Cancer Incidence in Northern Ireland 1993~95

N. IRELAND Cancer Registry

Cancer Incidence in Northern Ireland 1993-95

Editors

Dr A T Gavin, MB MSc FFPHM and James Reid, BSc(Hons) MTP MA GIS

Data Analysis: James Reid, BSc(Hons) MTP MA GIS

Morphology and Staging

Dr R J Middleton, PhD BSc. and Dr J H Robertson, MD FRCP(ED) FRCPath

The Giant's Causeway, Northern Ireland, is a National Trust property famous for its scenery and black basalt hexagonal columns, built up from successive lava flows cooled at the water's edge.

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Acknowledgements

Many people have contributed to the establishment of the new N. Ireland Cancer Registry (NICR). These include the visionaries and planners who were at work before the Registry officially started in May 1994 and the many hundreds of people who willingly gave of their time and skill during the Registry's development. This report provides the opportunity to publicly acknowledge all those who facilitated this. It is impossible to name every individual but those who have helped us in any way should feel very proud of the project and this report.

The late Dr Calum Muir, an international leader in cancer registration, was particularly helpful in the Registry's early years and this report is dedicated to his memory. Professor Gary Love, Dr James McKenna, Mr Michael Wood, Dr Rodger Blaney and Professor Alun Evans also deserve special mention.

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The Registry has been helped enormously by medical records staff in hospitals throughout Northern Ireland and our thanks go to them.

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Colin Fox — IT Manager
Wendy Hamill — Secretary
Dr Richard Middleton — Data Manager
James Reid — Epidemiologist
Breige Torrans — Administrator

Researchers
Rosemary Bergin — PhD Student
Dr Pauline Pedlow — Malignant Melanoma (until 1998)

Tumour Verification Officers
Bernadette Anderson
Marina Bleakley
Carmel Canning
Kate Donnelly
Patricia Donnelly
Helen Hanlon
Rosemary Ward

Dr Anna Gavin
Director

Foreword

Cancer is an important cause of ill-health and premature death in Northern Ireland. One in three people will get cancer and one in four will die from it. The starkness of these figures highlight the need for constant surveillance.

The N. Ireland Cancer Registry is a very necessary part of the infrastructure which is needed in our efforts to reduce the burden of cancer. Without the Registry we would not know with any certainty the incidence of the different cancers, the outcome of our preventive programmes or the effectiveness of our treatment services. In addition no meaningful research in cancer can be done without proper registration.

This important document is the first incidence report of our N. Ireland Cancer Registry. In this report the team at the Registry, headed by Dr Anna Gavin, have provided us with high quality information set out clearly in a manner which will be easily understood by all. This incidence report marks the beginning of a new era in cancer surveillance in Northern Ireland. It proves beyond doubt the great benefits to be gained from investing in the collection and collation of high quality data. This excellent report also shows the high level of commitment and energy which has been devoted by the team at the Registry. They are to be warmly congratulated.

H Campbell

Dr Henrietta Campbell
Chief Medical Officer

1. Introduction

This is the first report on cancer incidence produced under the aegis of the newly established N. Ireland Cancer Registry (NICR) and follows on from the publication of the report, "Cancer Deaths in N. Ireland: An Analysis of Patterns and Trends" (ref: 1).

For many years the planning of cancer services, essential research and even basic descriptive epidemiology on cancer in Northern Ireland has been frustrated by a lack of timely and accurate information. This report aims to redress this deficit by producing, for the first time, a comprehensive report consolidating data for the period 1993-95. The data represents a quantum leap in terms of the availability and coverage over the old cancer registration scheme.

Furthermore, the data serve to lay a foundation and will eventually contribute towards the investigation of survival patterns for those people who have developed cancer. This report is, therefore, a milestone for cancer registration and one that points to an important role in helping to enumerate, analyse and predict important disease patterns. Three years data are provided to reduce the effect of year to year fluctuations on interpretation. For ease of reference the layout of each disease specific section follows a similar format.

Background

A new Cancer Registry was established in 1994 to provide information on cancers occurring in the Northern Ireland population for the purposes of research, education and the planning of cancer services. The new Registry replaces a Department of Health and Social Services (DHSS) Registry which began in 1959. This old Registry relied on clinicians completing card registrations on each patient and, as a consequence, ascertainment of cases was incomplete (ref: 2). Additionally, data were poorly verified and significantly the date of diagnosis, an essential minimum data item (ref: 3) for modern registries, was not recorded; thus the data quality was poor.

