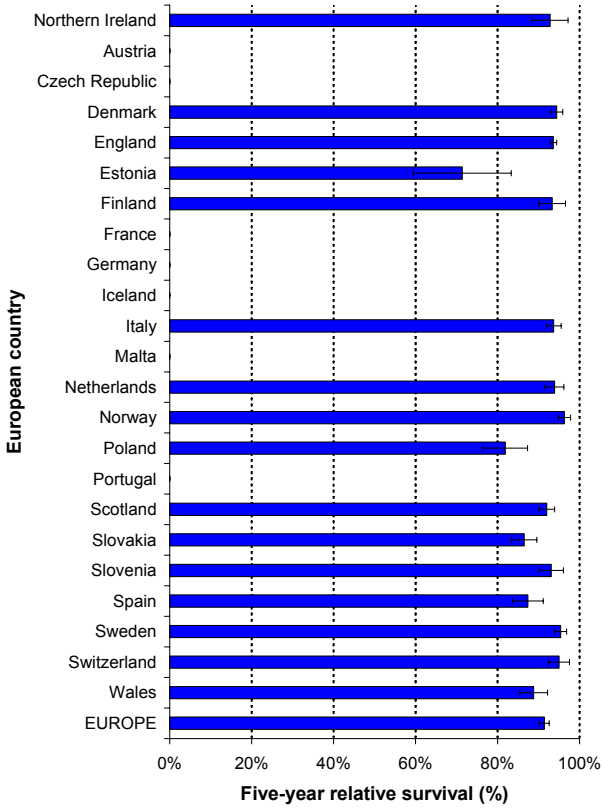


21.3: International Comparisons

EUROCARE-3 study

For males diagnosed with testicular cancer between 1993 and 1996 the five-year age-standardised relative survival rate was 91.2%. This was equivalent to testicular cancer survival in the majority of European countries included in the EUROCARE3 study. The exception was Estonia and Poland, which had significantly lower relative survival compared to Northern Ireland (Fig. 21.3).

Figure 21.3: Comparison of five-year age-standardised relative survival from testicular cancer with other European countries



Source: EUROCARE-3 (2003)[27,28]

Other countries

Five-year relative survival rates from testicular cancer in Northern Ireland were similar to those in Australia, New Zealand, Canada and USA with no more than a 1.0% difference existing between Northern Ireland and these countries. (Tab. 21.3)

Table 21.3: Five-year relative survival from testicular cancer for various countries

Country	Period of diagnosis	
Northern Ireland	1997-2000	96.0%
USA	1996-2002	95.7%
Canada	1995-1997	95.0%
Australia	1992-1997	95.4%
New Zealand	1994-1999	95.4%

21.4: Summary and Discussion

Testicular cancer is a relatively rare disease occurring mainly in males aged between 25 and 45. While not substantiated in Northern Ireland due to the small number of cases, rates of new cases of the disease are increasing in many countries, including England and Wales[31] for as yet unknown reasons. The number of

deaths due to the disease is however small and mortality rates in England and Wales are declining as survival improves[31]. Survival in Northern Ireland along with most European and North American countries is high being typically above 95% after five years.

Most cases of testicular cancer have no detectable risk factor. However a history of undescended testes can increase risk by up to ten times[90]. The use of an operation to lower the testes reduces this risk, but the risk of developing cancer of the testes is still higher than average[90]. Infertility and fertility problems can increase risk[90] as can the inheritance of a faulty gene, TGCT1, which can increase risk up to five times and can result in family clusters of testicular cancer[90]. The probability of developing testicular cancer due to infertility problems or genetic factors remains small.

22: CANCER OF THE KIDNEY (C64-C66, C68)

KEY FACTS:

- **110 male and 71 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **55 male and 32 female deaths per year between 2000 and 2004 with male mortality rates increasing by 2.5% per year between 1993 and 2004 with no significant change in female mortality rates;**
- **Survival similar in males and females with 53.0% of males and 50.3% of females alive after five years, but no significant change in survival between 1993-1996 and 1997-2000;**
- **Survival better for those aged 15-64 than for those aged 65 and over;**
- **Survival better than in Wales and Scotland, similar to Europe but worse than in USA, Canada and Australia.**

22.1: Incidence and Mortality

Incidence

Between 2000 and 2004 there were 110 male and 71 female cases of cancer of the kidney diagnosed each year. It represented 2.4% of all male and 1.6% of all female cancer cases. It was the eighth most common male cancer and the twelfth most common female cancer. (Tab. 22.1)

Table 22.1: Incidence and mortality: Cancer of the kidney (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	110	71	55	32
Percentage of all cancers	2.4%	1.6%	2.9%	1.8%
Rank	8	12	9	12
Median age at diagnosis/death	67	69	71	76
Male to female ratio	1.5:1	-	1.7:1	-
Incidence to mortality ratio	2.0:1	2.2:1	-	-
Crude rate per 100,000 persons	13.2	8.2	6.6	3.7
European age-standardised rate per 100,000 persons (95% CI)	13.5 (12.4,14.6)	7.1 (6.3,7.8)	6.7 (5.9,7.6)	2.7 (2.3,3.2)

Mortality

There were 55 male deaths from cancer of the kidney each year between 2000 and 2004, 2.9% of male cancer deaths. Among females there were 32 deaths per year from cancer of the kidney during this period, 1.8% of female cancer deaths. It was the ninth and twelfth commonest form of male and female cancer death respectively. (Tab. 22.1)

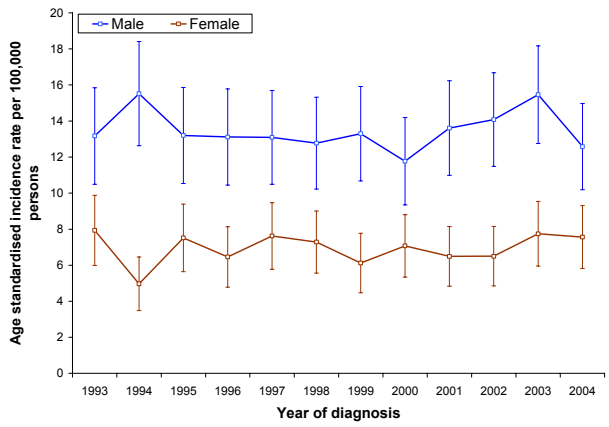
Trends

Incidence rates (EASIR) for kidney cancer among males and females were static during 1993-2004 with no significant trend present (p>0.05). However due to the ageing of the population, the number of cases of cancer of the kidney increased annually by 1.5 male and 1.2 female cases. (Fig. 22.1; App. 4&6)

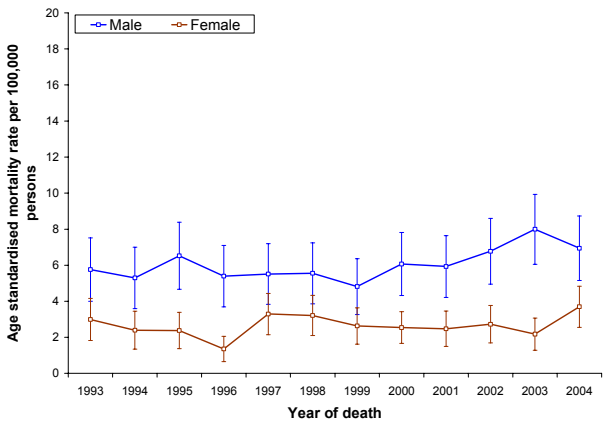
Male mortality rates (EASMR) for kidney cancer increased during 1993-2004 by 2.5% each year (p= 0.030) while no significant trend in female EASMRs existed during this period. The number of deaths as a result of this disease rose annually by 1.9 male and 1.1 female deaths. (Fig. 22.1; App. 5&6)

Figure 22.1: Incidence and mortality trends: Cancer of the kidney (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



22.2: Relative Survival

One-year relative survival from cancer of the kidney was 63.6% for patients diagnosed in 2001-2003 while five-year relative survival was 51.9% for patients diagnosed in 1997-2000. (Tab. 22.2)

Table 22.2: Relative survival from cancer of the kidney by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	66.8%	(61.6%, 72.0%)	68.7%	(62.2%, 75.1%)	67.5%	(63.5%, 71.6%)
	1997-2000	67.2%	(61.9%, 72.4%)	64.4%	(58.3%, 70.5%)	66.0%	(62.0%, 70.0%)
	2001-2003	62.7%	(57.0%, 68.4%)	65.2%	(57.8%, 72.6%)	63.6%	(59.1%, 68.1%)
3-year	**1993-1996**	56.5%	(50.6%, 62.4%)	56.0%	(48.8%, 63.2%)	56.3%	(51.7%, 60.9%)
	1997-2000	55.5%	(49.6%, 61.5%)	55.4%	(48.7%, 62.1%)	55.5%	(51.1%, 59.9%)
5-year	**1993-1996**	50.1%	(43.7%, 56.4%)	51.1%	(43.5%, 58.8%)	50.5%	(45.6%, 55.4%)
	1997-2000	53.0%	(46.7%, 59.4%)	50.3%	(43.2%, 57.4%)	51.9%	(47.1%, 56.6%)
7-year	**1993-1996**	47.4%	(40.7%, 54.0%)	46.5%	(38.5%, 54.5%)	47.0%	(41.9%, 52.1%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	84.1%	(78.3%, 89.9%)	81.2%	(74.0%, 88.3%)	82.9%	(78.4%, 87.5%)
	1997-2000	82.3%	(76.3%, 88.3%)	85.7%	(79.3%, 92.0%)	83.7%	(79.3%, 88.1%)
5-year*	**1993-1996**	74.1%	(66.7%, 81.4%)	73.7%	(65.1%, 82.3%)	73.9%	(68.4%, 79.5%)
	1997-2000	78.2%	(71.0%, 85.3%)	77.3%	(69.2%, 85.3%)	77.8%	(72.5%, 83.1%)
7-year*	**1993-1996**	69.7%	(61.6%, 77.9%)	66.5%	(56.9%, 76.1%)	68.4%	(62.2%, 74.6%)

* from diagnosis

Sex

There were no statistically significant differences in relative survival for males and females (p>0.05) diagnosed with kidney cancer during 1993-2003. For example five-year relative survival for males diagnosed in 1997-2000 was 53.0% compared to 50.3% for females (p>0.05). (Tab. 22.2; Fig.22.2)

Changes over time

There were no statistically significant changes in male or female one, three or five-year relative survival for patients diagnosed with cancer of the kidney during 1993-2003 (p>0.05). (Tab.22.2; Fig. 22.2)

Figure 22.2: Relative survival from cancer of the kidney by sex and period of diagnosis (1993-2000)

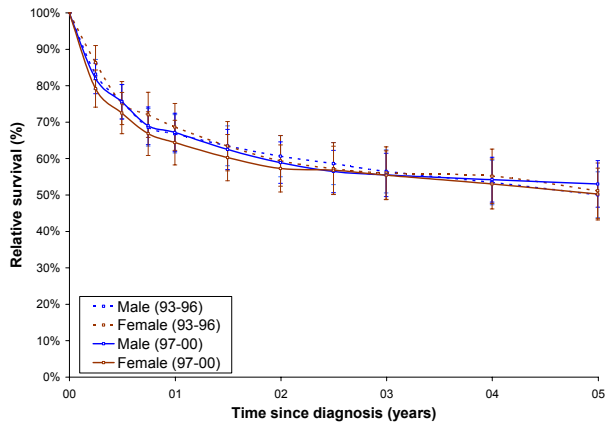
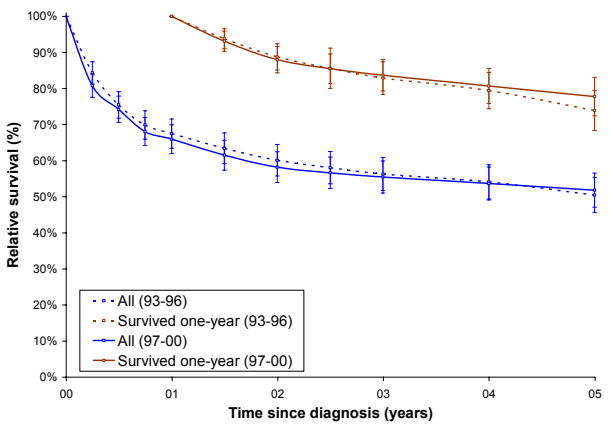


Figure 22.3: Relative survival from cancer of the kidney by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Conditional survival

Five-year relative survival for patients who survived one year from diagnosis and were diagnosed in 1997-2000 was 77.8% while seven-year survival was 68.4% for those diagnosed in 1993-1996. This conditional survival rate did not vary by sex during 1993-2003 and there were no significant changes over time (p>0.05). (Tab. 22.2; Fig. 22.3)

Age

For patients diagnosed in 1997-2000 five-year relative survival for those aged 15-64 was 63.0%, which was higher than the 44.3% of those aged 65-99 who survived five-years (p=0.004). In particular five-year relative survival for females aged either 65-74 or 75-99 and diagnosed in 1997-2000 was significantly worse than for those aged 15-44 (p=0.022; p=0.003). (Tab. 22.3; Fig. 22.4)

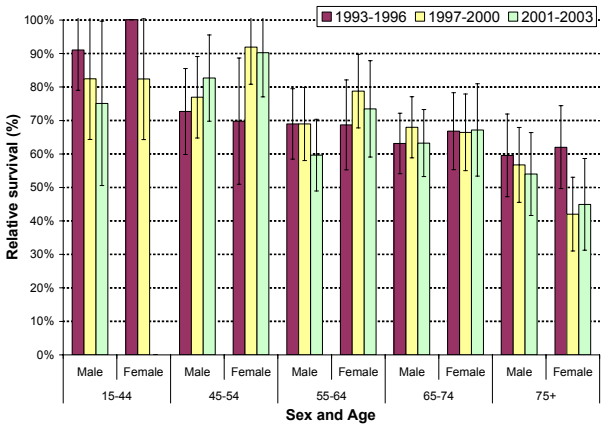
Table 22.3: Relative survival from cancer of the kidney by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	74.0%	(68.3%, 79.7%)	62.9%	(57.3%, 68.5%)
	1997-2000	77.3%	(71.8%, 82.7%)	58.6%	(53.2%, 64.0%)
	2001-2003	71.8%	(65.4%, 78.1%)	57.7%	(51.5%, 63.9%)
5-year	1993-1996	55.6%	(48.9%, 62.3%)	46.8%	(39.9%, 53.8%)
	1997-2000	63.0%	(56.4%, 69.5%)	44.3%	(37.7%, 50.8%)

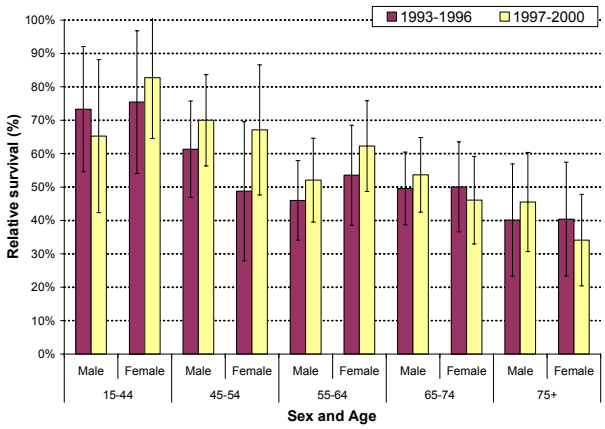
There were no statistically significant changes over time for 15-64 or 65-99 age groups or for individual male or female age groups (p>0.05). (Tab. 22.3; Fig. 22.4)

Figure 22.4: Relative survival from cancer of the kidney by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



22.3: Observed Survival

Observed survival from cancer of the kidney, which takes into account deaths from all causes, was moderate with 60.7% of male and 63.5% of female patients diagnosed in 2001-2003 alive after one-year. Five-year observed survival was 44.1% for male and 43.9% for female patients diagnosed in 1997-2000. (Tab. 22.4)

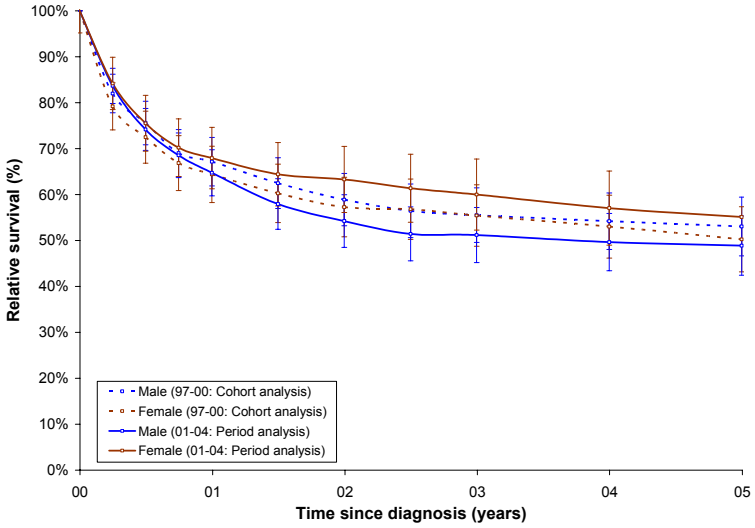
Table 22.4: Observed survival from cancer of the kidney by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	64.3%	(59.3%, 69.4%)	66.8%	(60.6%, 73.1%)	65.3%	(61.4%, 69.2%)
	1997-2000	64.7%	(59.6%, 69.8%)	62.7%	(56.7%, 68.7%)	63.9%	(60.0%, 67.7%)
	2001-2003	60.7%	(55.1%, 66.2%)	63.5%	(56.3%, 70.8%)	61.7%	(57.3%, 66.1%)
5-year	1993-1996	41.2%	(36.0%, 46.4%)	44.2%	(37.6%, 50.8%)	42.3%	(38.3%, 46.4%)
	1997-2000	44.1%	(38.8%, 49.4%)	43.9%	(37.7%, 50.1%)	44.0%	(40.0%, 48.1%)

22.4: Period Analysis

Five-year relative survival for the 2001-2004 period cannot be calculated using traditional methods (cohort analysis) as five-years worth of follow up are required. Period analysis which examines the more recent experience of patients can provide more up to date estimates. Five-year relative survival from cancer of the kidney for males diagnosed in 2001-2004 derived using this approach was 48.9% while for females it was 55.1%. This does not represent a significant difference between the two sexes (p>0.05). (Fig. 22.5; App. 7)

Figure 22.5: Estimated relative survival (period analysis) from cancer of the kidney for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



While not directly comparable these estimates do not constitute a significant difference from the actual five-year relative survival derived using cohort analysis for patients diagnosed in 1997-2000 (p>0.05). (Fig. 22.5; App. 7)

22.5: International Comparisons

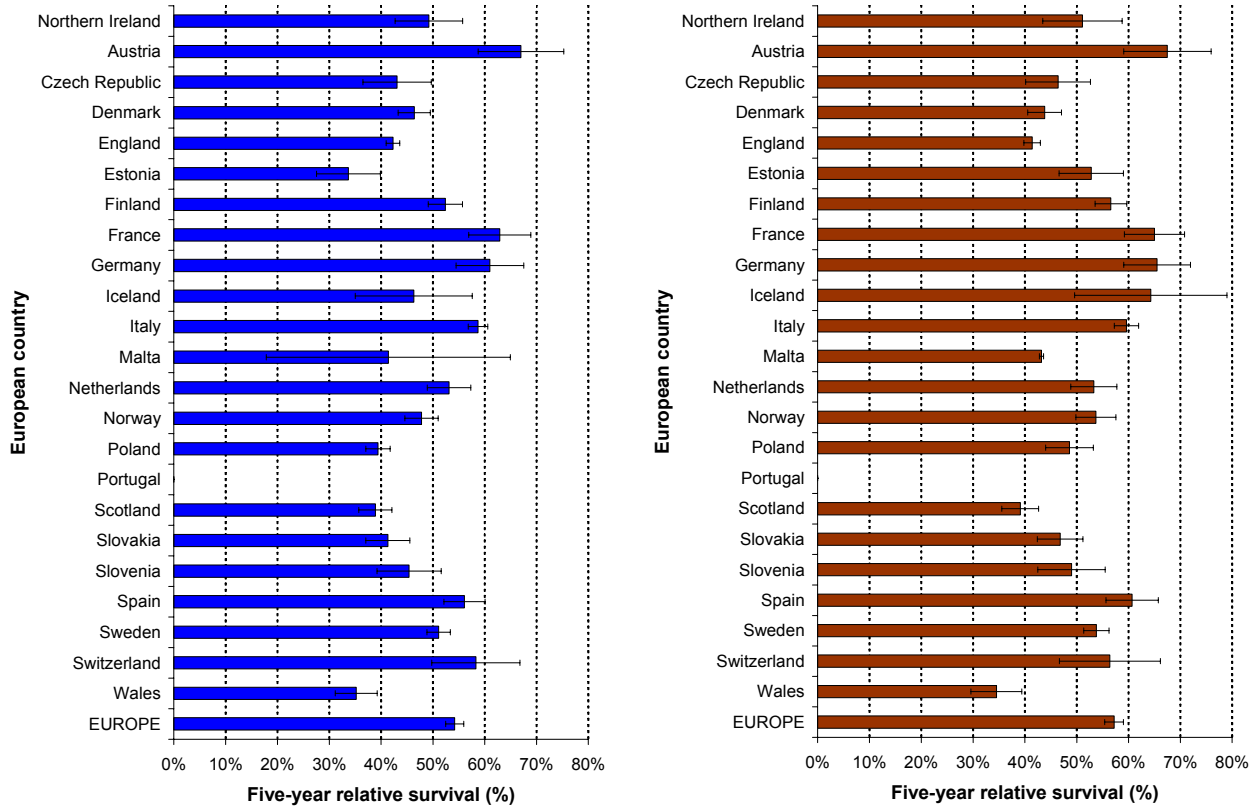
EUROCARE-3 study

Age-standardised five-year relative survival from cancer of the kidney in Europe was 54.2% for males and 57.2% for females, which was higher than the 49.2% for males and 51.1% for females in Northern Ireland.

Figure 22.6: Comparison of five-year age-standardised relative survival from cancer of the kidney with other European countries

(a) Male

(b) Female



Source: EUROCARE-3 (2003)[27,28]

While this difference was not statistically significant the survival in Austria and France was significantly better for both males and females. It was also significantly better in Italy for males and in Germany for females. Survival in Northern Ireland was better than in Scotland and Wales and than in England for females. (Fig. 22.6)

Other countries

Comparisons between Northern Ireland and other countries illustrate that survival was lower in Northern Ireland than in USA, Canada and Australia. (Tab. 22.5)

Table 22.5: Five-year relative survival from cancer of the kidney for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	53.0%	50.3%
USA	**1996-2002**	65.7%	65.4%
Canada	**1995-1997**	64.0%	66.0%
Australia	**1992-1997**	59.9%	57.5%
New Zealand	**1994-1999**	57.1%	55.8%

22.6: Summary and Discussion

The risk of developing cancer of the kidney is approximately 1 in 90 for males and 1 in 170 for females. It can depend greatly on lifestyle factors, with tobacco use and obesity[91,92] being significant risk factors with smokers being twice as likely as non-smokers to develop the disease[91]. Eating a well balanced diet is thought to lower the risk of developing this cancer type[91].

High blood pressure and kidney failure resulting in the use of regular dialysis increases the risk of developing cancer of the kidney[91]. Some inherited diseases or conditions also increase kidney cancer risk (Von Hippel-Lindau (VHL) syndrome, tuberous sclerosis, Birt-Hogg-Dube syndrome, hereditary non-VHL clear cell renal cell cancer and hereditary papillary renal cell cancer) while some kidney cancers (familial kidney cancer) can be caused by inheriting faulty genes[91]. Chemicals and compounds such as asbestos, cadmium, trichloroethylene and dry cleaning solutions can increase the risk of developing kidney cancer[91]. Consequently higher levels of incidence of kidney cancer are linked with those working in the petrochemical and iron and steel industries[91]. The use of some mild painkillers is also potentially linked to an increased risk of kidney cancer, although work is continuing into the types of painkiller that may induce an increased hazard[91].

Levels of kidney cancer in the UK have increased since the mid 1970s; however as in Northern Ireland, incidences of this cancer have remained fairly static since 1993[31]. Survival is moderate at 50% of persons surviving five years, which is similar to the rest of the UK but worse than some European countries and North America. There has been no improvement in survival from kidney cancer over the last ten years however new treatments currently in the development and testing phase, such as the TroVax vaccine[93], have the potential to start improving the survival rate within the next ten years.

23: CANCER OF THE BLADDER (C67)

KEY FACTS:

- **143 male and 57 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **55 male and 30 female deaths per year between 2000 and 2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **Survival moderate with 55.1% of patients diagnosed in 1997-2000 surviving five years;**
- **Survival better in males than females: 83.9% of males and 58.2% of females alive after one year, with no significant change in survival between 1993-1996 and 1997-2000;**
- **Survival better for those aged 15-64 than for those aged 65 and over;**
- **Survival poorer than in rest of UK, Europe, USA, Canada, Australia and New Zealand.**

23.1: Incidence and Mortality

Incidence

Cancer of the bladder was the sixth commonest male cancer during 2000-2004 with an average of 143 cases diagnosed each year; 3.2% of male cases. Age-standardised rates for this cancer were 3.5 times greater among males than females with 57 females diagnosed annually with the disease. It made up 1.2% of female cancers during 2000-2004 and was the fifteenth most common female cancer. (Tab. 23.1)

Table 23.1: Incidence and mortality: Cancer of the bladder (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	143	57	55	30
Percentage of all cancers	3.2%	1.2%	2.9%	1.7%
Rank	6	15	8	13
Median age at diagnosis/death	72	75	77	79
Male to female ratio	2.5:1	-	1.9:1	-
Incidence to mortality ratio	2.6:1	1.9:1	-	-
Crude rate per 100,000 persons	17.3	6.5	6.7	3.4
European age-standardised rate per 100,000 persons (95% CI)	17.2 (15.9,18.5)	4.9 (4.3,5.5)	6.7 (5.9,7.5)	2.3 (1.9,2.7)

Mortality

There were 55 male and 30 female deaths from cancer of the bladder each year during 2000-2004 representing 2.9% and 1.7% of male and female cancer deaths respectively. It was the eighth commonest cause of cancer death among males and thirteenth among females. (Tab. 23.1)

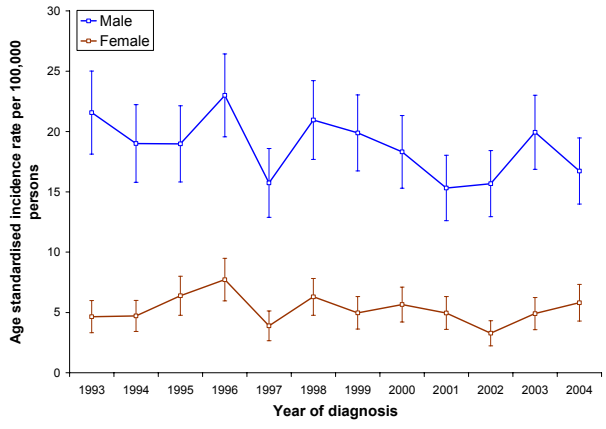
Trends

No significant trends in male or female incidence rates (EASIR) existed for cancer of the bladder during 1993-2004 (p>0.05) with little annual change in the number of cases. (Fig. 23.1; App. 4&6)

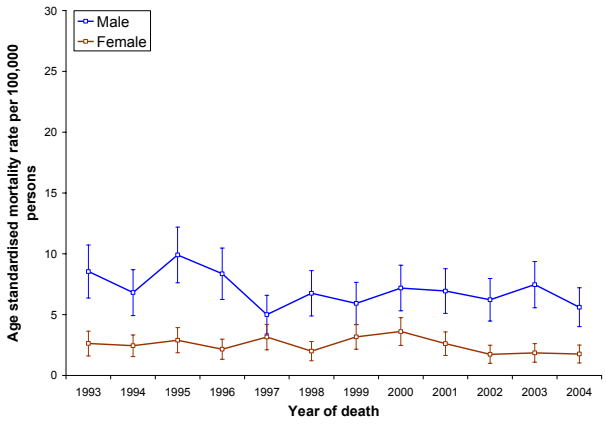
Male and female mortality rates were also static during 1993-2004 (p>0.05) with an annual decrease in the number of cases of 0.7 and 0.4 for males and females respectively. (Fig. 23.1; App. 5&6)

Figure 23.1: Incidence and mortality trends: Cancer of the bladder (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



23.2: Relative Survival

Relative survival from cancer of the bladder was moderate with 76.8% of patients diagnosed in 2001-2003 surviving one year and 55.1% of patients diagnosed in 1997-2000 surviving five years. (Tab. 23.2)

Table 23.2: Relative survival from cancer of the bladder by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	77.9%	(74.1%, 81.7%)	61.6%	(55.1%, 68.2%)	73.1%	(69.7%, 76.4%)
	1997-2000	80.6%	(76.8%, 84.3%)	59.1%	(52.3%, 66.0%)	74.4%	(71.0%, 77.8%)
	2001-2003	83.9%	(79.6%, 88.1%)	58.2%	(49.8%, 66.7%)	76.8%	(72.8%, 80.8%)
3-year	**1993-1996**	63.0%	(58.2%, 67.8%)	46.2%	(39.2%, 53.3%)	58.0%	(54.0%, 62.0%)
	1997-2000	64.7%	(59.8%, 69.6%)	47.6%	(40.2%, 55.0%)	59.8%	(55.7%, 63.9%)
5-year	**1993-1996**	57.5%	(52.1%, 62.9%)	41.5%	(34.1%, 49.0%)	52.7%	(48.3%, 57.1%)
	1997-2000	58.7%	(53.2%, 64.2%)	45.9%	(38.0%, 53.9%)	55.1%	(50.5%, 59.6%)
7-year	**1993-1996**	52.0%	(46.2%, 57.8%)	38.7%	(31.0%, 46.4%)	48.1%	(43.4%, 52.7%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	80.2%	(75.4%, 84.9%)	74.4%	(66.2%, 82.6%)	78.7%	(74.6%, 82.8%)
	1997-2000	79.7%	(75.0%, 84.5%)	80.0%	(71.7%, 88.3%)	79.8%	(75.7%, 83.9%)
5-year*	**1993-1996**	72.5%	(66.8%, 78.3%)	66.3%	(56.8%, 75.8%)	70.9%	(66.0%, 75.8%)
	1997-2000	71.8%	(66.0%, 77.6%)	76.6%	(66.7%, 86.4%)	72.9%	(67.9%, 77.9%)
7-year*	**1993-1996**	65.2%	(58.7%, 71.7%)	61.3%	(51.0%, 71.6%)	64.2%	(58.7%, 69.7%)

* from diagnosis

Sex

Relative survival from cancer of the bladder among males was better than among females with 83.9% of males diagnosed with this cancer in 2001-2003 surviving one year compared to 58.2% of females ($p<0.001$). For patients diagnosed in 1993-1996 a statistically significant difference of 16% existed between male and female five-year relative survival ($p=0.014$). (Tab. 23.2; Fig. 23.2)

Changes over time

Changes in male or female relative survival for patients diagnosed with cancer of the bladder between 1993 and 2003 were not statistically significant ($p>0.05$) with five-year relative survival for patients diagnosed in 1997-2000 being 52.7% compared to 55.1% for those diagnosed in 1993-1996. (Tab. 23.2; Fig. 23.2)

Figure 23.2: Relative survival from cancer of the bladder by sex and period of diagnosis (1993-2000)

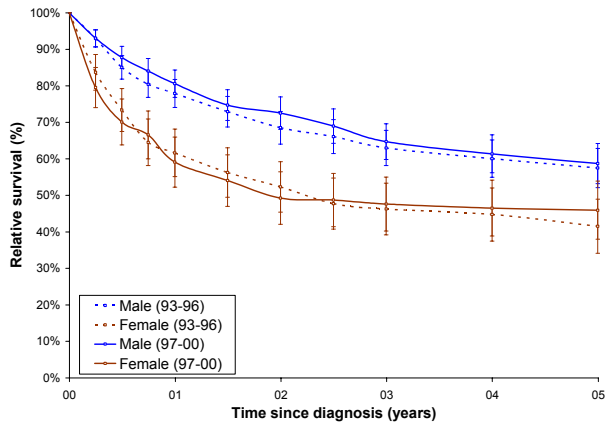
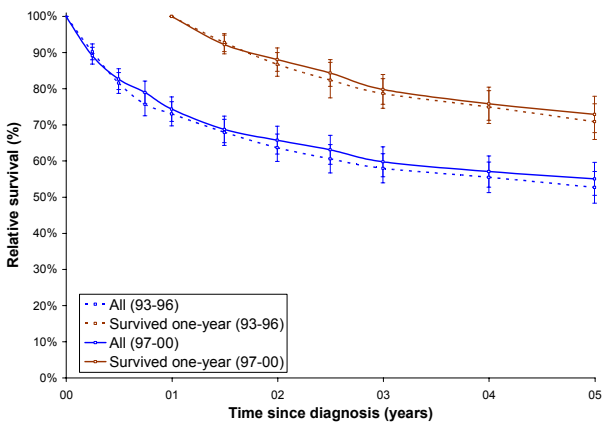


Figure 23.3: Relative survival from cancer of the bladder by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Conditional survival

For patients diagnosed with cancer of the bladder in 1997-2000 who were alive one-year after diagnosis 72.9% survived five-years from diagnosis, while seven-year survival for patients diagnosed in 1993-1996 who survived at least one-year from diagnosis was 64.2%. Conditional survival for cancer of the bladder did not vary by sex while there were no significant changes over time (p>0.05). (Tab. 23.2; Fig. 23.3)

Age

For patients diagnosed in 1997-2000 five-year relative survival for those aged 15-64 was 71.7% which was significantly higher than the 48.7% of those aged 65-99 (p<0.001). One-year relative survival was also better for 15-64 year olds diagnosed during this period and during 1993-1996 (p=0.014; p=0.001). (Tab. 23.3)

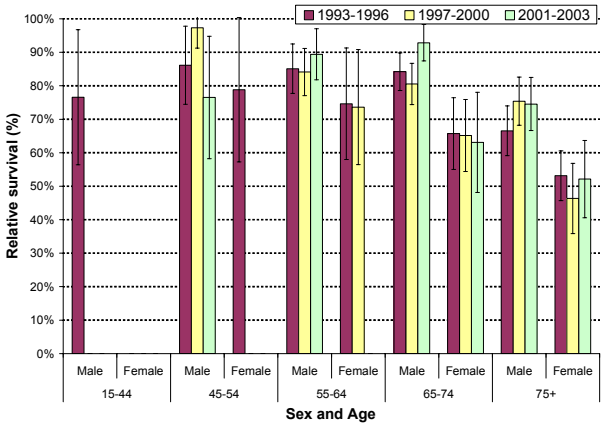
Table 23.3: Relative survival from cancer of the bladder by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	82.0%	(76.5%, 87.5%)	70.1%	(66.0%, 74.1%)
	1997-2000	85.6%	(80.5%, 90.8%)	70.5%	(66.3%, 74.6%)
	2001-2003	84.7%	(78.1%, 91.4%)	74.4%	(69.7%, 79.2%)
5-year	1993-1996	70.5%	(63.5%, 77.4%)	46.2%	(40.9%, 51.5%)
	1997-2000	71.7%	(64.8%, 78.7%)	48.7%	(43.2%, 54.3%)

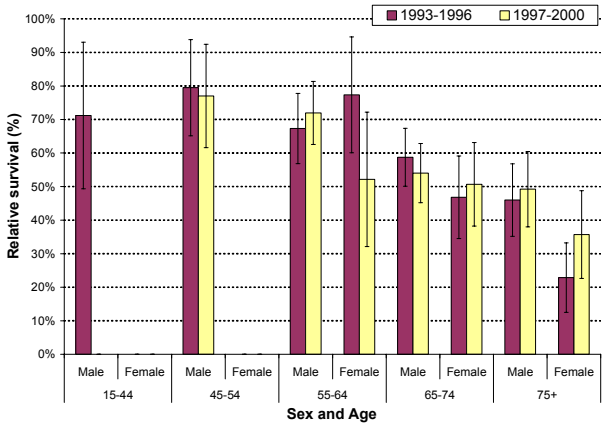
There were no changes in one or five-year relative survival for either 15-64 or 65-99 year olds over time (p>0.05). However the male 65-74 age group demonstrated a significant improvement in one-year relative survival from 80.5% for patients diagnosed in 1997-2000 to 92.9% for patients diagnosed in 2001-2003 (p=0.035). (Tab. 23.3; Fig. 23.4; App. 8)

Figure 23.4: Relative survival from cancer of the bladder by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



Note: Missing entries refer to less than 10 persons in that age/sex group

23.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) from cancer of the bladder was 79.6% for male and 55.9% for female patients diagnosed between 2001 and 2003. Five-year observed survival was 45.4% for male and 37.2% for female patients diagnosed between 1997 and 2000. (Tab. 23.4)

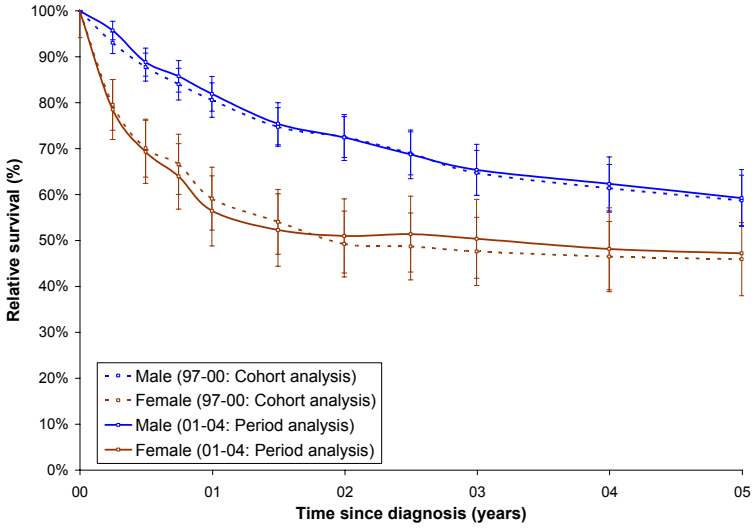
Table 23.4: Observed survival from cancer of the bladder by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	73.8%	(70.2%, 77.5%)	59.1%	(52.8%, 65.3%)	69.5%	(66.3%, 72.7%)
	1997-2000	76.6%	(73.0%, 80.2%)	56.6%	(50.1%, 63.2%)	70.8%	(67.6%, 74.1%)
	2001-2003	79.6%	(75.6%, 83.7%)	55.9%	(47.8%, 63.9%)	73.1%	(69.3%, 76.9%)
5-year	1993-1996	44.0%	(39.8%, 48.1%)	33.8%	(27.7%, 39.8%)	40.9%	(37.5%, 44.3%)
	1997-2000	45.4%	(41.1%, 49.6%)	37.2%	(30.8%, 43.6%)	43.0%	(39.4%, 46.5%)

