

Cancer Trends in Northern Ireland: 1993-2003

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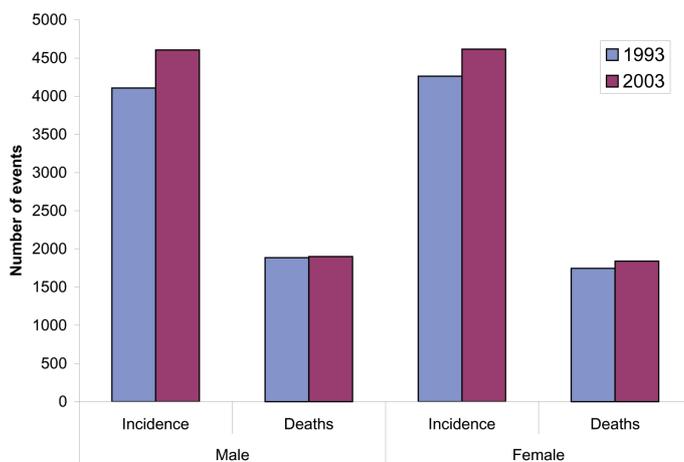
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Introduction

This report describes trends in cancer cases and deaths for Northern Ireland for the eleven year period, 1993 to 2003. Trends by Health Board are also examined.

In Northern Ireland there were, on average, 8,640 new cancers diagnosed annually and 3,630 cancer deaths each year between 1993 and 2003. The number of persons diagnosed with cancer increased during this period by 850 cases to 4,604 new cases in males and 4,615 new cases in females by 2003 (1993-male 4,107; female 4,262).

Figure 1: Cancer Incidence and Deaths: 1993 & 2003



Deaths from cancer also increased, but less so (111 deaths) with 1,901 deaths in males and 1,839 in females in 2003 from 1,884 male and 1,745 female cancer deaths in 1993 (Figure 1).

Summary

- Cancer is more common in males than females: 14% more cases, 40% more deaths.
- Rates for new cases of cancer are falling in males, driven by tobacco related cancers (lung, stomach, oral). Death rates are also decreasing.
- While cancer death rates are falling in females, driven by breast and colorectal cancers, rates for new cancers remain steady.
- Lung cancer in males showed dramatic changes with an average of 7 fewer cases and 6 fewer deaths per year over the period. No significant change in rates was noted for females.
- In females the most dramatic changes were in breast cancer with an average of 20 more cases each year and 5 fewer deaths.
- Prostate cancer rates for new cases have increased in recent years with no change in deaths.

Methods

To account for the ageing population, statistical analysis was performed on the European age-standardised rates (EASR) for the period 1993 to 2003, using the Joinpoint analysis (Kim et al). If a significant trend was identified, the annual percentage change (APC) in the EASRs is given. A negative APC corresponds to a downward trend/decrease in the EASRs, whilst a positive APC represents an upward trend/increase in the EASRs. In addition the actual change in the number of cases is provided as this information is useful to service planners.

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The most commonly diagnosed cancers between 1993 and 2003 in males were skin, lung, prostate and colorectal. In females, they were skin, breast, colorectal and lung (Figure 2). During this period, with the exception of skin cancer, the same cancers were the most common causes of cancer deaths (Figure 3).