The last report which was produced in 1991 acknowledges the incompleteness of data. Trend information for cancer incidence before 1993 is therefore unreliable. The old Registry cards are retained by the N. Ireland Cancer Registry (hereafter referred to as the 'Registry') and have proved useful in the identification of cancer patients diagnosed before 1993.

Confidentiality

The new Registry continues the old Registry's strict respect for the confidentiality of data. Names, addresses and other personal information are collected to prevent multiple registrations of the same patient and to help identify individuals for follow-up and survival analysis. The Registry is independent of all other agencies and does not share confidential information except for ethically approved studies or to assist doctors in reviewing their own work.

The standard provisions for medical confidentiality apply to the Registry which is also registered with the Data Protection Registrar under the Data Protection Act 1984 (The Data Protection Act 1998 received Royal assent in July 1998 but will not be enforced as an act of law until subordinate legislation has been assessed and this is expected no later than July 1999). All confidential information within the Registry is encoded, protected by security systems and destroyed when no longer needed. A policy document detailing confidentiality, and the rules for the issue of data is available on request.

Other (Disease Specific) Registries

The absence of an accurate population based registry prompted the establishment of several disease specific registries. These included the Leukaemia/Lymphoma Register, supported by the Northern Ireland Leukaemia Research Fund, the Melanoma Register, supported by the Ulster Cancer Foundation and the Colorectal Register supported by Friends of Montgomery House. These registries historically provided data essential for research and the planning of services and have additionally provided a source of independently collected data to act as a cross-check for the new Registry. Much of the valuable data initially collected by these independent registries can now be

provided centrally by the new Registry. Co-operative working arrangements exist and will enhance the accuracy and speed of data collection on these important cancers.

Links With Other Registries

Excellent co-operative relationships exist with the registry for the Republic of Ireland (The National Cancer Registry of Ireland) which builds on the pioneering work of the Cork and Kerry Registry. Their data collection coincidentally also started in 1994 thus making an all Ireland cancer report feasible for the first time. Joint data quality and research projects are ongoing.

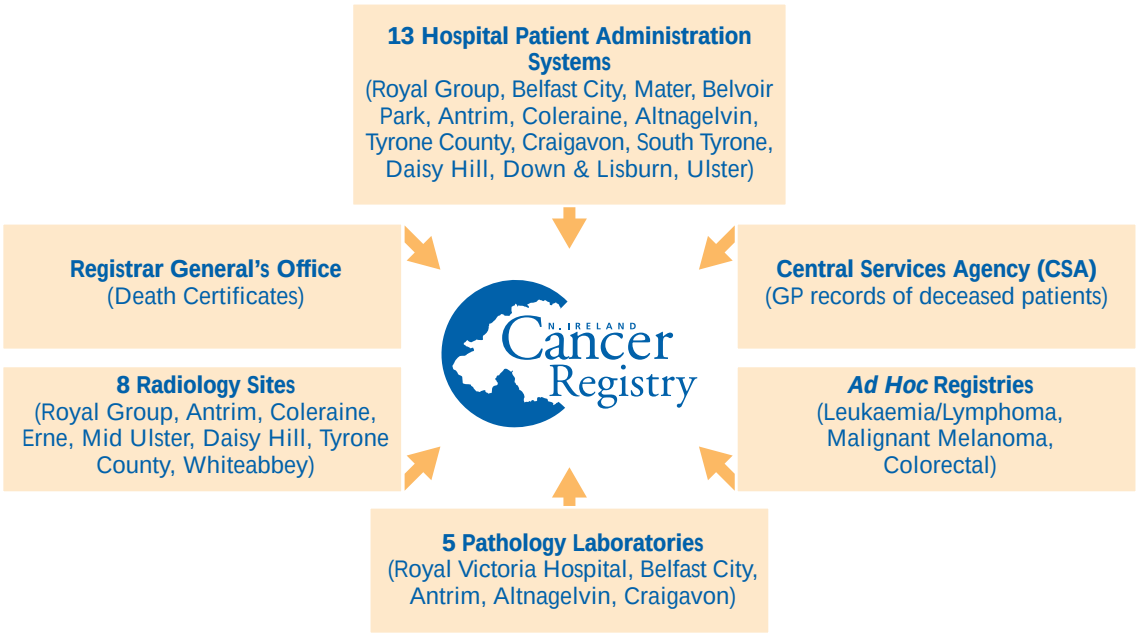
The N. Ireland Cancer Registry is a member of the United Kingdom Association of Cancer Registries (UKACR) and has links with the eleven registries which give complete population coverage for England, Wales and Scotland. The UKACR provides a forum for networking, setting standards, sharing information and encouraging development and research. The Registry is an associate member of the International Association of Cancer Registries (IACR) which provides links with cancer registries throughout the world.