23.4: Period Analysis

Five-year survival from cancer of the bladder for patients diagnosed in 2001-2004 cannot be derived using traditional methods (cohort analysis) but can be estimated using newer techniques (period analysis). Using this method five-year survival from cancer of the bladder for males diagnosed in 2001-2004 was 59.3% while for females it was 47.2%. This did not represent a significant difference between the two sexes (p>0.05), although only by a small margin. (Fig. 23.5; App. 7)

Figure 23.5: Estimated relative survival (period analysis) from cancer of the bladder for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



While not directly comparable the results from the period analysis do not constitute a significant difference from the actual five-year relative survival derived using cohort analysis for patients diagnosed in 1997-2000 (p>0.05). (Fig. 23.5; App.7)

23.5: International Comparisons

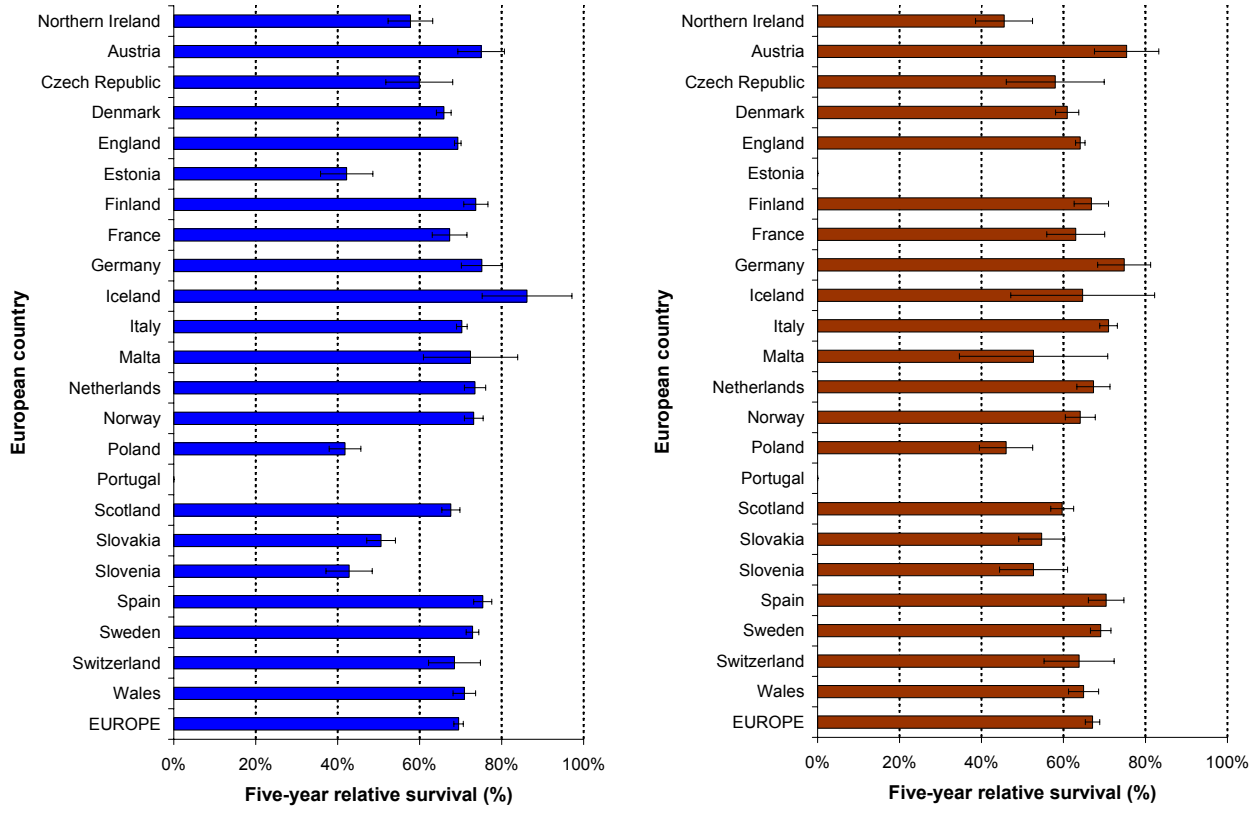
EUROCARE-3 study

Comparing the male and female age-standardised relative survival rates for persons in Northern Ireland diagnosed with cancer of the bladder during 1993-1996 with the results from the EUROCARE study

Figure 23.6: Comparison of five-year age-standardised relative survival from cancer of the bladder with other European countries

(a) Male

(b) Female



Source: EUROCARE-3 (2003) [27,28]

illustrates that survival from this cancer was worse in Northern Ireland during the early 1990s than in the majority of countries in Europe and in Europe as a whole although survival was higher in Northern Ireland than in Slovenia (males only), Poland (males only) and Estonia. (Fig. 23.6)

Other countries

Comparisons between Northern Ireland and other countries illustrate that survival was lower in Northern Ireland than in USA, Canada, Australia and New Zealand. (Tab. 23.5)

Table 23.5: Five-year relative survival from cancer of the bladder for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	58.7%	45.9%
USA	**1996-2002**	82.8%	75.4%
Canada	**1995-1997**	78.0%	74.0%
Australia	**1992-1997**	70.8%	64.7%
New Zealand	**1994-1999**	74.9%	66.1%

23.6: Summary and Discussion

Survival from this disease in Northern Ireland is poor compared to other countries in Europe and is generally poorer for females than males and those aged 64-99 compared to those aged 15-64. While the age discrepancy is usual for all types of cancer the male/female differences are uncommon but do occur throughout the UK and some European countries[29]. Work is ongoing to explain these gender differences.

The risk of developing cancer of the bladder is 1 in 71 for males and 1 in 245 for females. Tobacco use is the major established risk factor for this cancer[94,95]. The risk has been assessed as being four times higher in smokers versus non-smokers with the level of risk being linked to the length of time a person has smoked[94]. A diet high in fruit and vegetables has been linked to diminishing cancer risk[96], while consumption of large quantities of coffee (10 or more cups per day) slightly increases the risk of developing this disease[94].

Other environmental factors such as exposure to polyaromatic hydrocarbons[94,97] and contaminants such as chlorine in drinking water may also increase incidence of bladder cancer. There is no evidence to suggest that a high intake of fluids decreases risk[94].

Having had bladder infections or bladder stones in the past can increase the risk of developing particular types of bladder cancer[94]. The risk of developing a second bladder cancer is also higher than normal in cases where there is a past history of the disease[94]. There is no evidence however that this cancer is genetically related and a family history of bladder cancer does not increase the risk of it developing[94].

24: CANCER OF THE BRAIN (C71)

KEY FACTS:

- **64 male and 48 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **47 male and 34 female deaths per year between 2000 and 2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 17.0% of males and 21.0% of females alive after five years, with no significant change in survival between 1993-1996 and 1997-2000;**
- **Survival similar to Scotland and Wales, but worse than USA and than in England and Europe for males.**

24.1: Incidence and Mortality

Incidence

Brain cancer made up 1.4% of all cancers among males with an average of 64 new cases each year between 2000 and 2004 making it the fourteenth most common male cancer. Levels of new cases of brain cancer among females were less than that of males with 48 cases diagnosed per year between 2000 and 2004. This was 1.1% of all female cancers ranking this cancer sixteenth among females. (Tab. 24.1)

Table 24.1: Incidence and mortality: Cancer of the brain (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	64	48	47	34
Percentage of all cancers	1.4%	1.1%	2.5%	1.9%
Rank	14	16	11	11
Median age at diagnosis/death	58	60	60	64
Male to female ratio	1.3:1	-	1.4:1	-
Incidence to mortality ratio	1.4:1	1.4:1	-	-
Crude rate per 100,000 persons	7.7	5.5	5.6	3.9
European age-standardised rate per 100,000 persons (95% CI)	7.8 (6.9,8.7)	5.3 (4.6,6.0)	5.8 (5.0,6.5)	3.6 (3.1,4.2)

Mortality

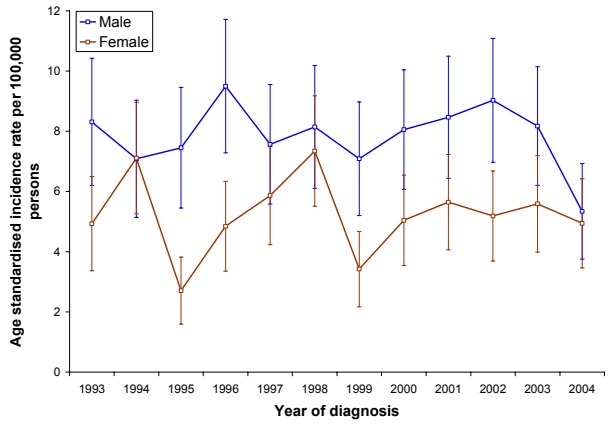
Brain cancer was the eleventh most common cause of cancer death among males during 2000-2004 making up 2.5% of male cancer deaths (47 deaths annually). It was also the eleventh leading cause of cancer death among females making up 1.9% of the female cancer death total (34 deaths annually). Note that this includes malignant brain cancer only. Death can also occur from benign brain cancer. (Tab. 24.1)

Trends

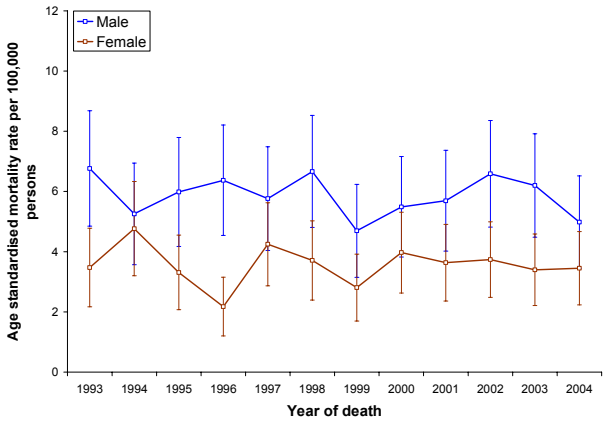
During 1993-2004 incidence and mortality rates (EASIR) for cancer of the brain varied considerably from year to year, with no significant trends for either sex during 1993-2004. Similarly there was little change over time in the average number of cases diagnosed or deaths from brain cancer. (Fig. 24.1; App. 4,5&6)

Figure 24.1: Incidence and mortality trends: Cancer of the brain (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



24.2: Relative Survival

Relative survival from brain cancer was poor with 36.0% of patients diagnosed during 2001-2003 surviving one year and 18.8% of patients diagnosed between 1997 and 2000 surviving five years. (Tab. 24.2)

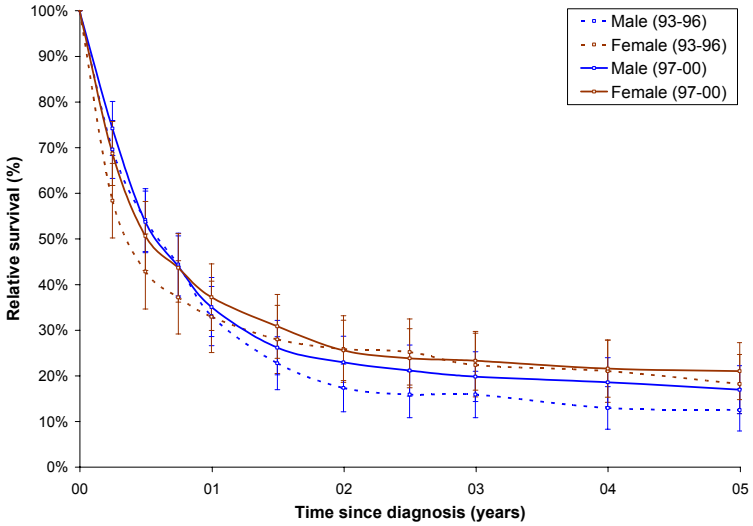
Table 24.2: Relative survival from cancer of the brain by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	33.1%	(26.6%, 39.6%)	32.9%	(25.1%, 40.8%)	33.0%	(28.0%, 38.0%)
	1997-2000	35.1%	(28.6%, 41.5%)	37.2%	(29.9%, 44.5%)	36.0%	(31.2%, 40.9%)
	2001-2003	36.1%	(29.1%, 43.0%)	35.8%	(27.4%, 44.2%)	36.0%	(30.6%, 41.3%)
3-year	**1993-1996**	15.9%	(10.9%, 21.0%)	22.4%	(15.4%, 29.3%)	18.6%	(14.4%, 22.7%)
	1997-2000	19.8%	(14.4%, 25.3%)	23.3%	(16.9%, 29.7%)	21.4%	(17.2%, 25.6%)
5-year	**1993-1996**	12.5%	(7.9%, 17.1%)	18.2%	(11.7%, 24.7%)	14.9%	(11.0%, 18.7%)
	1997-2000	17.0%	(11.7%, 22.2%)	21.0%	(14.8%, 27.3%)	18.8%	(14.8%, 22.8%)

Sex

Males and females had similar survival experience from brain cancer during 1993-2003. For example, five-year relative survival for males diagnosed in 1997-2000 was 17.0% compared to 21.0% for females; a 4.0% difference which was not statistically significant (p>0.05). (Tab. 24.2; Fig. 24.2)

Figure 24.2: Relative survival from cancer of the brain by sex and period of diagnosis (1993-2000)



Changes over time

Male and female relative survival from brain cancer did not change significantly during 1993-2003 (p>0.05). (Tab. 24.2; Fig. 24.2)

24.3: International Comparisons

EUROCARE-3 study

The five-year age-standardised relative survival rate for males diagnosed in 1993-1996 was 11.1%, which was lower than in Europe as a whole during the early 1990s. A comparison with individual European countries illustrates that survival from brain cancer among males was significantly lower than many other European countries, in particular England, Finland, Norway, Spain, Sweden and Switzerland. For females the five-year age-standardised relative survival rate was 17.2%. This faired better than male survival during the early 1990s, with Europe as a whole having a similar survival rate. Female survival, however, was still significantly worse than in Finland, Norway and Iceland. (Fig. 24.3)

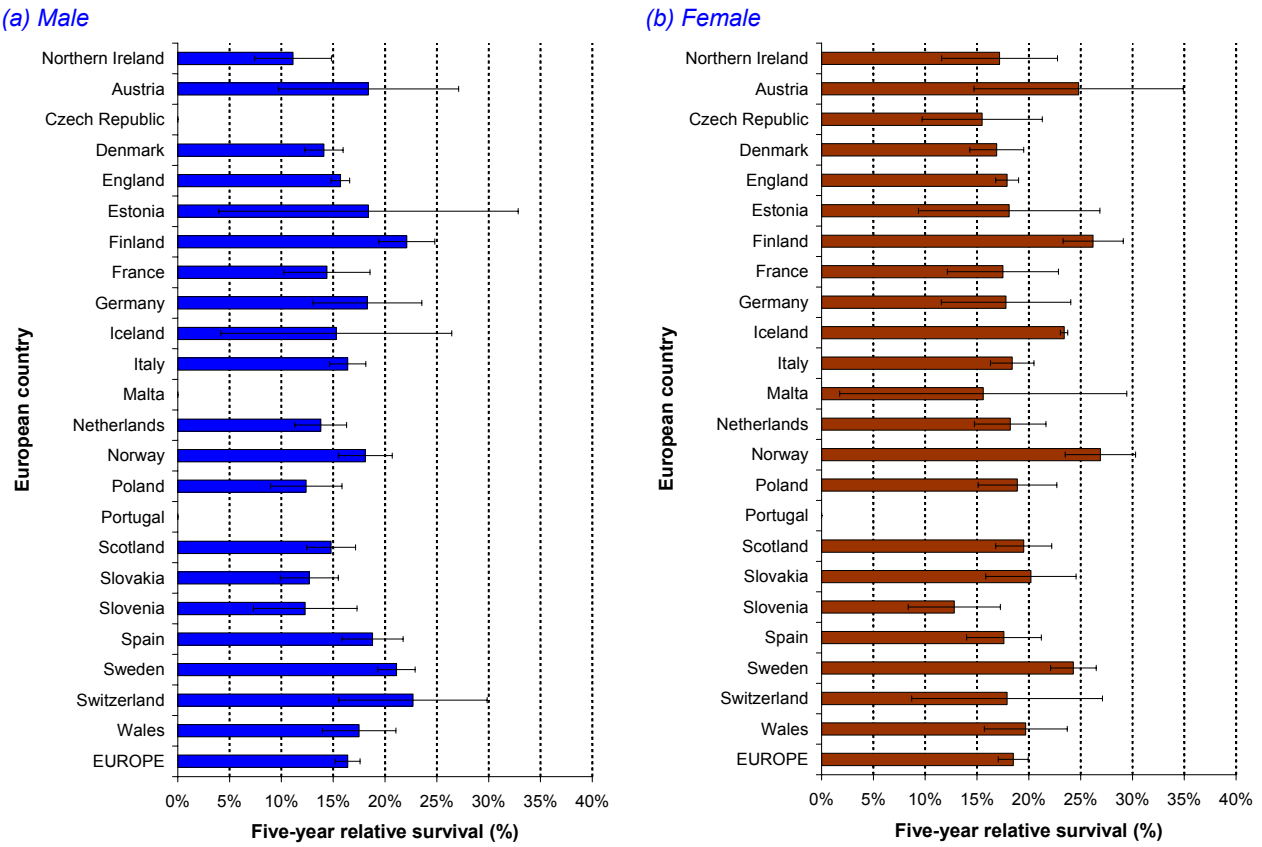
Other countries

More recent results suggest that survival from brain cancer in Northern Ireland was poor compared to survival in the USA and Australia. (Tab. 24.3)

Table 24.3: Five-year relative survival from cancer of the brain for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	17.0%	21.0%
USA	**1996-2002**	29.3%	31.9%
Canada	**1995-1997**	22.0%	25.0%
Australia	**1992-1997**	23.8%	23.8%
New Zealand	**1994-1999**	18.7%	17.4%

Figure 24.3: Comparison of five-year age-standardised relative survival from cancer of the brain with other European countries



Source: EUROCARE-3 (2003)[27,28]

24.4: Summary and Discussion

Cancer of the brain is one of the less common cancers making up less than 1.5% of male and female cancers. Levels of this disease have not changed over the last twelve years, a situation also found in the rest of the UK[35]. Survival from the disease in Northern Ireland is poor at approximately 19% of persons still alive after five years with no evidence existing of improvements over time. Survival in Northern Ireland appears to be similar to the rest of the UK but is worse than in many other European countries and the USA. The reasons for this are unknown and further investigation is required.

The only environmental factor associated with an increased risk of brain tumours is ionising radiation[98,99]. There are however some genetic (e.g. neurofibromatosis, tuberous sclerosis) and medical conditions (e.g. cerebral palsy in children) that increase risk by a small amount, as does a weakened immune system[100]. None of the following have a proven association; industrial and agricultural chemicals, viruses, bacterial infection, head injury, diet, non-ionising radiation (power lines, mobile phones) or tobacco[98,100].

25: HODGKIN'S DISEASE (C81)

KEY FACTS:

- **20 male and 16 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **5 male and less than 5 female deaths per year between 2000 and 2004 with decreasing male (-5.5% p.a.) and no significant change in female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 78.5% of males and 77.1% of females alive after five years, with no significant change in survival between 1993-1996 and 1997-2000;**
- **Similar survival to other UK countries, Europe, USA, Canada and Australia.**

25.1: Incidence and Mortality

Incidence

Hodgkin's disease was the twentieth most common cancer in males and the twenty-first in females with an average of 20 males and 16 females diagnosed annually in Northern Ireland with the disease between 2000 and 2004. This cancer occurred mostly in younger persons with a median age at diagnosis of 40 among males and 36 among females. (Tab. 25.1)

Table 25.1: Incidence and mortality: Hodgkin's disease (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	20	16	5	<5
Percentage of all cancers	0.4%	0.4%	0.3%	-
Rank	20	21	18	-
Median age at diagnosis/death	40	36	64	-
Male to female ratio	1.2:1	-	1.7:1	-
Incidence to mortality ratio	4.0:1	-	-	-
Crude rate per 100,000 persons	2.4	1.9	0.6	-
European age-standardised rate per 100,000 persons (95% CI)	2.4 (1.9,2.9)	1.9 (1.5,2.3)	0.6 (0.4,0.8)	-

Mortality

Between 2000 and 2004 for Hodgkin's disease the number of male deaths was small at an average of 5 per year; 0.3% of male cancer deaths. The number of female deaths as a result of Hodgkin's disease during this period was less than 5 per year. (Tab. 25.1)

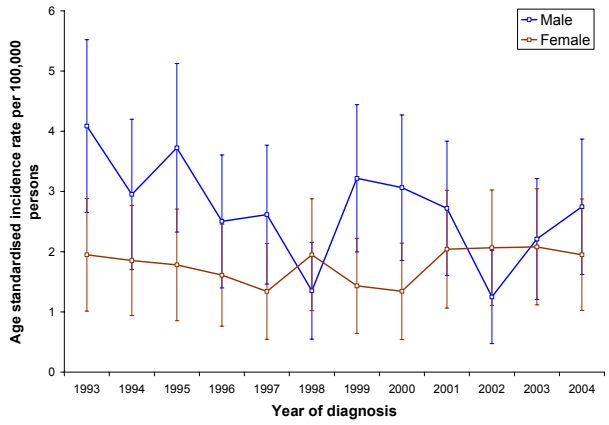
Trends

There were no statistically significant changes (p>0.05) in male incidence rates (EASIR) during 1993-2004 however male mortality rates (EASMR) decreased by 5.5% each year (p=0.023). There was an annual decrease in the number of cases and deaths among males as a result of this cancer of 0.7 cases and 0.2 deaths respectively. (Fig. 25.1; App. 4, 5 & 6)

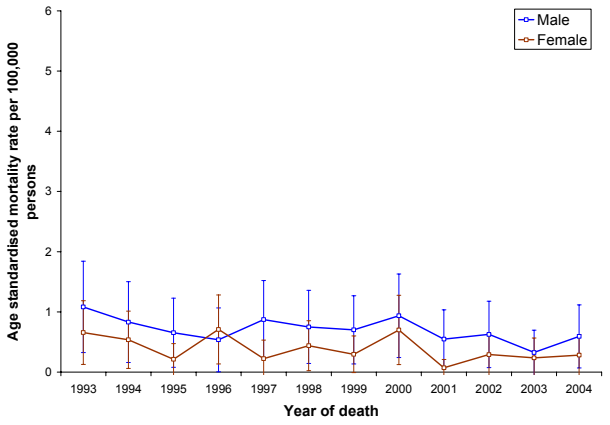
Female incidence and mortality rates from Hodgkin's disease remained static between 1993 and 2004 (p>0.05) although the actual number of deaths decreased annually by small amounts. (Fig. 25.1; App. 4, 5 & 6)

Figure 25.1: Incidence and mortality trends: Hodgkin's disease (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



25.2: Relative Survival

Relative survival from Hodgkin's disease was good with 92.1% of patients diagnosed between 2001 and 2003 surviving one year and 78.0% of patients diagnosed between 1997 and 2000 surviving five years. (Tab. 25.2)

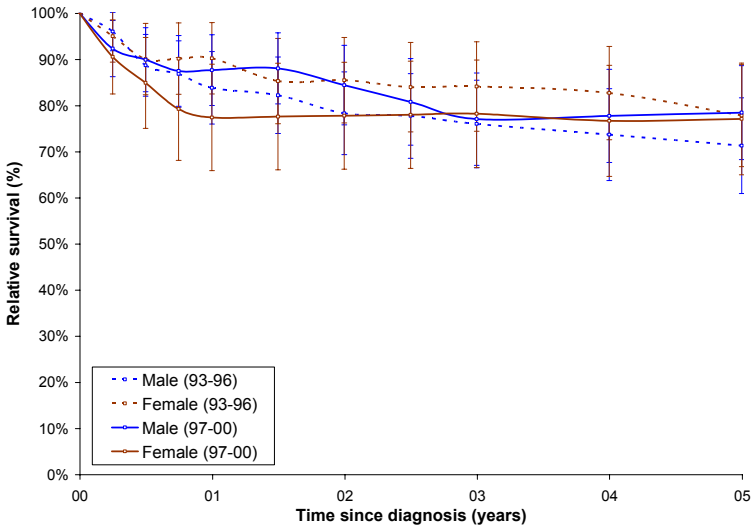
Table 25.2: Relative survival from Hodgkin's disease by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	83.9%	(76.0%, 91.8%)	90.3%	(82.5%, 98.0%)	86.4%	(80.7%, 92.1%)
	1997-2000	87.7%	(80.0%, 95.4%)	77.5%	(65.9%, 89.0%)	83.5%	(76.9%, 90.1%)
	2001-2003	90.1%	(81.2%, 99.0%)	94.0%	(87.0%, 101.0%)	92.1%	(86.4%, 97.8%)
3-year	**1993-1996**	76.1%	(66.6%, 85.5%)	84.2%	(74.5%, 93.9%)	79.3%	(72.3%, 86.2%)
	1997-2000	77.1%	(67.1%, 87.1%)	78.3%	(66.6%, 89.9%)	77.6%	(70.0%, 85.2%)
5-year	**1993-1996**	71.3%	(61.0%, 81.7%)	77.9%	(66.8%, 89.0%)	73.9%	(66.2%, 81.6%)
	1997-2000	78.5%	(68.3%, 88.7%)	77.1%	(65.0%, 89.2%)	78.0%	(70.2%, 85.8%)

Sex

There were no significant differences in relative survival from Hodgkin's disease between males and females (p>0.05) during 1993-2003. In particular five-year relative survival for those diagnosed in 1997-2000 was 78.5% for males and 77.1% for females. (Tab. 25.2; Fig. 25.2)

Figure 25.2: Relative survival from Hodgkin's disease by sex and period of diagnosis (1993-2000)



Changes over time

Relative survival from Hodgkin's disease did not change significantly during 1993-2003 (p>0.05). (Tab. 25.2; Fig. 25.2)

25.3: International Comparisons

EUROCARE-4 study

The five-year age-standardised relative survival rate for males diagnosed between 1995 and 1999 was 78.7%, while for females the rate was 78.4%. A comparison with the countries included in the EUROCARE-4 study illustrates that survival from Hodgkin's disease in Northern Ireland was equivalent to that in the rest of Europe for both males and females with no significant differences between individual countries detected. Results for Germany, Iceland, Netherlands and Wales were not available due to insufficient cases. (Fig. 25.3)

Other countries

Relative survival in Northern Ireland for those diagnosed in 1997-2000 was lower than in USA, Canada and Australia, although these differences were not statistically significant due to the small number of cases in Northern Ireland (p>0.05). (Tab. 25.3)

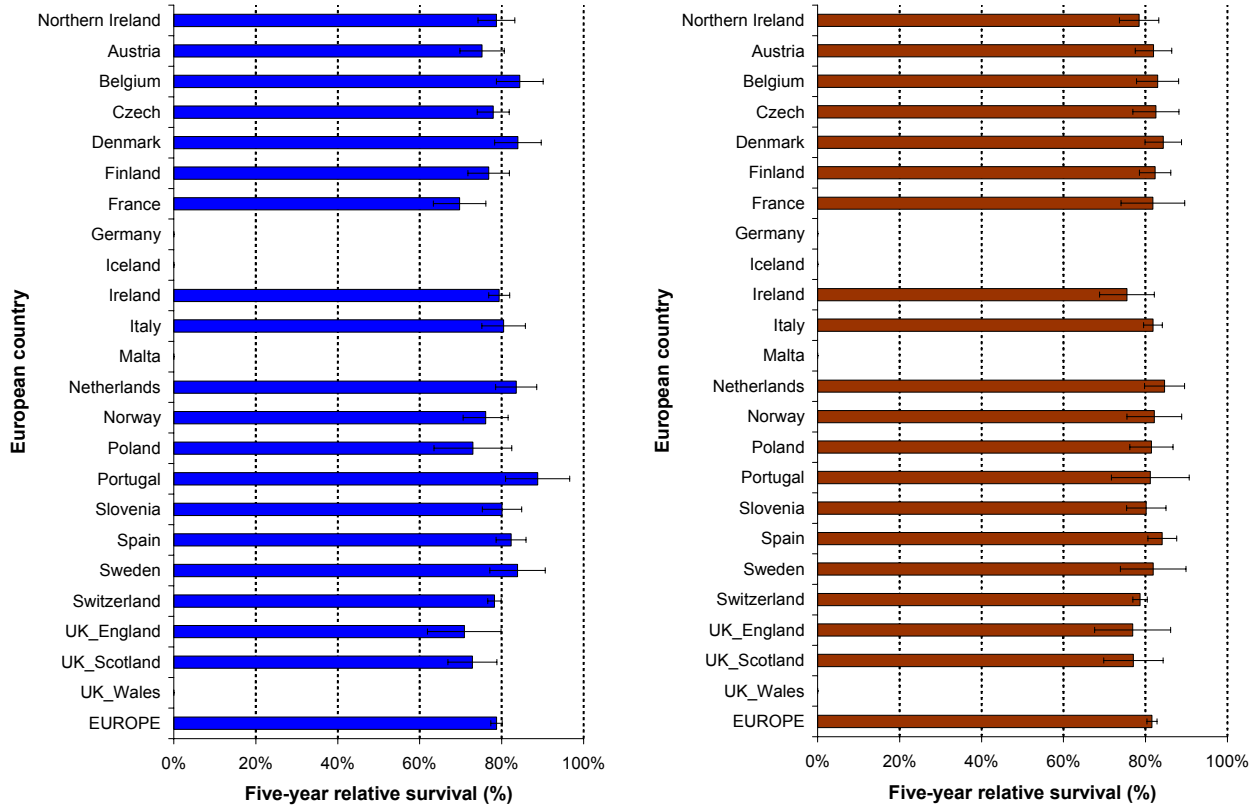
Table 25.3: Five-year relative survival from Hodgkin's disease for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	78.5%	77.1%
USA	**1996-2002**	83.5%	86.6%
Canada	**1995-1997**	85.0%	86.0%
Australia	**1992-1997**	82.6%	84.4%
New Zealand	**1994-1999**	-	-

Figure 25.3: Comparison of five-year age-standardised relative survival from Hodgkin's disease with other European countries

(a) Male

(b) Female



Source:EUROCARE-4 (2007)[29]

25.4: Summary and Discussion

Hodgkin's disease is a cancer of the lymphatic system making up 13% of lymphomas, with the remainder being non-Hodgkin's lymphoma. The risk of developing Hodgkin's disease is low, being over 1 in 500, with rates of newly diagnosed cases of this cancer being higher in males than females. Incidence rates for Hodgkin's disease were static in Northern Ireland, a result also observed in England and Wales. Both countries also have declining male mortality rates while England and Wales also has declining female mortality rates[31].

Not much is known about the causes of this disease although two possible factors have been suggested; infection with Epstein-Barr virus and/or a faulty gene. Further research however is required before a definite link is established[101].

Survival rates in Great Britain have steadily improved since the 1970s[55]. This improvement is also suggested by results in Northern Ireland; however further data is required for this result to become statistically significant.

26: NON-HODGKIN'S LYMPHOMA (C82-C85, C96)

KEY FACTS:

- **130 male and 136 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **62 male and 61 female deaths per year between 2000 and 2004 with male mortality rates decreasing by 2.0% per year between 1993 and 2004 and no significant change in female mortality rates between 1999 and 2004;**
- **Survival similar in males and females: 48.6% of males and 52.9% of females alive after five years, with one-year survival having improved for all persons from 64.9% to 72.3% between 1993-1996 and 2001-2003;**
- **Survival better for those aged 15-64 than for those aged 65 and over;**
- **Estimates using period analysis suggest that five-year survival will improve further for females diagnosed in 2001-2004;**
- **Survival similar to rest of UK and Europe but worse than USA.**

26.1: Incidence and Mortality

Incidence

Among males non-Hodgkin's lymphoma (NHL) was the seventh most common cancer contributing 2.9% of male cancers with an average of 130 new cases each year in 2000-2004. It was the seventh commonest cancer in females representing 3.0% of female cancers with an annual average of 136 cases each year. (Tab. 26.1)

Table 26.1: Incidence and mortality: Non-Hodgkin's lymphoma (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	130	136	62	61
Percentage of all cancers	2.9%	3.0%	3.3%	3.4%
Rank	7	7	7	7
Median age at diagnosis/death	64	69	70	74
Male to female ratio	1.0:1	-	1.0:1	-
Incidence to mortality ratio	2.1:1	2.2:1	-	-
Crude rate per 100,000 persons	15.6	15.6	7.4	7.0
European age-standardised rate per 100,000 persons (95% CI)	16.0 (14.8,17.3)	13.1 (12.1,14.2)	7.5 (6.6,8.3)	5.3 (4.7,5.9)

Mortality

There was an average of 62 male and 61 female deaths each year from non-Hodgkin's lymphoma in 2000-2004. It was the seventh commonest cause of cancer death among both males and females making up 3.3% of male and 3.4% of female cancer deaths. (Tab. 26.1)

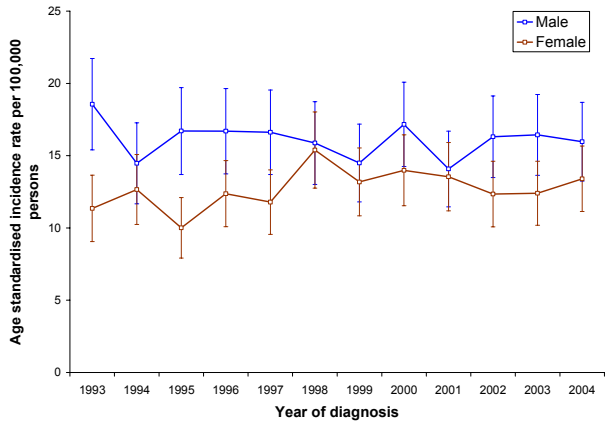
Trends

There was no significant trend in NHL incidence rates (EASIR) in 2000-2004, although the average number of cases diagnosed rose by 1.0 and 3.3 each year for males and females respectively. (Fig. 26.1; App. 4&6)

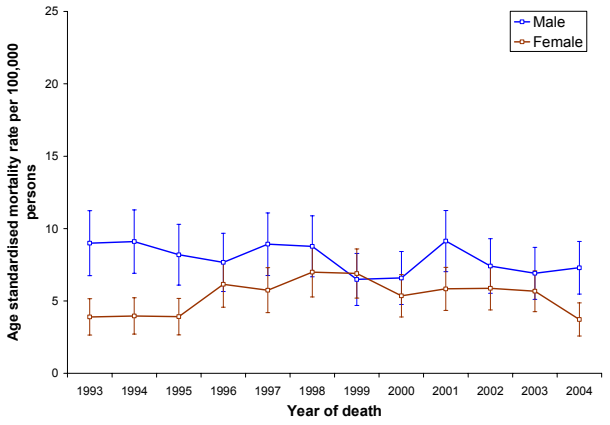
Male mortality rates (EASMR) decreased in 1993-2004 by 2.0% each year (p=0.05). Female EASMRs were static over the 1999 to 2004 period (p>0.05) after a significant increase of 14.1% each year in 1993-1999 (p=0.032). (Fig. 26.1; App. 5&6)

Figure 26.1: Incidence and mortality trends: Non-Hodgkin's lymphoma (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



26.2: Relative Survival

Survival from non-Hodgkin's lymphoma was moderate with one-year relative survival 72.3% for patients diagnosed in 2001-2003, while five-year relative survival was 50.8% for patients diagnosed in 1997-2000. (Tab. 26.2)

Table 26.2: Relative survival from non-Hodgkin's lymphoma by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	64.4%	(59.8%, 69.0%)	65.5%	(60.7%, 70.3%)	64.9%	(61.6%, 68.2%)
	1997-2000	68.8%	(64.3%, 73.2%)	67.1%	(62.7%, 71.4%)	67.9%	(64.8%, 71.0%)
	2001-2003	72.5%	(67.5%, 77.5%)	72.1%	(67.2%, 76.9%)	72.3%	(68.8%, 75.8%)
3-year	**1993-1996**	52.4%	(47.3%, 57.4%)	52.0%	(46.7%, 57.2%)	52.2%	(48.5%, 55.8%)
	1997-2000	55.5%	(50.5%, 60.5%)	56.5%	(51.7%, 61.3%)	56.0%	(52.6%, 59.5%)
5-year	**1993-1996**	46.2%	(40.9%, 51.5%)	45.9%	(40.5%, 51.3%)	46.1%	(42.3%, 49.8%)
	1997-2000	48.6%	(43.3%, 53.9%)	52.9%	(47.8%, 58.0%)	50.8%	(47.2%, 54.5%)
7-year	**1993-1996**	43.5%	(38.0%, 48.9%)	42.1%	(36.6%, 47.7%)	42.8%	(38.9%, 46.7%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	81.0%	(75.7%, 86.2%)	79.0%	(73.6%, 84.5%)	80.0%	(76.2%, 83.8%)
	1997-2000	80.4%	(75.4%, 85.5%)	83.9%	(79.2%, 88.5%)	82.2%	(78.8%, 85.6%)
5-year*	**1993-1996**	71.0%	(64.7%, 77.4%)	69.5%	(63.1%, 75.9%)	70.3%	(65.8%, 74.8%)
	1997-2000	70.2%	(64.1%, 76.4%)	78.0%	(72.4%, 83.6%)	74.2%	(70.0%, 78.4%)
7-year*	**1993-1996**	66.6%	(59.7%, 70.5%)	63.5%	(56.5%, 67.5%)	65.1%	(60.2%, 70.0%)