Figure 2: Cancers Diagnosed: 1993-2003

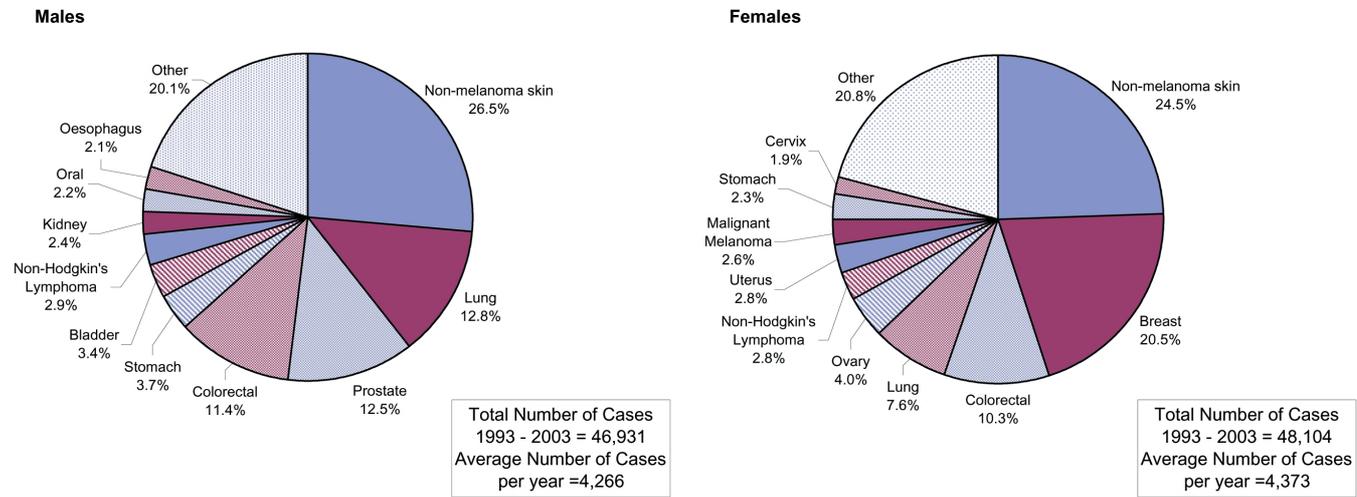
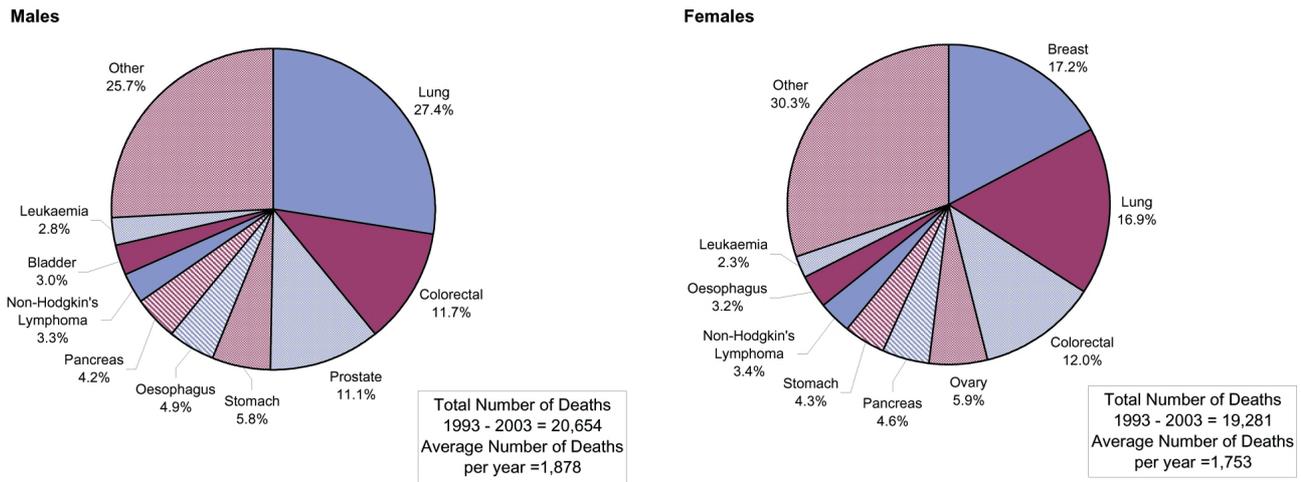


Figure 3: Causes of Cancer Death: 1993-2003



For the purposes of the trend analysis, non-melanoma skin cancers (NMS), which have an excellent prognosis and are rarely fatal, have been excluded. New cases of such cancers are increasing with the number of new cases in males having increased by an average of 27 cases per year while the number of new cases diagnosed each year in females increased by just under 2 cases per year (Figure 4).

Figure 4: Skin Cancer: Trends 1993-2003

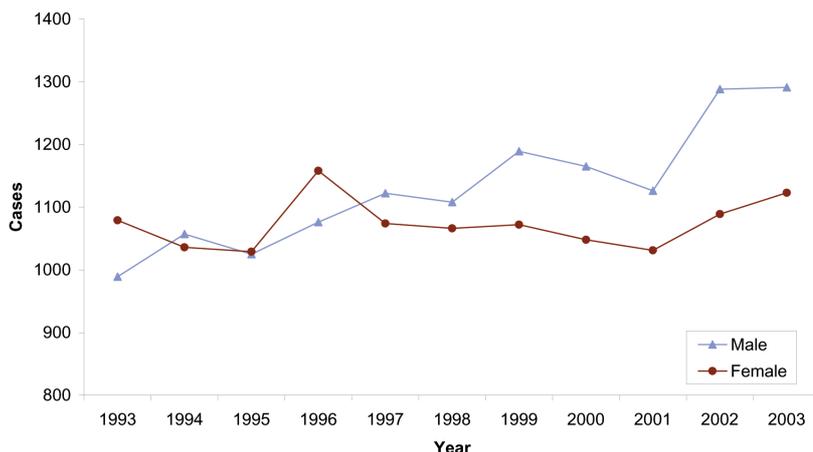


Table 1: Significant Trends for European Age-Standardised Cancer Incidence Rates (1993-2003)