2. Method of Operation

Much of the data required for cancer registration in Northern Ireland is already stored on Health & Personal Social Services (HPSS) computer systems. The Registry receives these data via securely coded electronic mail from the five pathology laboratories and the various hospital Patient Administration Systems (PAS). The Registrar General's Office supplies data on deaths. The various disease specific registries, previously mentioned, also provide relevant supplementary data. The Registry also has links with the Breast and Cervical Screening Services, the Hospices and several Radiology Departments - see Figure 1.

Figure 1

Registry Data Sources



Multiple sources of data assist in optimising completeness but can create problems of case resolution when there are multiple notifications for each patient. The absence of a Unique Patient Client Identifier (UPCI) has made the process of record matching more problematic. This issue has been addressed using various computer based matching programmes and a close scrutiny of the database.

Data Inventory

The Registry collects personal and tumour details on cancer diagnoses according to the International Classification of Diseases Revision 9 (ICD-9) (World Health Organisation 1977). This will change to ICD-10 for future reports. Additionally, data on conditions which could, in some cases, be pre-malignant e.g. Barrett's oesophagus, is also recorded. Such conditions are not included in this report.

The Registry records more cancers than patients (25,539 tumours/24,159 patients for the three year period) because about 6% of patients had more than one cancer.

ICD-9 Codes Registered by the Registry

140 - 208	All malignant neoplasms
210 - 229	All benign neoplasms
230 - 234	All *in situ* neoplasms
235 - 239	All neoplasms of uncertain (235-238) or unspecified (239) behaviour
273.3	Waldenstrom's macroglobulinaemia
501	Asbestosis
530.1	Oesophagitis - to detect Barrett's oesophagus
622.1	Dysplasia of cervix uteri (CIN I and II)
630	Hydatidiform mole

Registry Information Technology (IT) Infrastructure and Security

As a largely electronically based registry, the Registry relies heavily on its computing infrastructure. A private client/server network is used to store, retrieve and interrogate the cancer registration system. The registration software itself is a customised version of a generic system developed by the Thames Cancer Registry and also used by Trent Cancer Registry. Data processing is largely automatic although a significant degree of clerical review, data checking and manual intervention is undertaken to ensure that eventual registrations are correct and quality assured.

The strict use of passwords enhances security. Security measures include system/data backup, contingency policies and the use of 'views' within the cancer registration system to allow only certain specified information to be viewed by specific users. We also have a separate cancer registration system containing scrambled data records for training, test and demonstration purposes. An IT Security Policy is available on request.

3. Data Quality

The many uses of cancer registry data depend on the quality of the data held. This is important for all registries but particularly so for a new one, where historical comparisons are not available and cases diagnosed years previously (prevalent cases) are difficult to assign to the correct year of diagnosis. The Registry actively seeks to ensure that the data are of the highest quality and has spent 50% of its budget in the last year (16% of total expenditure) and over 25% of its time, to date, on data quality issues.

The broad objectives of any cancer registration scheme are:

- To obtain information on all cancers diagnosed in the population (a high level of case ascertainment).
- To have accurate data.
- To record certain items on all cases (completeness of data).
- To have the most recent data available (timeliness of data).
- To ensure data reliability through regular audit.

With these objectives in mind the Registry has undertaken the following initiatives.

1. Routine, secure electronic data transfer.
2. Electronic validation checks on incoming data.
3. Investigation of Death Certificate Initiated (DCI) cases via Central Services Agency (CSA), to gain additional information on diagnosis.
4. Examination of hospital records in cases with a Patient Administration System (PAS) only notification to validate patient and tumour details, especially the date of diagnosis and diagnosis code.
5. Examination of pathology reports for specific tumours (bladder, liver, peritoneum, cervix, pleura, pericardium) as difficulties are known to arise in the coding of these cancers between *in situ* and fully malignant or between primary and secondary tumours.
6. Year to year case number consistency checks.
7. An examination of the percentage with Microscopic Verification (%MV) and the Mortality: Incidence ratios (M:I) for various cancers compared to other cancer registries for international comparisons.