* from diagnosis

Sex

There were no statistically significant differences in one or five-year relative survival for males and females (p>0.05) diagnosed with non-Hodgkin's lymphoma between 1993 and 2003. (Tab. 26.2; Fig. 26.2)

Changes over time

One-year relative survival for all patients diagnosed with non-Hodgkin's lymphoma improved during 1997-2003 with 64.9% of patients diagnosed during 1993-1996 surviving one year compared to 72.3% of patients diagnosed during 2001-2003; a statistically significant difference of 7.4% (p=0.033). (Tab. 26.2; Fig. 26.2)

Figure 26.2: Relative survival from non-Hodgkin's lymphoma by sex and period of diagnosis (1993-2000)

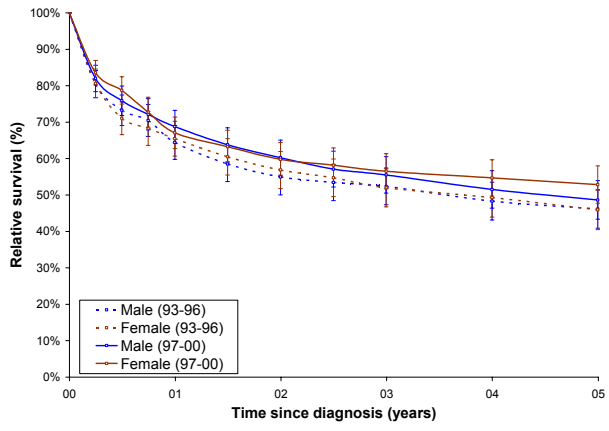
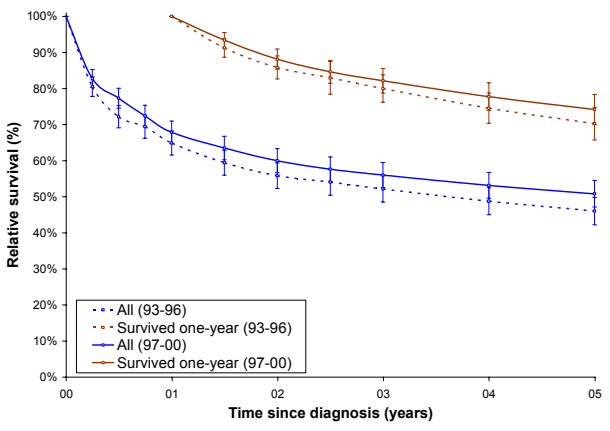


Figure 26.3: Relative survival from non-Hodgkin's lymphoma by period of diagnosis and whether or not patients survive at least one year (1993-2000)



There were no statistically significant changes in three or five-year relative survival for all patients or for males or females diagnosed with this cancer between 1993 and 2003 (p>0.05). (Tab.26.2;Fig.26.2)

Conditional survival

Five-year relative survival from the date of diagnosis for the sub-group of patients who survived at least one-year from a diagnosis of non-Hodgkin's lymphoma was 74.2%, while seven year survival was 65.1%. There were no significant differences between males and females or changes over time in this conditional survival (p>0.05). (Tab. 26.2; Fig. 26.3)

Age

For patients diagnosed with NHL one and five-year relative survival was better among those aged 15-64 than among those aged 65-99 regardless of period of diagnosis (p<0.001). Relative survival for males and females aged 15-44 was also consistently better than for those aged 75 and over. (Tab. 26.3; Fig. 26.4)

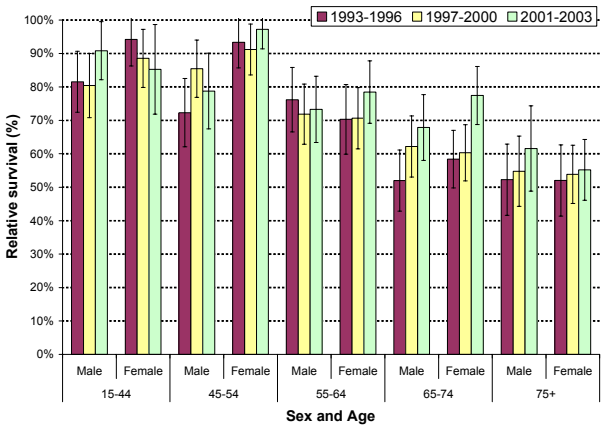
Table 26.3: Relative survival from non-Hodgkin's lymphoma by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	78.8%	(74.6%, 83.0%)	53.8%	(49.1%, 58.5%)
	1997-2000	79.4%	(75.5%, 83.2%)	57.8%	(53.2%, 62.3%)
	2001-2003	81.5%	(77.1%, 85.9%)	64.9%	(59.8%, 69.9%)
5-year	1993-1996	61.3%	(56.2%, 66.5%)	33.2%	(28.0%, 38.3%)
	1997-2000	59.8%	(55.0%, 64.6%)	42.8%	(37.3%, 48.3%)

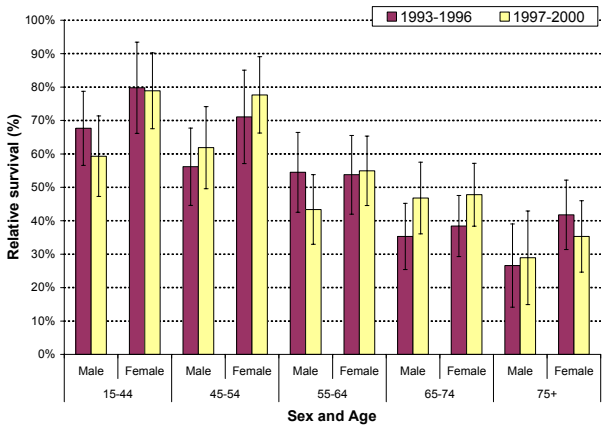
One-year relative survival improved for 65-99 year olds during 1993-2003 with an increase of 11.1% between those diagnosed in 1993-1996 and 2001-2003. There were no other statistically significant changes over time in survival by age and sex. (Tab. 26.3; Fig. 26.4)

Figure 26.4: Relative survival from non-Hodgkin's lymphoma by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



26.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) from non-Hodgkin's lymphoma was 70.6% for male and 70.0% for female patients diagnosed between 2001 and 2003. Five-year observed survival was 42.1% for male and 46.2% for female patients diagnosed between 1997 and 2000. (Tab. 26.4)

Table 26.4: Observed survival from non-Hodgkin's lymphoma by sex and period of diagnosis (1993-2003)

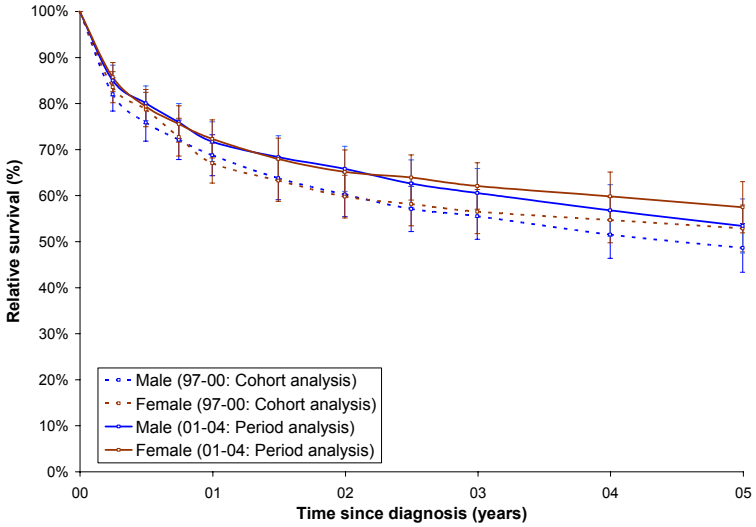
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	62.3%	(57.8%, 66.7%)	63.7%	(59.0%, 68.3%)	62.9%	(59.7%, 66.1%)
	1997-2000	66.8%	(62.5%, 71.1%)	65.3%	(61.1%, 69.5%)	66.0%	(63.0%, 69.1%)
	2001-2003	70.6%	(65.8%, 75.5%)	70.0%	(65.3%, 74.7%)	70.3%	(66.9%, 73.7%)
5-year	1993-1996	39.3%	(34.8%, 43.8%)	40.2%	(35.5%, 45.0%)	39.7%	(36.5%, 43.0%)
	1997-2000	42.1%	(37.5%, 46.7%)	46.2%	(41.7%, 50.7%)	44.2%	(41.0%, 47.4%)

26.4: Period Analysis

Five-year survival from non-Hodgkin's lymphoma for patients diagnosed in 2001-2004 derived using the period analysis approach, in order to reflect more recent survival experiences, was 53.4% for males and 57.5% for females. The difference between males and females was not statistically significant (p<0.05). (Fig. 26.5; App. 7)

While not directly comparable with results from traditional methods these estimates represent an improvement in survival for female patients compared to those diagnosed in 1993-1996 (p>0.05). Changes in male survival were not statistically significant (p<0.05). (App. 7)

Figure 26.5: Estimated relative survival (period analysis) from non-Hodgkin's lymphoma for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



26.5: International Comparisons

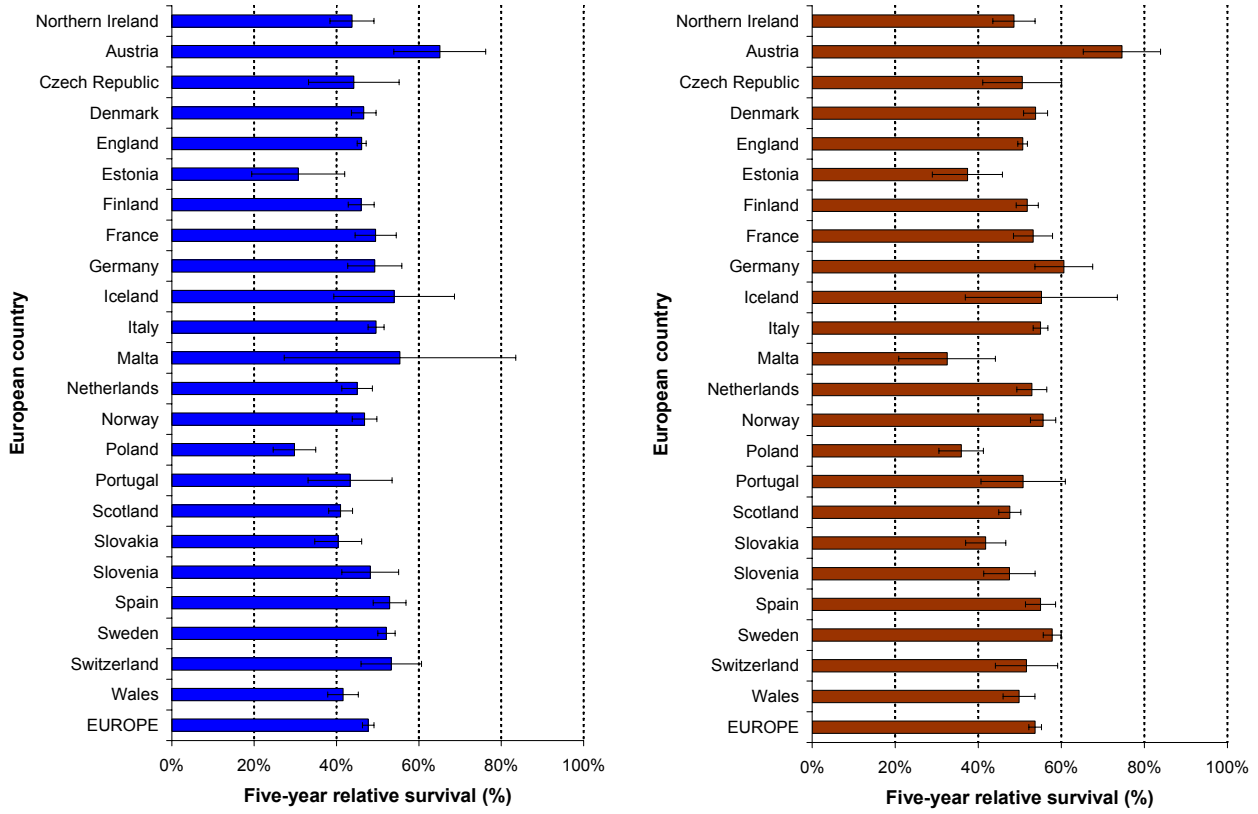
EUROCARE-3 study

The five-year age-standardised relative survival rate from non-Hodgkin's lymphoma was 43.7% while for females it was 48.6%. Both these rates are lower than that for Europe but not by a significant amount. Results from the EUROCARE-3 study indicate that five-year relative survival from this disease was better in Northern Ireland than in Poland but was worse than in Austria and Sweden for both sexes. Male survival in

Figure 26.6: Comparison of five-year age-standardised relative survival from non-Hodgkin's lymphoma with other European countries

(a) Male

(b) Female



Source: EUROCARE-3 (2003) [27,28]

Northern Ireland was also worse than in Spain while female survival was lower than that in Germany. (Fig. 26.6)

Other countries

Five-year relative survival among males diagnosed with non-Hodgkin's lymphoma during 1996-2000 was lower than for males diagnosed with this disease in other countries during the late 1990s. Five-year relative survival among females compared more favorably with the situation in other countries but was still considerably lower than in the USA and Canada. (Tab. 26.5)

Table 26.5: Five-year relative survival from non-Hodgkin's lymphoma for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	48.6%	52.9%
USA	**1996-2002**	60.4%	64.9%
Canada	**1995-1997**	53.5%	60.5%
Australia	**1992-1997**	54.6%	55.8%
New Zealand	**1994-1999**	54.0%	53.8%

26.6: Summary and Discussion

Non-Hodgkin's lymphoma is one of the more common cancers being the seventh most common male and female cancer. Incidence of this cancer have remained fairly steady over time while male death rates have fallen, although both have been seen to increase in England and Wales[32,35].

The risk of non-Hodgkin's lymphoma is increased by the use of immunosuppression, for example in transplant patients, or among those with HIV infection, although only about 3% of HIV positive patients will develop non-Hodgkin's lymphoma[102,103]. Both increase risk by a weakening of the immune system. Various other infections also increase the risk of developing this cancer. Epstein-Barr virus is associated with Burkitt's lymphoma[102], helicobacter pylori is linked with primary gastric lymphoma[104], coliac disease is linked with both enteropathy type T cell lymphoma and B cell non-Hodgkin's lymphoma while human T cell lymphoma increases the risk of developing any type of non-Hodgkin's lymphoma[102].

There are many other possible factors that increase the risk of developing this cancer; however these have yet to be substantiated. They include family history, diet and use of recreational drugs, exposure to agricultural chemicals or chemicals in drinking water, use of hair dye for more than 10 years or exposure to Hepatitis C[102]. It has been shown that there is no increased risk from cigarette smoking or alcohol consumption[102].

Survival from this cancer is average with 49% of males and 53% of females who develop the disease surviving at least five years. Survival depends upon age with younger persons fairing better, however while survival in Northern Ireland is similar to that in the rest of the UK it is worse than some countries in Europe and the USA. Survival from this disease however is improving slowly with improvements in one-year survival identified in Northern Ireland. Similar improvements have also occurred in England and Wales[55].

27: MULTIPLE MYELOMA (C90)

KEY FACTS:

- **60 male and 46 female cases per year between 2000 and 2004 with no significant change in male or female incidence rates between 1993 and 2004;**
- **31 male and 29 female deaths per year between 2000 and 2004 with no significant change in male or female mortality rates between 1993 and 2004;**
- **Survival similar in males and females: 29.0% of males and 35.7% of females alive after five years, with survival for 15-64 year olds having improved between 1993-1996 and 1997-2000;**
- **Survival better for those aged 15-64 than for those aged 65 and over;**
- **Survival similar to rest of UK, USA and Canada but worse than in France and Italy.**

27.1: Incidence and Mortality

Incidence

Multiple myeloma accounted for 1.3% of male cancers diagnosed in 2000-2004. It was the sixteenth most common male cancer with an average of 60 cases per year. Multiple myeloma was less frequent among females with 46 cases diagnosed annually. It was the seventeenth most common female cancer and made up 1.0% of cancer cases. (Tab. 27.1)

Table 27.1: Incidence and mortality: Multiple myeloma (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	60	46	31	29
Percentage of all cancers	1.3%	1.0%	1.7%	1.6%
Rank	16	17	15	15
Median age at diagnosis/death	70	74	75	78
Male to female ratio	1.3:1	-	1.1:1	-
Incidence to mortality ratio	1.9:1	1.6:1	-	-
Crude rate per 100,000 persons	7.2	5.3	3.8	3.3
European age-standardised rate per 100,000 persons (95% CI)	7.2 (6.3,8.0)	4.0 (3.5,4.6)	3.7 (3.1,4.3)	2.3 (1.9,2.7)

Mortality

There were 31 male and 29 female deaths due to multiple myeloma each year between 2000 and 2004. This represented 1.7% of male and 1.6% of female cancer deaths, with multiple myeloma being the fifteenth leading cause of cancer death among both males and females. (Tab. 27.1)

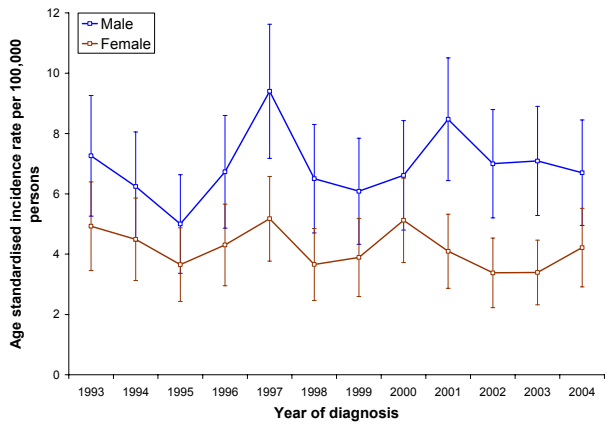
Trends

Neither male nor female incidence rates (EASIR) exhibited a trend during 1993-2004 ($p>0.05$) although the number of male cases diagnosed rose by 1.3 each year. (Fig. 27.1; App. 4&6)

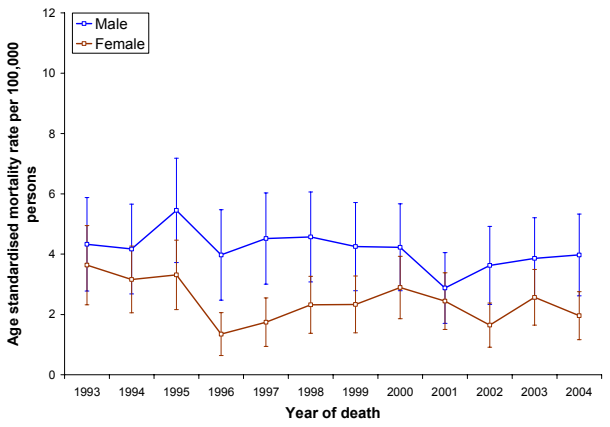
Mortality rates (EASMR) were also static over the 1993 to 2004 period with the annual change in the number of deaths being small for both sexes. (Fig. 27.1; App. 5&6)

Figure 27.1: Incidence and mortality trends: Multiple myeloma (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



27.2: Relative Survival

Relative survival from multiple myeloma was moderately poor with 68.8% of patients diagnosed in 2001-2003 surviving one year and 32.3% of patients diagnosed in 1997-2000 surviving five years. (Tab. 27.2)

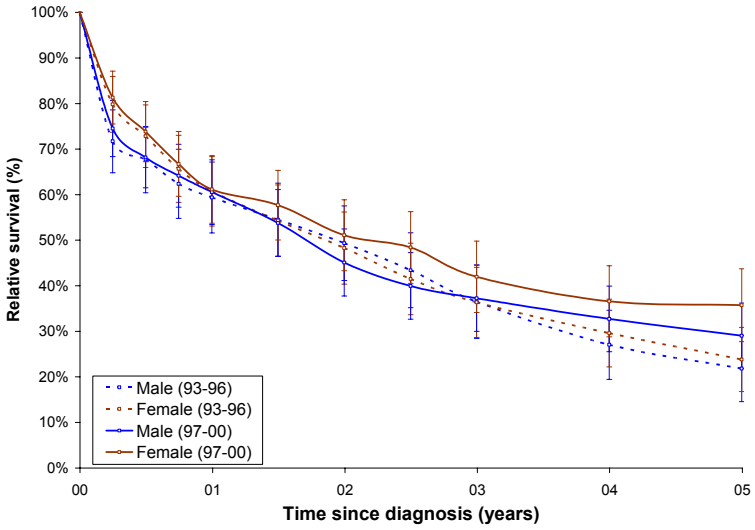
Table 27.2: Relative survival from multiple myeloma by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	1993-1996	59.4%	(51.6%, 67.1%)	60.7%	(53.1%, 68.3%)	60.1%	(54.6%, 65.5%)
	1997-2000	60.6%	(53.5%, 67.7%)	61.1%	(53.7%, 68.6%)	60.8%	(55.7%, 66.0%)
	2001-2003	69.5%	(62.2%, 76.8%)	67.8%	(58.9%, 76.7%)	68.8%	(63.2%, 74.5%)
3-year	1993-1996	36.5%	(28.4%, 44.5%)	36.4%	(28.6%, 44.1%)	36.4%	(30.8%, 42.0%)
	1997-2000	37.3%	(30.0%, 44.5%)	42.0%	(34.1%, 49.8%)	39.5%	(34.2%, 44.9%)
5-year	1993-1996	21.8%	(14.6%, 29.1%)	23.8%	(16.8%, 30.9%)	22.9%	(17.8%, 27.9%)
	1997-2000	29.0%	(21.8%, 36.2%)	35.7%	(27.8%, 43.7%)	32.3%	(26.9%, 37.6%)

Sex

Among multiple myeloma patients diagnosed in 1997-2000 survival did not differ significantly between males and females with five-year relative survival 29.0% for males compared to 35.7% for females (p>0.05). (Tab. 27.2; Fig. 27.2)

Figure 27.2: Relative survival from multiple myeloma by sex and period of diagnosis (1993-2000)



Changes over time

Male and female relative survival from multiple myeloma did not change significantly during 1993-2003 (p>0.05). (Tab. 27.2; Fig. 27.2)

Age

For patients diagnosed with multiple myeloma in 1997-2000 five-year relative survival among those aged 15-64 was 31.8% better than for those aged 65-99 (p<0.001). Similar differences existed in one-year relative survival between these age groups for those diagnosed between 1993 and 2003. (Tab. 27.3)

Table 27.3: Relative survival from multiple myeloma by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	82.5%	(74.5%, 90.4%)	51.5%	(45.0%, 58.1%)
	1997-2000	80.5%	(73.0%, 88.1%)	52.8%	(46.5%, 59.0%)
	2001-2003	86.5%	(79.0%, 93.9%)	61.4%	(54.3%, 68.5%)
5-year	1993-1996	32.6%	(22.8%, 42.5%)	19.0%	(13.2%, 24.8%)
	1997-2000	54.4%	(44.6%, 64.1%)	22.6%	(16.5%, 28.6%)

Five-year relative survival improved for 15-64 year olds diagnosed between 1993 and 2000 with 54.4% of those diagnosed between 1997-2000 surviving five years compared to 22.6% of those diagnosed in 1993-1996 (p=0.030). There were no changes in survival for 65-99 year olds over time (p>0.05). (Tab. 27.3)

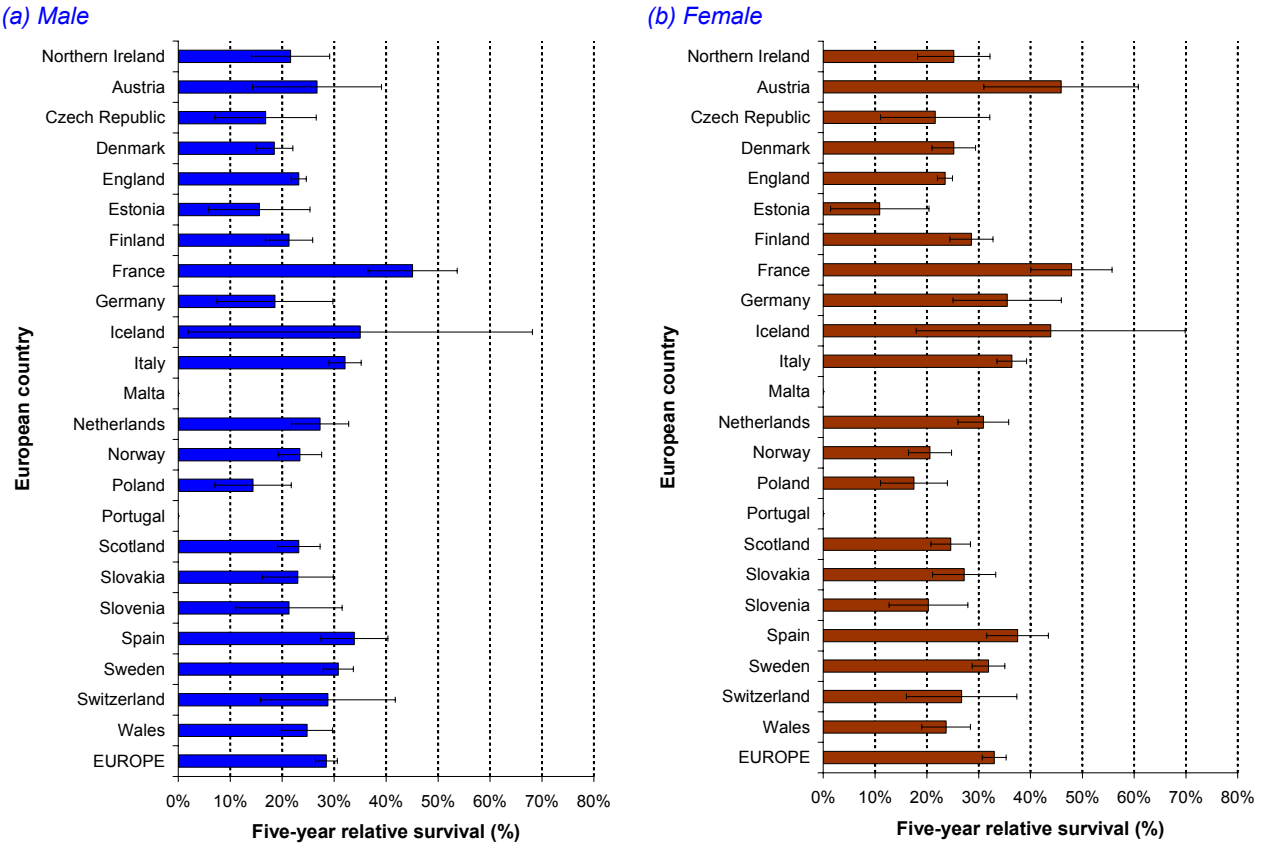
27.3: International Comparisons

EUROCARE-3 study

The five-year age-standardised relative survival rate for males diagnosed between 1993 and 1996 was 21.6% while for females the rate was 25.2%. For both sexes this was lower than the five-year relative

survival rate in Europe (male 28.5%; female 33.0%) but not at a significant level. Significant differences between Northern Ireland and other European countries included in the EUROCARE-3 study include higher survival for patients living in France and Italy. (Fig. 27.3)

Figure 27.3: Comparison of five-year age-standardised relative survival from multiple myeloma with other European countries



Source: EUROCARE-3 (2003)[27,28]

Other countries

Five-year relative survival in Northern Ireland for patients diagnosed between 1997 and 2000 was slightly lower than in USA or Canada for males but slightly higher for females, although this is not conclusive due to the wide confidence intervals associated with the Northern Ireland estimates. (Tab. 27.4)

Table 27.4: Five-year relative survival from multiple myeloma for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	29.0%	35.7%
USA	**1996-2002**	35.4%	30.1%
Canada	**1995-1997**	31.0%	32.0%
Australia	**1992-1997**	-	-
New Zealand	**1994-1999**	-	-

27.4: Summary and Discussion

Multiple myeloma is one of the less common cancers the levels of which are fairly static over time. Survival from the disease in Northern Ireland is moderately poor at approximately 32% of persons still alive after five years. Some evidence exists of improvements in survival although this is restricted to those aged 15-64 whose survival is generally better than those aged 65 and over. Survival in Northern Ireland appears to be similar to the rest of the UK and USA but is worse than in some European countries.

Few risk factors for this cancer have been established although an increased risk has been associated with radiation exposure and the medical condition known as Monoclonal Gammopathy of Unknown Significance, with 20-30% of sufferers from this condition eventually developing multiple myeloma[105]. This cancer is also more common in black populations[105].

28: LEUKAEMIA (C91-C95; ADULTS ONLY)

KEY FACTS:

- **87 male and 64 female cases diagnosed each year during 2000-2004 with no significant change in male or female incidence rates during 1993-2004;**
- **52 male and 39 female deaths from the disease each year between 2000 and 2004 with an annual decrease of 2.9% in female and no significant change in male mortality rates during 1993-2004;**
- **Five-year survival for patients diagnosed in 1997-2000 was 31.2% with no significant changes in five-year survival for patients diagnosed in 1997-2000 compared to those diagnosed in 1993-1996. There was no variation in survival by sex;**
- **Survival was better for 15-64 year olds than for 65-99 year olds and varied considerably by cancer site (Five-year survival from acute myeloid leukaemia was 10.2% compared to 59.2% for chronic lymphocytic leukaemia);**
- **Survival similar to rest of UK and Europe but lower than USA, Canada and Australia.**

28.1: Incidence and Mortality

Incidence

Between 2000 and 2004 there were 87 male and 64 female cases of leukaemia diagnosed each year. It was the twelfth most frequently diagnosed male cancer making up 1.9% of newly diagnosed male cases. It was the thirteenth most common female cancer making up 1.4% of female cancers. (Tab. 28.1)

Table 28.1: Incidence and mortality: Leukaemia (2000-2004)

	Incidence		Mortality	
	Male	Female	Male	Female
Number of cases/deaths per year	87	64	52	39
Percentage of all cancers	1.9%	1.4%	2.7%	2.2%
Rank	12	13	10	9
Median age at diagnosis/death	67	69	71	76
Male to female ratio	1.4:1	-	1.3:1	-
Incidence to mortality ratio	1.7:1	1.7:1	-	-
Crude rate per 100,000 persons	10.5	7.4	6.2	4.4
European age-standardised rate per 100,000 persons (95% CI)	10.6 (9.6,11.6)	6.1 (5.4,6.8)	6.3 (5.5,7.1)	3.2 (2.7,3.7)

Mortality

Deaths from leukaemia were more common in males than females with an average of 52 male and 39 female deaths per year between 2000 and 2004 making up 2.7% and 2.2% of all male and female cancer deaths respectively. It was the tenth most common cause of cancer death for males and the ninth for females. (Tab. 28.1)

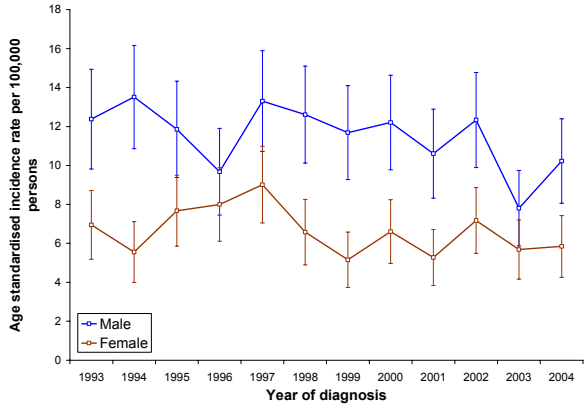
Trends

Incidence rates (EASIR) were static over the 1993-2004 period with no significant trend present (p>0.05) although the number of actual cases fell by 1.1 and 0.6 cases for males and females respectively. (Fig. 28.1; App. 4&6)

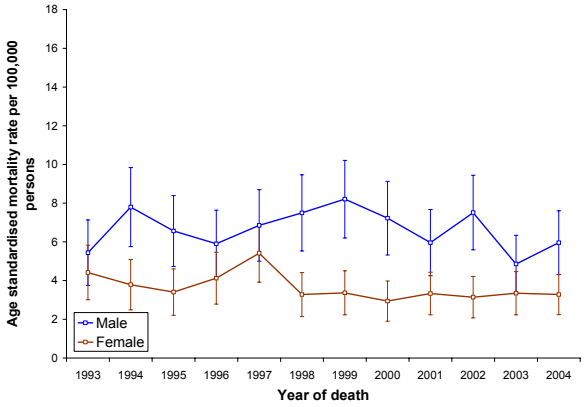
Female mortality rates (EASMR) declined during the twelve-year period by 2.9% each year (p=0.047) although the actual number of deaths remained static over time. Male EASMRs did not demonstrate any

Figure 28.1: Incidence and mortality trends: Leukaemia (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates



significant trend during 1993-2004 (p<0.05) with the number of deaths increasing by one every five years. (Fig. 28.1; App. 5&6)

28.2: Relative Survival

Relative survival from leukaemia was moderately poor with 58.9% of patients diagnosed in 2001-2003 surviving one year and 31.2% of patients diagnosed in 1997-2000 surviving five years. (Tab. 28.2)

Table 28.2: Relative survival from leukaemia by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Males		Females		All persons	
ALL PATIENTS							
1-year	**1993-1996**	57.8%	(51.9%, 63.6%)	54.4%	(47.6%, 61.2%)	56.3%	(51.9%, 60.8%)
	1997-2000	52.4%	(46.8%, 58.0%)	56.2%	(49.6%, 62.7%)	54.0%	(49.7%, 58.2%)
	2001-2003	59.6%	(52.6%, 66.6%)	58.0%	(49.8%, 66.1%)	58.9%	(53.6%, 64.2%)
3-year	**1993-1996**	40.8%	(34.6%, 46.9%)	43.4%	(36.2%, 50.6%)	41.9%	(37.2%, 46.6%)
	1997-2000	35.8%	(30.2%, 41.4%)	40.6%	(33.9%, 47.3%)	37.8%	(33.5%, 42.1%)
5-year	**1993-1996**	30.0%	(24.1%, 36.0%)	36.0%	(28.7%, 43.3%)	32.6%	(28.0%, 37.3%)
	1997-2000	31.0%	(25.3%, 36.7%)	31.6%	(24.9%, 38.3%)	31.2%	(26.9%, 35.6%)
7-year	**1993-1996**	26.6%	(20.5%, 32.7%)	33.0%	(25.6%, 40.5%)	29.4%	(24.6%, 34.1%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	70.2%	(62.3%, 78.0%)	79.2%	(70.7%, 87.8%)	73.9%	(68.1%, 79.7%)
	1997-2000	68.0%	(60.2%, 75.8%)	71.9%	(63.3%, 80.4%)	69.7%	(63.9%, 75.4%)
5-year*	**1993-1996**	51.3%	(42.5%, 60.2%)	65.2%	(54.8%, 75.5%)	57.1%	(50.3%, 63.8%)
	1997-2000	58.5%	(49.7%, 67.3%)	55.6%	(45.7%, 65.5%)	57.2%	(50.6%, 63.8%)
7-year*	**1993-1996**	45.1%	(35.9%, 54.4%)	59.4%	(48.2%, 70.5%)	51.0%	(43.9%, 58.2%)

* from diagnosis

Sex

Patient survival from leukaemia was not dependent upon sex during the 1993-2003 period with 31.0% of males diagnosed with leukaemia between 1997 and 2000 surviving five years compared to 31.6% of females (p>0.05). (Tab. 28.2; Fig. 28.2)

Changes over time

For male and female patients diagnosed with leukaemia between 1993 and 2003 there was little or no

Figure 28.2: Relative survival from leukaemia by sex and period of diagnosis (1993-2000)

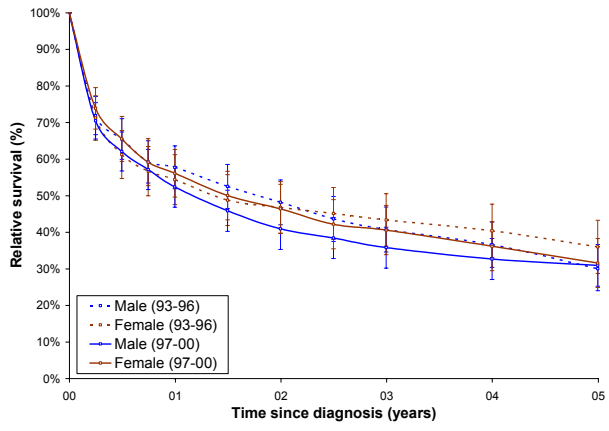
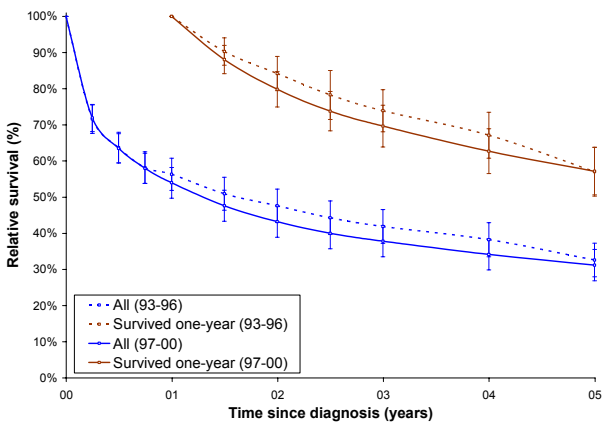


Figure 28.3: Relative survival from leukaemia by period of diagnosis and whether or not patients survive at least one year (1993-2000)



improvement in survival over time with no statistically significant changes in one, three or five-year relative survival for the three consecutive periods of diagnosis (p>0.05). (Tab. 28.2; Fig. 28.2)

Conditional survival

Five-year relative survival for leukaemia patients who survived one year from diagnosis and were diagnosed in 1997-2000 was 57.2% while seven-year survival for those diagnosed in 1993-1996 was 51.0%. This conditional survival rate did not vary by sex and there were no significant changes over time. (Tab. 28.2; Fig. 28.3)

Age

For leukaemia patients diagnosed during 1997-2000 five-year relative survival for those aged 15-64 was 22% better than for those aged 65-99 (p<0.001). Differences also existed in one-year relative survival between these age groups (p<0.028). There were no significant changes in survival for either 15-64 or 65-99 year olds over time (p>0.05). (Tab. 28.3)

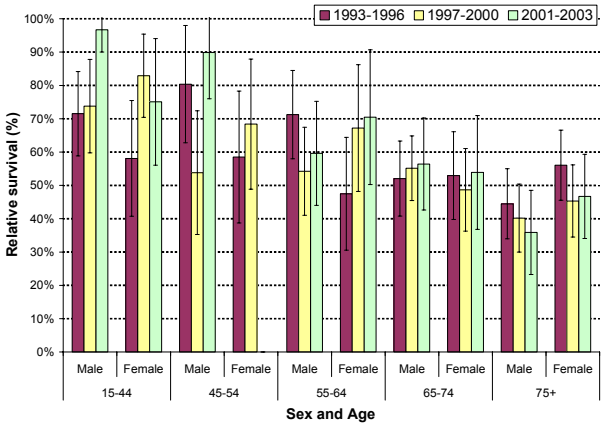
Table 28.3: Relative survival from leukaemia by age and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)			
		Aged 15-64		Aged 65-99	
1-year	1993-1996	64.8%	(58.2%, 71.4%)	50.7%	(44.9%, 56.6%)
	1997-2000	65.9%	(59.3%, 72.4%)	47.4%	(42.0%, 52.7%)
	2001-2003	77.8%	(70.7%, 84.8%)	47.0%	(40.1%, 54.0%)
5-year	1993-1996	39.4%	(32.5%, 46.2%)	27.7%	(21.5%, 33.9%)
	1997-2000	44.9%	(37.8%, 52.0%)	22.9%	(17.7%, 28.2%)

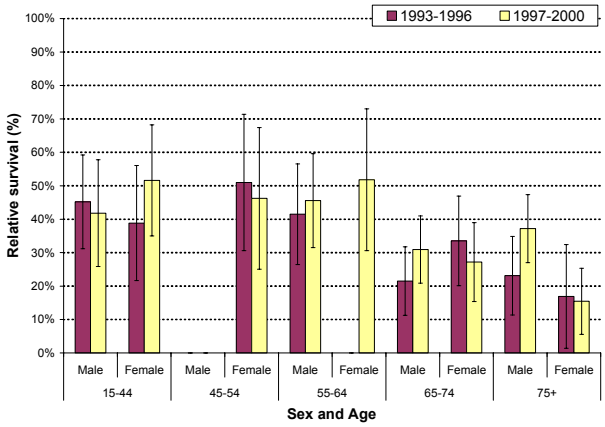
One-year survival for both males and females and five-year relative survival for females aged 75-99 who were diagnosed with leukaemia in 1997-2000 was significantly worse than for those aged 15-44 (p<0.05). For males aged 15-44 and 45-54 a significant improvement in one-year relative survival occurred between patients diagnosed in 1997-2000 and 2001-2003 (p=0.030; p=0.029). (Fig. 28.4; App. 8)

Figure 28.4: Relative survival from leukaemia by age, sex and period of diagnosis (1993-2003)

(a) One-year



(b) Five-year



Note: Missing entries refer to less than 10 persons in that age/sex group

Cancer site

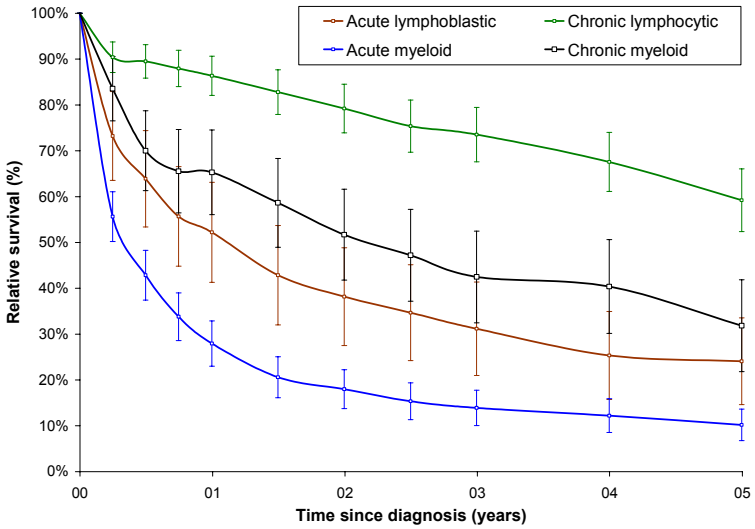
There are several types of leukaemia, with survival varying considerably by type. The most common form during 1993-2004 was acute myeloid leukaemia, making up 30% of all leukaemias. This type also had the worst survival with 10.2% of all persons diagnosed with this disease alive five years after a diagnosis in 1993-2000.