Site (ICD10)	Males				Females			
	Average number of cases per year	Annual percentage change (APC) in rates	Annual change in cases		Average number of cases per year	Annual percentage change (APC) in rates	Annual change in cases	
			Percentage	Number			Percentage	Number
Oral (C00-C14)	94	-4.4%***	-3.0%	-2.8	47		-1.7%	-0.8
Stomach (C16)	158	-1.8%*	-0.2%	-0.3	100		-0.3%	-0.3
Colorectal (C18-C21)	486		0.7%	3.4	449	-1.4%**	-0.6%	-2.5
Lung (C33,C34)	548	-2.8%***	-1.3%	-7.2	332		1.0%	3.3
Malignant Melanoma (C43)	73	2.6%*	3.9%	2.9	115		1.8%	2.1
Breast (C50)					897	1.1%**	2.3%	20.4
Uterine Corpus (C54)					122	6.0%***	6.6%	8.0
Prostate (C61)	533	7.9%* (99-03)	9.7% (99-03)	51.8				
All cancers ex NMS (C00-C97 ex C44)	3,137	-0.8%**	0.6%	19.7	3,300		1.0%	33.8

* p<0.05, ** p<0.01, *** p<0.001

Table 2: Significant Trends in European Age-Standardised Mortality Rates (1993-2003)

Site (ICD10)	Males				Females			
	Average number of deaths per year	Annual percentage change (APC) in rates	Annual change in deaths		Average number of deaths per year	Annual percentage change (APC) in rates	Annual change in deaths	
			Percentage	Number			Percentage	Number
Stomach (C16)	109	-4.0%**	-2.3%	-2.5	75		-0.1%	-0.1
Colorectal (C18-C21)	220		-0.2%	-0.3	210	-2.6%*	-1.7%	-3.5
Lung (C33,C34)	514	-2.6%***	-1.1%	-5.8	297		1.9%	5.6
Malignant Melanoma (C43)	14	7.5%**	8.9%	1.3	18		-0.4%	-0.1
Breast (C50)					301	-3.3%***	-1.5%	-4.6
Uterine Corpus (C54)					15	6.9%*	8.3%	1.2
Kidney (C64-C66, C68)	46	2.7%*	4.0%	1.9	28		2.0%	0.6
Non-Hodgkin's Lymphoma (C82-C85)	62		-0.5%	-0.3	59	13.7%* (93-98)	10.5% (93-98)	6.1 (93-98)
All cancers ex NMS (C00-C97 ex C44)	1,871	-1.3%***	0.2%	4.4	1,747	-0.8%*	0.5%	9.6

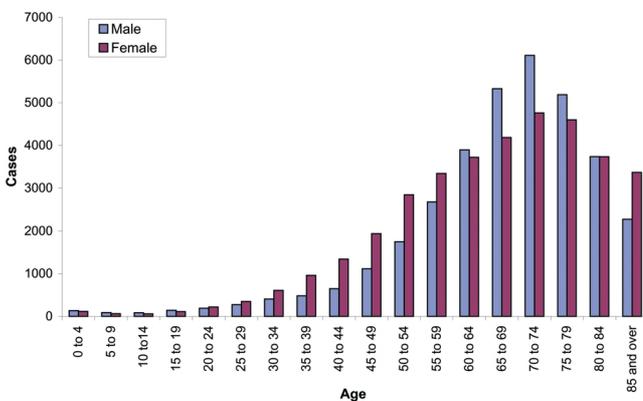
* p<0.05, ** p<0.01, *** p<0.001

Changing rates - All Cancers (excluding NMS) (ICD10: C00-97 ex. C44)

Rates of new cancers in males fell significantly during 1993-2003 by 0.8% each year. There was no significant change in rates for new cancers diagnosed in females. Death rates from cancer for both sexes decreased during the time period by an average of 1.3% per year in males and 0.8% per year in females. This was significant for both males and females (Table 1 and 2).