Each of these initiatives is outlined more fully below:

1. Electronic Data Transfer

All of the Registry's data are received electronically encrypted, from multiple sources - see Figure 1. The advantages of electronic data transfer are that, once established, it is inexpensive, permits timely updates, involves minimal staff time and additionally transcription errors are avoided. Conversely, manual based registries are labour intensive, liable to transcription errors and usually restricted in the range of diseases they register. Electronic data transfer also facilitates collection of data on tumours which are largely non-fatal e.g. non-melanoma skin cancer and also conditions known or suspected to be pre-malignant, for example, Bowen's disease, Barrett's oesophagus and *in situ* cancers. This facilitates research into these conditions, particularly over a period of time.

With an electronic system, however, problems can occur with transfer of incorrect/invalid data from one system to another. The Registry has addressed this issue by using multiple sources of data and manual resolution of conflicts with inspection of patient's notes when required. This, coupled with feedback to Trusts and training co-ordinators, will ultimately improve the quality of data in the feeder systems. Another problem with electronic data transfer is the identification of duplicate cases. The Registry uses a matching process with weighted probabilities based on name, date of birth etc. In the longer term this problem should be solved when a Unique Patient Client Identifier (UPCI) is routinely adopted for use in Northern Ireland.

A further problem with electronic data transfer is that the system can only collect what is electronically available on the existing feeder systems. The Registry is fortunate to have full pathology reports available electronically from most sites but has had to resort to a review of notes when required. It is hoped that key data items required for registration will be routinely recorded and available for electronic downloading to the Registry in the future. This applies particularly to the stage of disease, occupation and address/postcode information.

2. Electronic Validation Routines

Electronic validation checks are automatically conducted on incoming data using subsets of the USA Surveillance, Epidemiology and End Results Programme (SEER) and International Agency for Research on Cancer (IARC) validation checks. These seek to identify and eliminate nonsensical and implausible combinations of disease, sex, age etc.

3. Investigation of Death Certificate Notifications

All cancer registries have some registrations from death certificate only (DCO). The level of DCO notifications is generally regarded as a measure of a registry's performance in case ascertainment and as an indicator of data quality. In the hierarchy of sources available to registries for case notifications, the death certificate is regarded as the most suspect. Consequently, low levels of DCOs are regarded as a measure of good data quality as more reliable sources will have notified the registry of the tumour. A high DCO level indicates the registry has a problem with case ascertainment and is missing cancers as they are diagnosed. A very low or zero level of DCO cases may indicate that the registry is not receiving information on all deaths.

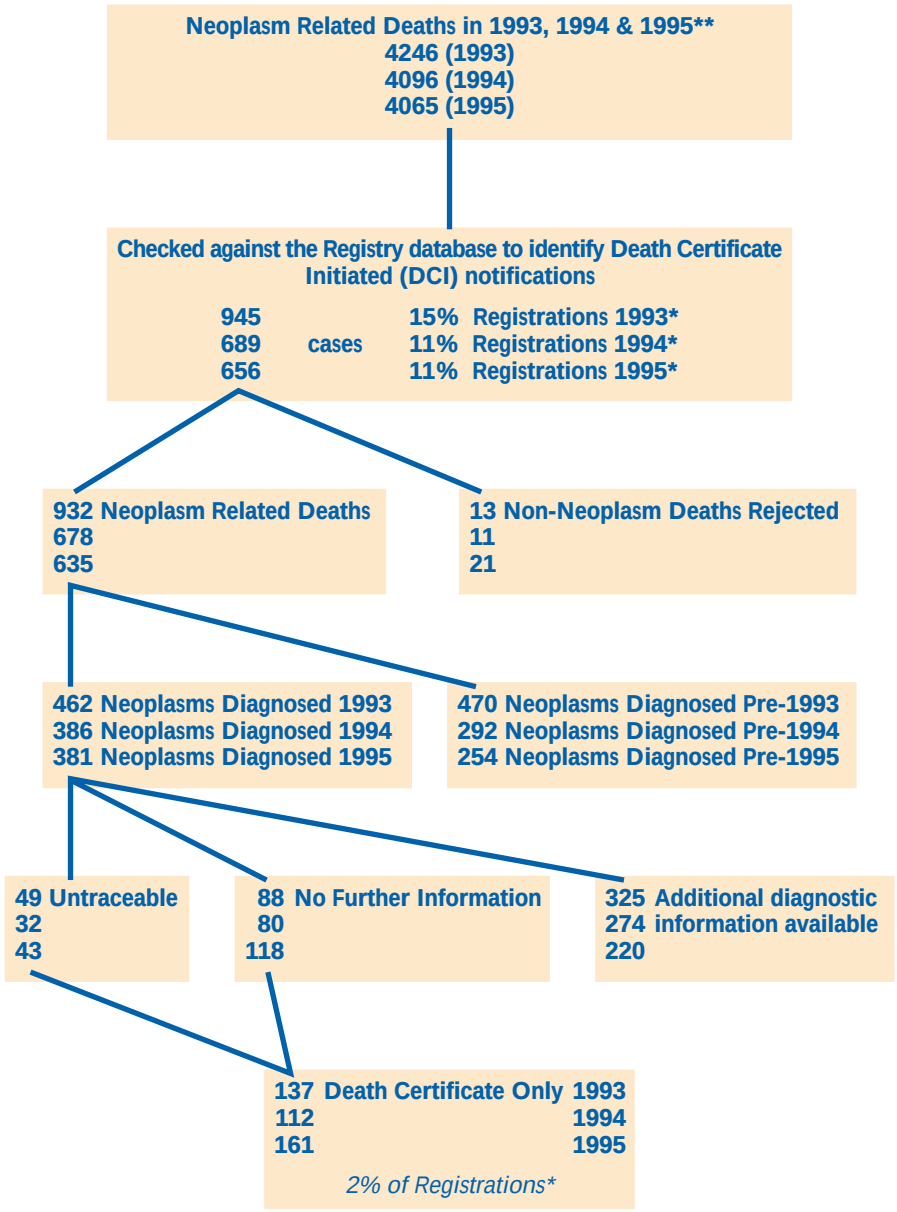
The N. Ireland Cancer Registry receives information from the Registrar General's Office on deaths from all causes. Deaths in which cancer was implicated as the primary or contributory cause are extracted annually and compared with the data on the Cancer Registry database. For each year a number of Death Certificate Initiated (DCI) cases were identified i.e. cases first notified to the Registry via a death certificate. As expected the number was higher in 1993 (945 cases) than in subsequent years 1994 (689 cases) and 1995 (656 cases) as some of the patients who died in 1993 had their cancer diagnosed in years prior to the period covered by the Registry.