Table 28.4: Relative survival from leukaemia by cancer site (1993-2000)

Survival time	RELATIVE SURVIVAL (95% CI)							
	Acute lymphoblastic		Chronic lymphocytic		Acute myeloid		Chronic myeloid	
1-year	52.2%	(41.5%, 62.9%)	86.4%	(82.2%, 90.6%)	27.9%	(23.1%, 32.8%)	65.3%	(56.3%, 74.4%)
5-year	24.1%	(14.8%, 33.3%)	59.2%	(52.5%, 65.9%)	10.2%	(6.8%, 13.6%)	31.8%	(22.0%, 41.7%)

Chronic lymphocytic leukaemia made up 29% of leukaemias in Northern Ireland with five-year relative survival for patients diagnosed in 1993-2000 of 59.2%. The other two main types are acute lymphoblastic leukaemia (15% of leukaemias) and chronic myeloid leukaemia (10% of leukaemias). These both had moderately poor five-year survival of 24.1% and 31.8% respectively. (Tab. 28.4; Fig. 28.5)

Figure 28.5: Relative survival from leukaemia by cancer site (1993-2000)



28.3: Observed Survival

One-year observed survival (which takes into account deaths from all causes and therefore is lower than relative survival) from leukaemia was 57.6% for male and 55.8% for female patients diagnosed between 2001 and 2003. Five-year observed survival was 25.6% for male and 26.9% for female patients diagnosed between 1997 and 2000. (Tab. 28.5)

Table 28.5: Observed survival from leukaemia by sex and period of diagnosis (1993-2003)

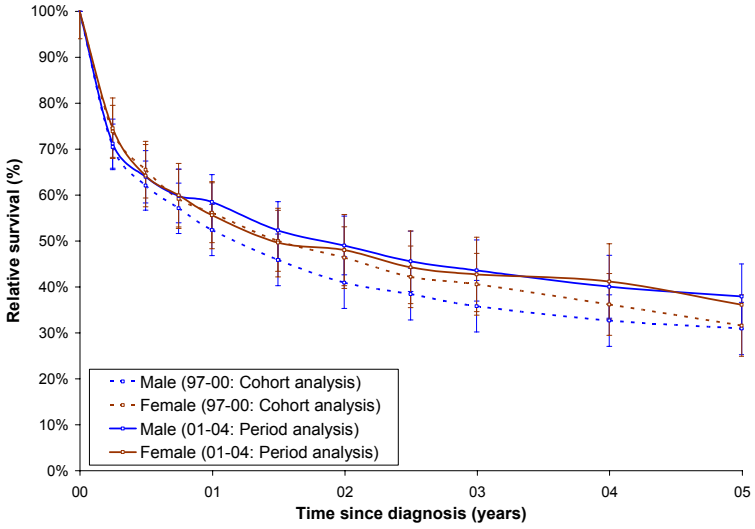
Survival time and period of diagnosis		OBSERVED SURVIVAL (95% CI)					
		Males		Females		All persons	
1-year	1993-1996	55.3%	(49.7%, 61.0%)	52.5%	(45.9%, 59.1%)	54.1%	(49.8%, 58.4%)
	1997-2000	50.3%	(45.0%, 55.6%)	54.4%	(48.1%, 60.7%)	52.0%	(47.9%, 56.1%)
	2001-2003	57.6%	(50.8%, 64.3%)	55.8%	(48.0%, 63.7%)	56.8%	(51.7%, 61.9%)
5-year	1993-1996	24.3%	(19.5%, 29.2%)	29.9%	(23.8%, 35.9%)	26.7%	(22.9%, 30.5%)
	1997-2000	25.6%	(20.9%, 30.3%)	26.9%	(21.2%, 32.7%)	26.1%	(22.5%, 29.8%)

28.4: Period Analysis

Traditional methods for producing five-year relative survival rates (cohort analysis) require five years worth of follow up data and thus do not reflect more recent survival experience. More up to date survival rates can be estimated using newer techniques such as period analysis.

Five-year survival from leukaemia for males diagnosed in 2001-2004 derived using this approach was 37.9% while for females it was 36.1%. While not directly comparable the results from the period analysis do not constitute a significant difference from the actual five-year relative survival derived using cohort analysis for patients diagnosed in 1997-2000 (p>0.05). (Fig. 28.6; App. 7)

Figure 28.6: Estimated relative survival (period analysis) from leukaemia for patients diagnosed in 2001-2004 compared with actual relative survival (cohort analysis) for patients diagnosed in 1997-2000.



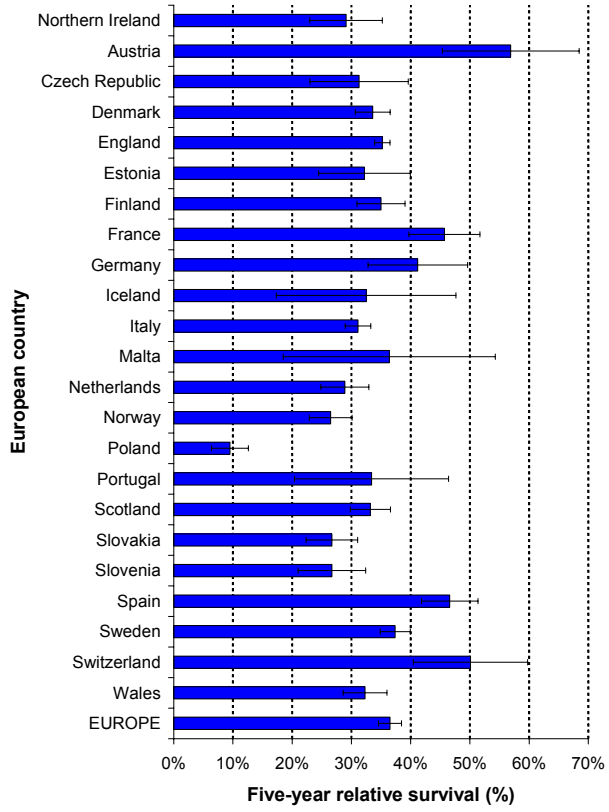
28.5: International Comparisons

EUROCARE-3 study

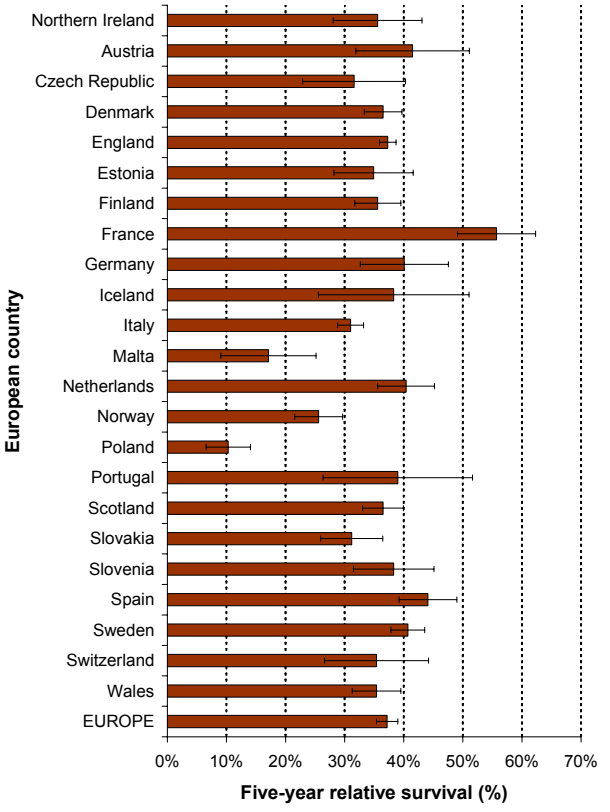
The European age-standardised five-year relative survival rate for leukaemia in Northern Ireland was 29.1% for males and 35.6% for females. For males this was significantly lower than the 36% for Europe as a whole but was similar to the 37% for European females. Some European countries demonstrated better male survival from leukaemia than in Northern Ireland, namely Austria, France, Spain, and Switzerland while male survival in Northern Ireland was better than that in Poland. For females Northern Ireland had worse survival than in France but better survival than in Malta and Poland. (Fig. 28.7)

Figure 28.7:Comparison of five-year age-standardised relative survival from leukaemia with other European countries

(a) Male



(b) Female



Source: EUROCARE-3 (2003)[27,28]

Other countries

Male and female survival from leukaemia patients diagnosed in the late 1990s was worse in Northern Ireland than in USA, Canada, Australia and New Zealand by at least 10% for males and 11% for females. (Tab. 28.6)

Table 28.6: Five-year relative survival from leukaemia for various countries

Country	Period of diagnosis	Male	Female
Northern Ireland	**1997-2000**	31.0%	31.6%
USA	**1996-2002**	48.6%	47.8%
Canada	**1995-1997**	46.0%	45.0%
Australia	**1992-1997**	41.2%	43.2%
New Zealand	**1994-1999**	48.3%	49.5%

28.6: Summary and Discussion

Leukaemia refers to a group of diseases where white blood cells or their precursor cells multiply out of control preventing the bone marrow producing other essential cells such as red blood cells, platelets and normal white blood cells.

Over the last twelve years levels of leukemia have remained fairly static, a situation similar to the rest of the UK although over a longer period of time there has been a slow increase in incidence of this disease[35]. Mortality levels from leukaemia in Great Britain[32] have been slowly declining with evidence of a definite decrease in Northern Ireland over the last twelve years in female deaths from this disease.

Exposure to high levels of radiation increase the risk of developing acute leukaemia as does exposure to benzene[106]. Smokers also have a higher risk of developing acute myeloid leukaemia with smoking being responsible for 1 in 5 cases of this disease[106]. Other factors which increase risk include previous chemotherapy, blood disorders such as aplastic anaemia and myelodysplastic syndrome, inherited conditions such as Down's syndrome and infections such as human T-cell leukaemia virus[106]. Little is known about the causes of chronic lymphocytic leukaemia although a possible risk factor is family history which may increase the risk of developing this leukaemia by a small amount[107]. Established risk factors of chronic myeloid leukaemia include exposure to high levels of radiation and exposure to benzene[108].

Survival from this disease is low at around 31% of patients alive five years from diagnosis. The situation in Northern Ireland is slightly worse than in other countries although this is likely to be due to variations in the type of leukemia from country to country as leukaemia type has a significant impact on survival. While improvements in survival over the last decade have been slow, new treatment types may improve survival probability within the next decade; a prime example being the development of the Glivec drug which improves survival from chronic myeloid leukaemia[109].

29: CHILDHOOD CANCER (Ages 0-14; All cancers excluding NMSC)

KEY FACTS:

- **24 cases per year among boys and 21 among girls between 2000 and 2004 with no significant trends in incidence rates between 1993 and 2004;**
- **6 deaths per year among boys and less than 5 among girls during 2000-2004 with no significant trends in mortality rates between 1993 and 2004;**
- **Survival similar in boys and girls: 74.0% of boys and 75.5% of girls alive after five years, with no significant change in survival between 1993-1996 and 1997-2000;**
- **Survival for at least one-year from diagnosis did not significantly improve long-term survival;**
- **Survival from leukaemia better (79.5% after five years) than survival from brain cancer (57.4% after five years).**

29.1: Incidence and Mortality

Incidence

There were on average 24 boys and 21 girls diagnosed with cancer each year in 2000-2004, representing 0.5% of all male and female cancers. The two main types of childhood cancer were leukaemia and cancer of the brain, respectively making up 32% and 24% of childhood cancers with an average of 14 childhood leukaemia and 11 childhood brain cancers each year. (Tab. 29.1)

Table 29.1: Incidence and mortality: Childhood cancer (2000-2004)

	Incidence		Mortality	
	Boys	Girls	Boys	Girls
Number of cases/deaths per year	24	21	6	<5
Percentage of all cancers	0.5%	0.5%	0.3%	-
Male to female ratio	1.1:1	-	2.7:1	-
Incidence to mortality ratio	3.7:1	8.6:1	-	-
Crude rate per 100,000 persons	12.6	11.6	3.4	-
European age-standardised rate per 100,000 persons (95% CI)	12.9 (10.6,15.3)	12.0 (9.7,14.3)	3.5 (2.3,4.7)	- -

Mortality

Annually there were 6 boys and less than 5 girls who died of some form of cancer between 2000 and 2004. This represented less than 0.5% of all male and female cancer deaths with one death occurring for every 3.7 new cancers among boys. (Tab. 29.1)

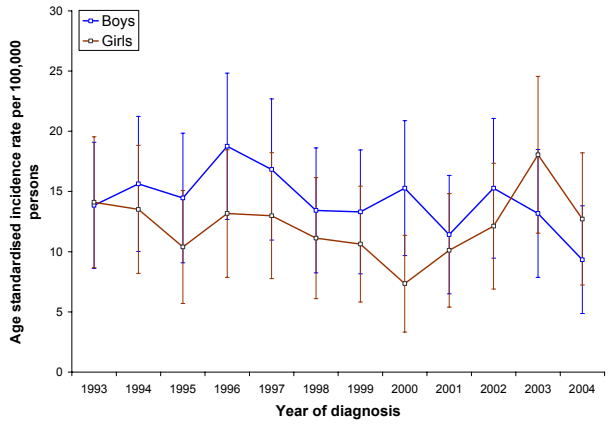
Trends

Incidence rates of childhood cancer for both girls and boys remained in a steady state during 1993-2004 ($p>0.05$). The number of cases among boys decreased annually by just less than one case between 1993 and 2004 while the annual change in cases for girls was close to zero. (Fig. 29.1; App. 4&6)

No significant trend in mortality rates was present between 1993 and 2004 ($p>0.05$) with the annual change in the number of deaths being very small for both sexes. (Fig. 29.1; App. 5&6)

Figure 29.1: Incidence and mortality trends: Childhood cancer (1993-2004)

(a) European age-standardised incidence rates



(b) European age-standardised mortality rates

29.2: Relative Survival

Relative survival from childhood cancer was good with 90.6% of patients diagnosed between 2001 and 2003 surviving one year and 74.6% of patients diagnosed between 1997 and 2000 surviving five years. (Tab. 29.2)

Table 29.2: Relative survival from childhood cancer by sex and period of diagnosis (1993-2003)

Survival time and period of diagnosis		RELATIVE SURVIVAL (95% CI)					
		Boys		Girls		All children	
ALL PATIENTS							
1-year	**1993-1996**	91.8%	(86.9%, 96.7%)	89.2%	(82.8%, 95.6%)	90.7%	(86.8%, 94.6%)
	1997-2000	91.1%	(85.8%, 96.4%)	85.2%	(77.1%, 93.3%)	88.8%	(84.2%, 93.3%)
	2001-2003	88.4%	(80.9%, 96.0%)	92.7%	(86.5%, 98.9%)	90.6%	(85.6%, 95.5%)
3-year	**1993-1996**	81.9%	(75.0%, 88.8%)	79.4%	(71.2%, 87.7%)	80.8%	(75.5%, 86.1%)
	1997-2000	79.6%	(72.1%, 87.0%)	78.5%	(69.1%, 87.9%)	79.1%	(73.3%, 85.0%)
5-year	**1993-1996**	73.7%	(65.8%, 81.6%)	76.2%	(67.5%, 84.9%)	74.8%	(68.9%, 80.6%)
	1997-2000	74.0%	(65.8%, 82.2%)	75.5%	(65.6%, 85.4%)	74.6%	(68.3%, 80.9%)
7-year	**1993-1996**	71.3%	(63.2%, 79.4%)	76.2%	(67.5%, 85.0%)	73.4%	(67.4%, 79.4%)
PATIENTS SURVIVING AT LEAST ONE YEAR (ONE-YEAR CONDITIONAL SURVIVAL)							
3-year*	**1993-1996**	84.4%	(77.9%, 90.9%)	84.9%	(77.5%, 92.2%)	84.6%	(79.7%, 89.4%)
	1997-2000	83.1%	(76.2%, 90.1%)	81.2%	(72.2%, 90.1%)	82.3%	(76.8%, 87.8%)
5-year*	**1993-1996**	73.7%	(65.8%, 81.5%)	77.3%	(68.7%, 85.9%)	75.2%	(69.4%, 81.0%)
	1997-2000	76.0%	(68.1%, 83.9%)	78.5%	(69.1%, 87.9%)	77.0%	(70.9%, 83.1%)
7-year*	**1993-1996**	72.9%	(64.9%, 80.8%)	76.2%	(67.5%, 84.9%)	74.3%	(68.4%, 80.2%)

* from diagnosis

Sex

There were no statistically significant differences in one or five-year relative survival for boys and girls ($p>0.05$) diagnosed with cancer between 1993 and 2003. (Tab 29.2; Fig.29.2)

Changes over time

The survival experience of children diagnosed with cancer has not changed over time with, for example, five-year relative survival for all children diagnosed in both 1993-1996 and 1997-2000 being just under 75%. (Tab. 29.2; Fig. 29.2)

Figure 29.2: Relative survival from childhood cancer by sex and period of diagnosis (1993-2000)

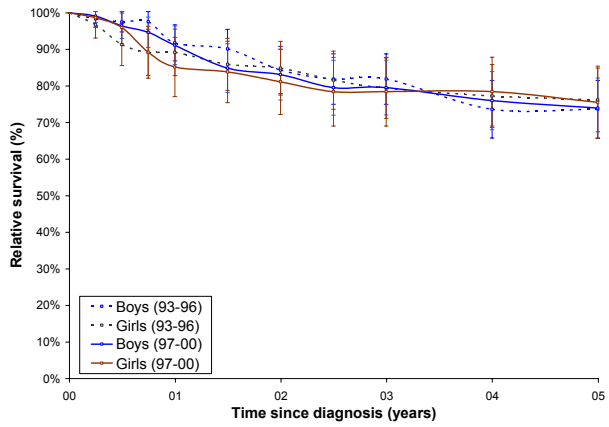
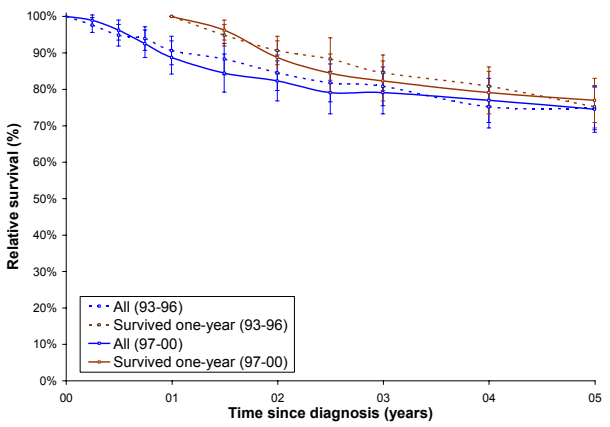


Figure 29.3: Relative survival from childhood cancer by period of diagnosis and whether or not patients survive at least one year (1993-2000)



Conditional survival

For children diagnosed with cancer during 1997-2000 who survived at least one-year after diagnosis 77.0% survived five-years from their date of diagnosis. This proportion was not significantly different than the five-year relative survival rate for all persons indicating that surviving one-year from diagnosis did not significantly improve the long-term survival of children with cancer. (Tab. 29.2; Fig.29.3)

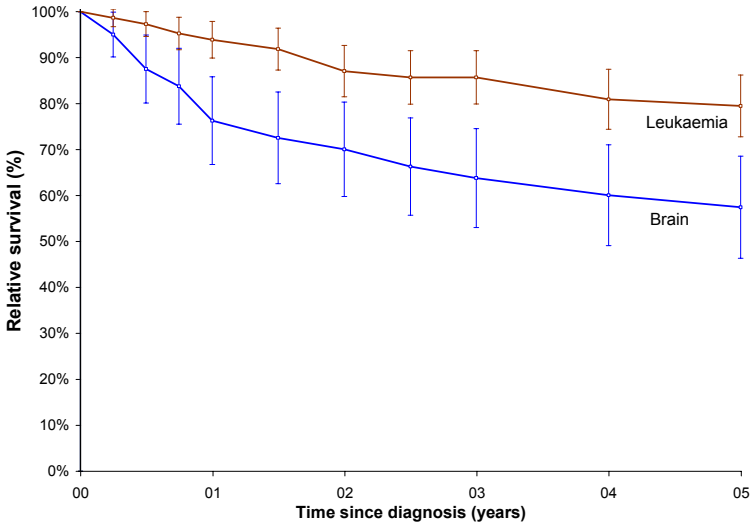
Cancer site

For children (aged 0 to 14) diagnosed with cancer of the brain between 1993 and 2000 one-year relative survival was 76.3% while for children diagnosed in the same time period survival after five years was 57.4%. Relative survival from leukaemia among children was good with 93.9% of children diagnosed between 1993 and 2000 surviving one year and 79.5% of children surviving five years. Differences in survival between brain cancer and leukaemia were statistically significant (p=0.013). (Tab. 29.3; Fig. 29.4)

Table 29.3: Relative survival from childhood cancer by cancer site (1993-2000)

Survival time	RELATIVE SURVIVAL (95% CI)			
	Brain		Leukaemia	
1-year	76.3%	(67.0%, 85.6%)	93.9%	(90.0%, 97.8%)
5-year	57.4%	(46.6%, 68.3%)	79.5%	(72.9%, 86.1%)

Figure 29.4: Relative survival from childhood cancer by cancer site (1993-2000)



29.3: Summary and Discussion

Cancer affects a small number of children in Northern Ireland each year, the exact causes of which are as yet unknown. Some factors associated with a higher risk of cancer in children which have been identified include some inherited conditions (such as Down's syndrome), problems with development in the womb, exposure to infections such as Epstein-Barr virus and exposure to radiation[110]. To date there is no evidence to suggest that exposure to electromagnetic fields increases the likelihood of children developing cancer[110].

Childhood cancer in Britain has been rising since 1962 by an average of 0.8% each year while deaths among children from cancer have fallen by 2.6% per year due to improvements in survival since the 1960s as a result of the introduction of combination chemotherapy[111]. Trends in Northern Ireland however remain in a steady state with no changes in incidence or mortality over time. This is probably due to the small number of cases in Northern Ireland and the availability of only twelve years of cancer incidence data.

Approximately 75% of all children with cancer survive at least five years, a similar proportion to the survival rate in England[111], with no difference in survival between boys and girls and no improvements over the last ten years. Leukaemia and brain cancer make up almost 60% of all childhood cancers with survival from leukaemia better than that from brain cancer (based on those diagnosed between 1993 and 2000).

A1: ABBREVIATIONS

AIHW	Australian Institute of Health and Welfare
APC	Annual Percentage Change
ASR	Age-Standardised Rate
CI	Confidence Interval
CCPS	Centre for Clinical & Population Sciences
CCS	Canadian Cancer Society
COA	Census Output Area
CPD	Central Postcode Directory
DCO	Death Certificate Only
DHSSPSNI	Department of Health, Social Services and Public Safety, Northern Ireland
EASR	European Age-Standardised Rate
EASIR	European Age-Standardised Incidence Rate
EASMR	European Age-Standardised Mortality Rate
EU	European Union
FAP	Familial Adenomatous Polyposis
GAD	Government Actuary Department
GRO	General Registrar Office (Northern Ireland)
ICD10	International Classification of Diseases, Version 10
ISD	Information Services Department, Scotland
HNPCC	Hereditary Non-Polyposis Colorectal Cancer
HPV	Human Papillomavirus
HRT	Hormone Replacement Therapy
LGD	Local Government District
NCI	National Cancer Institute, USA
NCRI	National Cancer Registry, Ireland
NHL	Non-Hodgkin's Lymphoma
NI	Northern Ireland
NICR	Northern Ireland Cancer Registry
NISRA	Northern Ireland Statistics and Research Agency
NMSC	Non-Melanoma Skin Cancer
NSCLC	Non-Small Cell Lung Cancer
NZHIS	New Zealand Health Information Service
ONS	Office of National Statistics
QUB	Queen's University, Belfast
ROI	Republic of Ireland
SCLC	Small Cell Lung Cancer
SIR	Standardised Incidence Ratio
SMR	Standardised Mortality Ratio
TVO	Tumour Verification Officer
UKACR	United Kingdom Association of Cancer Registries
UV	Ultraviolet
WCISU	Welsh Cancer Intelligence and Surveillance Unit

A2: DEFINITIONS

Annual Percentage Change (APC): The percentage increase or decrease per year in the age-standardised rate (ASR). It is calculated by fitting a regression line to the natural logarithm of the rates using calendar year as a regression variable, i.e. $y = mx + b$, where $y = \ln(ASR)$, x is the calendar year, and b is a constant. The annual percentage change (APC) is thus given by

$$APC = 100 \times (e^{m} - 1)$$

The calculation assumes that the age-standardised rates increase or decrease at a constant rate over the period examined.

Age-Specific Rate: The rate per 100,000 persons for a particular age group. It is calculated using the following formula:

$$a_i = \frac{r_i}{n_i} \times 100{,}000$$

where a_i is the age-specific rate for age group i, r_i is the number of cases in age group i and n_i is the number of persons in age group i.

Age-Standardised Rate (ASR): The rate per 100,000 persons that has been adjusted to take account of different age structures between geographic areas or time periods by adopting a reference population. It is calculated by the direct method using the following formula:

$$ASR = \frac{\sum_{i=1}^{A} a_i w_i}{\sum_{i=1}^{A} w_i}$$

where ASR is the age-standardised rate, a_i is the age-specific rate for age group i, w_i is the standard population of age group i and A is the number of age intervals.

Behaviour: The manner in which a tumour acts, i.e. benign, in-situ or malignant.

Benign Tumour: A tumour which does not invade or destroy the tissue in which it originates, or spread to distant sites in the body.

Cancer: A disease resulting from the breakdown in the normal growth of body cells as a result of faults or damage to the genes that control for cell growth.

Cancer Site: The body place that a cancer originates in, e.g. lung, breast or prostate.

Cell Type: Cancers can be classified according to the type of cell that the tumour resembles. The most common categories include: carcinoma, lymphoma, leukaemia, sarcoma and glioma. Carcinomas represent the most common cancers with sub categories frequently used including adenocarcinoma, squamous cell carcinoma, basal cell carcinoma, small-cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC).

Censor Date: The date at which a patient was last known to be alive or dead.

Census Output Area (COA): The smallest geographic area commonly used in Northern Ireland. Census Output Areas are derived from the results of the 2001 Census and aggregate exactly to Electoral Ward and Local Government District. There are 5,022 COAs in Northern Ireland with an average of 335 persons resident in each area[9].

Cohort Analysis: The traditional method of survival analysis which is based upon the survival experience of patients diagnosed with cancer during a particular period of time and who have been followed up until the most recent date possible. See observed and relative survival.

Comorbidity: The presence of one or more disorders (or diseases) in addition to a primary disease or disorder.

Conditional Survival: The probability of survival given that survival for a certain length of time has already occurred.

Confidence Interval: The range of values calculated to have a specified (usually 95%) probability of containing the true value of an observation. Thus the 95% confidence interval for a survival rate is the range of values within which there is a 95% probability of finding the true value for the survival rate.

Crude Rate: The rate per 100,000 persons that an event occurs among a given population. It is calculated by using the formula:

$$C = \frac{R}{N} \times 100{,}000$$

where *C* is the crude rate, *R* is the number of events and *N* is the population within which the events occur.

Deprivation Quintile: The division of the 5,022 Census Output Areas in Northern Ireland into five groups of approximately equal population based upon their level of economic deprivation. They are derived using the 2005 NI Noble deprivation measures[7]. Quintile 5 contains the fifth of the population resident in the least deprived COAs and quintile 1 contains the fifth of the population resident in the most deprived COAs.

Diagnosis: The process whereby the nature of a patient's illness is identified through medical examination.

District Council: See Local Government District.

Ederer II Method: A method for calculating expected survival using life table data. See reference 14.

European Standard Population: A standard population using the age distribution per 100,000 persons given in table A2.1: The same age distribution is used for males and females.

Table A2.1: European standard population

Age Group	Population	Age Group	Population	Age Group	Population	Age Group	Population
0-4	8,000	**25-29**	7,000	**50-54**	7,000	**75-79**	2,000
5-9	7,000	**30-34**	7,000	**55-59**	6,000	**80-84**	1,000
10-14	7,000	**35-39**	7,000	**60-64**	5,000	**85+**	1,000
15-19	7,000	**40-44**	7,000	**65-69**	4,000		
20-24	7,000	**45-49**	7,000	**70-74**	3,000	**Total**	100,000

Expected Survival: The survival expected from of a group of patients based upon the life table of the general population from which they are diagnosed.

Hybrid-Period Analysis: A modification of period analysis in which data on the survival experience of patients diagnosed with cancer prior to the period being investigated in used. See reference 16.

ICD10: The tenth edition of the International Statistical Classification of Diseases and Related Health Problems, which is published by the World Health Organisation (WHO). It provides a detailed description of known diseases and injuries and is used in the production of morbidity and mortality statistics. See reference 5.

Incidence: The number of new cases of a cancer diagnosed in a particular period for a particular population.

Incidence to Mortality Ratio: The ratio of the number of newly diagnosed cancers in a given year to the number of deaths due to cancer in the same year.

In-situ Tumour: An early cancer that has not spread to neighbouring tissue.

Kaplan-Meier method: See observed survival.

Life Table: A table that shows the life expectancy of a person at each age and sex. Also included in Northern Ireland life tables are:

- the probability that a person of a given age will die before their next birthday;
- the number of people out of 100,000 live births who survive to a given age;
- the number of people who die at a given age.

Local Government District (LGD): A geographic area in Northern Ireland defined for Local Government purposes. There are currently 26 Local Government Districts in Northern Ireland. It is expected that the number of Local Government Districts will be reduced in 2009 as part of the Review of Public Administration. LGDs are also referred to as District Councils.

Log-Linear Model: A mathematical model in which a continuous variable, *y*, is related to an explanatory variable, *x*, by the following equation:

$$\text{Ln}(y) = mx + b,$$

where *b* is a constant value.

Malignant Tumour: A cancerous tumour that can invade and destroy nearby tissue and spread to other parts of the body.

Mid-year Population Estimate: An estimate of the population in a region. This is based upon the number of births, deaths and the migration flows for the region that have occurred since the last population census.

Mortality: For the purposes of this report mortality refers to the number of patients whose primary cause of death for a particular period was cancer. In a wider context this refers to all causes of death.

Neoplasm: See Tumour.

Observed Survival: The probability that a patient with a given disease will be alive at the end of a time period, *i,* measured from the date of diagnosis. It is determined using the formula:

$$S_i = \prod_{j=1}^{i} 1 - \frac{d_j}{n_j - \frac{1}{2} w_j}$$

where *j* is the observed period of death, d_j is the number of deaths from any cause occurring during period *j,* n_j is the number of patients alive entering period *j* and w_j is the number of patients withdrawn alive (censored) during the j^{th} period.

Passive Follow-up: A method of cancer registration in which the status of patients is identified by the matching of cancer registrations with death registrations. This approach is used in Northern Ireland with deaths data supplied by the General Registrar Office.

Pathology: The identification of a disease through microscopic examination of cells and tissue.

Period Analysis: An approach used to estimate patient survival for more recent periods of time, which cannot be obtained using cohort analysis due to insufficient follow up time. This approach utilises the survival experience of patients still alive in the period of interest rather than of those diagnosed during the period. See reference 15.

P-value: The probability of an event occurring given a null hypothesis is true. In any statistical tests in this report the null hypothesis is taken to be that there is no difference between two mean values or rates. A small p-value (typically less than 0.05) suggests that the two means or rates tested are significantly different.

Relative Survival: The ratio of the observed survival of a given group of patients to the expected survival for a group of persons in the general population with the same characteristics (usually sex and age).

Settlement Band: An eight-band urban/rural classification for areas in Northern Ireland. The bands used are as follows:

(A) Belfast Metropolitan Urban Area;
(B) Derry Urban Area;
(C) Large town (population 18,000 or more);
(D) Medium town (population 10,000 or more, but under 18,000);
(E) Small town (population 4,500 or more, but under 10,000);
(F) Intermediate settlement (population 2,250 or more, but under 4,500);
(G) Village (population 1,000 or more, but under 2,250);
(H) Small village, hamlet and open countryside (population under 1,000).

Bands A to E are classified as urban settlements and bands F to H are classified as rural settlements.

Staging: A measure of how far a malignancy has spread in the body. The higher the stage the greater the disease has spread and the less favourable the prognosis for the patient. See appendix 3 for staging of individual cancer sites.

Standardised Incidence Ratio (SIR): The ratio of the number of newly diagnosed cancers observed in a given population to the number of cases expected in a reference population of the same size. The expected number of incidence is calculated by applying a standard set of age specific rates to the given population. The formula for the standardised incidence ratio (*SIR*) is:

$$SIR = \frac{\sum_{i=1}^{A} r_i}{\sum_{i=1}^{A} \frac{a_i n_i}{100{,}000}}$$

where a_i is the age specific rate in the reference population, n_i is the observed population in age group i and r_i is the observed number of cases in age group i.

Standardised Mortality Ratio (SMR): The ratio of the number of cancer deaths observed in a given population to the number of deaths expected in a reference population of the same size. The SMR is calculated in the same manner as the standardised incidence ratio using deaths due to cancer instead of the number of newly diagnosed cases.

Survival Curve: A plot of survival probability against time.

Tumour: An abnormal mass of tissue resulting from uncontrolled cell growth and causing a swelling of the body. Tumours may be benign or malignant.

Vital Status: Whether or not a patient is alive or dead at the censor date.

A3: STAGING

The stage of a tumour is a measure of how far a malignancy has spread in the body. The higher the stage the greater the disease has spread and the less favourable the prognosis for the patient.