Despite the drop in rates, an increase in the number of newly diagnosed cases and deaths due to cancer was observed. In males, cancer cases increased by an average of 20 per year, while in females there was an increase of 34 cases per year (Table 1). These rises corresponded to an average annual increase of 0.6% and 1.0% respectively. Cancer deaths increased by an average of 4 per year in males and 10 per year in females (Table 2), representing annual average increases of 0.2% and 0.5% respectively. These increases in numbers, despite falling or steady rates, reflect the ageing of the population as cancer is more common with increasing age (Figure 5).

Figure 5: Number of Registrations by Sex and Age: 1993-2003



Males vs. Females

The rate of new cancers and cancer deaths is higher in males than in females.

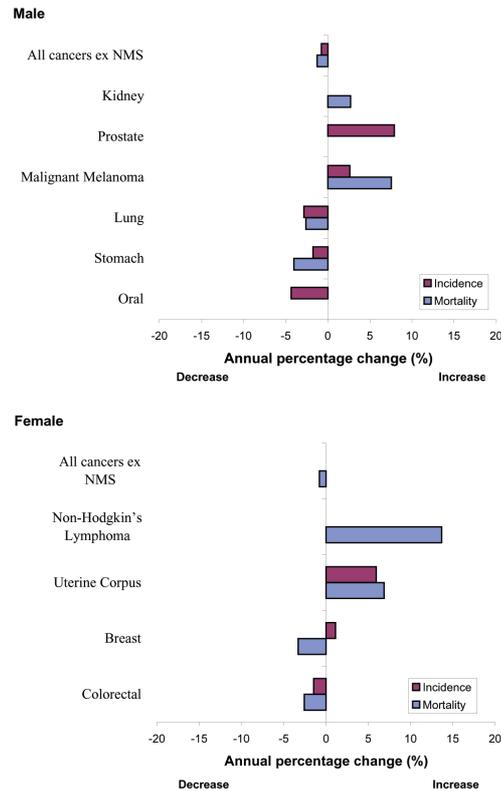
NEW CASES: The EASR (incidence) for all male cancers (excluding NMS) in 2003 was 396 cases per 100,000 males which was 14% higher than the female rate of 346 cases per 100,000 females.

DEATHS: The male EASR (deaths) in 2003 was 40% higher than the female rate at 224 and 160 deaths per 100,000 males and females respectively.

Common Cancers

Trends in new cases and deaths as a result of cancer vary according to sex and the cancer type. Figure 6 illustrates those cancers for which the trend between 1993 and 2003 was significant. This shows increases in prostate cancer and melanoma in males and increased cancer of the uterus and lymphomas among females.

Figure 6: Annual Percentage Change in European Age-Standardised Incidence and Mortality Rates 1993-2003

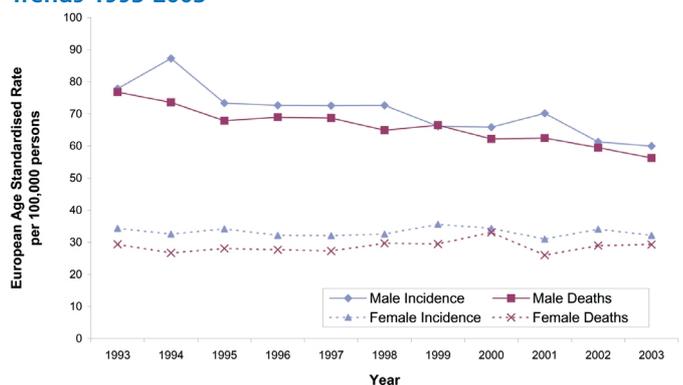


Lung Cancer (ICD10: C33-34)

(2003 – 508 new male and 337 new female cases, 476 male and 327 female deaths)

Lung cancer was the most common cancer and the greatest cause of cancer death in males. However, the rates in males have fallen significantly over the period from 1993 to 2003, with APCs of -2.8% for new cases (Figure 7), corresponding to an annual decrease of 7 cases, and -2.6% for deaths, corresponding to an annual decrease of 6 deaths. This decreasing trend in males has been observed elsewhere in the UK (Cancer Research UK). Females did not show any trend in either incidence or death rates.