In Northern Ireland, GP records of patients who have died are held centrally by the Central Services Agency (CSA). The GP records of the DCI cases were examined and almost half were diagnosed in years prior to their death and allocated to that year. Over a third (36%) of cases had additional information available and were added to the Cancer Registry database while about 2% were not cancers. In 12% of DCI cases there was no additional information from the GP records and an additional 5% were untraceable. This resulted in a DCO rate of approximately 2% of registrations (excluding non-melanoma skin cancers) - see Figure 2. This compares favourably with other registries as illustrated in Table 1 below.

Table 1 - Comparative Levels of Death Certificate Only Registrations From Some European Registries

Registry	% of all registrations (excluding skin cancer)
Italy, Florence	5%
Spain, Basque Country	4%
UK, Scotland	4%
UK, England and Wales	3%
Republic of Ireland	2%
Northern Ireland	**2%**
Czech Republic	2%
Denmark	2%
Norway	1%

Figure 2: Outcome of Death Certificate Initiated Notifications to the N. Ireland Cancer Registry 1993, 1994 and 1995*



** Registrations excluding non-melanoma skin cancers.*
*** Includes cases where cancer was recorded as primary and/or additional cause.*

4. Note Examination for Patient Administration System (PAS) Only Records

The Registry recognised that cases with a single source notification from the Patient Administration System (PAS) could include records which should not be included in the database. These are:

i prevalent cases, diagnosed before 1993;

ii wrongly coded cases; or

iii extra-regional cases i.e. cancers diagnosed in patients who normally live outside Northern Ireland.

This initiative was undertaken early in the Cancer Registry's development when not all pathology records were available and death certificates were not processed. Over 5,500 notes were examined of which almost 31% were diagnosed prior to 1993. Seven percent were not cancers and 14% were *in situs* or uncertain behaviours which were wrongly coded as fully malignant cancer. Nineteen percent of the notes requested were not available. There were 29 extra-regional cases detected.

Information on all cancers was enhanced by this exercise but in particular cancer of the cervix (where 75% of PAS only cases were not true cervical cancers) and liver cancer (where 60% of cases were not true primary liver cancers) were significantly improved. The results of this project have been fed back to Trusts and PAS coders.