Staging is carried out using a number of laboratory and clinical tests at diagnosis. The most commonly used staging classification is the TNM stage that includes information on the extent of the primary tumour (T), the absence or presence of lymph node metastasis (N) and the absence or presence of distant metastasis (M). The classification combines these three elements to produce an overall TNM stage for the tumour. However the manner in which the overall TNM stage is derived depends upon the cancer site. A comparison of how this differs between cancer sites is shown below. For a more detailed description of staging see reference 112.

Colorectal cancer

Stage group	T	N	M
I	T1	N0	M0
	T2	N0	M0
IIA	T3	N0	M0
IIB	T4	N0	M0
IIIA	T1-T2	N1	M0
IIIB	T3-T4	N1	M0
IIIC	Any T	N2	M0
IV	Any T	Any N	M1

T1: Tumour invades submucosa
T2: Tumour invades muscularis propria
T3: Tumour invades through the muscularis propria into the subserosa
T4: Tumour invades directly invades other organs or structures and/or perforates visceral peritoneum
N0: No regional lymph nodes involved
N1: 1-3 regional lymph nodes involved
N2: More than 4 regional lymph nodes involved
M0: No distant metastases
M1: Distant metastases

The modified Dukes classification system is sometimes used to stage colorectal cancer as an alternative to the TNM stage. The two systems however are related in the following manner

- Dukes Stage A = Stage I;
- Dukes Stage B = Stage IIA & Stage IIB;
- Dukes Stage C = Stage IIIA, Stage IIIB & Stage IIIC;
- Dukes Stage D = Stage IV.

Malignant melanoma

Stage group	T	N	M
I	T1	N0	M0
II	T2	N0	M0
III	T3	N0	M0
IV	T4	N0	M0
	Any T	N1	M0
	Any T	Any N	M1

T1: Tumour invades papillary dermis
T2: Tumour invades papillary-reticular interface
T3: Tumour invades reticular dermis
T4: Tumour invades subcutaneous tissue
N0: No regional lymph nodes involved
N1: Regional lymph nodes involved
M0: No distant metastases
M1: Distant metastases

Two alternative classifications are in frequent use for malignant melanoma. The Clark's level is equivalent to the TNM stage with an additional category for early in-situ tumours. Thus

- Clark's Level I = Early in-situ tumour with no nodal involvement or metastatic spread;
- Clark's Level II = Stage I;
- Clark's Level III = Stage II;
- Clark's Level IV = Stage III;
- Clark's Level V = Stage IV.

The second classification in common use is the Breslow Depth. This classification is unrelated to the TNM stage and records the depth of the tumour. In this report the following categories: 0.00-0.75mm, 0.76-1.50mm, 1.51-3.00mm and greater than 3.00mm are used.

Breast cancer

Stage group	T	N	M
I	T1	N0	M0
IIA	T0	N1	M0
	T1	N1	M0
	T2	N0	M0
IIB	T2	N1	M0
	T3	N0	M0
IIIA	T0	N2	M0
	T1-T2	N2	M0
	T3	N1-N2	M0
IIIB	T4	N0-N2	M0
IIIC	Any T	N3	M0
IV	Any T	Any N	M1

T0: No evidence of primary tumour
T1: Tumour 2cm or less in greatest dimension
T2: Tumour more than 2cm but less than 5cm in greatest dimension
T3: Tumour more than 5cm in greatest dimension
T4: Tumour of any size with direct extension to chest wall or skin
N0: No regional lymph nodes involved
N1: 1-3 axiliary lymph nodes involved
N2: 4-9 axiliary lymph nodes involved
N3: More than 10 axiliary lymph nodes involved or metastases in infraclavicular nodes
M0: No distant metastases
M1: Distant metastases

For statistical analysis the different breast cancer stages are combined into four stages, ranging from early tumours (Stage I) to advanced tumours that have distant metastasis (Stage IV).

Cervical cancer

Stage group	T	N	M
I	T1	N0	M0
II	T2	N0	M0
III	T1	N1	M0
	T2	N1	M0
	T3	Any N	M0
IV	T4	Any N	M0
	Any T	Any N	M1

T1: Tumour confined to uterus
T2: Tumour invades beyond the uterus but no to the pelvic wall or lower third of the vagina
T3: Tumour extends to pelvic wall and/or involves lower third of the vagina and/or causes hydronephrosis or defunctioning kidney
T4: Tumour invades mucosa of bladder or rectum, and/or extends beyond the pelvis
N0: No regional lymph nodes involved
N1: Regional lymph nodes involved
M0: No distant metastases
M1: Distant metastases

Ovarian cancer

Stage group	T	N	M
I	T1	N0	M0
II	T2	N0	M0
III	T3	N0	M0
	Any T	N1	M0
IV	Any T	Any N	M1

T1: Tumour limited to ovaries (one or both)
T2: Tumour limited to ovaries with pelvic extension and/or implants
T3: Tumour involves one or both ovaries with microscopically confirmed peritoneal metastases outside the pelvis
N0: No regional lymph nodes involved
N1: Regional lymph nodes involved
M0: No distant metastases
M1: Distant metastases

The FIGO classification uses staging categories accepted by the Federation International de Gynecologie et d'Obstetrique to stage cervical and ovarian cancers. The FIGO categories are roughly equivalent to Stages I-IV of the TNM classification but do not include nodal involvement. Thus

- FIGO Stage I = Stage I
- FIGO Stage II = Stage II
- FIGO Stage III = Stage III
- FIGO Stage IV = Stage IV

A4: INCIDENCE RATES BY SEX AND CANCER SITE (1993-2004)

All cancers including non-melanoma skin cancer (C00-C97)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	4,123	100.0%	516.5	569.4	552.0,586.8	4,276	100.0%	510.7	451.3	437.1,465.5
1994	4,163	100.0%	519.1	569.3	552.0,586.6	4,153	100.0%	493.4	438.5	424.4,452.5
1995	4,077	100.0%	507.1	551.5	534.6,568.5	4,205	100.0%	497.6	439.5	425.6,453.5
1996	4,238	100.0%	523.0	562.5	545.5,579.4	4,419	100.0%	519.0	451.8	437.8,465.8
1997	4,164	100.0%	510.6	546.9	530.2,563.5	4,366	100.0%	510.2	440.4	426.7,454.1
1998	4,234	100.0%	517.2	548.2	531.7,564.7	4,394	100.0%	511.5	444.9	431.1,458.6
1999	4,201	100.0%	513.3	536.7	520.5,552.9	4,413	100.0%	512.8	442.7	429.1,456.4
2000	4,287	100.0%	522.5	541.7	525.5,557.9	4,442	100.0%	515.0	446.3	432.6,460.0
2001	4,385	100.0%	531.9	544.0	527.9,560.1	4,314	100.0%	498.8	423.4	410.2,436.6
2002	4,586	100.0%	553.3	558.2	542.0,574.3	4,598	100.0%	529.9	442.4	429.1,455.8
2003	4,719	100.0%	566.6	563.4	547.3,579.5	4,726	100.0%	543.3	453.3	439.8,466.8
2004	4,643	100.0%	555.1	543.1	527.5,558.7	4,662	100.0%	533.5	443.1	429.8,456.3
2000-2004	22,620	100.0%	546.0	550.2	543.1,557.4	22,742	100.0%	524.2	441.7	435.7,447.7
1993-2004	51,820	100.0%	528.2	552.7	547.9,557.5	52,968	100.0%	514.8	443.1	439.1,447.0

All cancers excluding non-melanoma skin cancer (C00-C97, ex. C44)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	3,128	75.9%	391.9	430.7	415.5,445.9	3,192	74.6%	381.2	345.4	332.9,358.0
1994	3,109	74.7%	387.7	424.5	409.5,439.4	3,118	75.1%	370.4	337.6	325.1,350.0
1995	3,058	75.0%	380.3	412.1	397.5,426.8	3,171	75.4%	375.2	341.0	328.5,353.4
1996	3,157	74.5%	389.6	417.9	403.2,432.5	3,258	73.7%	382.7	342.5	330.2,354.8
1997	3,039	73.0%	372.6	398.3	384.1,412.5	3,289	75.3%	384.3	340.2	328.0,352.3
1998	3,126	73.8%	381.8	403.8	389.6,418.0	3,323	75.6%	386.8	345.5	333.2,357.8
1999	3,010	71.6%	367.7	385.0	371.2,398.7	3,344	75.8%	388.6	342.6	330.5,354.7
2000	3,121	72.8%	380.4	394.1	380.3,408.0	3,397	76.5%	393.9	350.2	337.9,362.4
2001	3,257	74.3%	395.1	404.0	390.1,417.9	3,282	76.1%	379.5	329.9	318.1,341.7
2002	3,297	71.9%	397.8	401.9	388.2,415.7	3,507	76.3%	404.1	347.2	335.2,359.2
2003	3,426	72.6%	411.4	409.2	395.5,423.0	3,602	76.2%	414.1	355.4	343.3,367.4
2004	3,427	73.8%	409.7	401.2	387.8,414.7	3,595	77.1%	411.4	351.8	339.9,363.8
2000-2004	16,528	73.1%	398.9	402.2	396.1,408.4	17,383	76.4%	400.6	346.9	341.5,352.3
1993-2004	38,155	73.6%	388.9	406.6	402.5,410.7	40,078	75.7%	389.5	344.2	340.7,347.7

Cancer of the lip, oral cavity & pharynx (C00-C14)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	107	2.6%	13.4	15.2	12.3,18.1	54	1.3%	6.4	5.3	3.8,6.8
1994	108	2.6%	13.5	14.8	12.0,17.7	47	1.1%	5.6	4.7	3.3,6.2
1995	101	2.5%	12.6	14.4	11.6,17.3	51	1.2%	6.0	5.8	4.1,7.4
1996	103	2.4%	12.7	14.1	11.4,16.9	50	1.1%	5.9	5.0	3.6,6.5
1997	104	2.5%	12.8	14.3	11.6,17.1	45	1.0%	5.3	4.5	3.1,5.9
1998	83	2.0%	10.1	11.0	8.6,13.4	42	1.0%	4.9	4.1	2.8,5.4
1999	91	2.2%	11.1	12.1	9.6,14.5	56	1.3%	6.5	5.8	4.2,7.4
2000	85	2.0%	10.4	11.1	8.7,13.5	42	0.9%	4.9	4.5	3.0,5.9
2001	88	2.0%	10.7	11.4	9.0,13.8	40	0.9%	4.6	3.8	2.6,5.1
2002	86	1.9%	10.4	10.8	8.5,13.1	43	0.9%	5.0	4.1	2.8,5.4
2003	84	1.8%	10.1	10.1	7.9,12.2	48	1.0%	5.5	5.0	3.5,6.4
2004	105	2.3%	12.6	12.9	10.4,15.4	48	1.0%	5.5	4.8	3.4,6.2
2000-2004	448	2.0%	10.8	11.3	10.2,12.3	221	1.0%	5.1	4.4	3.8,5.0
1993-2004	1,145	2.2%	11.7	12.6	11.9,13.4	566	1.1%	5.5	4.8	4.4,5.2

Oesophageal cancer (C15)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	89	2.2%	11.1	12.3	9.7,14.9	56	1.3%	6.7	5.3	3.8,6.7
1994	100	2.4%	12.5	14.0	11.2,16.8	52	1.3%	6.2	4.6	3.3,5.9
1995	95	2.3%	11.8	13.4	10.7,16.1	54	1.3%	6.4	4.9	3.5,6.3
1996	78	1.8%	9.6	10.2	7.9,12.5	60	1.4%	7.0	5.3	3.9,6.7
1997	97	2.3%	11.9	13.3	10.6,16.0	74	1.7%	8.6	6.3	4.8,7.8
1998	100	2.4%	12.2	13.5	10.8,16.1	53	1.2%	6.2	4.4	3.1,5.7
1999	92	2.2%	11.2	12.0	9.5,14.5	61	1.4%	7.1	5.6	4.1,7.1
2000	69	1.6%	8.4	8.8	6.7,11.0	69	1.6%	8.0	6.2	4.6,7.7
2001	101	2.3%	12.3	12.8	10.3,15.3	64	1.5%	7.4	5.5	4.1,7.0
2002	86	1.9%	10.4	10.8	8.5,13.1	58	1.3%	6.7	4.9	3.6,6.2
2003	97	2.1%	11.6	11.6	9.3,13.9	53	1.1%	6.1	4.5	3.3,5.8
2004	106	2.3%	12.7	12.6	10.2,15.1	49	1.1%	5.6	3.7	2.6,4.8
2000-2004	459	2.0%	11.1	11.4	10.3,12.4	293	1.3%	6.8	5.0	4.4,5.6
1993-2004	1,110	2.1%	11.3	12.1	11.4,12.8	703	1.3%	6.8	5.1	4.7,5.5

EASR: European age-standardised rate

Stomach cancer (C16)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	153	3.7%	19.2	21.2	17.8,24.6	105	2.5%	12.5	9.5	7.6,11.5
1994	167	4.0%	20.8	22.5	19.0,26.0	97	2.3%	11.5	9.0	7.1,10.9
1995	155	3.8%	19.3	21.3	17.9,24.7	85	2.0%	10.1	8.2	6.4,10.1
1996	171	4.0%	21.1	23.0	19.5,26.5	117	2.6%	13.7	10.6	8.6,12.7
1997	143	3.4%	17.5	18.9	15.8,22.1	99	2.3%	11.6	8.7	6.9,10.5
1998	175	4.1%	21.4	23.1	19.6,26.5	100	2.3%	11.6	9.0	7.1,10.8
1999	157	3.7%	19.2	19.9	16.7,23.0	107	2.4%	12.4	9.4	7.6,11.3
2000	140	3.3%	17.1	17.7	14.8,20.7	94	2.1%	10.9	8.4	6.6,10.2
2001	148	3.4%	18.0	17.7	14.8,20.6	107	2.5%	12.4	8.6	6.9,10.3
2002	158	3.4%	19.1	18.9	15.9,21.9	100	2.2%	11.5	8.5	6.7,10.3
2003	171	3.6%	20.5	20.4	17.4,23.5	92	1.9%	10.6	7.7	6.0,9.4
2004	123	2.6%	14.7	14.2	11.7,16.8	80	1.7%	9.2	6.4	4.9,7.9
2000-2004	740	3.3%	17.9	17.8	16.5,19.1	473	2.1%	10.9	7.9	7.2,8.7
1993-2004	1,861	3.6%	19.0	19.8	18.9,20.7	1,183	2.2%	11.5	8.6	8.1,9.2

Colorectal cancer (C18-C21)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	475	11.5%	59.5	66.3	60.3,72.4	450	10.5%	53.7	44.4	40.1,48.8
1994	482	11.6%	60.1	66.1	60.1,72.0	435	10.5%	51.7	43.1	38.8,47.4
1995	491	12.0%	61.1	66.6	60.7,72.6	497	11.8%	58.8	48.1	43.6,52.6
1996	503	11.9%	62.1	67.4	61.5,73.4	467	10.6%	54.9	44.6	40.3,48.9
1997	455	10.9%	55.8	59.4	53.9,64.9	455	10.4%	53.2	42.1	38.0,46.2
1998	491	11.6%	60.0	64.0	58.2,69.7	441	10.0%	51.3	43.4	39.1,47.6
1999	449	10.7%	54.9	57.5	52.2,62.9	456	10.3%	53.0	41.8	37.7,45.8
2000	461	10.8%	56.2	58.4	53.1,63.8	422	9.5%	48.9	40.2	36.2,44.3
2001	528	12.0%	64.0	65.6	59.9,71.2	426	9.9%	49.3	39.4	35.5,43.4
2002	466	10.2%	56.2	57.2	51.9,62.4	450	9.8%	51.9	41.5	37.5,45.6
2003	559	11.8%	67.1	66.5	61.0,72.1	452	9.6%	52.0	39.8	35.9,43.7
2004	507	10.9%	60.6	59.5	54.3,64.8	447	9.6%	51.2	40.4	36.5,44.4
2000-2004	2,521	11.1%	60.8	61.5	59.0,63.9	2,197	9.7%	50.6	40.3	38.5,42.0
1993-2004	5,867	11.3%	59.8	62.8	61.2,64.4	5,398	10.2%	52.5	42.3	41.1,43.5

Cancer of the colon (C18)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	290	7.0%	36.3	40.5	35.8,45.2	321	7.5%	38.3	31.4	27.7,35.0
1994	305	7.3%	38.0	42.0	37.2,46.7	313	7.5%	37.2	31.2	27.6,34.9
1995	316	7.8%	39.3	42.8	38.0,47.6	349	8.3%	41.3	33.6	29.8,37.3
1996	315	7.4%	38.9	42.6	37.9,47.4	310	7.0%	36.4	29.6	26.1,33.1
1997	298	7.2%	36.5	38.7	34.2,43.1	311	7.1%	36.3	28.4	25.1,31.8
1998	304	7.2%	37.1	39.7	35.2,44.2	324	7.4%	37.7	31.6	28.0,35.2
1999	289	6.9%	35.3	37.3	32.9,41.6	334	7.6%	38.8	30.3	26.8,33.7
2000	275	6.4%	33.5	34.7	30.6,38.8	270	6.1%	31.3	25.4	22.2,28.6
2001	315	7.2%	38.2	39.0	34.6,43.3	271	6.3%	31.3	24.1	21.1,27.1
2002	300	6.5%	36.2	36.8	32.6,41.0	317	6.9%	36.5	28.7	25.4,32.1
2003	313	6.6%	37.6	36.9	32.8,41.0	310	6.6%	35.6	27.4	24.2,30.6
2004	300	6.5%	35.9	34.9	30.9,38.9	298	6.4%	34.1	26.6	23.4,29.7
2000-2004	1,503	6.6%	36.3	36.4	34.6,38.3	1,466	6.4%	33.8	26.5	25.0,27.9
1993-2004	3,620	7.0%	36.9	38.7	37.4,39.9	3,728	7.0%	36.2	28.9	27.9,29.9

Cancer of the rectum, rectosigmoid junction & anus (C19-C21)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	185	4.5%	23.2	25.8	22.1,29.6	129	3.0%	15.4	13.0	10.6,15.4
1994	177	4.3%	22.1	24.1	20.5,27.7	122	2.9%	14.5	11.9	9.6,14.1
1995	175	4.3%	21.8	23.8	20.3,27.4	148	3.5%	17.5	14.5	12.1,17.0
1996	188	4.4%	23.2	24.8	21.2,28.4	157	3.6%	18.4	15.0	12.5,17.5
1997	157	3.8%	19.3	20.7	17.5,24.0	144	3.3%	16.8	13.7	11.3,16.0
1998	187	4.4%	22.8	24.3	20.8,27.8	117	2.7%	13.6	11.8	9.5,14.0
1999	160	3.8%	19.5	20.3	17.1,23.4	122	2.8%	14.2	11.5	9.4,13.7
2000	186	4.3%	22.7	23.7	20.3,27.2	152	3.4%	17.6	14.8	12.3,17.3
2001	213	4.9%	25.8	26.6	23.0,30.2	155	3.6%	17.9	15.3	12.8,17.8
2002	166	3.6%	20.0	20.4	17.3,23.5	133	2.9%	15.3	12.8	10.5,15.1
2003	246	5.2%	29.5	29.6	25.9,33.4	142	3.0%	16.3	12.4	10.2,14.6
2004	207	4.5%	24.7	24.6	21.3,28.0	149	3.2%	17.1	13.9	11.5,16.2
2000-2004	1,018	4.5%	24.6	25.0	23.5,26.6	731	3.2%	16.8	13.8	12.8,14.9
1993-2004	2,247	4.3%	22.9	24.1	23.1,25.1	1,670	3.2%	16.2	13.4	12.7,14.0

EASR: European age-standardised rate

Liver cancer (C22)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	32	0.8%	4.0	4.5	2.9,6.0	33	0.8%	3.9	3.2	2.0,4.3
1994	26	0.6%	3.2	3.7	2.2,5.1	29	0.7%	3.4	2.7	1.6,3.7
1995	32	0.8%	4.0	4.4	2.9,6.0	17	0.4%	2.0	1.7	0.9,2.6
1996	33	0.8%	4.1	4.4	2.9,6.0	30	0.7%	3.5	2.6	1.6,3.6
1997	31	0.7%	3.8	3.8	2.5,5.2	27	0.6%	3.2	2.1	1.2,3.0
1998	26	0.6%	3.2	3.3	2.0,4.6	20	0.5%	2.3	2.0	1.1,3.0
1999	20	0.5%	2.4	2.8	1.6,4.0	32	0.7%	3.7	2.6	1.7,3.5
2000	34	0.8%	4.1	4.2	2.8,5.6	30	0.7%	3.5	2.9	1.8,3.9
2001	17	0.4%	2.1	2.2	1.1,3.2	8	0.2%	0.9	0.9	0.3,1.5
2002	39	0.9%	4.7	4.7	3.2,6.2	26	0.6%	3.0	2.5	1.5,3.5
2003	35	0.7%	4.2	4.2	2.8,5.6	19	0.4%	2.2	1.6	0.9,2.4
2004	30	0.6%	3.6	3.6	2.3,4.9	16	0.3%	1.8	1.4	0.7,2.1
2000-2004	155	0.7%	3.7	3.8	3.2,4.4	99	0.4%	2.3	1.8	1.5,2.2
1993-2004	355	0.7%	3.6	3.8	3.4,4.2	287	0.5%	2.8	2.2	1.9,2.4

Pancreatic cancer (C25)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	90	2.2%	11.3	12.1	9.6,14.6	85	2.0%	10.2	7.9	6.1,9.7
1994	62	1.5%	7.7	8.5	6.4,10.7	78	1.9%	9.3	7.5	5.8,9.3
1995	58	1.4%	7.2	7.7	5.7,9.7	66	1.6%	7.8	6.1	4.5,7.6
1996	91	2.1%	11.2	11.8	9.3,14.2	72	1.6%	8.5	6.6	5.0,8.2
1997	80	1.9%	9.8	10.5	8.2,12.9	82	1.9%	9.6	7.2	5.5,8.8
1998	71	1.7%	8.7	9.3	7.1,11.5	65	1.5%	7.6	5.6	4.2,7.0
1999	63	1.5%	7.7	8.2	6.2,10.3	59	1.3%	6.9	5.1	3.7,6.4
2000	65	1.5%	7.9	8.3	6.3,10.4	81	1.8%	9.4	7.7	6.0,9.5
2001	96	2.2%	11.6	12.0	9.6,14.5	75	1.7%	8.7	6.2	4.7,7.7
2002	84	1.8%	10.1	9.9	7.8,12.1	86	1.9%	9.9	7.4	5.8,9.1
2003	63	1.3%	7.6	7.3	5.5,9.1	97	2.1%	11.2	8.0	6.3,9.7
2004	71	1.5%	8.5	8.5	6.5,10.5	82	1.8%	9.4	7.1	5.5,8.7
2000-2004	379	1.7%	9.1	9.2	8.3,10.1	421	1.9%	9.7	7.3	6.6,8.0
1993-2004	894	1.7%	9.1	9.5	8.9,10.1	928	1.8%	9.0	6.9	6.4,7.3

Cancer of the larynx (C32)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	59	1.4%	7.4	8.6	6.4,10.8	18	0.4%	2.1	2.1	1.1,3.1
1994	48	1.2%	6.0	6.7	4.8,8.7	9	0.2%	1.1	0.9	0.3,1.6
1995	58	1.4%	7.2	8.3	6.1,10.4	15	0.4%	1.8	1.4	0.7,2.2
1996	50	1.2%	6.2	7.1	5.1,9.0	11	0.2%	1.3	1.1	0.5,1.8
1997	53	1.3%	6.5	7.3	5.3,9.3	11	0.3%	1.3	1.4	0.6,2.2
1998	51	1.2%	6.2	6.9	5.0,8.8	14	0.3%	1.6	1.5	0.7,2.3
1999	65	1.5%	7.9	8.8	6.6,10.9	14	0.3%	1.6	1.5	0.7,2.3
2000	46	1.1%	5.6	6.0	4.3,7.8	14	0.3%	1.6	1.7	0.8,2.6
2001	51	1.2%	6.2	6.4	4.7,8.2	13	0.3%	1.5	1.6	0.7,2.5
2002	55	1.2%	6.6	6.9	5.0,8.7	9	0.2%	1.0	1.0	0.3,1.7
2003	49	1.0%	5.9	6.1	4.4,7.8	13	0.3%	1.5	1.3	0.6,2.1
2004	40	0.9%	4.8	4.9	3.3,6.4	13	0.3%	1.5	1.4	0.6,2.2
2000-2004	241	1.1%	5.8	6.1	5.3,6.8	62	0.3%	1.4	1.4	1.0,1.8
1993-2004	625	1.2%	6.4	7.0	6.4,7.5	154	0.3%	1.5	1.4	1.2,1.7

Lung cancer (C33-C34)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	565	13.7%	70.8	77.9	71.4,84.4	319	7.5%	38.1	34.4	30.5,38.4
1994	625	15.0%	77.9	87.5	80.6,94.4	311	7.5%	36.9	32.6	28.8,36.4
1995	546	13.4%	67.9	73.2	67.0,79.4	331	7.9%	39.2	34.2	30.3,38.1
1996	551	13.0%	68.0	72.7	66.6,78.9	308	7.0%	36.2	32.2	28.5,36.0
1997	557	13.4%	68.3	73.4	67.3,79.6	325	7.4%	38.0	32.1	28.5,35.8
1998	565	13.3%	69.0	72.1	66.1,78.1	330	7.5%	38.4	32.0	28.4,35.6
1999	512	12.2%	62.6	65.1	59.4,70.8	358	8.1%	41.6	35.2	31.4,39.0
2000	519	12.1%	63.3	65.7	60.0,71.4	341	7.7%	39.5	34.2	30.4,38.0
2001	572	13.0%	69.4	70.6	64.7,76.4	321	7.4%	37.1	31.3	27.7,34.8
2002	505	11.0%	60.9	61.2	55.8,66.6	363	7.9%	41.8	34.1	30.4,37.7
2003	530	11.2%	63.6	62.7	57.3,68.1	362	7.7%	41.6	34.3	30.6,38.0
2004	571	12.3%	68.3	65.6	60.2,71.0	361	7.7%	41.3	32.9	29.4,36.5
2000-2004	2,697	11.9%	65.1	65.1	62.6,67.6	1,748	7.7%	40.3	33.4	31.7,35.0
1993-2004	6,618	12.8%	67.5	70.4	68.7,72.1	4,030	7.6%	39.2	33.3	32.2,34.4

EASR: European age-standardised rate

Bone cancer (C40-C41)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	6	0.1%	0.8	0.9	0.2,1.6	6	0.1%	0.7	0.6	0.1,1.1
1994	8	0.2%	1.0	0.9	0.3,1.5	6	0.1%	0.7	0.6	0.1,1.1
1995	15	0.4%	1.9	1.8	0.9,2.7	10	0.2%	1.2	1.0	0.4,1.7
1996	11	0.3%	1.4	1.3	0.5,2.0	<5				
1997	9	0.2%	1.1	1.1	0.4,1.9	5	0.1%	0.6	0.6	0.1,1.2
1998	6	0.1%	0.7	0.7	0.1,1.2	<5				
1999	6	0.1%	0.7	0.8	0.1,1.4	6	0.1%	0.7	0.6	0.1,1.1
2000	8	0.2%	1.0	1.0	0.3,1.7	<5				
2001	<5					<5				
2002	<5					6	0.1%	0.7	0.6	0.1,1.1
2003	8	0.2%	1.0	1.0	0.3,1.7	<5				
2004	7	0.2%	0.8	0.8	0.2,1.4	10	0.2%	1.1	1.0	0.4,1.6
2000-2004	29	0.1%	0.7	0.7	0.5,1.0	25	0.1%	0.6	0.5	0.3,0.7
1993-2004	90	0.2%	0.9	0.9	0.7,1.1	63	0.1%	0.6	0.6	0.4,0.7

Malignant melanoma (C43)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	58	1.4%	7.3	8.3	6.2,10.5	126	2.9%	15.0	14.2	11.7,16.8
1994	68	1.6%	8.5	9.2	7.0,11.5	111	2.7%	13.2	12.8	10.3,15.3
1995	68	1.7%	8.5	9.3	7.1,11.6	101	2.4%	12.0	11.4	9.1,13.8
1996	70	1.7%	8.6	9.5	7.3,11.8	105	2.4%	12.3	12.0	9.6,14.3
1997	66	1.6%	8.1	8.8	6.6,10.9	93	2.1%	10.9	10.5	8.3,12.7
1998	61	1.4%	7.5	8.0	6.0,10.0	116	2.6%	13.5	12.2	9.9,14.5
1999	69	1.6%	8.4	8.7	6.6,10.8	109	2.5%	12.7	12.1	9.8,14.5
2000	76	1.8%	9.3	9.9	7.6,12.1	111	2.5%	12.9	12.0	9.7,14.3
2001	87	2.0%	10.6	10.9	8.6,13.2	129	3.0%	14.9	13.5	11.1,15.9
2002	101	2.2%	12.2	12.5	10.0,14.9	146	3.2%	16.8	15.6	13.0,18.2
2003	83	1.8%	10.0	10.3	8.1,12.5	129	2.7%	14.8	13.3	10.9,15.6
2004	112	2.4%	13.4	13.3	10.8,15.8	148	3.2%	16.9	15.8	13.2,18.4
2000-2004	459	2.0%	11.1	11.4	10.3,12.4	663	2.9%	15.3	14.1	13.0,15.2
1993-2004	919	1.8%	9.4	9.9	9.3,10.6	1,424	2.7%	13.8	13.0	12.3,13.7

Non-melanoma skin cancer (C44)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	995	24.1%	124.7	138.7	130.0,147.4	1,084	25.4%	129.5	105.9	99.2,112.6
1994	1,054	25.3%	131.4	144.9	136.0,153.7	1,035	24.9%	123.0	100.9	94.4,107.4
1995	1,019	25.0%	126.7	139.4	130.7,148.1	1,034	24.6%	122.3	98.6	92.2,105.0
1996	1,081	25.5%	133.4	144.6	135.9,153.3	1,161	26.3%	136.4	109.3	102.6,116.0
1997	1,125	27.0%	137.9	148.5	139.8,157.3	1,077	24.7%	125.9	100.2	93.9,106.5
1998	1,108	26.2%	135.3	144.4	135.8,152.9	1,071	24.4%	124.7	99.3	93.0,105.6
1999	1,191	28.4%	145.5	151.7	143.0,160.4	1,069	24.2%	124.2	100.1	93.8,106.5
2000	1,166	27.2%	142.1	147.6	139.1,156.1	1,045	23.5%	121.2	96.1	90.0,102.3
2001	1,128	25.7%	136.8	140.0	131.8,148.3	1,032	23.9%	119.3	93.5	87.5,99.5
2002	1,289	28.1%	155.5	156.3	147.6,164.9	1,091	23.7%	125.7	95.3	89.3,101.2
2003	1,293	27.4%	155.3	154.2	145.7,162.7	1,124	23.8%	129.2	97.9	91.9,104.0
2004	1,216	26.2%	145.4	141.9	133.8,149.9	1,067	22.9%	122.1	91.3	85.5,97.1
2000-2004	6,092	26.9%	147.0	148.0	144.3,151.8	5,359	23.6%	123.5	94.8	92.1,97.5
1993-2004	13,665	26.4%	139.3	146.1	143.7,148.6	12,890	24.3%	125.3	98.9	97.1,100.7

Mesothelioma (C45)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	34	0.8%	4.3	4.5	3.0,6.1					
1994	30	0.7%	3.7	4.2	2.7,5.8					
1995	28	0.7%	3.5	3.9	2.4,5.4					
1996	36	0.8%	4.4	4.7	3.2,6.3					
1997	35	0.8%	4.3	4.8	3.2,6.5					
1998	45	1.1%	5.5	5.8	4.1,7.6					
1999	60	1.4%	7.3	7.7	5.7,9.7					
2000	40	0.9%	4.9	5.0	3.4,6.5					
2001	53	1.2%	6.4	6.5	4.7,8.2					
2002	51	1.1%	6.2	6.2	4.5,7.9					
2003	36	0.8%	4.3	4.4	2.9,5.9					
2004	41	0.9%	4.9	4.8	3.3,6.3					
2000-2004	221	1.0%	5.3	5.4	4.7,6.1	26	0.1%	0.6	0.5	0.3,0.7
1993-2004	489	0.9%	5.0	5.2	4.8,5.7	56	0.1%	0.5	0.5	0.4,0.6

EASR: European age-standardised rate

Breast cancer (C50)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993						771	18.0%	92.1	93.0	86.2,99.9
1994						833	20.1%	99.0	100.8	93.7,107.9
1995						880	20.9%	104.1	104.2	97.1,111.4
1996						847	19.2%	99.5	99.5	92.5,106.5
1997						857	19.6%	100.1	99.6	92.7,106.5
1998						911	20.7%	106.0	104.7	97.7,111.7
1999						946	21.4%	109.9	105.8	98.8,112.8
2000						961	21.6%	111.4	107.5	100.5,114.5
2001						922	21.4%	106.6	103.3	96.4,110.1
2002						945	20.6%	108.9	102.0	95.3,108.7
2003						1,035	21.9%	119.0	112.2	105.2,119.3
2004						1,117	24.0%	127.8	117.7	110.6,124.8
2000-2004	33	0.1%	0.8	0.8	0.5,1.1	4,980	21.9%	114.8	108.6	105.5,111.7
1993-2004	79	0.2%	0.8	0.8	0.7,1.0	11,025	20.8%	107.1	104.4	102.4,106.4

Cervical cancer (C53)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993						84	2.0%	10.0	10.5	8.2,12.8
1994						75	1.8%	8.9	9.2	7.1,11.3
1995						86	2.0%	10.2	11.0	8.6,13.3
1996						93	2.1%	10.9	11.3	8.9,13.6
1997						84	1.9%	9.8	9.8	7.6,11.9
1998						80	1.8%	9.3	9.3	7.2,11.3
1999						76	1.7%	8.8	8.9	6.8,10.9
2000						94	2.1%	10.9	10.7	8.5,12.9
2001						72	1.7%	8.3	8.2	6.3,10.1
2002						82	1.8%	9.4	9.3	7.2,11.3
2003						75	1.6%	8.6	8.4	6.5,10.3
2004						67	1.4%	7.7	7.2	5.5,9.0
2000-2004						390	1.7%	9.0	8.7	7.9,9.6
1993-2004						968	1.8%	9.4	9.4	8.8,10.0

Cancer of the uterus (C54)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993						89	2.1%	10.6	10.4	8.2,12.7
1994						105	2.5%	12.5	11.8	9.5,14.2
1995						90	2.1%	10.6	10.3	8.1,12.6
1996						98	2.2%	11.5	11.2	8.9,13.5
1997						116	2.7%	13.6	13.5	10.9,16.0
1998						105	2.4%	12.2	11.7	9.4,14.0
1999						119	2.7%	13.8	13.4	10.9,15.9
2000						144	3.2%	16.7	16.0	13.3,18.7
2001						143	3.3%	16.5	15.6	13.0,18.3
2002						158	3.4%	18.2	17.1	14.3,19.8
2003						176	3.7%	20.2	18.9	16.0,21.7
2004						156	3.3%	17.9	16.0	13.4,18.6
2000-2004						777	3.4%	17.9	16.7	15.5,17.9
1993-2004						1,499	2.8%	14.6	13.9	13.2,14.6

Ovarian cancer (C56)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993						151	3.5%	18.0	17.9	14.9,20.9
1994						155	3.7%	18.4	18.2	15.2,21.2
1995						156	3.7%	18.5	18.3	15.4,21.3
1996						151	3.4%	17.7	17.2	14.4,20.1
1997						185	4.2%	21.6	20.9	17.8,24.1
1998						195	4.4%	22.7	22.0	18.8,25.1
1999						183	4.1%	21.3	21.4	18.2,24.6
2000						168	3.8%	19.5	18.5	15.6,21.4
2001						177	4.1%	20.5	19.1	16.2,22.0
2002						191	4.2%	22.0	19.9	17.0,22.9
2003						214	4.5%	24.6	22.0	18.9,25.1
2004						205	4.4%	23.5	21.0	18.0,24.0
2000-2004						955	4.2%	22.0	20.1	18.8,21.5
1993-2004						2,131	4.0%	20.7	19.7	18.9,20.6

EASR: European age-standardised rate

Prostate cancer (C61)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	474	11.5%	59.4	64.0	58.2,69.9					
1994	484	11.6%	60.4	64.2	58.4,70.0					
1995	511	12.5%	63.6	67.1	61.2,73.1					
1996	456	10.8%	56.3	59.5	54.0,65.0					
1997	491	11.8%	60.2	63.0	57.4,68.6					
1998	497	11.7%	60.7	63.0	57.4,68.6					
1999	494	11.8%	60.4	62.4	56.9,68.0					
2000	576	13.4%	70.2	71.6	65.7,77.5					
2001	554	12.6%	67.2	68.5	62.7,74.2					
2002	652	14.2%	78.7	79.2	73.1,85.3					
2003	739	15.7%	88.7	88.1	81.7,94.5					
2004	757	16.3%	90.5	88.6	82.3,95.0					
2000-2004	3,278	14.5%	79.1	79.4	76.7,82.1					
1993-2004	6,685	12.9%	68.1	70.3	68.6,72.0					

Testicular cancer (C62)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	55	1.3%	6.9	6.9	5.0,8.7					
1994	47	1.1%	5.9	5.8	4.1,7.4					
1995	40	1.0%	5.0	4.9	3.3,6.4					
1996	56	1.3%	6.9	6.8	5.0,8.6					
1997	48	1.2%	5.9	5.8	4.2,7.5					
1998	46	1.1%	5.6	5.6	3.9,7.2					
1999	56	1.3%	6.8	6.9	5.1,8.7					
2000	68	1.6%	8.3	8.0	6.1,10.0					
2001	51	1.2%	6.2	6.1	4.4,7.8					
2002	56	1.2%	6.8	6.7	5.0,8.5					
2003	56	1.2%	6.7	6.7	4.9,8.5					
2004	69	1.5%	8.2	8.1	6.2,10.1					
2000-2004	300	1.3%	7.2	7.2	6.3,8.0					
1993-2004	648	1.3%	6.6	6.6	6.0,7.1					