Figure 7: Lung Cancer Incidence and Deaths: Trends 1993-2003



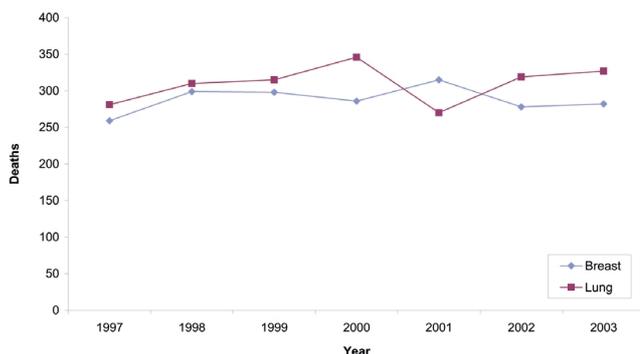
On examination of rates by Health and Social Services Board area (HSSB), rates for new cases and deaths from lung cancer rose significantly in females living in the Southern HSSB area (APC 4.8% and 4.6% respectively). Whilst for males in the Eastern, Northern and Western HSSB decreasing rates for new cases were observed (APC -3.5%, -2.2% and -3.0% respectively), along with falling death rates in the Eastern and Northern HSSB areas (APC -2.9% and -1.7% respectively). No change in female lung cancer was observed in residents of the Northern, Eastern and Western Board areas.

Breast Cancer (ICD10: C50)

(2003 – 1,024 new female cases, 282 female deaths)

On average, breast cancer was the most common cause of both cancer and cancer death in females from 1993 to 2003 (897 cases and 301 deaths in females due to breast cancer per year). However since 1997 the number of female deaths each year from lung cancer has exceeded that from breast cancer with the exception of 2001 (Figure 8).

Figure 8: Breast and Lung Cancer Deaths among Females: Trends 1997-2003



Rates for new cases of breast cancer were found to rise significantly (APC 1.1%, equivalent to 20 additional cases per year). This may in part be attributed to better detection (breast screening) and increased awareness of symptoms. Additionally there are changing patterns in the risk factors for breast cancer, which include late age of first pregnancy, fewer pregnancies, lack of breast feeding, increasing obesity and increased use of Hormone Replacement Therapy (HRT) (Cancer Research UK). Reassuringly, there was a significant fall in death rates (APC -3.3%), equivalent to a reduction of just under 5 deaths per year.

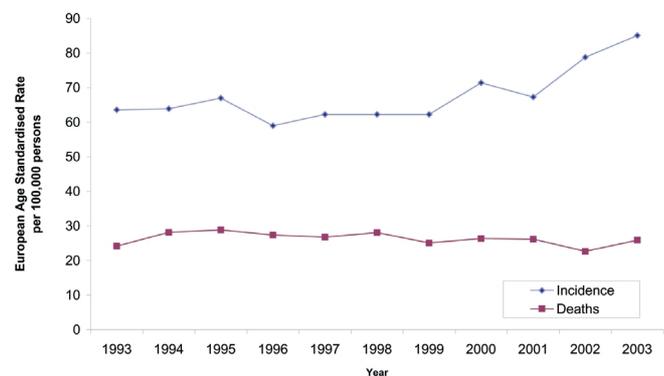
Examination at HSSB level demonstrated rising rates of new cases only in the Eastern HSSB (APC 2.4%), with death rates falling significantly in each Health Board area (APC -3.4% in the Northern HSSB, -3.9% in the Southern HSSB, -2.5% in the Eastern HSSB, and -4.5% in the Western HSSB).

Prostate Cancer (ICD10: C61)

(2003 – 715 new cases, 219 deaths)

Prostate cancer was the second most common cause of cancer in males, with rates for new cases rising significantly in the latter years of 1999 to 2003 (APC 7.9%, equivalent to 52 cases per year after a period of steady state prior to 1999) (Figure 9). This was the largest increase in APC noted and is likely fuelled by the increased use of PSA testing. There was no overall significant trend in deaths at Northern Ireland level.

Figure 9: Prostate Cancer Incidence and Deaths: Trends 1993-2003



Significant rises in rates for new cases of prostate cancer were noted in each of the HSSB areas (APC 6.7% in the Northern HSSB during 1998-2003, 20.2% in the Southern HSSB during 2000-2003, 3.2% in the Eastern HSSB during 1993-2003, and 4.6% in the Western HSSB during 1993-2003). Only the Northern HSSB exhibited a significant fall in death rates (APC -2.6%).