5. Examination of Pathology Records for Selected Sites

Electronic pathology reports, including full text, are available to the Registry and provide useful supplementary information to the summary diagnosis codes automatically received from the regional pathology laboratories. Investigation of pathology reports was necessary as the final summary code does not always reflect the discussion in the pathology report text. In conjunction with the Registry's visiting pathologist, Dr Jeffrey Robertson, these reports were reviewed for specific cancers which are regarded as diagnostically difficult: bladder, peritoneum, liver, pericardium and pleura.

Bladder - Pathology records for 1,807 bladder tumours for the years 1993-95 were examined. Forty percent were fully malignant, 7% were recurrences with diagnosis prior to 1993, 4% were *in situ* (flat tumours) and 50% were non-invasive tumours.

Peritoneum - Pathology records for 201 peritoneal tumours were examined, 97% of these were secondaries and 3% were true peritoneal tumours (mesothelioma).

Liver - The pathology records for 183 liver tumours were examined. Thirty two percent were secondary tumours, 30% were intra-hepatic bile duct tumours and 14% were liver primaries. In 20% of cases the code of 155.2 (uncertain liver primary or secondary) was allocated.

Pericardium - Pathology records for 49 pericardial tumours were examined, of which 45% were secondary from lung, 8% were Hodgkins disease, 4% were secondaries from the bowel while 14% were tumours of the heart or pericardium.

Pleura - Pathology records for 121 pleural tumours were examined, of these 72% were pleura and 24% were lung primaries. Rarely secondaries in the pleura were noted from primaries in the oesophagus and prostate.

6. Year to Year Case Number Consistency Checks

Case numbers for each year are presented in tables within each chapter to illustrate consistency from year to year. While year to year fluctuations are to be expected, especially for rarer cancers, figures are fairly consistent both in terms of sex ratios and age distributions, suggesting that no gross omissions in case ascertainment has occurred.

7.1 Examination of Percentage Microscopically Verifiable

Ideally all cancers would have a diagnosis verified histologically and/or cytologically. Inevitably,

however, some will be diagnosed on the basis of clinical opinion or other detection methods e.g. radiology. The level of microscopic validation is given for each site in the relevant chapter and overall is high at over 82%, 79% if non-melanoma excluded for all cancers - see Table 2 for comparison of specific sites with other registries.

Table 2: Percentage of Registrations with Microscopic Verification

Site	Northern Ireland	England	Yorkshire	North Thames	France	Spain	Denmark
All Cancers*	79	69	78	63	97	83	92
Breast	91	74	83	67	97	87	94
Melanoma	100	84	91	76	98	90	99
Lung	67	67	76	65	97	85	93
Colon	84	76	88	72	98	85	94
Oesophagus	88	80	92	81	98	88	99

*Excluding non-melanoma skin cancers.

The differences in Table 2 may reflect clinical practice in addition to variations in case ascertainment.

7.2. Mortality/Incidence Ratio

This provides a guide to overall case ascertainment and assumes that death certificate information is complete and accurate. A ratio close to 1 indicates a cancer with a poor survival (assuming incidence rates are constant). The ratio for specific sites may be compared between registries to assess completeness of registration - see Table 3. While the Northern Ireland Mortality:Incidence Ratios appear better than other countries it should be noted that this may reflect a number of undetected prevalent cases. As the Registry matures the numbers of prevalent cases will fall.

Table 3: Mortality/Incidence ratio for some European countries

	Northern Ireland	Republic of Ireland	European Union	Austria	Denmark	Finland	The Netherlands	Sweden	United Kingdom
Oesophagus	0.73	0.96	1.04	0.89	1.09	0.86	1.06	0.98	1.01
Stomach	0.73	0.85	0.85	0.78	0.91	0.77	0.83	0.84	0.79
Colon/rectum	0.45	0.55	0.56	0.57	0.63	0.54	0.51	0.52	0.62
Bronchus, lung	0.88	1.10	0.95	0.86	1.03	0.92	0.93	1.01	0.92
Melanoma of skin	0.16	0.11	0.27	0.38	0.31	0.24	0.22	0.23	0.30
Breast	0.40	0.41	0.41	0.43	0.43	0.30	0.37	0.28	0.48
Cervix uteri	0.39	0.48	0.48	0.54	0.47	0.28	0.46	0.46	0.48
Ovary	0.57	0.61	0.76	0.70	0.79	0.71	0.79	0.66	0.78
Prostate	0.45	0.47	0.58	0.46	0.64	0.45	0.48	0.41	0.63
Bladder	0.46	0.36	0.45	0.35	0.77	0.32	0.56	0.31	0.42
All sites*	0.57	0.58	0.66	0.59	0.68	0.57	0.63	0.55	0.68

*Except non-melanoma skin cancers

Primary Site Unknown

The extent to which the primary site for a cancer is unknown is another indication of data quality - Table 4 sets the Northern Ireland position into a wider European context.