Cancer of the kidney (C64-C66, C68)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	95	2.3%	11.9	13.2	10.5,15.8	70	1.6%	8.4	7.9	6.0,9.9
1994	113	2.7%	14.1	15.5	12.6,18.4	47	1.1%	5.6	5.0	3.5,6.5
1995	96	2.4%	11.9	13.2	10.5,15.9	67	1.6%	7.9	7.5	5.6,9.4
1996	95	2.2%	11.7	13.1	10.5,15.8	63	1.4%	7.4	6.5	4.8,8.1
1997	99	2.4%	12.1	13.1	10.5,15.7	72	1.6%	8.4	7.6	5.8,9.5
1998	98	2.3%	12.0	12.8	10.2,15.3	76	1.7%	8.8	7.3	5.6,9.0
1999	101	2.4%	12.3	13.3	10.7,15.9	58	1.3%	6.7	6.1	4.5,7.8
2000	92	2.1%	11.2	11.8	9.3,14.2	69	1.6%	8.0	7.1	5.3,8.8
2001	105	2.4%	12.7	13.6	11.0,16.2	64	1.5%	7.4	6.5	4.8,8.1
2002	115	2.5%	13.9	14.1	11.5,16.7	66	1.4%	7.6	6.5	4.8,8.2
2003	128	2.7%	15.4	15.5	12.8,18.2	78	1.7%	9.0	7.7	5.9,9.5
2004	108	2.3%	12.9	12.6	10.2,15.0	79	1.7%	9.0	7.6	5.8,9.3
2000-2004	548	2.4%	13.2	13.5	12.4,14.6	356	1.6%	8.2	7.1	6.3,7.8
1993-2004	1,245	2.4%	12.7	13.5	12.8,14.3	809	1.5%	7.9	6.9	6.4,7.4

Cancer of the bladder (C67)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	156	3.8%	19.5	21.6	18.1,25.0	51	1.2%	6.1	4.7	3.3,6.0
1994	138	3.3%	17.2	19.0	15.8,22.2	57	1.4%	6.8	4.7	3.4,6.0
1995	143	3.5%	17.8	19.0	15.8,22.1	66	1.6%	7.8	6.4	4.8,8.0
1996	176	4.2%	21.7	23.0	19.6,26.4	84	1.9%	9.9	7.7	6.0,9.5
1997	120	2.9%	14.7	15.7	12.9,18.6	43	1.0%	5.0	3.9	2.7,5.1
1998	162	3.8%	19.8	20.9	17.7,24.2	72	1.6%	8.4	6.3	4.8,7.8
1999	156	3.7%	19.1	19.9	16.7,23.0	58	1.3%	6.7	5.0	3.6,6.3
2000	145	3.4%	17.7	18.3	15.3,21.3	65	1.5%	7.5	5.7	4.2,7.1
2001	126	2.9%	15.3	15.3	12.6,18.0	57	1.3%	6.6	5.0	3.6,6.3
2002	129	2.8%	15.6	15.7	12.9,18.4	42	0.9%	4.8	3.3	2.2,4.3
2003	167	3.5%	20.1	19.9	16.9,23.0	58	1.2%	6.7	4.9	3.6,6.2
2004	148	3.2%	17.7	16.7	14.0,19.5	62	1.3%	7.1	5.8	4.3,7.3
2000-2004	715	3.2%	17.3	17.2	15.9,18.5	284	1.2%	6.5	4.9	4.3,5.5
1993-2004	1,766	3.4%	18.0	18.7	17.8,19.6	715	1.3%	6.9	5.3	4.9,5.7

EASR: European age-standardised rate

Cancer of the brain (C71)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	61	1.5%	7.6	8.3	6.2,10.4	40	0.9%	4.8	4.9	3.4,6.5
1994	52	1.2%	6.5	7.1	5.1,9.0	59	1.4%	7.0	7.1	5.3,9.0
1995	54	1.3%	6.7	7.5	5.4,9.5	25	0.6%	3.0	2.7	1.6,3.8
1996	72	1.7%	8.9	9.5	7.3,11.7	43	1.0%	5.1	4.8	3.4,6.3
1997	57	1.4%	7.0	7.6	5.6,9.6	52	1.2%	6.1	5.9	4.2,7.5
1998	62	1.5%	7.6	8.1	6.1,10.2	66	1.5%	7.7	7.3	5.5,9.2
1999	55	1.3%	6.7	7.1	5.2,9.0	30	0.7%	3.5	3.4	2.2,4.7
2000	64	1.5%	7.8	8.1	6.1,10.0	46	1.0%	5.3	5.0	3.5,6.5
2001	68	1.6%	8.2	8.5	6.4,10.5	51	1.2%	5.9	5.6	4.1,7.2
2002	75	1.6%	9.0	9.0	7.0,11.1	49	1.1%	5.6	5.2	3.7,6.7
2003	67	1.4%	8.0	8.2	6.2,10.1	49	1.0%	5.6	5.6	4.0,7.2
2004	44	0.9%	5.3	5.3	3.8,6.9	45	1.0%	5.1	4.9	3.5,6.4
2000-2004	318	1.4%	7.7	7.8	6.9,8.7	240	1.1%	5.5	5.3	4.6,6.0
1993-2004	731	1.4%	7.5	7.8	7.3,8.4	555	1.0%	5.4	5.2	4.8,5.7

Hodgkin's disease (C81)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	32	0.8%	4.0	4.1	2.7,5.5	17	0.4%	2.0	1.9	1.0,2.9
1994	22	0.5%	2.7	3.0	1.7,4.2	16	0.4%	1.9	1.9	0.9,2.8
1995	28	0.7%	3.5	3.7	2.3,5.1	15	0.4%	1.8	1.8	0.9,2.7
1996	20	0.5%	2.5	2.5	1.4,3.6	14	0.3%	1.6	1.6	0.8,2.5
1997	20	0.5%	2.5	2.6	1.5,3.8	11	0.3%	1.3	1.3	0.5,2.1
1998	11	0.3%	1.3	1.4	0.5,2.2	18	0.4%	2.1	1.9	1.0,2.9
1999	27	0.6%	3.3	3.2	2.0,4.4	13	0.3%	1.5	1.4	0.6,2.2
2000	25	0.6%	3.0	3.1	1.9,4.3	11	0.2%	1.3	1.3	0.5,2.1
2001	23	0.5%	2.8	2.7	1.6,3.8	17	0.4%	2.0	2.0	1.1,3.0
2002	10	0.2%	1.2	1.2	0.5,2.0	18	0.4%	2.1	2.1	1.1,3.0
2003	19	0.4%	2.3	2.2	1.2,3.2	18	0.4%	2.1	2.1	1.1,3.0
2004	23	0.5%	2.7	2.7	1.6,3.9	17	0.4%	1.9	1.9	1.0,2.9
2000-2004	100	0.4%	2.4	2.4	1.9,2.9	81	0.4%	1.9	1.9	1.5,2.3
1993-2004	260	0.5%	2.7	2.7	2.4,3.0	185	0.3%	1.8	1.8	1.5,2.1

Non-Hodgkin's lymphoma (C82-C85, C96)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	136	3.3%	17.0	18.6	15.4,21.7	104	2.4%	12.4	11.3	9.0,13.6
1994	105	2.5%	13.1	14.5	11.7,17.3	116	2.8%	13.8	12.7	10.2,15.1
1995	121	3.0%	15.0	16.7	13.7,19.7	97	2.3%	11.5	10.0	7.9,12.1
1996	126	3.0%	15.5	16.7	13.7,19.6	122	2.8%	14.3	12.4	10.1,14.7
1997	127	3.0%	15.6	16.6	13.7,19.5	117	2.7%	13.7	11.8	9.5,14.0
1998	120	2.8%	14.7	15.9	13.0,18.7	143	3.3%	16.6	15.4	12.8,18.0
1999	113	2.7%	13.8	14.5	11.8,17.2	133	3.0%	15.5	13.2	10.8,15.5
2000	135	3.1%	16.5	17.2	14.2,20.1	135	3.0%	15.7	14.0	11.5,16.4
2001	113	2.6%	13.7	14.1	11.5,16.7	139	3.2%	16.1	13.5	11.2,15.9
2002	130	2.8%	15.7	16.3	13.5,19.1	125	2.7%	14.4	12.3	10.1,14.6
2003	135	2.9%	16.2	16.4	13.6,19.2	132	2.8%	15.2	12.4	10.2,14.6
2004	135	2.9%	16.1	16.0	13.2,18.7	147	3.2%	16.8	13.4	11.1,15.7
2000-2004	648	2.9%	15.6	16.0	14.8,17.3	678	3.0%	15.6	13.1	12.1,14.2
1993-2004	1,496	2.9%	15.2	16.1	15.3,16.9	1,510	2.9%	14.7	12.7	12.0,13.4

Multiple myeloma (C90)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	52	1.3%	6.5	7.3	5.3,9.3	48	1.1%	5.7	4.9	3.5,6.4
1994	47	1.1%	5.9	6.2	4.4,8.1	46	1.1%	5.5	4.5	3.1,5.9
1995	37	0.9%	4.6	5.0	3.4,6.6	38	0.9%	4.5	3.7	2.4,4.9
1996	51	1.2%	6.3	6.7	4.9,8.6	44	1.0%	5.2	4.3	3.0,5.7
1997	70	1.7%	8.6	9.4	7.2,11.6	59	1.4%	6.9	5.2	3.8,6.6
1998	51	1.2%	6.2	6.5	4.7,8.3	40	0.9%	4.7	3.7	2.5,4.9
1999	47	1.1%	5.7	6.1	4.3,7.8	38	0.9%	4.4	3.9	2.6,5.2
2000	52	1.2%	6.3	6.6	4.8,8.4	58	1.3%	6.7	5.1	3.7,6.5
2001	68	1.6%	8.2	8.5	6.4,10.5	49	1.1%	5.7	4.1	2.9,5.3
2002	60	1.3%	7.2	7.0	5.2,8.8	37	0.8%	4.3	3.4	2.2,4.5
2003	61	1.3%	7.3	7.1	5.3,8.9	43	0.9%	4.9	3.4	2.3,4.5
2004	58	1.2%	6.9	6.7	5.0,8.4	44	0.9%	5.0	4.2	2.9,5.5
2000-2004	299	1.3%	7.2	7.2	6.3,8.0	231	1.0%	5.3	4.0	3.5,4.6
1993-2004	654	1.3%	6.7	7.0	6.4,7.5	544	1.0%	5.3	4.2	3.8,4.6

EASR: European age-standardised rate

Leukaemia (C91-C95)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	93	2.3%	11.7	12.4	9.8,14.9	65	1.5%	7.8	6.9	5.2,8.7
1994	103	2.5%	12.8	13.5	10.9,16.2	54	1.3%	6.4	5.6	4.0,7.1
1995	91	2.2%	11.3	11.9	9.4,14.3	75	1.8%	8.9	7.7	5.9,9.5
1996	75	1.8%	9.3	9.7	7.5,11.9	75	1.7%	8.8	8.0	6.1,9.9
1997	104	2.5%	12.8	13.3	10.7,15.9	89	2.0%	10.4	9.0	7.0,11.0
1998	101	2.4%	12.3	12.6	10.1,15.1	64	1.5%	7.4	6.6	4.9,8.3
1999	92	2.2%	11.2	11.7	9.3,14.1	56	1.3%	6.5	5.2	3.7,6.6
2000	99	2.3%	12.1	12.2	9.8,14.6	68	1.5%	7.9	6.6	5.0,8.2
2001	85	1.9%	10.3	10.6	8.3,12.9	58	1.3%	6.7	5.3	3.8,6.7
2002	100	2.2%	12.1	12.3	9.9,14.8	78	1.7%	9.0	7.2	5.5,8.9
2003	64	1.4%	7.7	7.8	5.9,9.7	58	1.2%	6.7	5.7	4.2,7.2
2004	87	1.9%	10.4	10.2	8.1,12.4	58	1.2%	6.6	5.8	4.3,7.4
2000-2004	435	1.9%	10.5	10.6	9.6,11.6	320	1.4%	7.4	6.1	5.4,6.8
1993-2004	1,094	2.1%	11.2	11.5	10.8,12.2	798	1.5%	7.8	6.6	6.1,7.1

Childhood cancer (Ages 0-14, C00-C97, ex. C44)

Year of diagnosis	Male					Female				
	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI	Cases	%cancer cases	Crude rate	EASR	EASR 95% CI
1993	27	0.7%	13.4	13.8	8.6,19.1	26	0.6%	13.5	14.1	8.7,19.5
1994	30	0.7%	15.0	15.6	10.0,21.2	25	0.6%	13.0	13.5	8.2,18.8
1995	28	0.7%	14.0	14.5	9.1,19.8	19	0.5%	10.0	10.4	5.7,15.1
1996	37	0.9%	18.6	18.8	12.7,24.8	24	0.5%	12.6	13.2	7.9,18.5
1997	32	0.8%	16.1	16.8	11.0,22.7	24	0.5%	12.7	13.0	7.8,18.2
1998	26	0.6%	13.2	13.4	8.2,18.6	19	0.4%	10.1	11.1	6.1,16.1
1999	26	0.6%	13.3	13.3	8.2,18.4	19	0.4%	10.2	10.6	5.8,15.4
2000	29	0.7%	15.0	15.3	9.7,20.9	13	0.3%	7.1	7.3	3.3,11.4
2001	21	0.5%	11.1	11.4	6.5,16.3	18	0.4%	10.0	10.1	5.4,14.8
2002	27	0.6%	14.4	15.3	9.5,21.1	21	0.5%	11.8	12.1	6.9,17.3
2003	24	0.5%	12.9	13.2	7.9,18.5	30	0.6%	17.1	18.1	11.5,24.6
2004	17	0.4%	9.3	9.3	4.9,13.8	21	0.5%	12.1	12.7	7.2,18.2
2000-2004	118	0.5%	12.6	12.9	10.6,15.3	103	0.5%	11.6	12.0	9.7,14.3
1993-2004	324	0.6%	13.9	14.3	12.7,15.8	259	0.5%	11.7	12.2	10.7,13.7

EASR: European age-standardised rate

A5: MORTALITY RATES BY SEX AND CANCER SITE (1993-2004)

All cancers including non-melanoma skin cancer (C00-C97)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	1,884	100.0%	236.0	259.8	248.0,271.7	1,745	100.0%	208.4	176.5	167.8,185.3
1994	1,858	100.0%	231.7	254.8	243.1,266.5	1,757	100.0%	208.7	172.7	164.1,181.2
1995	1,845	100.0%	229.5	247.6	236.2,259.0	1,648	100.0%	195.0	162.6	154.3,170.9
1996	1,849	100.0%	228.2	246.0	234.7,257.3	1,685	100.0%	197.9	160.6	152.5,168.7
1997	1,849	100.0%	226.7	241.3	230.2,252.3	1,746	100.0%	204.0	164.3	156.2,172.5
1998	1,927	100.0%	235.4	247.8	236.7,258.9	1,736	100.0%	202.1	161.4	153.4,169.4
1999	1,798	100.0%	219.7	228.5	217.9,239.1	1,749	100.0%	203.3	161.7	153.7,169.7
2000	1,764	100.0%	215.0	222.3	211.9,232.7	1,793	100.0%	207.9	167.4	159.3,175.6
2001	1,923	100.0%	233.3	236.0	225.3,246.6	1,749	100.0%	202.2	158.0	150.2,165.8
2002	1,905	100.0%	229.8	231.1	220.7,241.6	1,758	100.0%	202.6	154.9	147.3,162.6
2003	1,902	100.0%	228.4	225.4	215.2,235.6	1,839	100.0%	211.4	160.8	153.1,168.6
2004	1,935	100.0%	231.3	222.3	212.4,232.3	1,815	100.0%	207.7	155.5	148.0,163.1
2000-2004	9,429	100.0%	227.6	227.4	222.8,232.0	8,954	100.0%	206.4	159.3	155.8,162.8
1993-2004	22,439	100.0%	228.7	238.0	234.9,241.2	21,020	100.0%	204.3	162.8	160.5,165.1

All cancers excluding non-melanoma skin cancer (C00-C97, ex. C44)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	1,881	99.8%	235.7	259.4	247.6,271.3	1,737	99.5%	207.4	175.6	166.9,184.3
1994	1,849	99.5%	230.6	253.5	241.8,265.2	1,755	99.9%	208.5	172.5	164.0,181.1
1995	1,842	99.8%	229.1	247.2	235.8,258.6	1,644	99.8%	194.5	162.3	154.0,170.6
1996	1,840	99.5%	227.1	244.8	233.5,256.0	1,682	99.8%	197.6	160.4	152.3,168.5
1997	1,840	99.5%	225.6	240.2	229.2,251.3	1,742	99.8%	203.6	164.0	155.9,172.1
1998	1,920	99.6%	234.5	246.8	235.7,257.9	1,731	99.7%	201.5	161.0	153.0,169.0
1999	1,789	99.5%	218.6	227.3	216.7,237.9	1,746	99.8%	202.9	161.4	153.4,169.4
2000	1,757	99.6%	214.1	221.5	211.0,231.9	1,790	99.8%	207.5	167.3	159.1,175.4
2001	1,918	99.7%	232.6	235.3	224.7,245.9	1,734	99.1%	200.5	156.9	149.1,164.7
2002	1,898	99.6%	229.0	230.3	219.9,240.8	1,753	99.7%	202.0	154.7	147.0,162.3
2003	1,894	99.6%	227.4	224.4	214.3,234.6	1,829	99.5%	210.3	160.2	152.5,168.0
2004	1,926	99.5%	230.2	221.3	211.3,231.3	1,808	99.6%	206.9	155.1	147.6,162.7
2000-2004	9,393	99.6%	226.7	226.5	221.9,231.1	8,914	99.6%	205.4	158.8	155.3,162.3
1993-2004	22,354	99.6%	227.9	237.1	234.0,240.3	20,951	99.7%	203.6	162.4	160.1,164.7

Cancer of the lip, oral cavity & pharynx (C00-C14)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	38	2.0%	4.8	5.4	3.6,7.1	9	0.5%	1.1	0.7	0.2,1.3
1994	29	1.6%	3.6	4.3	2.7,5.8	19	1.1%	2.3	1.6	0.8,2.4
1995	29	1.6%	3.6	4.0	2.5,5.5	17	1.0%	2.0	1.5	0.8,2.3
1996	35	1.9%	4.3	4.8	3.2,6.4	27	1.6%	3.2	2.5	1.5,3.6
1997	36	1.9%	4.4	5.0	3.4,6.6	22	1.3%	2.6	1.8	1.0,2.6
1998	36	1.9%	4.4	4.8	3.2,6.3	19	1.1%	2.2	1.8	1.0,2.7
1999	27	1.5%	3.3	3.6	2.2,4.9	30	1.7%	3.5	2.7	1.7,3.8
2000	27	1.5%	3.3	3.4	2.1,4.7	22	1.2%	2.6	2.4	1.3,3.4
2001	35	1.8%	4.2	4.5	3.0,6.0	20	1.1%	2.3	1.9	1.0,2.9
2002	38	2.0%	4.6	4.8	3.2,6.3	19	1.1%	2.2	1.7	0.9,2.6
2003	30	1.6%	3.6	3.6	2.3,4.9	11	0.6%	1.3	1.0	0.4,1.6
2004	27	1.4%	3.2	3.3	2.0,4.5	16	0.9%	1.8	1.4	0.7,2.2
2000-2004	157	1.7%	3.8	3.9	3.3,4.5	88	1.0%	2.0	1.7	1.3,2.1
1993-2004	387	1.7%	3.9	4.3	3.8,4.7	231	1.1%	2.2	1.8	1.5,2.0

Oesophageal cancer (C15)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	76	4.0%	9.5	10.8	8.3,13.3	50	2.9%	6.0	4.4	3.1,5.7
1994	87	4.7%	10.8	12.0	9.4,14.5	59	3.4%	7.0	5.3	3.8,6.7
1995	72	3.9%	9.0	9.5	7.3,11.7	48	2.9%	5.7	4.2	2.9,5.4
1996	91	4.9%	11.2	12.4	9.8,15.0	52	3.1%	6.1	4.5	3.2,5.8
1997	92	5.0%	11.3	12.4	9.9,15.0	57	3.3%	6.7	4.8	3.5,6.1
1998	92	4.8%	11.2	12.1	9.6,14.6	60	3.5%	7.0	5.1	3.7,6.5
1999	98	5.5%	12.0	12.7	10.2,15.3	60	3.4%	7.0	5.1	3.7,6.5
2000	92	5.2%	11.2	11.7	9.3,14.1	64	3.6%	7.4	5.2	3.9,6.6
2001	90	4.7%	10.9	11.1	8.8,13.5	60	3.4%	6.9	5.3	3.9,6.7
2002	111	5.8%	13.4	13.5	11.0,16.1	54	3.1%	6.2	4.3	3.0,5.5
2003	103	5.4%	12.4	12.2	9.9,14.6	51	2.8%	5.9	4.2	2.9,5.4
2004	87	4.5%	10.4	10.3	8.1,12.5	49	2.7%	5.6	3.7	2.6,4.8
2000-2004	483	5.1%	11.7	11.8	10.7,12.8	278	3.1%	6.4	4.5	4.0,5.1
1993-2004	1,091	4.9%	11.1	11.7	11.0,12.4	664	3.2%	6.5	4.7	4.3,5.0

EASR: European age-standardised rate

Stomach cancer (C16)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	126	6.7%	15.8	17.2	14.1,20.2	67	3.8%	8.0	5.9	4.4,7.4
1994	129	6.9%	16.1	18.0	14.8,21.1	72	4.1%	8.6	6.5	4.9,8.1
1995	98	5.3%	12.2	13.2	10.6,15.9	73	4.4%	8.6	6.4	4.8,7.9
1996	111	6.0%	13.7	14.9	12.1,17.7	86	5.1%	10.1	7.7	5.9,9.4
1997	101	5.5%	12.4	13.3	10.7,16.0	68	3.9%	7.9	5.2	3.9,6.5
1998	119	6.2%	14.5	15.8	12.9,18.6	96	5.5%	11.2	8.0	6.3,9.7
1999	116	6.5%	14.2	14.7	12.0,17.4	76	4.3%	8.8	6.3	4.8,7.8
2000	112	6.3%	13.7	13.9	11.3,16.5	64	3.6%	7.4	5.9	4.4,7.4
2001	97	5.0%	11.8	11.8	9.4,14.2	77	4.4%	8.9	6.2	4.7,7.7
2002	86	4.5%	10.4	10.2	8.0,12.3	78	4.4%	9.0	6.2	4.7,7.6
2003	100	5.3%	12.0	11.5	9.2,13.8	65	3.5%	7.5	5.1	3.8,6.4
2004	109	5.6%	13.0	12.5	10.2,14.9	70	3.9%	8.0	5.3	4.0,6.6
2000-2004	504	5.3%	12.2	12.0	10.9,13.1	354	4.0%	8.2	5.7	5.1,6.4
1993-2004	1,304	5.8%	13.3	13.8	13.1,14.6	892	4.2%	8.7	6.2	5.8,6.6

Colorectal cancer (C18-C21)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	238	12.6%	29.8	33.5	29.1,37.8	236	13.5%	28.2	21.1	18.2,23.9
1994	216	11.6%	26.9	29.9	25.9,33.9	225	12.8%	26.7	20.6	17.7,23.4
1995	236	12.8%	29.4	31.9	27.8,36.1	219	13.3%	25.9	19.9	17.1,22.7
1996	214	11.6%	26.4	28.5	24.6,32.3	202	12.0%	23.7	18.0	15.3,20.6
1997	191	10.3%	23.4	24.7	21.2,28.3	221	12.7%	25.8	19.6	16.9,22.4
1998	245	12.7%	29.9	31.5	27.5,35.4	205	11.8%	23.9	17.6	15.1,20.2
1999	199	11.1%	24.3	25.3	21.8,28.9	203	11.6%	23.6	16.7	14.3,19.2
2000	201	11.4%	24.5	25.5	22.0,29.1	216	12.0%	25.0	18.6	16.0,21.2
2001	220	11.4%	26.7	26.7	23.1,30.3	180	10.3%	20.8	14.5	12.3,16.8
2002	202	10.6%	24.4	24.9	21.4,28.3	179	10.2%	20.6	14.7	12.4,17.0
2003	253	13.3%	30.4	30.4	26.6,34.2	214	11.6%	24.6	18.3	15.7,20.9
2004	230	11.9%	27.5	26.8	23.3,30.3	197	10.9%	22.5	16.1	13.7,18.4
2000-2004	1,106	11.7%	26.7	26.9	25.3,28.5	986	11.0%	22.7	16.5	15.4,17.6
1993-2004	2,645	11.8%	27.0	28.2	27.1,29.3	2,497	11.9%	24.3	17.9	17.2,18.7

Cancer of the colon (C18)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	170	9.0%	21.3	23.7	20.1,27.4	181	10.4%	21.6	16.3	13.8,18.9
1994	156	8.4%	19.5	21.5	18.1,24.9	168	9.6%	20.0	15.6	13.1,18.2
1995	182	9.9%	22.6	24.7	21.0,28.3	173	10.5%	20.5	15.7	13.2,18.2
1996	151	8.2%	18.6	20.0	16.8,23.3	150	8.9%	17.6	13.3	11.0,15.6
1997	138	7.5%	16.9	17.8	14.8,20.8	172	9.9%	20.1	15.0	12.6,17.4
1998	179	9.3%	21.9	22.9	19.5,26.3	156	9.0%	18.2	13.0	10.9,15.2
1999	134	7.5%	16.4	17.3	14.3,20.2	163	9.3%	18.9	13.3	11.1,15.4
2000	142	8.0%	17.3	18.1	15.1,21.1	161	9.0%	18.7	14.0	11.7,16.3
2001	143	7.4%	17.3	17.7	14.8,20.6	125	7.1%	14.5	9.9	8.1,11.7
2002	147	7.7%	17.7	18.2	15.3,21.2	123	7.0%	14.2	9.8	7.9,11.6
2003	174	9.1%	20.9	20.6	17.5,23.7	141	7.7%	16.2	11.8	9.7,13.8
2004	145	7.5%	17.3	17.0	14.2,19.8	140	7.7%	16.0	11.1	9.1,13.0
2000-2004	751	8.0%	18.1	18.3	17.0,19.7	690	7.7%	15.9	11.3	10.4,12.2
1993-2004	1,861	8.3%	19.0	19.9	18.9,20.8	1,853	8.8%	18.0	13.2	12.5,13.8

Cancer of the rectum, rectosigmoid junction & anus (C19-C21)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	68	3.6%	8.5	9.7	7.4,12.1	55	3.2%	6.6	4.7	3.4,6.1
1994	60	3.2%	7.5	8.4	6.2,10.5	57	3.2%	6.8	4.9	3.6,6.3
1995	54	2.9%	6.7	7.3	5.3,9.2	46	2.8%	5.4	4.2	2.9,5.5
1996	63	3.4%	7.8	8.4	6.3,10.5	52	3.1%	6.1	4.7	3.3,6.0
1997	53	2.9%	6.5	6.9	5.0,8.8	49	2.8%	5.7	4.6	3.2,6.0
1998	66	3.4%	8.1	8.6	6.5,10.6	49	2.8%	5.7	4.6	3.3,6.0
1999	65	3.6%	7.9	8.1	6.1,10.1	40	2.3%	4.6	3.5	2.3,4.6
2000	59	3.3%	7.2	7.5	5.6,9.4	55	3.1%	6.4	4.6	3.3,5.9
2001	77	4.0%	9.3	9.0	7.0,11.0	55	3.1%	6.4	4.6	3.3,5.9
2002	55	2.9%	6.6	6.6	4.8,8.4	56	3.2%	6.5	5.0	3.6,6.3
2003	79	4.2%	9.5	9.7	7.6,11.9	73	4.0%	8.4	6.6	5.0,8.2
2004	85	4.4%	10.2	9.8	7.7,11.9	57	3.1%	6.5	5.0	3.6,6.3
2000-2004	355	3.8%	8.6	8.5	7.6,9.4	296	3.3%	6.8	5.2	4.5,5.8
1993-2004	784	3.5%	8.0	8.3	7.7,8.9	644	3.1%	6.3	4.8	4.4,5.1

EASR: European age-standardised rate

Liver cancer (C22)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	34	1.8%	4.3	4.7	3.1,6.3	37	2.1%	4.4	3.8	2.5,5.0
1994	38	2.0%	4.7	5.4	3.7,7.2	39	2.2%	4.6	3.6	2.4,4.7
1995	40	2.2%	5.0	5.2	3.6,6.8	26	1.6%	3.1	2.5	1.5,3.5
1996	37	2.0%	4.6	5.0	3.3,6.6	28	1.7%	3.3	2.4	1.5,3.4
1997	31	1.7%	3.8	4.0	2.6,5.4	39	2.2%	4.6	3.3	2.2,4.4
1998	49	2.5%	6.0	6.3	4.5,8.1	35	2.0%	4.1	3.0	2.0,4.1
1999	44	2.4%	5.4	5.8	4.1,7.5	33	1.9%	3.8	2.9	1.9,3.9
2000	43	2.4%	5.2	5.4	3.8,7.0	44	2.5%	5.1	3.9	2.7,5.2
2001	42	2.2%	5.1	5.2	3.6,6.8	26	1.5%	3.0	2.1	1.3,3.0
2002	38	2.0%	4.6	4.4	3.0,5.8	36	2.0%	4.1	3.3	2.2,4.5
2003	35	1.8%	4.2	4.1	2.7,5.5	33	1.8%	3.8	2.7	1.8,3.7
2004	36	1.9%	4.3	4.2	2.8,5.6	33	1.8%	3.8	2.9	1.9,4.0
2000-2004	194	2.1%	4.7	4.7	4.0,5.3	172	1.9%	4.0	3.0	2.5,3.5
1993-2004	467	2.1%	4.8	5.0	4.5,5.4	409	1.9%	4.0	3.0	2.7,3.3

Pancreatic cancer (C25)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	72	3.8%	9.0	9.8	7.5,12.1	83	4.8%	9.9	7.6	5.8,9.3
1994	69	3.7%	8.6	9.1	7.0,11.3	80	4.6%	9.5	7.6	5.8,9.3
1995	70	3.8%	8.7	9.5	7.2,11.7	71	4.3%	8.4	6.5	5.0,8.1
1996	79	4.3%	9.7	10.3	8.0,12.7	74	4.4%	8.7	6.4	4.9,8.0
1997	80	4.3%	9.8	10.4	8.1,12.7	81	4.6%	9.5	7.1	5.4,8.7
1998	88	4.6%	10.7	11.6	9.1,14.0	68	3.9%	7.9	5.8	4.4,7.3
1999	75	4.2%	9.2	9.8	7.5,12.0	64	3.7%	7.4	5.4	4.0,6.8
2000	78	4.4%	9.5	9.8	7.6,12.0	86	4.8%	10.0	8.0	6.2,9.8
2001	90	4.7%	10.9	11.1	8.8,13.5	87	5.0%	10.1	7.3	5.7,9.0
2002	101	5.3%	12.2	12.2	9.8,14.6	90	5.1%	10.4	7.3	5.7,8.9
2003	71	3.7%	8.5	8.3	6.4,10.3	102	5.5%	11.7	8.3	6.6,10.0
2004	72	3.7%	8.6	8.3	6.4,10.3	79	4.4%	9.0	6.3	4.8,7.8
2000-2004	412	4.4%	9.9	9.9	9.0,10.9	444	5.0%	10.2	7.4	6.7,8.2
1993-2004	945	4.2%	9.6	10.0	9.4,10.7	965	4.6%	9.4	7.0	6.5,7.5

Cancer of the larynx (C32)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	17	0.9%	2.1	2.5	1.3,3.8	8	0.5%	1.0	0.8	0.2,1.4
1994	18	1.0%	2.2	2.5	1.3,3.7	8	0.5%	1.0	0.8	0.2,1.4
1995	17	0.9%	2.1	2.3	1.2,3.3	<5				
1996	15	0.8%	1.9	2.1	1.0,3.2	<5				
1997	25	1.4%	3.1	3.4	2.1,4.8	6	0.3%	0.7	0.6	0.1,1.1
1998	23	1.2%	2.8	2.9	1.7,4.1	7	0.4%	0.8	0.6	0.1,1.1
1999	15	0.8%	1.8	2.0	1.0,3.0	8	0.5%	0.9	0.9	0.3,1.6
2000	16	0.9%	2.0	2.1	1.1,3.2	5	0.3%	0.6	0.5	0.0,1.0
2001	18	0.9%	2.2	2.3	1.2,3.3	<5				
2002	23	1.2%	2.8	2.8	1.6,4.0	<5				
2003	13	0.7%	1.6	1.5	0.7,2.4	5	0.3%	0.6	0.4	0.0,0.8
2004	12	0.6%	1.4	1.4	0.6,2.2	7	0.4%	0.8	0.6	0.1,1.0
2000-2004	82	0.9%	2.0	2.0	1.6,2.5	24	0.3%	0.6	0.5	0.3,0.7
1993-2004	212	0.9%	2.2	2.3	2.0,2.6	65	0.3%	0.6	0.5	0.4,0.7

Lung cancer (C33-C34)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	540	28.7%	67.7	74.2	67.9,80.6	268	15.4%	32.0	28.6	25.0,32.2
1994	518	27.9%	64.6	71.1	65.0,77.3	263	15.0%	31.2	25.9	22.6,29.2
1995	490	26.6%	60.9	65.7	59.8,71.6	269	16.3%	31.8	27.7	24.3,31.2
1996	508	27.5%	62.7	66.9	61.0,72.8	277	16.4%	32.5	27.6	24.2,31.1
1997	500	27.0%	61.3	65.3	59.5,71.0	275	15.8%	32.1	26.6	23.3,29.9
1998	489	25.4%	59.7	61.8	56.2,67.3	302	17.4%	35.2	29.0	25.5,32.4
1999	480	26.7%	58.6	60.7	55.2,66.2	300	17.2%	34.9	28.0	24.7,31.4
2000	457	25.9%	55.7	57.5	52.2,62.8	330	18.4%	38.3	31.5	28.0,35.0
2001	508	26.4%	61.6	62.5	57.0,67.9	270	15.4%	31.2	26.0	22.8,29.2
2002	492	25.8%	59.4	59.6	54.3,65.0	319	18.1%	36.8	29.0	25.7,32.4
2003	476	25.0%	57.2	56.3	51.2,61.4	327	17.8%	37.6	29.3	26.0,32.6
2004	507	26.2%	60.6	57.4	52.3,62.4	326	18.0%	37.3	29.0	25.7,32.3
2000-2004	2,440	25.9%	58.9	58.6	56.3,61.0	1,572	17.6%	36.2	29.0	27.5,30.5
1993-2004	5,965	26.6%	60.8	63.0	61.4,64.6	3,526	16.8%	34.3	28.2	27.2,29.2

EASR: European age-standardised rate

Bone cancer (C40-C41)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
2000-2004	22	0.2%	0.5	0.5	0.3,0.7	18	0.2%	0.4	0.3	0.2,0.4
1993-2004	67	0.3%	0.7	0.7	0.5,0.8	46	0.2%	0.4	0.4	0.3,0.5

Malignant melanoma (C43)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	7	0.4%	0.9	1.0	0.2,1.7	20	1.1%	2.4	2.1	1.2,3.1
1994	14	0.8%	1.7	2.0	0.9,3.1	21	1.2%	2.5	2.3	1.3,3.3
1995	9	0.5%	1.1	1.2	0.4,2.0	16	1.0%	1.9	1.5	0.7,2.3
1996	11	0.6%	1.4	1.6	0.7,2.6	16	0.9%	1.9	1.4	0.7,2.2
1997	12	0.6%	1.5	1.6	0.7,2.5	14	0.8%	1.6	1.5	0.7,2.3
1998	13	0.7%	1.6	1.7	0.8,2.6	17	1.0%	2.0	1.5	0.8,2.3
1999	16	0.9%	2.0	2.0	1.0,3.0	18	1.0%	2.1	1.8	0.9,2.7
2000	13	0.7%	1.6	1.8	0.8,2.7	17	0.9%	2.0	1.7	0.9,2.6
2001	20	1.0%	2.4	2.5	1.4,3.6	15	0.9%	1.7	1.5	0.7,2.2
2002	18	0.9%	2.2	2.4	1.3,3.5	20	1.1%	2.3	1.6	0.8,2.3
2003	23	1.2%	2.8	2.8	1.6,4.0	17	0.9%	2.0	1.6	0.8,2.4
2004	24	1.2%	2.9	2.9	1.7,4.0	13	0.7%	1.5	1.0	0.4,1.6
2000-2004	98	1.0%	2.4	2.5	2.0,3.0	82	0.9%	1.9	1.5	1.1,1.8
1993-2004	180	0.8%	1.8	2.0	1.7,2.3	204	1.0%	2.0	1.6	1.4,1.9

Non-melanoma skin cancer (C44)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
2000-2004	36	0.4%	0.9	0.9	0.6,1.2	40	0.4%	0.9	0.5	0.3,0.7
1993-2004	85	0.4%	0.9	0.9	0.7,1.1	69	0.3%	0.7	0.4	0.3,0.5

Mesothelioma (C45)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	31	1.6%	3.9	4.0	2.5,5.4					
1994	24	1.3%	3.0	3.4	2.0,4.8					
1995	28	1.5%	3.5	3.9	2.5,5.4					
1996	20	1.1%	2.5	2.6	1.4,3.7					
1997	37	2.0%	4.5	5.0	3.4,6.6					
1998	32	1.7%	3.9	4.3	2.8,5.7					
1999	43	2.4%	5.3	5.3	3.7,6.9					
2000	30	1.7%	3.7	3.9	2.5,5.2					
2001	50	2.6%	6.1	6.0	4.3,7.6					
2002	45	2.4%	5.4	5.4	3.8,7.0					
2003	33	1.7%	4.0	3.9	2.5,5.2					
2004	45	2.3%	5.4	5.3	3.7,6.8					
2000-2004	203	2.2%	4.9	4.9	4.2,5.5	23	0.3%	0.5	0.5	0.3,0.7
1993-2004	418	1.9%	4.3	4.4	4.0,4.9	42	0.2%	0.4	0.4	0.3,0.5