Colorectal Cancer (ICD10: C18-21)

(2003 – 556 new male and 439 new female cases, 253 male and 214 female deaths)

Colorectal cancer is the third most common cancer diagnosed in males and second in females. Significant downward trends in both new cases and deaths were observed for females (APC -1.4% and -2.6% respectively, equivalent to decreases of 2.5 cases and 3.5 deaths per year). No similar change was observed in males. Rates for new cases fell in females in the Western HSSB (APC -2.1%) but did not change significantly in any other Health Board area. None of the Health Board areas has demonstrated a significant change in new cases among males.

Stomach Cancer (ICD10: C16)

(2003 – 167 new male and 90 new female cases, 100 male and 65 female deaths)

Stomach cancer was the fourth most common cancer in males for both new cases and deaths, with both showing downward trends in rates (APC -1.8% and -4.0% respectively, equivalent to a negligible annual change in the number of cases and an average decrease of 2.5 deaths per year). This fall in deaths has also been observed in other developed countries. Stomach cancer accounted for the largest decrease in cancer death rates observed in males (APC -4.0%). There was no significant change in rates for new cases or deaths in females.

Males in the Eastern HSSB had falling death rates from stomach cancer (APC -3.9%), with no significant changes in the other Health Board areas.

Oral Cancer (ICD10: C00-14)

(2003 – 79 new male and 48 new female cases, 29 male and 11 female deaths)

Rates of oral cancer in males fell significantly (APC -4.4%), exhibiting the largest annual decrease, representing an average annual fall of 3 cases per year. The number of cases in females fell by an average of just under 1 case per year, which does not translate to a significant change in the age-standardised rate. Males living in the Eastern HSSB had falling rates of new cases of oral cancer (APC -5.1%). No significant change was noted in any other Health Board for either sex.

Malignant Melanoma (ICD10: C43)

(2003 – 81 new male and 127 new female cases, 23 male and 17 female deaths)

There were significant upward trends in new cases and deaths from malignant melanoma in males (APC 2.6% and 7.5%

respectively, equivalent to an increase of 3 cases and 1 death annually). This was the largest increase in APC for male death rates. Despite larger numbers of cases and rates in females, no significant trend in female malignant melanoma is present. Rates for new cases of malignant melanoma rose significantly for males in the Southern HSSB area (APC 5.1%) but fell for females in this Health Board (APC -3.5%). They did however rise significantly for females residing in the Northern HSSB (APC 5.2%) and Western HSSB (APC 30.3%).

Cancer of the Uterus (ICD10: C54)

(2003 – 174 new cases, 21 deaths)

Rates for both new cases and deaths from cancer of the uterus were found to be rising significantly (APC 6.0% and 6.9% respectively, equivalent to rises of 8 cases and 1 death annually). This was the largest increase in APC for female incidence rates. This rise in incidence was noted in each of the Health and Social Services Boards, with APCs of 5.1% in the Northern HSSB, 6.4% in the Southern HSSB, 5.9% in the Eastern HSSB, and 7.6% in the Western HSSB, with only the Northern HSSB exhibiting a significant rise in deaths (APC 19.9%). Risk factors of this disease are obesity and the use of HRT (Cancer Research UK).

Non-Hodgkin's Lymphoma (ICD10: C82-85)

(2003 – 131 new male and 128 new female cases, 57 male and 70 female deaths)

The largest annual increase in female cancer death rates was noted in Non-Hodgkin's lymphoma which rose significantly in the earlier period of 1993 to 1998 (APC 13.7%, equivalent to 6 deaths per year). After 1998 rates began to fall but not significantly. For males, incidence rates fell significantly in the Southern HSSB (APC -4.4%).

Glossary

Incidence: The number of new cases of a cancer diagnosed for a particular period.

Mortality: The number of patients whose primary cause of death was the specified cancer during a particular period.

European Age Standardised Rate (EASR): A rate used to permit comparisons with other European countries. The rate adjusts for differences in national population age structures by adopting a notional standard population. It is reported as a rate per 100,000 persons.

Annual Percentage Change (APC): The percentage increase or decrease in the rate or number of cases/deaths per year.

ICD10: The tenth edition of the International Statistical Classification of Diseases and Related Health Problems published by the World Health Organisation (WHO) which provides a detailed description of known diseases and injuries. It is used in the production of morbidity and mortality statistics.

References

- Kim HJ, Fay MP, Feuer EJ, Midthune DN. Permutation tests for Joinpoint regression with application to cancer rates. *Stat Med* 2000; 19:335-51.
- Cancer Research UK, 2005. Lung Cancer Factsheet.
- Cancer Research UK, <http://www.cancerhelp.org.uk/>