Table 4 - Percentage of Cases with Primary Site Unknown in Some European Registries

Registry	Males	Females
Northern Ireland	3.8	4.4
Spain, Basque Country	7.5	8.0
UK, West Midlands	5.6	5.9
UK, Scotland	4.9	5.6
Netherlands, Eindhoven	4.7	5.1
France, Bas Rhin	4.5	4.8
Norway	3.7	4.3
Czech Republic	3.4	4.3
Switzerland, Basle	3.8	3.8
Sweden	3.4	3.9
Republic of Ireland	3.8	3.5
Denmark	3.3	3.7
Finland	2.3	3.4
Italy, Florence	2.6	2.7
Iceland	2.3	2.9

Data Sources

About two thirds of all cancers had a pathology and PAS confirmation of disease. Half of these i.e. a third of all cases also had a death certificate confirmation. About 1 in 20 (4.5%) of cases were from unverified Patient Administration System (PAS only) records. This represents a potential source of error as it may include some prevalent cases diagnosed before 1993 and may also include some misdiagnoses. In some specific tumour sites, e.g. childhood cancers analysis excluded these PAS only cases in order to minimise potential avoidable error.

Recording of address information, principally the postcode used to assign cases to geographical areas, has posed problems. The Registry has attempted to ensure that postcoding difficulties are minimised by: use of the Central Postcode Directory (CPD); the Ordnance Survey for Northern Ireland (OSNI) files; analysis of data aggregated at District Council and Health Board level; double checking doubtful addresses and in-depth scrutiny of the cases allocated to district councils which have a higher than expected level of disease. Nevertheless, caution should still be exercised in the interpretation of these geographical patterns as case numbers are relatively small and not all addresses were available to the Registry. Data on leukaemias and lymphomas require further checking and so have not been included as a specific chapter.

Quality assurance is an ongoing process. The Registry will continue to monitor data quality in line with standards set by the International Association for Research in Cancer (IARC) and plan to contribute in the future to 'Cancer Incidence in Five Continents'. (ref: 4)

Recommendations

Experience gleaned from the foregoing initiatives suggest that a number of practical measures should be implemented in order to enhance cancer registration in Northern Ireland:

- A Unique Patient Client Identifier (UPCI) should be introduced as soon as possible to improve identification of individuals and avoid duplication.
- Trusts should ensure that key data items on stage of disease, occupation and postcode are routinely and accurately collected.
- Hospital records should be stored in a manner so they are readily accessible and not mislaid.
- The radiology departments should routinely use the coding system available to them.
- Haematology bone marrow records should be computerised.
- Pathology systems should endeavour to improve completeness of address information particularly with regard to the recording of postcodes.

4. Section Layout

In the subsequent sections covering the various cancers, a common layout has been adopted:

- Summary
- Age Profile
- Morphology
- Geographical Distribution of Disease
- Data Quality
- Comment
- Health Gain

Summary

A textual summary precedes the main summary table which details incidence, data quality and mortality measures by sex and year for the cancer in question. Although a technical definition of each measure appears in Appendix ii, a more accessible synopsis is provided below for the casual reader.

Incident Case	A new case of cancer.
Crude Rate	The number of cases per head of population reported as a rate per 100,000 per year.
Cumulative Risk	The lifetime (0-74 years) chance of developing/dying from the cancer cited. Usually expressed as a percentage.
World Age Standardised Rate (WASR)	A rate used to permit international comparisons by adjusting for differences in national population age structures by adopting a notional standard population. Reported as a rate per 100,000.
European Age Standardised Rate (EASR)	Identical to the WASR except the notional standardised population is different, reflecting an older European age profile. This rate is useful for comparisons with other European countries.
% of all cancers	The contribution of that specific cancer to the total numbers of patients with cancer.
M:I Ratio	Simply the ratio of the number of deaths to the number of new cases in a given time period. Ratios of 1 or greater may be interpreted as cancers for which survival is poor, conversely the lower the value, the better the survival. Note that this measure assumes that both the numbers of deaths and incidence are not changing in a directed fashion over time.
% DCO	The percentage of new cases that are only notified to the Registry via a death certificate. As death certificates are considered diagnostically inferior to other sources, the lower the percentage of DCOs the greater the confidence in the diagnosis. This also indicates the extent to which other (more reliable) sources are available to detect new cases.
% Microscopically Verified (%MV)	The gold standard for the registration of a new case of cancer is to have had a specimen confirmed as a malignant tumour by examination under a microscope. Not every case will necessarily require or have had microscopic verification but the greater the proportion, the better the diagnostic confidence.