Breast cancer (C50)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993						329	18.9%	39.3	38.0	33.7,42.3
1994						338	19.2%	40.2	37.1	32.9,41.3
1995						327	19.8%	38.7	35.5	31.5,39.6
1996						305	18.1%	35.8	31.8	28.0,35.5
1997						259	14.8%	30.3	26.9	23.4,30.3
1998						299	17.2%	34.8	31.3	27.6,35.0
1999						290	16.6%	33.7	29.8	26.2,33.4
2000						286	16.0%	33.2	29.3	25.7,32.8
2001						315	18.0%	36.4	31.0	27.4,34.5
2002						278	15.8%	32.0	26.4	23.2,29.7
2003						282	15.3%	32.4	26.3	23.1,29.6
2004						323	17.8%	37.0	30.6	27.1,34.1
2000-2004	7	0.1	0.2	0.2	0.0,0.3	1,484	16.6%	34.2	28.7	27.2,30.2
1993-2004	21	0.1	0.2	0.2	0.1,0.3	3,631	17.3%	35.3	31.0	30.0,32.1

EASR: European age-standardised rate

Cervical cancer (C53)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993						34	1.9%	4.1	3.9	2.5,5.2
1994						37	2.1%	4.4	4.5	3.0,6.0
1995						20	1.2%	2.4	2.4	1.3,3.4
1996						44	2.6%	5.2	4.8	3.3,6.3
1997						27	1.5%	3.2	3.0	1.9,4.2
1998						33	1.9%	3.8	3.4	2.2,4.6
1999						35	2.0%	4.1	3.7	2.4,4.9
2000						31	1.7%	3.6	3.6	2.3,5.0
2001						24	1.4%	2.8	2.6	1.5,3.6
2002						24	1.4%	2.8	2.3	1.4,3.3
2003						31	1.7%	3.6	3.0	1.9,4.1
2004						37	2.0%	4.2	3.6	2.4,4.8
2000-2004						147	1.6%	3.4	3.0	2.5,3.5
1993-2004						377	1.8%	3.7	3.4	3.0,3.7

Cancer of the uterus (C54)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993						6	0.3%	0.7	0.5	0.1,0.9
1994						17	1.0%	2.0	1.7	0.9,2.6
1995						9	0.5%	1.1	0.9	0.3,1.5
1996						13	0.8%	1.5	1.1	0.4,1.7
1997						13	0.7%	1.5	1.3	0.5,2.0
1998						13	0.7%	1.5	1.3	0.6,2.0
1999						10	0.6%	1.2	0.9	0.3,1.6
2000						19	1.1%	2.2	1.8	0.9,2.6
2001						22	1.3%	2.5	1.9	1.0,2.7
2002						20	1.1%	2.3	1.8	1.0,2.7
2003						21	1.1%	2.4	1.8	1.0,2.6
2004						16	0.9%	1.8	1.4	0.7,2.1
2000-2004						98	1.1%	2.3	1.7	1.4,2.1
1993-2004						179	0.9%	1.7	1.4	1.2,1.6

Ovarian cancer (C56)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993						92	5.3%	11.0	10.2	8.0,12.4
1994						90	5.1%	10.7	9.6	7.5,11.7
1995						99	6.0%	11.7	11.6	9.2,13.9
1996						89	5.3%	10.5	9.3	7.3,11.4
1997						96	5.5%	11.2	10.1	8.0,12.2
1998						89	5.1%	10.4	8.9	7.0,10.9
1999						116	6.6%	13.5	12.4	10.0,14.7
2000						101	5.6%	11.7	10.0	8.0,12.1
2001						117	6.7%	13.5	12.0	9.7,14.2
2002						109	6.2%	12.6	10.3	8.3,12.4
2003						130	7.1%	14.9	12.0	9.9,14.2
2004						124	6.8%	14.2	11.1	9.0,13.1
2000-2004						581	6.5%	13.4	11.1	10.1,12.0
1993-2004						1,252	6.0%	12.2	10.6	10.0,11.2

Prostate cancer (C61)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	181	9.6%	22.7	24.2	20.6,27.8					
1994	211	11.4%	26.3	28.2	24.3,32.1					
1995	219	11.9%	27.2	28.9	25.0,32.8					
1996	206	11.1%	25.4	27.2	23.4,31.0					
1997	208	11.2%	25.5	26.8	23.1,30.6					
1998	222	11.5%	27.1	28.1	24.4,31.9					
1999	197	11.0%	24.1	24.3	20.8,27.7					
2000	209	11.8%	25.5	25.8	22.3,29.4					
2001	214	11.1%	26.0	26.2	22.6,29.8					
2002	192	10.1%	23.2	22.7	19.4,26.0					
2003	219	11.5%	26.3	25.9	22.4,29.4					
2004	240	12.4%	28.7	27.0	23.5,30.4					
2000-2004	1,074	11.4%	25.9	25.5	24.0,27.1					
1993-2004	2,518	11.2%	25.7	26.2	25.2,27.3					

EASR: European age-standardised rate

Testicular cancer (C62)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
2000-2004	15	0.2%	0.4	0.4	0.2,0.6					
1993-2004	35	0.2%	0.4	0.4	0.2,0.5					

Cancer of the kidney (C64-C66, C68)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	42	2.2%	5.3	5.8	4.0,7.5	28	1.6%	3.3	3.0	1.8,4.2
1994	38	2.0%	4.7	5.3	3.6,7.0	22	1.3%	2.6	2.4	1.3,3.5
1995	48	2.6%	6.0	6.5	4.7,8.4	24	1.5%	2.8	2.4	1.4,3.4
1996	39	2.1%	4.8	5.4	3.7,7.1	16	0.9%	1.9	1.4	0.7,2.1
1997	42	2.3%	5.2	5.5	3.8,7.2	36	2.1%	4.2	3.3	2.1,4.4
1998	42	2.2%	5.1	5.6	3.9,7.2	36	2.1%	4.2	3.2	2.1,4.3
1999	38	2.1%	4.6	4.8	3.3,6.4	29	1.7%	3.4	2.6	1.6,3.6
2000	47	2.7%	5.7	6.1	4.3,7.8	35	2.0%	4.1	2.5	1.7,3.4
2001	47	2.4%	5.7	5.9	4.2,7.6	27	1.5%	3.1	2.5	1.5,3.5
2002	54	2.8%	6.5	6.8	4.9,8.6	30	1.7%	3.5	2.7	1.7,3.8
2003	67	3.5%	8.0	8.0	6.0,9.9	25	1.4%	2.9	2.2	1.3,3.1
2004	59	3.0%	7.1	6.9	5.2,8.7	45	2.5%	5.1	3.7	2.6,4.8
2000-2004	274	2.9%	6.6	6.7	5.9,7.6	162	1.8%	3.7	2.7	2.3,3.2
1993-2004	563	2.5%	5.7	6.1	5.6,6.6	353	1.7%	3.4	2.7	2.4,3.0

Cancer of the bladder (C67)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	61	3.2%	7.6	8.5	6.4,10.7	28	1.6%	3.3	2.6	1.6,3.6
1994	52	2.8%	6.5	6.8	4.9,8.7	32	1.8%	3.8	2.4	1.6,3.3
1995	75	4.1%	9.3	9.9	7.6,12.2	34	2.1%	4.0	2.9	1.9,3.9
1996	63	3.4%	7.8	8.4	6.3,10.5	28	1.7%	3.3	2.2	1.3,3.0
1997	39	2.1%	4.8	5.0	3.4,6.6	39	2.2%	4.6	3.1	2.1,4.2
1998	52	2.7%	6.4	6.8	4.9,8.6	27	1.6%	3.1	2.0	1.2,2.8
1999	46	2.6%	5.6	5.9	4.2,7.7	42	2.4%	4.9	3.2	2.2,4.2
2000	58	3.3%	7.1	7.2	5.3,9.1	43	2.4%	5.0	3.6	2.5,4.8
2001	57	3.0%	6.9	6.9	5.1,8.8	32	1.8%	3.7	2.6	1.6,3.6
2002	50	2.6%	6.0	6.2	4.5,8.0	23	1.3%	2.7	1.7	1.0,2.5
2003	62	3.3%	7.4	7.5	5.6,9.4	25	1.4%	2.9	1.9	1.1,2.6
2004	49	2.5%	5.9	5.6	4.0,7.2	25	1.4%	2.9	1.8	1.0,2.5
2000-2004	276	2.9%	6.7	6.7	5.9,7.5	148	1.7%	3.4	2.3	1.9,2.7
1993-2004	664	3.0%	6.8	7.0	6.5,7.6	378	1.8%	3.7	2.5	2.2,2.8

Cancer of the brain (C71)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	49	2.6%	6.1	6.8	4.8,8.7	29	1.7%	3.5	3.5	2.2,4.8
1994	38	2.0%	4.7	5.3	3.6,6.9	37	2.1%	4.4	4.8	3.2,6.3
1995	43	2.3%	5.3	6.0	4.2,7.8	30	1.8%	3.5	3.3	2.1,4.6
1996	47	2.5%	5.8	6.4	4.5,8.2	20	1.2%	2.3	2.2	1.2,3.2
1997	44	2.4%	5.4	5.8	4.0,7.5	39	2.2%	4.6	4.2	2.9,5.6
1998	50	2.6%	6.1	6.7	4.8,8.5	33	1.9%	3.8	3.7	2.4,5.0
1999	36	2.0%	4.4	4.7	3.1,6.2	26	1.5%	3.0	2.8	1.7,3.9
2000	42	2.4%	5.1	5.5	3.8,7.2	36	2.0%	4.2	4.0	2.6,5.3
2001	45	2.3%	5.5	5.7	4.0,7.4	33	1.9%	3.8	3.6	2.4,4.9
2002	54	2.8%	6.5	6.6	4.8,8.4	36	2.0%	4.1	3.7	2.5,5.0
2003	51	2.7%	6.1	6.2	4.5,7.9	34	1.8%	3.9	3.4	2.2,4.6
2004	41	2.1%	4.9	5.0	3.5,6.5	32	1.8%	3.7	3.4	2.2,4.7
2000-2004	233	2.5%	5.6	5.8	5.0,6.5	171	1.9%	3.9	3.6	3.1,4.2
1993-2004	540	2.4%	5.5	5.9	5.4,6.4	385	1.8%	3.7	3.6	3.2,3.9

Hodgkin's disease (C81)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
2000-2004	25	0.3%	0.6	0.6	0.4,0.8	15	0.2%	0.3	0.3	0.2,0.5
1993-2004	67	0.3%	0.7	0.7	0.5,0.9	46	0.2%	0.4	0.4	0.3,0.5

EASR: European age-standardised rate

Non-Hodgkin's lymphoma (C82-C85, C96)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	64	3.4%	8.0	9.0	6.8,11.2	42	2.4%	5.0	3.9	2.6,5.2
1994	68	3.7%	8.5	9.1	6.9,11.3	43	2.4%	5.1	4.0	2.7,5.2
1995	60	3.3%	7.5	8.2	6.1,10.3	40	2.4%	4.7	3.9	2.7,5.2
1996	57	3.1%	7.0	7.7	5.7,9.7	64	3.8%	7.5	6.2	4.6,7.7
1997	67	3.6%	8.2	8.9	6.8,11.1	58	3.3%	6.8	5.7	4.2,7.3
1998	68	3.5%	8.3	8.8	6.7,10.9	72	4.1%	8.4	7.0	5.3,8.7
1999	51	2.8%	6.2	6.5	4.7,8.3	71	4.1%	8.3	6.9	5.2,8.6
2000	51	2.9%	6.2	6.6	4.8,8.4	56	3.1%	6.5	5.4	3.9,6.8
2001	74	3.8%	9.0	9.1	7.0,11.3	66	3.8%	7.6	5.8	4.3,7.3
2002	61	3.2%	7.4	7.4	5.5,9.3	66	3.8%	7.6	5.9	4.4,7.4
2003	58	3.0%	7.0	6.9	5.1,8.7	70	3.8%	8.0	5.7	4.3,7.1
2004	64	3.3%	7.7	7.3	5.5,9.1	46	2.5%	5.3	3.7	2.6,4.9
2000-2004	308	3.3%	7.4	7.5	6.6,8.3	304	3.4%	7.0	5.3	4.7,5.9
1993-2004	743	3.3%	7.6	7.9	7.4,8.5	694	3.3%	6.7	5.3	4.9,5.8

Multiple myeloma (C90)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	31	1.6%	3.9	4.3	2.8,5.9	33	1.9%	3.9	3.6	2.3,4.9
1994	31	1.7%	3.9	4.2	2.7,5.7	35	2.0%	4.2	3.2	2.1,4.3
1995	39	2.1%	4.9	5.5	3.7,7.2	36	2.2%	4.3	3.3	2.2,4.5
1996	28	1.5%	3.5	4.0	2.5,5.5	15	0.9%	1.8	1.3	0.6,2.1
1997	35	1.9%	4.3	4.5	3.0,6.0	20	1.1%	2.3	1.7	0.9,2.5
1998	37	1.9%	4.5	4.6	3.1,6.1	26	1.5%	3.0	2.3	1.4,3.3
1999	33	1.8%	4.0	4.3	2.8,5.7	26	1.5%	3.0	2.3	1.4,3.3
2000	34	1.9%	4.1	4.2	2.8,5.7	33	1.8%	3.8	2.9	1.9,3.9
2001	24	1.2%	2.9	2.9	1.7,4.1	30	1.7%	3.5	2.4	1.5,3.4
2002	31	1.6%	3.7	3.6	2.3,4.9	23	1.3%	2.7	1.6	0.9,2.4
2003	33	1.7%	4.0	3.9	2.5,5.2	33	1.8%	3.8	2.6	1.6,3.5
2004	34	1.8%	4.1	4.0	2.6,5.3	26	1.4%	3.0	2.0	1.2,2.8
2000-2004	156	1.7%	3.8	3.7	3.1,4.3	145	1.6%	3.3	2.3	1.9,2.7
1993-2004	390	1.7%	4.0	4.1	3.7,4.6	336	1.6%	3.3	2.4	2.2,2.7

Leukaemia (C91-C95)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
1993	41	2.2%	5.1	5.4	3.7,7.1	42	2.4%	5.0	4.4	3.0,5.8
1994	58	3.1%	7.2	7.8	5.8,9.8	36	2.0%	4.3	3.8	2.5,5.1
1995	51	2.8%	6.3	6.6	4.7,8.4	34	2.1%	4.0	3.4	2.2,4.6
1996	46	2.5%	5.7	5.9	4.2,7.6	41	2.4%	4.8	4.1	2.8,5.5
1997	54	2.9%	6.6	6.9	5.0,8.7	56	3.2%	6.5	5.4	3.9,6.9
1998	57	3.0%	7.0	7.5	5.5,9.5	35	2.0%	4.1	3.3	2.1,4.4
1999	66	3.7%	8.1	8.2	6.2,10.2	38	2.2%	4.4	3.4	2.2,4.5
2000	57	3.2%	6.9	7.2	5.3,9.1	34	1.9%	3.9	2.9	1.9,4.0
2001	48	2.5%	5.8	6.0	4.2,7.7	40	2.3%	4.6	3.3	2.2,4.4
2002	60	3.1%	7.2	7.5	5.6,9.4	37	2.1%	4.3	3.1	2.1,4.2
2003	42	2.2%	5.0	4.9	3.4,6.3	39	2.1%	4.5	3.3	2.2,4.5
2004	51	2.6%	6.1	6.0	4.3,7.6	43	2.4%	4.9	3.3	2.2,4.3
2000-2004	258	2.7%	6.2	6.3	5.5,7.1	193	2.2%	4.4	3.2	2.7,3.7
1993-2004	631	2.8%	6.4	6.6	6.1,7.2	475	2.3%	4.6	3.6	3.3,4.0

Childhood cancer (Ages 0-14; C00-C97, ex. C44)

Year of death	Male					Female				
	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI	Deaths	%cancer deaths	Crude rate	EASR	EASR 95% CI
2000-2004	32	0.3%	3.4	3.5	2.3,4.7	12	0.1%	1.3	1.3	0.6,2.1
1993-2004	92	0.4%	3.9	4.0	3.2,4.8	47	0.2%	2.1	2.1	1.5,2.7

EASR: European age-standardised rate

A6: ANNUAL PERCENTAGE CHANGES BY SEX AND CANCER SITE (1993-2004)

Incidence

Cancer Site	MALE					FEMALE				
	Period of diagnosis	Annual percentage change (APC)			Annual change in number of cases	Period of diagnosis	Annual percentage change (APC)			Annual change in number of cases
		APC	95% CI	p-value			APC	95% CI	p-value	
All cancers excluding NMSC (C00-C97, ex. C44)	**93-99** **99-04**	-1.6 0.8	-2.3,-0.8 -0.2,1.8	0.002 0.113	-12.1 86.9	**93-04**	0.2	-0.1,0.6	0.146	40.6
Lip, oral cavity & pharynx (C00-C14)	**93-04**	-3.0	-4.7,-1.4	0.002	-1.6	**93-04**	-1.4	-3.7, 1.0	0.228	-0.6
Oesophagus (C15)	**93-04**	-1.0	-3.2,1.3	0.342	0.4	**93-04**	-1.0	-3.9, 1.9	0.441	-0.1
Stomach (C16)	**93-04**	-2.5	-4.3,-0.6	0.015	-1.5	**93-04**	-2.2	-3.9, -0.4	0.021	-1.0
Colorectal (C18-C21)	**93-04**	-0.8	-1.9,0.3	0.145	3.4	**93-04**	-1.3	-2.0, -0.6	0.003	-1.7
Colon (C18)	**93-04**	-1.6	-2.4,-0.8	0.001	0.0	**93-04**	-1.9	-3.2, -0.6	0.010	-2.8
Rectum, rectosigmoid junction & anus (C19-C21)	**93-04**	0.5	-1.6,2.7	0.590	3.4	**93-04**	0.2	-1.7, 2.2	0.829	1.1
Liver (C22)	**93-04**	-1.0	-4.6,2.8	0.581	0.1	**93-04**	-3.9	-8.9, 1.4	0.133	-1.1
Pancreas (C25)	**93-04**	-1.6	-4.8,1.8	0.315	-0.2	**93-04**	0.2	-2.3, 2.9	0.848	1.0
Larynx (C32)	**93-04**	-3.0	-5.3,-0.7	0.017	-0.8	**93-04**	-1.0	-5.2, 3.3	0.594	-0.1
Lung (C33-C34)	**93-04**	-2.4	-3.4,-1.3	0.001	-4.0	**93-04**	0.0	-0.7, 0.8	0.906	4.5
Malignant melanoma (C43)	**93-04**	3.5	1.5, 5.6	0.003	3.8	**93-98** **98-04**	-5.6 5.1	-12.7, 2.2 1.8, 8.5	0.130 0.008	-2.9 6.1
Mesothelioma (C45)	**93-04**	2.2	-1.9, 6.6	0.262	1.4	**93-04**	-1.0	-10.2, 9.3	0.832	0.3
Breast (C50)	**-**	-	-	-	-	**93-04**	1.4	0.7, 2.1	0.002	23.8
Cervix (C53)	**-**	-	-	-	-	**93-04**	-2.5	-4.4, -0.6	0.014	-1.0
Uterus (C54)	**-**	-	-	-	-	**93-04**	5.3	3.5, 7.1	0.000	7.6
Ovary (C56)	**-**	-	-	-	-	**93-04**	1.4	0.1, 2.8	0.044	5.0
Prostate (C61)	**93-99** **99-04**	-0.4 7.6	-3.2, 2.6 4.2, 11.2	0.782 0.001	2.4 54.3	**-**	-	-	-	-
Testis (C62)	**93-04**	2.0	-0.4, 4.4	0.083	1.4	**-**	-	-	-	-
Kidney (C64-C66, C68)	**93-04**	0.0	-1.6, 1.6	0.994	1.5	**93-04**	0.4	-1.9, 2.7	0.703	1.2
Bladder (C67)	**93-04**	-1.8	-4.0, 0.4	0.090	-0.4	**93-04**	-1.5	-5.8, 3.0	0.477	-0.4
Brain (C71)	**93-04**	-0.6	-3.3, 2.2	0.647	0.3	**93-04**	-0.6	-5.4, 4.3	0.774	0.4
Hodgkin's disease (C81)	**93-04**	-4.2	-8.8, 0.6	0.077	-0.7	**93-04**	1.2	-1.9, 4.4	0.410	0.2
Non-Hodgkin's lymphoma (C82-C85, C96)	**93-04**	-0.6	-2.0, 0.9	0.383	1.0	**93-04**	1.2	-0.8, 3.2	0.219	3.3
Multiple myeloma (C90)	**93-04**	0.7	-2.5, 3.9	0.648	1.3	**93-04**	-1.8	-4.4, 0.8	0.157	-0.2
Leukaemia (C91-C95)	**93-04**	-2.0	-4.4, 0.4	0.090	-1.1	**93-04**	-2.1	-5.3, 1.2	0.180	-0.6
Childhood (Ages 0-14) All cancers ex. NMSC	**93-04**	-2.4	-5.3, 0.6	0.105	-0.9	**93-04**	0.3	-3.5, 4.2	0.880	-0.2

Annual percentage changes in blue represent significant trends.

Mortality

Cancer Site	MALE					FEMALE				
	Period of death	Annual percentage change (APC)			Annual change in number of deaths	Period of death	Annual percentage change (APC)			Annual Change in number of deaths
		APC	95% CI	p-value			APC	95% CI	p-value	
All cancers excluding NMSC (C00-C97, ex. C44)	**93-04**	-1.3	-1.8, -0.9	0.000	4.6	**93-04**	-0.8	-1.3, -0.4	0.003	9.2
Lip, oral cavity & pharynx (C00-C14)	**93-04**	-2.6	-5.1, 0.0	0.049	-0.3	**93-04**	1.5	-5.8, 8.8	0.671	0.0
Oesophagus (C15)	**93-04**	0.4	-1.4, 2.4	0.607	1.9	**93-02** **02-04**	1.6 -11.0	-1.2, 4.5 -22.4, 2.0	0.221 0.083	0.9 -2.5
Stomach (C16)	**93-04**	-3.6	-5.5, -1.7	0.002	-2.0	**93-04**	-1.6	-4.2, 1.0	0.196	-0.3
Colorectal (C18-C21)	**93-04**	-1.5	-3.2, 0.2	0.083	0.1	**93-04**	-2.5	-4.0, -1.0	0.005	-3.3
Colon (C18)	**93-04**	-2.4	-4.3, -0.5	0.017	-1.5	**93-04**	-4.0	-5.7, -2.3	0.000	-4.2
Rectum, rectosigmoid junction & anus (C19-C21)	**93-04**	0.7	-1.8, 3.2	0.564	1.6	**93-04**	1.8	-0.8, 4.4	0.148	0.9
Liver (C22)	**93-04**	-1.4	-4.0, 1.4	0.296	0.1	**93-04**	-1.4	-4.9, 2.2	0.395	0.1
Pancreas (C25)	**93-04**	-0.1	-2.5, 2.4	0.945	0.9	**93-04**	0.3	-2.1, 2.8	0.770	1.3
Larynx (C32)	**93-04**	-3.3	-7.6, 1.2	0.128	-0.3	**93-04**	-3.1	-9.6, 3.9	0.338	-0.1
Lung (C33-C34)	**93-04**	-2.2	-2.8, -1.6	0.000	-3.0	**93-04**	0.6	-0.4, 1.6	0.206	5.9
Malignant melanoma (C43)	**93-04**	7.3	4.1, 10.5	0.000	1.3	**93-04**	-3.5	-6.4, -0.4	0.030	-0.3
Mesothelioma (C45)	**93-04**	3.5	-0.2, 7.4	0.063	1.7	**93-04**	13.0	-23.4, 66.5	0.500	0.3
Breast (C50)	**-**	-	-	-	-	**93-04**	-2.6	-4.1, -1.1	0.003	-2.8
Cervix (C53)	**-**	-	-	-	-	**93-04**	-2.7	-6.6, 1.4	0.174	-0.3
Uterus (C54)	**-**	-	-	-	-	**93-04**	5.5	-0.2, 11.5	0.058	1.0
Ovary (C56)	**-**	-	-	-	-	**93-04**	1.3	-0.6, 3.2	0.168	3.4
Prostate (C61)	**93-04**	-0.6	-1.8, 0.7	0.339	1.9	**-**	-	-	-	-
Testis (C62)	**93-04**	-3.8	-30.9, 33.8	0.797	-0.1	**-**	-	-	-	-
Kidney (C64-C66, C68)	**93-04**	2.5	0.3, 4.7	0.030	1.9	**93-04**	1.4	-2.6, 5.6	0.455	1.1
Bladder (C67)	**93-04**	-2.7	-5.7, 0.4	0.083	-0.7	**93-04**	-2.2	-6.8, 2.6	0.326	-0.4
Brain (C71)	**93-04**	-0.8	-3.0, 1.4	0.433	0.3	**93-04**	-0.7	-4.0, 2.8	0.666	0.3
Hodgkin's disease (C81)	**93-04**	-5.5	-9.8, -1.0	0.023	-0.2	**93-04**	-5.3	-14.4, 4.9	0.262	-0.3
Non-Hodgkin's lymphoma (C82-C85, C96)	**93-04**	-2.0	-4.0, 0.0	0.050	-0.2	**93-99** **99-04**	14.1 -6.4	1.5, 28.2 -14.0, 1.8	0.032 0.104	5.8 -2.4
Multiple myeloma (C90)	**93-04**	-2.2	-4.6, 0.2	0.072	-0.1	**93-04**	-3.6	-8.0, 1.0	0.106	-0.3
Leukaemia (C91-C95)	**93-04**	-0.8	-3.7, 2.3	0.587	0.2	**93-04**	-2.9	-5.7, -0.5	0.047	0.0
Childhood (Ages 0-14) All cancers ex. NMSC	**93-04**	-3.1	-9.5, 3.7	0.329	-0.3	**93-04**	-7.2	-16.1, 2.7	0.133	-0.3

Annual percentage changes in blue represent significant trends.

A7: RELATIVE SURVIVAL BY SEX AND CANCER SITE (1993-2004)

Cancer Site	FIVE-YEAR RELATIVE SURVIVAL (95% CI)											
	Male						Female					
	1993-1996		1997-2000		2001-2004*		1993-1996		1997-2000		2001-2004*	
All cancers excluding NMSC (C00-C97, ex. C44)	35.7%	(34.6%, 36.7%)	39.4%	(38.3%, 40.4%)	42.8%	(41.6%, 44.0%)	47.5%	(46.5%, 48.5%)	51.2%	(50.2%, 52.2%)	53.1%	(52.0%, 54.0%)
Lip, oral cavity & pharynx (C00-C14)	49.3%	(43.2%, 55.4%)	49.3%	(42.9%, 55.6%)	53.9%	(46.6%, 61.2%)	50.9%	(42.4%, 59.3%)	39.1%	(30.8%, 47.3%)	57.1%	(46.2%, 68.1%)
Oesophagus (C15)	5.7%	(3.0%, 8.4%)	13.2%	(9.3%, 17.2%)	10.3%	(6.5%, 14.1%)	14.4%	(9.0%, 19.8%)	12.3%	(7.6%, 17.0%)	17.9%	(11.4%, 24.4%)
Stomach (C16)	15.2%	(11.9%, 18.5%)	16.8%	(13.3%, 20.3%)	19.2%	(15.0%, 23.4%)	14.8%	(10.8%, 18.8%)	17.3%	(13.0%, 21.7%)	16.9%	(12.1%, 21.6%)
Colorectal (C18-C21)	46.7%	(43.9%, 49.5%)	51.9%	(48.9%, 54.8%)	52.2%	(49.0%, 55.4%)	45.7%	(42.9%, 48.5%)	53.1%	(50.2%, 56.0%)	54.5%	(51.3%, 57.8%)
Colon (C18)	46.8%	(43.2%, 50.4%)	53.5%	(49.7%, 57.2%)	52.3%	(48.2%, 56.3%)	47.0%	(43.6%, 50.4%)	53.9%	(50.4%, 57.4%)	56.3%	(52.3%, 60.3%)
Rectum, rectosigmoid junction & anus (C19-C21)	46.6%	(42.0%, 51.1%)	49.2%	(44.4%, 54.0%)	51.7%	(46.5%, 56.8%)	42.8%	(37.8%, 47.8%)	51.2%	(46.0%, 56.5%)	50.8%	(45.2%, 56.4%)
Larynx (C32)	62.0%	(53.7%, 70.2%)	69.6%	(61.6%, 77.6%)	76.6%	(67.7%, 85.4%)	59.9%	(43.7%, 76.2%)	57.9%	(41.6%, 74.2%)	56.6%	(39.2%, 74.0%)
Lung (C33-C34)	6.9%	(5.7%, 8.1%)	9.1%	(7.7%, 10.5%)	8.1%	(6.7%, 9.6%)	9.1%	(7.4%, 10.9%)	9.2%	(7.5%, 10.9%)	10.1%	(8.0%, 12.1%)
Malignant melanoma (C43)	86.5%	(80.6%, 92.4%)	85.8%	(79.4%, 92.2%)	82.0%	(75.2%, 88.8%)	91.5%	(87.5%, 95.5%)	95.3%	(91.4%, 99.3%)	96.7%	(92.6%, 100.8%)
Breast (C50)	-	-	-	-	-	-	75.5%	(73.7%, 77.4%)	80.1%	(78.4%, 81.8%)	81.6%	(79.8%, 83.5%)
Cervix (C53)	-	-	-	-	-	-	61.8%	(56.3%, 67.3%)	67.8%	(62.3%, 73.2%)	69.7%	(63.8%, 75.7%)
Uterus (C54)	-	-	-	-	-	-	66.1%	(60.4%, 71.8%)	72.5%	(67.7%, 77.3%)	75.2%	(70.3%, 80.0%)
Ovary (C56)	-	-	-	-	-	-	41.6%	(37.3%, 45.9%)	43.0%	(39.0%, 47.0%)	43.6%	(39.2%, 48.1%)
Prostate (C61)	55.6%	(52.4%, 58.8%)	64.5%	(61.4%, 67.6%)	72.2%	(68.8%, 75.6%)	-	-	-	-	-	-
Testis (C62)	92.4%	(88.3%, 96.4%)	96.0%	(92.8%, 99.2%)	94.0%	(90.3%, 97.8%)	-	-	-	-	-	-
Kidney (C64-C66, C68)	50.1%	(43.7%, 56.4%)	53.0%	(46.7%, 59.4%)	48.9%	(42.4%, 55.3%)	51.1%	(43.5%, 58.8%)	50.3%	(43.2%, 57.4%)	55.1%	(47.1%, 63.2%)
Bladder (C67)	57.5%	(52.1%, 62.9%)	58.7%	(53.2%, 64.2%)	59.3%	(53.1%, 65.4%)	41.5%	(34.1%, 49.0%)	45.9%	(38.0%, 53.9%)	47.2%	(38.3%, 56.1%)
Brain (C71)	12.5%	(7.9%, 17.1%)	17.0%	(11.7%, 22.2%)	20.2%	(14.3%, 26.2%)	18.2%	(11.7%, 24.7%)	21.0%	(14.8%, 27.3%)	20.5%	(13.6%, 27.4%)
Hodgkin's disease (C81)	71.3%	(61.0%, 81.7%)	78.5%	(68.3%, 88.7%)	83.8%	(74.3%, 93.4%)	77.9%	(66.8%, 89.0%)	77.1%	(65.0%, 89.2%)	74.7%	(61.1%, 88.2%)
Non-Hodgkin's lymphoma (C82-C85, C96)	46.2%	(40.9%, 51.5%)	48.6%	(43.3%, 53.9%)	53.4%	(47.5%, 59.3%)	45.9%	(40.5%, 51.3%)	52.9%	(47.8%, 58.0%)	57.5%	(51.9%, 63.1%)
Multiple myeloma (C90)	21.8%	(14.6%, 29.1%)	29.0%	(21.8%, 36.2%)	36.8%	(27.6%, 45.9%)	23.8%	(16.8%, 30.9%)	35.7%	(27.8%, 43.7%)	36.6%	(27.4%, 45.9%)
Leukaemia (C91-C95)	30.0%	(24.1%, 36.0%)	31.0%	(25.3%, 36.7%)	37.9%	(30.9%, 45.0%)	36.0%	(28.7%, 43.3%)	31.6%	(24.9%, 38.3%)	36.1%	(27.9%, 44.3%)
Childhood (Ages 0-14) All cancers ex. NMSC	73.7%	(65.8%, 81.6%)	74.0%	(65.8%, 82.2%)	69.3%	(59.2%, 79.3%)	76.2%	(67.5%, 84.9%)	75.5%	(65.6%, 85.4%)	78.2%	(67.8%, 88.7%)

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

A8: RELATIVE SURVIVAL BY SEX, AGE AND CANCER SITE (1993-2003)

All cancers excluding non-melanoma skin cancer (C00-C97, ex. C44)

		RELATIVE SURVIVAL (95% CI)											
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	81.3%	(78.6%, 84.0%)	63.1%	(60.1%, 66.2%)	57.3%	(55.2%, 59.4%)	52.7%	(51.1%, 54.3%)	49.5%	(47.7%, 51.3%)	56.1%	(55.2%, 57.1%)
	Female	90.9%	(89.3%, 92.6%)	82.6%	(80.7%, 84.4%)	72.2%	(70.3%, 74.0%)	58.8%	(57.0%, 60.6%)	48.3%	(46.5%, 50.1%)	63.5%	(62.6%, 64.4%)
1997-2000	**Male**	83.9%	(81.2%, 86.5%)	69.4%	(66.5%, 72.3%)	60.8%	(58.8%, 62.9%)	56.7%	(55.1%, 58.4%)	49.2%	(47.4%, 51.0%)	58.9%	(57.9%, 59.8%)
	Female	90.8%	(89.3%, 92.4%)	85.6%	(83.9%, 87.2%)	76.1%	(74.4%, 77.8%)	60.3%	(58.5%, 62.0%)	50.1%	(48.4%, 51.7%)	65.6%	(64.8%, 66.5%)
2001-2003	**Male**	85.7%	(82.7%, 88.6%)	69.4%	(66.5%, 72.3%)	65.5%	(63.3%, 67.7%)	62.0%	(60.2%, 63.8%)	52.1%	(50.1%, 54.1%)	62.3%	(61.2%, 63.3%)
	Female	92.1%	(90.4%, 93.8%)	87.0%	(85.1%, 88.9%)	80.4%	(78.6%, 82.1%)	63.0%	(60.9%, 65.0%)	49.1%	(47.2%, 51.0%)	67.3%	(66.3%, 68.2%)
5-YEAR													
1993-1996	**Male**	66.6%	(63.2%, 69.9%)	43.6%	(40.5%, 46.8%)	34.3%	(32.2%, 36.5%)	32.6%	(30.8%, 34.3%)	30.0%	(27.8%, 32.2%)	36.1%	(35.1%, 37.2%)
	Female	75.2%	(72.7%, 77.6%)	65.1%	(62.7%, 67.5%)	53.6%	(51.5%, 55.8%)	40.2%	(38.2%, 42.1%)	31.7%	(29.6%, 33.7%)	45.9%	(44.9%, 46.9%)
1997-2000	**Male**	67.1%	(63.7%, 70.6%)	45.7%	(42.5%, 48.9%)	40.3%	(38.2%, 42.5%)	37.9%	(36.1%, 39.8%)	32.5%	(30.3%, 34.7%)	40.0%	(38.9%, 41.1%)
	Female	77.5%	(75.2%, 79.8%)	68.9%	(66.7%, 71.2%)	59.2%	(57.2%, 61.3%)	42.3%	(40.4%, 44.2%)	36.1%	(34.0%, 38.1%)	49.6%	(48.6%, 50.6%)

Cancer of the lip, oral cavity and pharynx (C00-C14)

		RELATIVE SURVIVAL (95% CI)											
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	92.1%	(81.5%, 102.8%)	70.3%	(58.7%, 82.0%)	72.1%	(62.2%, 82.0%)	70.1%	(61.5%, 78.7%)	64.0%	(51.6%, 76.4%)	71.5%	(66.7%, 76.4%)
	Female	95.3%	(86.2%, 104.4%)	90.3%	(77.1%, 103.5%)	69.6%	(52.6%, 86.6%)	75.1%	(62.4%, 87.7%)	65.0%	(52.7%, 77.4%)	76.4%	(69.7%, 83.0%)
1997-2000	**Male**	89.0%	(74.5%, 103.6%)	87.2%	(78.1%, 96.4%)	73.9%	(64.6%, 83.3%)	66.3%	(56.2%, 76.5%)	64.6%	(52.1%, 77.1%)	74.1%	(69.2%, 78.9%)
	Female	-	-	66.9%	(47.9%, 85.8%)	73.5%	(59.1%, 87.9%)	65.4%	(51.8%, 79.0%)	51.8%	(37.4%, 66.3%)	68.3%	(61.4%, 75.2%)
2001-2003	**Male**	89.0%	(74.5%, 103.6%)	85.7%	(74.9%, 96.6%)	75.0%	(64.0%, 86.0%)	72.1%	(60.1%, 84.0%)	68.3%	(54.0%, 82.6%)	76.2%	(70.6%, 81.9%)
	Female	91.0%	(74.0%, 108.0%)	93.6%	(80.9%, 106.3%)	86.2%	(73.2%, 99.3%)	80.6%	(64.0%, 97.1%)	78.5%	(63.1%, 94.0%)	85.1%	(78.2%, 91.9%)
5-YEAR													
1993-1996	**Male**	80.7%	(64.9%, 96.5%)	41.2%	(28.4%, 54.0%)	52.3%	(40.7%, 64.0%)	49.6%	(38.8%, 60.4%)	41.2%	(23.3%, 59.2%)	50.0%	(43.8%, 56.1%)
	Female	76.5%	(58.2%, 94.8%)	66.3%	(45.0%, 87.7%)	32.6%	(14.9%, 50.2%)	53.4%	(37.5%, 69.3%)	43.5%	(26.5%, 60.4%)	50.5%	(42.2%, 58.8%)
1997-2000	**Male**	72.8%	(52.0%, 93.7%)	63.5%	(49.8%, 77.1%)	52.6%	(41.3%, 63.9%)	43.5%	(31.5%, 55.5%)	34.4%	(18.6%, 50.1%)	50.6%	(44.4%, 56.8%)
	Female	-	-	45.1%	(24.3%, 65.8%)	47.2%	(30.3%, 64.1%)	34.0%	(19.6%, 48.5%)	29.1%	(12.8%, 45.5%)	43.5%	(35.4%, 51.6%)

Oesophageal cancer (C15)

		RELATIVE SURVIVAL (95% CI)											
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	-	-	35.5%	(19.3%, 51.6%)	31.8%	(21.7%, 42.0%)	30.8%	(22.1%, 39.5%)	13.8%	(6.2%, 21.5%)	25.6%	(20.8%, 30.3%)
	Female	-	-	-	-	46.8%	(28.2%, 65.5%)	30.4%	(18.9%, 41.8%)	22.7%	(15.0%, 30.3%)	34.8%	(27.8%, 41.9%)
1997-2000	**Male**	-	-	45.7%	(30.9%, 60.4%)	35.6%	(25.8%, 45.3%)	40.6%	(31.0%, 50.2%)	21.9%	(12.9%, 31.0%)	34.1%	(28.9%, 39.2%)
	Female	-	-	-	-	42.4%	(26.6%, 58.3%)	35.5%	(24.2%, 46.7%)	20.5%	(13.0%, 28.1%)	33.2%	(26.8%, 39.5%)
2001-2003	**Male**	-	-	60.8%	(45.2%, 76.4%)	32.5%	(19.7%, 45.2%)	30.5%	(20.3%, 40.8%)	21.6%	(12.4%, 30.8%)	31.2%	(25.6%, 36.7%)
	Female	-	-	-	-	61.3%	(41.2%, 81.3%)	40.3%	(26.2%, 54.4%)	28.8%	(18.5%, 39.2%)	42.2%	(34.1%, 50.3%)
5-YEAR													
1993-1996	**Male**	-	-	-	-	-	-	-	-	-	-	5.6%	(2.9%, 8.3%)
	Female	-	-	-	-	-	-	17.8%	(7.7%, 27.9%)	-	-	17.6%	(11.7%, 23.6%)
1997-2000	**Male**	-	-	-	-	17.1%	(9.1%, 25.1%)	12.4%	(5.4%, 19.3%)	-	-	12.3%	(8.4%, 16.3%)
	Female	-	-	-	-	-	-	-	-	-	-	15.9%	(10.9%, 21.0%)

Stomach cancer (C16)

1-YEAR		RELATIVE SURVIVAL (95% CI)											
		Aged 15-44		Aged 45-54		Aged 55-64		Aged 65-74		Aged 75-99		Aged 15-99 (age-standardised)	
1993-1996	Male	42.2%	(19.9%, 64.4%)	46.8%	(31.8%, 61.7%)	49.6%	(40.7%, 58.4%)	41.6%	(35.0%, 48.2%)	22.7%	(16.3%, 29.2%)	35.7%	(31.8%, 39.6%)
	Female	-	-	44.1%	(24.6%, 63.6%)	39.3%	(26.8%, 51.9%)	38.2%	(28.1%, 48.4%)	24.7%	(18.3%, 31.2%)	33.5%	(28.5%, 38.5%)
1997-2000	Male	-	-	50.2%	(37.1%, 63.4%)	45.5%	(36.7%, 54.2%)	33.4%	(26.5%, 40.3%)	26.2%	(19.6%, 32.8%)	34.3%	(30.4%, 38.3%)
	Female	-	-	-	-	47.0%	(32.3%, 61.7%)	42.3%	(33.1%, 51.4%)	22.0%	(15.4%, 28.6%)	35.2%	(30.1%, 40.2%)
2001-2003	Male	50.1%	(26.9%, 73.2%)	47.3%	(30.4%, 57.5%)	44.0%	(33.7%, 54.2%)	44.5%	(36.5%, 52.6%)	31.2%	(23.5%, 38.9%)	39.4%	(34.8%, 44.0%)
	Female	-	-	-	-	62.6%	(46.8%, 78.3%)	36.1%	(25.5%, 46.6%)	26.6%	(18.9%, 34.2%)	36.4%	(30.5%, 42.3%)
5-YEAR													
1993-1996	Male	-	-	-	-	20.0%	(12.6%, 27.4%)	12.7%	(7.7%, 17.6%)	14.1%	(7.0%, 21.2%)	15.3%	(11.6%, 19.0%)
	Female	-	-	-	-	19.5%	(9.1%, 30.0%)	21.4%	(12.2%, 30.5%)	6.6%	(2.1%, 11.1%)	15.5%	(11.4%, 19.6%)
1997-2000	Male	-	-	17.7%	(7.3%, 28.1%)	19.2%	(12.0%, 26.5%)	15.3%	(9.6%, 21.1%)	17.4%	(10.0%, 24.9%)	17.3%	(13.4%, 21.1%)
	Female	-	-	-	-	-	-	22.4%	(14.2%, 30.5%)	14.0%	(7.4%, 20.5%)	17.7%	(13.2%, 22.2%)

Colorectal cancer (C18-C21)

1-YEAR		RELATIVE SURVIVAL (95% CI)											
		Aged 15-44		Aged 45-54		Aged 55-64		Aged 65-74		Aged 75-99		Aged 15-99 (age-standardised)	
1993-1996	Male	83.8%	(73.4%, 94.2%)	76.0%	(69.4%, 82.5%)	75.9%	(71.4%, 80.4%)	72.2%	(68.6%, 75.8%)	64.1%	(59.7%, 68.6%)	70.5%	(68.2%, 72.8%)
	Female	84.0%	(74.8%, 93.1%)	82.8%	(76.4%, 89.1%)	75.5%	(70.5%, 80.4%)	75.5%	(71.4%, 79.6%)	60.0%	(55.5%, 64.4%)	70.4%	(68.2%, 72.7%)
1997-2000	Male	85.0%	(75.4%, 94.7%)	86.3%	(80.8%, 91.8%)	83.2%	(79.2%, 87.2%)	77.0%	(73.3%, 80.6%)	59.7%	(55.1%, 64.3%)	72.6%	(70.3%, 74.9%)
	Female	82.8%	(72.5%, 93.1%)	89.7%	(84.5%, 95.0%)	86.1%	(82.1%, 90.1%)	76.3%	(72.3%, 80.4%)	62.8%	(58.9%, 66.7%)	74.3%	(72.1%, 76.5%)
2001-2003	Male	90.4%	(81.3%, 99.5%)	80.5%	(73.4%, 87.7%)	80.5%	(76.1%, 84.9%)	77.8%	(73.8%, 81.9%)	66.4%	(61.5%, 71.3%)	74.6%	(72.1%, 77.1%)
	Female	83.1%	(72.3%, 93.8%)	82.4%	(74.9%, 89.9%)	82.9%	(77.6%, 88.1%)	77.6%	(72.9%, 82.3%)	65.2%	(60.7%, 69.7%)	74.4%	(71.9%, 77.0%)
5-YEAR													
1993-1996	Male	61.8%	(48.0%, 75.6%)	53.9%	(46.1%, 61.7%)	46.1%	(40.6%, 51.6%)	47.6%	(43.1%, 52.2%)	42.2%	(36.0%, 48.4%)	46.2%	(43.2%, 49.3%)
	Female	52.0%	(39.4%, 64.5%)	53.6%	(45.1%, 62.1%)	48.9%	(43.0%, 54.8%)	53.3%	(48.2%, 58.5%)	37.3%	(32.5%, 42.1%)	46.4%	(43.6%, 49.2%)
1997-2000	Male	55.2%	(41.7%, 68.8%)	57.3%	(49.3%, 65.3%)	57.7%	(52.1%, 63.3%)	54.6%	(49.6%, 59.6%)	43.2%	(36.9%, 49.6%)	51.1%	(47.9%, 54.3%)
	Female	61.8%	(48.4%, 75.1%)	62.5%	(54.0%, 70.9%)	64.7%	(59.0%, 70.5%)	51.5%	(46.3%, 56.6%)	46.9%	(41.7%, 52.1%)	53.4%	(50.5%, 56.4%)

Cancer of the colon (C18)

1-YEAR		RELATIVE SURVIVAL (95% CI)											
		Aged 15-44		Aged 45-54		Aged 55-64		Aged 65-74		Aged 75-99		Aged 15-99 (age-standardised)	
1993-1996	Male	80.1%	(65.8%, 94.5%)	77.5%	(68.9%, 86.2%)	72.9%	(66.9%, 78.9%)	69.9%	(65.3%, 74.5%)	66.0%	(60.5%, 71.4%)	69.7%	(66.8%, 72.7%)
	Female	82.4%	(69.6%, 95.3%)	79.1%	(71.0%, 87.1%)	72.9%	(66.7%, 79.0%)	73.1%	(68.2%, 78.0%)	59.3%	(53.9%, 64.8%)	68.3%	(65.6%, 71.0%)
1997-2000	Male	81.4%	(67.8%, 94.9%)	84.7%	(77.1%, 92.3%)	83.1%	(77.9%, 88.4%)	77.0%	(72.4%, 81.6%)	57.4%	(51.7%, 63.0%)	71.0%	(68.0%, 73.9%)
	Female	76.6%	(62.3%, 90.8%)	89.6%	(83.4%, 95.9%)	85.1%	(80.1%, 90.1%)	74.5%	(69.4%, 79.5%)	59.0%	(54.4%, 63.6%)	71.4%	(68.7%, 74.1%)
2001-2003	Male	94.9%	(84.8%, 104.9%)	77.3%	(67.0%, 87.6%)	79.0%	(72.9%, 85.2%)	76.3%	(71.0%, 81.7%)	64.7%	(58.7%, 70.8%)	72.8%	(69.6%, 76.1%)
	Female	80.9%	(65.7%, 96.0%)	79.4%	(68.5%, 90.4%)	83.0%	(76.6%, 89.5%)	76.0%	(70.3%, 81.6%)	66.1%	(60.7%, 71.5%)	73.7%	(70.5%, 76.9%)
5-YEAR													
1993-1996	Male	63.9%	(46.5%, 81.3%)	53.8%	(43.3%, 64.3%)	45.5%	(38.5%, 52.6%)	46.6%	(40.8%, 52.3%)	44.6%	(36.7%, 52.4%)	46.7%	(42.7%, 50.6%)
	Female	56.3%	(39.5%, 73.1%)	51.5%	(41.5%, 61.6%)	49.2%	(42.1%, 56.3%)	54.2%	(48.1%, 60.3%)	39.6%	(33.6%, 45.6%)	47.3%	(43.9%, 50.8%)
1997-2000	Male	53.7%	(36.2%, 71.1%)	55.4%	(44.8%, 66.1%)	64.9%	(57.8%, 72.0%)	56.5%	(50.2%, 62.7%)	42.8%	(35.0%, 50.6%)	52.4%	(48.3%, 56.4%)
	Female	50.1%	(33.1%, 67.1%)	63.7%	(53.7%, 73.7%)	67.1%	(60.2%, 74.0%)	51.6%	(45.3%, 57.9%)	49.0%	(42.8%, 55.2%)	54.2%	(50.6%, 57.7%)

Cancer of the rectum, rectosigmoid junction and anus (C19-C21)

		RELATIVE SURVIVAL (95% CI)											
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	89.6%	(75.8%, 103.4%)	74.0%	(64.1%, 84.0%)	80.4%	(73.8%, 87.0%)	76.1%	(70.4%, 81.8%)	60.7%	(53.1%, 68.3%)	71.9%	(68.2%, 75.5%)
	Female	85.8%	(72.8%, 98.8%)	92.4%	(83.8%, 101.0%)	81.6%	(73.3%, 89.8%)	81.9%	(74.8%, 88.9%)	61.3%	(53.7%, 69.0%)	75.7%	(71.9%, 79.5%)
1997-2000	**Male**	90.6%	(78.0%, 103.2%)	88.5%	(80.7%, 96.3%)	83.4%	(77.1%, 89.6%)	76.8%	(70.8%, 82.9%)	64.1%	(56.4%, 71.9%)	75.2%	(71.6%, 78.9%)
	Female	94.5%	(83.9%, 105.1%)	90.0%	(80.5%, 99.6%)	88.3%	(81.7%, 94.9%)	80.3%	(73.6%, 86.9%)	72.6%	(65.6%, 79.6%)	80.6%	(76.9%, 84.2%)
2001-2003	**Male**	86.5%	(72.1%, 100.9%)	84.3%	(74.6%, 93.9%)	82.3%	(76.0%, 88.6%)	80.1%	(73.9%, 86.3%)	69.5%	(61.3%, 77.7%)	77.4%	(73.6%, 81.3%)
	Female	85.8%	(70.8%, 100.8%)	85.6%	(75.6%, 95.7%)	82.5%	(73.5%, 91.4%)	81.9%	(73.6%, 90.1%)	63.2%	(55.0%, 71.4%)	75.9%	(71.5%, 80.4%)
5-YEAR													
1993-1996	**Male**	58.4%	(36.0%, 80.9%)	54.1%	(42.6%, 65.6%)	47.0%	(38.3%, 55.7%)	49.5%	(41.9%, 57.1%)	37.8%	(27.8%, 47.8%)	45.6%	(40.8%, 50.4%)
	Female	46.7%	(28.1%, 65.3%)	59.0%	(43.0%, 75.0%)	48.2%	(37.3%, 59.0%)	51.1%	(41.3%, 60.8%)	32.4%	(24.3%, 40.4%)	44.5%	(39.5%, 49.5%)
1997-2000	**Male**	57.7%	(36.3%, 79.0%)	59.8%	(47.7%, 71.9%)	47.2%	(38.5%, 56.0%)	51.3%	(43.1%, 59.6%)	44.1%	(33.2%, 55.0%)	48.9%	(43.8%, 54.1%)
	Female	83.8%	(66.5%, 101.1%)	59.4%	(43.4%, 75.4%)	59.6%	(49.1%, 70.0%)	51.2%	(42.2%, 60.3%)	41.4%	(31.9%, 51.0%)	51.3%	(46.1%, 56.4%)

Lung cancer (C33-C34)

		RELATIVE SURVIVAL (95% CI)											
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	33.4%	(18.0%, 48.8%)	29.5%	(22.6%, 36.4%)	28.1%	(23.9%, 32.4%)	21.7%	(18.9%, 24.5%)	18.2%	(14.9%, 21.5%)	23.2%	(21.3%, 25.0%)
	Female	30.5%	(11.6%, 49.3%)	30.1%	(21.5%, 38.7%)	28.1%	(22.5%, 33.6%)	28.7%	(24.6%, 32.9%)	18.4%	(15.2%, 21.7%)	25.9%	(23.4%, 28.5%)
1997-2000	**Male**	41.4%	(23.5%, 59.4%)	39.8%	(31.7%, 47.8%)	31.8%	(27.3%, 36.3%)	26.9%	(23.7%, 30.1%)	20.8%	(17.4%, 24.2%)	27.8%	(25.8%, 29.8%)
	Female	46.2%	(27.0%, 65.4%)	35.1%	(25.7%, 44.5%)	36.3%	(30.1%, 42.4%)	25.1%	(21.2%, 29.1%)	21.8%	(17.7%, 25.9%)	28.2%	(25.6%, 30.7%)
2001-2003	**Male**	-	-	31.6%	(22.8%, 40.4%)	28.9%	(23.7%, 34.0%)	27.4%	(23.7%, 31.1%)	20.4%	(16.5%, 24.2%)	26.4%	(24.1%, 28.7%)
	Female	47.4%	(24.9%, 69.9%)	30.2%	(19.7%, 40.8%)	35.2%	(28.6%, 41.8%)	23.7%	(18.9%, 28.4%)	22.9%	(18.3%, 27.4%)	27.3%	(24.4%, 30.2%)
5-YEAR													
1993-1996	**Male**	-	-	11.1%	(6.3%, 16.0%)	9.1%	(6.3%, 11.9%)	6.1%	(4.4%, 7.9%)	3.1%	(1.3%, 4.9%)	6.9%	(5.7%, 8.1%)
	Female	-	-	11.1%	(5.2%, 17.1%)	8.6%	(5.1%, 12.2%)	10.8%	(7.8%, 13.8%)	6.6%	(3.3%, 9.9%)	9.1%	(7.3%, 10.9%)
1997-2000	**Male**	-	-	9.2%	(4.4%, 14.0%)	10.1%	(7.0%, 13.2%)	9.9%	(7.5%, 12.2%)	6.9%	(4.3%, 9.5%)	9.3%	(7.9%, 10.8%)
	Female	-	-	13.2%	(6.5%, 19.9%)	12.5%	(8.2%, 16.9%)	8.0%	(5.4%, 10.6%)	6.3%	(3.5%, 9.0%)	9.5%	(7.8%, 11.3%)

Malignant melanoma (C43)

		RELATIVE SURVIVAL (95% CI)											
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	96.2%	(91.9%, 100.6%)	100.5%	(100.5%, 100.5%)	97.6%	(92.5%, 102.7%)	90.9%	(81.2%, 100.7%)	102.7%	(92.9%, 112.6%)	97.4%	(94.5%, 100.3%)
	Female	99.4%	(98.2%, 100.7%)	96.7%	(91.8%, 101.6%)	99.3%	(96.5%, 102.2%)	99.4%	(95.4%, 103.5%)	94.1%	(84.2%, 103.9%)	98.0%	(96.1%, 100.0%)
1997-2000	**Male**	95.9%	(91.2%, 100.6%)	98.0%	(93.2%, 102.7%)	99.1%	(95.1%, 103.1%)	99.0%	(92.8%, 105.2%)	88.4%	(76.2%, 100.5%)	96.2%	(93.3%, 99.1%)
	Female	98.7%	(96.7%, 100.6%)	100.3%	(100.3%, 100.3%)	96.5%	(91.9%, 101.2%)	94.0%	(87.3%, 100.7%)	95.6%	(88.0%, 103.1%)	97.2%	(95.1%, 99.2%)
2001-2003	**Male**	98.6%	(95.6%, 101.6%)	94.3%	(86.1%, 102.4%)	82.4%	(71.9%, 92.8%)	95.4%	(88.4%, 102.3%)	98.1%	(87.5%, 108.7%)	94.1%	(90.7%, 97.5%)
	Female	99.2%	(97.4%, 100.9%)	98.4%	(94.8%, 102.0%)	99.1%	(96.1%, 102.1%)	99.0%	(95.1%, 102.9%)	96.6%	(89.2%, 104.0%)	98.5%	(96.8%, 100.3%)
5-YEAR													
1993-1996	**Male**	90.3%	(83.4%, 97.2%)	93.0%	(83.9%, 102.1%)	88.1%	(76.9%, 99.3%)	83.4%	(66.8%, 100.1%)	66.6%	(37.5%, 95.8%)	85.2%	(78.5%, 91.8%)
	Female	98.5%	(96.4%, 100.6%)	89.1%	(80.3%, 97.9%)	89.3%	(80.5%, 98.1%)	83.3%	(71.2%, 95.5%)	89.0%	(70.2%, 107.8%)	90.6%	(86.0%, 95.1%)
1997-2000	**Male**	89.4%	(82.0%, 96.8%)	78.6%	(64.7%, 92.5%)	80.0%	(66.9%, 93.2%)	93.9%	(78.1%, 109.7%)	88.7%	(63.1%, 114.3%)	86.4%	(79.8%, 93.0%)
	Female	99.0%	(97.0%, 100.9%)	89.9%	(81.1%, 98.8%)	95.4%	(88.7%, 102.0%)	89.4%	(78.3%, 100.4%)	99.9%	(81.9%, 117.9%)	94.9%	(90.7%, 99.2%)

Breast cancer (C50; females only)

	RELATIVE SURVIVAL (95% CI)									
1-YEAR	**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	96.7%	(95.0%, 98.5%)	95.9%	(94.4%, 97.3%)	95.8%	(94.3%, 97.3%)	91.4%	(88.9%, 93.9%)	81.8%	(78.3%, 85.3%)	92.0%	(91.0%, 93.1%)
1997-2000	98.4%	(97.2%, 99.6%)	98.3%	(97.3%, 99.2%)	96.8%	(95.5%, 98.2%)	94.4%	(92.4%, 96.4%)	87.8%	(84.7%, 90.8%)	94.9%	(94.0%, 95.8%)
2001-2003	98.0%	(96.5%, 99.4%)	98.5%	(97.5%, 99.5%)	98.2%	(97.1%, 99.3%)	94.7%	(92.4%, 97.0%)	85.9%	(82.3%, 89.5%)	94.9%	(93.9%, 95.9%)
5-YEAR												
1993-1996	74.9%	(70.6%, 79.3%)	81.3%	(78.4%, 84.2%)	81.1%	(78.1%, 84.2%)	72.7%	(68.3%, 77.0%)	65.0%	(59.2%, 70.8%)	75.1%	(73.2%, 77.0%)
1997-2000	81.1%	(77.5%, 84.8%)	84.7%	(82.2%, 87.3%)	85.4%	(82.7%, 88.2%)	76.6%	(72.6%, 80.7%)	71.0%	(65.2%, 76.7%)	79.8%	(78.0%, 81.5%)

Cervical cancer (C53)

	RELATIVE SURVIVAL (95% CI)									
1-YEAR	**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	93.6%	(89.4%, 97.7%)	85.8%	(77.4%, 94.1%)	79.1%	(67.7%, 90.5%)	70.8%	(56.0%, 85.6%)	51.9%	(33.0%, 70.8%)	81.1%	(76.7%, 85.4%)
1997-2000	92.3%	(88.0%, 96.5%)	87.2%	(77.4%, 97.0%)	83.2%	(72.9%, 93.6%)	82.9%	(70.4%, 95.4%)	43.0%	(25.5%, 60.4%)	82.3%	(78.2%, 86.4%)
2001-2003	96.5%	(93.1%, 99.9%)	91.6%	(82.4%, 100.9%)	84.4%	(71.4%, 97.4%)	69.5%	(49.7%, 89.4%)	49.7%	(24.6%, 74.8%)	83.6%	(78.2%, 88.9%)
5-YEAR												
1993-1996	79.4%	(72.5%, 86.2%)	64.9%	(53.3%, 76.4%)	55.4%	(41.1%, 69.7%)	37.8%	(21.0%, 54.6%)	-	-	57.7%	(52.6%, 62.8%)
1997-2000	82.0%	(75.8%, 88.2%)	72.9%	(59.7%, 86.2%)	54.7%	(40.3%, 69.1%)	56.7%	(38.7%, 74.6%)	-	-	65.2%	(59.7%, 70.6%)

Cancer of the uterus (C54)

	RELATIVE SURVIVAL (95% CI)									
1-YEAR	**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	100.1%	(100.1%, 100.1%)	98.4%	(94.5%, 102.3%)	94.8%	(90.5%, 99.1%)	78.0%	(69.3%, 86.7%)	63.9%	(52.7%, 75.1%)	83.6%	(79.7%, 87.5%)
1997-2000	96.1%	(88.4%, 103.8%)	96.1%	(91.4%, 100.8%)	94.0%	(89.8%, 98.2%)	85.4%	(79.0%, 91.7%)	72.4%	(62.3%, 82.6%)	87.0%	(83.8%, 90.3%)
2001-2003	100.1%	(100.1%, 100.1%)	97.3%	(93.3%, 101.3%)	95.9%	(92.5%, 99.4%)	87.9%	(81.6%, 94.2%)	67.2%	(56.5%, 77.8%)	87.6%	(84.4%, 90.8%)
5-YEAR												
1993-1996	-	-	83.7%	(72.9%, 94.6%)	83.2%	(75.5%, 90.8%)	55.0%	(43.7%, 66.3%)	38.6%	(24.7%, 52.5%)	65.1%	(59.7%, 70.6%)
1997-2000	91.5%	(79.3%, 103.6%)	84.6%	(75.7%, 93.4%)	83.7%	(76.7%, 90.8%)	64.5%	(55.1%, 73.9%)	52.6%	(38.8%, 66.4%)	71.4%	(66.6%, 76.3%)

Ovarian cancer (C56)

	RELATIVE SURVIVAL (95% CI)									
1-YEAR	**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	90.4%	(83.5%, 97.2%)	79.0%	(71.0%, 87.1%)	70.7%	(62.9%, 78.4%)	62.8%	(54.8%, 70.8%)	37.0%	(27.7%, 46.2%)	64.9%	(61.1%, 68.7%)
1997-2000	91.4%	(86.0%, 96.8%)	77.6%	(69.9%, 85.3%)	73.5%	(66.7%, 80.2%)	61.3%	(53.5%, 69.1%)	39.0%	(30.3%, 47.8%)	65.5%	(62.0%, 69.0%)
2001-2003	94.3%	(89.3%, 99.2%)	82.4%	(74.2%, 90.6%)	85.4%	(78.6%, 92.3%)	63.9%	(54.8%, 73.0%)	30.3%	(22.1%, 38.5%)	68.3%	(64.6%, 72.0%)
5-YEAR												
1993-1996	75.3%	(65.3%, 85.4%)	55.5%	(45.5%, 65.5%)	40.6%	(32.0%, 49.1%)	31.3%	(23.2%, 39.5%)	22.0%	(12.4%, 31.7%)	40.5%	(36.3%, 44.6%)
1997-2000	73.2%	(64.6%, 81.8%)	44.6%	(35.3%, 53.9%)	40.7%	(33.0%, 48.4%)	40.0%	(31.6%, 48.4%)	24.6%	(15.2%, 34.0%)	41.3%	(37.3%, 45.3%)

Prostate cancer (C61)

	RELATIVE SURVIVAL (95% CI)									
1-YEAR	**Aged 15-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-84**		**Aged 85-99**		**Aged 15-99 (age-standardised)**	
1993-1996	86.2%	(75.5%, 96.8%)	90.5%	(86.2%, 94.8%)	88.3%	(85.4%, 91.2%)	80.7%	(77.2%, 84.2%)	65.6%	(57.6%, 73.6%)	83.5%	(81.5%, 85.4%)
1997-2000	95.8%	(89.5%, 102.2%)	94.9%	(92.0%, 97.8%)	91.1%	(88.6%, 93.7%)	80.6%	(77.1%, 84.1%)	64.2%	(56.2%, 72.1%)	85.1%	(83.2%, 86.9%)
2001-2003	97.8%	(94.0%, 101.5%)	98.9%	(97.3%, 100.4%)	96.9%	(95.2%, 98.7%)	87.8%	(84.3%, 91.4%)	71.6%	(62.6%, 80.7%)	91.3%	(89.5%, 93.1%)
5-YEAR												
1993-1996	49.2%	(33.6%, 64.9%)	63.0%	(55.7%, 70.4%)	61.9%	(56.9%, 66.8%)	51.8%	(46.1%, 57.4%)	40.3%	(27.0%, 53.7%)	55.9%	(52.6%, 59.2%)
1997-2000	65.9%	(50.7%, 81.2%)	72.9%	(67.0%, 78.9%)	73.3%	(68.7%, 77.9%)	56.5%	(50.7%, 62.2%)	50.3%	(35.5%, 65.1%)	64.5%	(61.2%, 67.7%)

Cancer of the kidney (C64-C66, C68)

		RELATIVE SURVIVAL (95% CI)										
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	91.0%	(79.0%, 103.1%)	72.7%	(59.8%, 85.5%)	69.0%	(58.5%, 79.5%)	63.2%	(54.1%, 72.2%)	59.6%	(47.2%, 71.9%)	66.5%	(61.3%, 71.8%)
	Female	100.1%	(100.1%, 100.1%)	69.8%	(50.9%, 88.7%)	68.7%	(55.2%, 82.1%)	66.8%	(55.3%, 78.3%)	62.0%	(49.6%, 74.4%)	68.4%	(62.0%, 74.8%)
1997-2000	**Male**	82.5%	(64.3%, 100.6%)	77.0%	(64.8%, 89.1%)	69.0%	(58.0%, 79.9%)	68.0%	(58.8%, 77.1%)	56.7%	(45.6%, 67.9%)	67.4%	(62.2%, 72.6%)
	Female	82.4%	(64.3%, 100.6%)	91.9%	(80.8%, 103.0%)	78.8%	(67.8%, 89.8%)	66.5%	(55.0%, 77.9%)	42.0%	(31.0%, 53.1%)	67.7%	(62.1%, 73.3%)
2001-2003	**Male**	75.1%	(50.6%, 99.7%)	82.7%	(69.8%, 95.6%)	59.7%	(49.0%, 70.3%)	63.3%	(53.2%, 73.3%)	54.0%	(41.6%, 66.4%)	63.2%	(57.6%, 68.8%)
	Female	-	-	90.2%	(77.1%, 103.4%)	73.5%	(59.1%, 87.9%)	67.2%	(53.4%, 81.0%)	44.9%	(31.3%, 58.6%)	67.5%	(60.5%, 74.4%)
5-YEAR													
1993-1996	**Male**	73.3%	(54.6%, 92.1%)	61.3%	(46.9%, 75.8%)	46.0%	(34.1%, 57.9%)	49.6%	(38.6%, 60.5%)	40.1%	(23.3%, 56.9%)	49.2%	(42.7%, 55.7%)
	Female	75.5%	(54.1%, 96.8%)	48.8%	(27.9%, 69.6%)	53.5%	(38.6%, 68.5%)	50.0%	(36.6%, 63.5%)	45.5%	(28.5%, 62.6%)	51.1%	(43.5%, 58.8%)
1997-2000	**Male**	65.2%	(42.3%, 88.2%)	70.0%	(56.3%, 83.7%)	52.1%	(39.5%, 64.6%)	53.7%	(42.5%, 64.8%)	40.4%	(25.5%, 55.3%)	52.8%	(46.4%, 59.1%)
	Female	82.8%	(64.5%, 101.0%)	67.1%	(47.7%, 86.6%)	62.3%	(48.7%, 75.9%)	46.1%	(33.0%, 59.2%)	34.1%	(20.4%, 47.8%)	51.9%	(45.0%, 58.9%)

Cancer of the bladder (C67)

		RELATIVE SURVIVAL (95% CI)										
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	76.6%	(56.4%, 96.8%)	86.1%	(74.5%, 97.8%)	85.1%	(77.7%, 92.5%)	84.2%	(78.6%, 89.8%)	66.6%	(59.2%, 74.0%)	78.0%	(74.3%, 81.8%)
	Female	-	-	78.8%	(57.3%, 100.4%)	74.6%	(58.0%, 91.3%)	65.7%	(55.0%, 76.4%)	53.1%	(45.7%, 60.6%)	63.8%	(57.4%, 70.2%)
1997-2000	**Male**	-	-	97.3%	(91.3%, 103.4%)	84.1%	(77.1%, 91.2%)	80.5%	(74.4%, 86.7%)	75.4%	(68.2%, 82.6%)	80.9%	(77.2%, 84.5%)
	Female	-	-	-	-	73.6%	(56.4%, 90.8%)	65.1%	(54.4%, 75.9%)	46.3%	(35.8%, 56.8%)	62.8%	(56.4%, 69.3%)
2001-2003	**Male**	-	-	76.5%	(58.2%, 94.8%)	89.4%	(81.8%, 97.1%)	92.9%	(87.4%, 98.3%)	74.5%	(66.6%, 82.5%)	84.7%	(80.7%, 88.6%)
	Female	-	-	-	-	-	-	63.1%	(48.1%, 78.1%)	52.1%	(40.6%, 63.7%)	61.7%	(52.8%, 70.6%)
5-YEAR													
1993-1996	**Male**	71.2%	(49.3%, 93.0%)	79.5%	(65.1%, 93.8%)	67.3%	(56.8%, 77.8%)	58.8%	(50.1%, 67.4%)	46.0%	(35.2%, 56.8%)	57.8%	(52.3%, 63.2%)
	Female	-	-	-	-	77.4%	(60.1%, 94.6%)	46.8%	(34.5%, 59.1%)	22.9%	(12.5%, 33.2%)	45.5%	(38.6%, 52.5%)
1997-2000	**Male**	-	-	77.0%	(61.6%, 92.4%)	72.0%	(62.6%, 81.4%)	54.0%	(45.2%, 62.8%)	49.2%	(38.0%, 60.4%)	58.5%	(53.0%, 64.0%)
	Female	-	-	-	-	52.2%	(32.1%, 72.2%)	50.7%	(38.2%, 63.1%)	35.7%	(22.6%, 48.8%)	49.1%	(41.3%, 56.8%)

Non-Hodgkin's lymphoma (C82-C85,C96)

		RELATIVE SURVIVAL (95% CI)											
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	81.5%	(72.4%, 90.7%)	72.3%	(62.1%, 82.5%)	76.2%	(66.5%, 85.8%)	52.0%	(42.8%, 61.2%)	52.3%	(41.6%, 62.9%)	63.4%	(58.8%, 68.0%)
	Female	94.2%	(86.3%, 102.1%)	93.3%	(85.7%, 101.0%)	70.3%	(59.9%, 80.7%)	58.4%	(49.8%, 67.0%)	52.0%	(41.4%, 62.7%)	68.3%	(64.0%, 72.6%)
1997-2000	**Male**	80.4%	(70.8%, 90.0%)	85.5%	(76.9%, 94.0%)	71.8%	(62.8%, 80.8%)	62.2%	(53.1%, 71.3%)	54.8%	(44.3%, 65.3%)	67.5%	(63.1%, 72.0%)
	Female	88.5%	(79.8%, 97.2%)	91.2%	(83.6%, 98.8%)	70.6%	(61.5%, 79.8%)	60.3%	(51.9%, 68.7%)	53.9%	(45.1%, 62.6%)	68.4%	(64.3%, 72.4%)
2001-2003	**Male**	90.8%	(82.1%, 99.5%)	78.8%	(67.4%, 90.1%)	73.3%	(63.4%, 83.2%)	67.9%	(58.0%, 77.7%)	61.6%	(48.8%, 74.3%)	71.7%	(66.6%, 76.8%)
	Female	85.3%	(71.8%, 98.7%)	97.2%	(91.4%, 103.1%)	78.5%	(69.1%, 87.8%)	77.4%	(68.7%, 86.1%)	55.2%	(46.1%, 64.3%)	75.3%	(71.0%, 79.6%)
5-YEAR													
1993-1996	**Male**	67.7%	(56.6%, 78.8%)	56.2%	(44.6%, 67.7%)	54.5%	(42.6%, 66.4%)	35.3%	(25.4%, 45.2%)	26.6%	(14.1%, 39.1%)	43.7%	(38.4%, 49.1%)
	Female	79.8%	(66.1%, 93.4%)	71.1%	(57.1%, 85.1%)	53.8%	(42.0%, 65.5%)	38.4%	(29.3%, 47.6%)	28.9%	(18.5%, 39.3%)	48.6%	(43.5%, 53.7%)
1997-2000	**Male**	59.3%	(47.3%, 71.4%)	61.9%	(49.6%, 74.2%)	43.4%	(33.0%, 53.8%)	46.8%	(36.1%, 57.5%)	41.8%	(27.8%, 55.8%)	48.4%	(42.8%, 54.1%)
	Female	78.9%	(67.6%, 90.2%)	77.7%	(66.2%, 89.1%)	54.9%	(44.6%, 65.3%)	47.8%	(38.4%, 57.2%)	35.3%	(24.6%, 46.0%)	53.8%	(49.0%, 58.7%)

Leukaemia (C91-C95)

		RELATIVE SURVIVAL (95% CI)											
1-YEAR		**Aged 15-44**		**Aged 45-54**		**Aged 55-64**		**Aged 65-74**		**Aged 75-99**		**Aged 15-99 (age-standardised)**	
1993-1996	**Male**	71.5%	(58.8%, 84.2%)	80.4%	(62.8%, 98.0%)	71.2%	(58.0%, 84.5%)	52.1%	(40.8%, 63.3%)	44.5%	(33.9%, 55.0%)	57.5%	(51.8%, 63.2%)
	Female	58.1%	(40.7%, 75.5%)	58.5%	(38.7%, 78.3%)	47.5%	(30.6%, 64.4%)	52.9%	(39.8%, 66.1%)	56.1%	(45.5%, 66.6%)	54.3%	(47.4%, 61.1%)
1997-2000	**Male**	73.8%	(59.8%, 87.8%)	53.8%	(35.3%, 72.4%)	54.2%	(41.0%, 67.5%)	55.1%	(45.4%, 64.9%)	40.2%	(30.0%, 50.4%)	52.0%	(46.5%, 57.5%)
	Female	82.9%	(70.4%, 95.4%)	68.4%	(48.9%, 87.9%)	67.2%	(48.2%, 86.2%)	48.7%	(36.3%, 61.1%)	45.3%	(34.5%, 56.1%)	56.5%	(50.1%, 62.9%)
2001-2003	**Male**	96.7%	(90.0%, 103.3%)	89.9%	(76.0%, 103.7%)	59.6%	(44.0%, 75.2%)	56.4%	(42.6%, 70.2%)	35.9%	(23.3%, 48.5%)	57.7%	(51.2%, 64.3%)
	Female	75.1%	(56.1%, 94.1%)	-	-	70.5%	(50.2%, 90.7%)	53.9%	(36.8%, 71.0%)	46.7%	(34.1%, 59.3%)	60.0%	(52.2%, 67.8%)
5-YEAR													
1993-1996	**Male**	45.2%	(31.2%, 59.2%)	-	-	41.5%	(26.4%, 56.5%)	21.5%	(11.2%, 31.7%)	23.1%	(11.4%, 34.9%)	29.1%	(23.0%, 35.2%)
	Female	38.8%	(21.6%, 56.0%)	51.0%	(30.6%, 71.4%)	-	-	33.5%	(20.1%, 46.9%)	37.2%	(21.7%, 52.7%)	35.6%	(28.0%, 43.1%)
1997-2000	**Male**	41.8%	(25.8%, 57.8%)	-	-	45.6%	(31.5%, 59.6%)	30.9%	(20.9%, 41.0%)	16.9%	(6.8%, 27.1%)	30.0%	(24.3%, 35.6%)
	Female	51.6%	(35.0%, 68.2%)	46.2%	(25.1%, 67.4%)	51.8%	(30.6%, 73.0%)	27.2%	(15.4%, 39.0%)	15.5%	(5.6%, 25.4%)	31.8%	(25.3%, 38.4%)

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Northern Ireland Cancer Registry

Centre for Clinical and Population Sciences
Mulhouse Building
Grosvenor Road
Belfast BT12 6BJ

Tel: (44) 028 9063 2573
Fax: (44) 028 9024 8017
Email: nicr@qub.ac.uk
Website: www.qub.ac.uk/nicr