Age Profile

The age specific counts and rates are reported next in graphical form with comment where appropriate.

Morphology

The morphology (i.e. the type of tumour) for the cancer is reported, where appropriate, as this can be an indicator of outcome.

Geographical Distribution of Disease

The geographical distribution is given next and is based on pooled data for the 1993-95 period, where significant geographical variation is evident at either local government District Council or Health Board level (scale depends on the number of cases involved). Maps using Standardised Incidence Ratios (SIRs) are presented. The SIRs provide a means of inter-area comparison, taking account of the variation in age structure between areas. Areas are indexed relative to a Northern Ireland figure of 100 with areas above or below this value having an excess or deficit respectively.

For example, female breast cancer in Belfast has a value of 91 indicating that Belfast has a 9% deficit in incidence over what would be expected if the Northern Ireland rate applied to Belfast. Conventional statistical confidence intervals (significant at 95%) were used to indicate areas with significantly high or low levels of disease. Further to the example, the 95% confidence limits for female breast cancer in Belfast were 82-99 - as the upper confidence interval is below 100, this indicates that the deficit in Belfast had only a 1 in 20 probability of being that low by chance alone. SIRs were computed for three age groupings: all ages, those under 75 years and those under 65 years.

Comparisons with other neighbouring countries are provided in the next section, setting Northern Ireland rates in a wider context. The 1995 EASR are used as comparators as they were the most recent figures available for comparative purposes. These have been derived for Scotland and England & Wales from estimates provided by the Office of National Statistics (ONS) and published by the Cancer Research Campaign (CRC).

Data Quality

Comparative figures for data quality measures are provided as an indication of the confidence with which the data may be viewed.

Comment

A brief section on the general epidemiology and aetiology of the disease is provided.

Health Gain

This section provides some practical measures that may be adopted to assist in reducing the incidence and mortality burden from the cancer.

Note:

- Some sections have an annex giving additional details of morphology, stage etc.
- The population denominators used in this report were the official mid-year estimates grouped by age and sex for the years 1993, 1994 and 1995 - see Table 0. The 1991 age and sex disaggregated populations for District Concils and Health and Social Services Boards were used to produce Standardised Incidence Ratios (SIRs).
- The numbers of deaths reported are based on the date of death rather than the year of registration of death and will, therefore, differ slightly from figures published in the Registrar General's Annual Reports.

Cancer Sites

5. All Cancers

ICD-9 140 - 208

KEY FACTS

- On average over 8,500 cancers were registered per year, (6,288 excluding non-melanoma skin cancers).
- Males had higher overall rates than females.
- Belfast, Newry & Mourne and Derry had higher than expected numbers of cancers in males.
- Limavady and Derry had higher than expected numbers in females.
- One in three chance of developing cancer by the age of 75.

On average, over the period 1993-95, around 8,500 cancers per year were registered by the Registry. Figures 3 and 4 indicate the most commonly diagnosed cancers in males and females. Lung, prostate and colorectal cancers were the most common cancers in males, while for females breast, colon and lung cancers were the most common after non-melanoma skin cancers.

Most Common Cancers in Northern Ireland

Figure 3 - Most Common Male Cancers

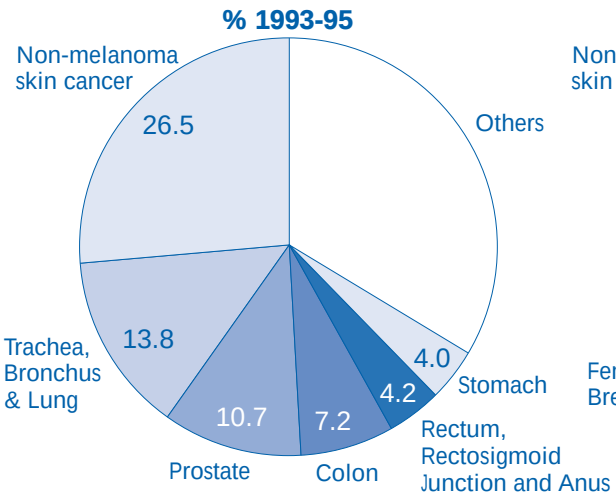
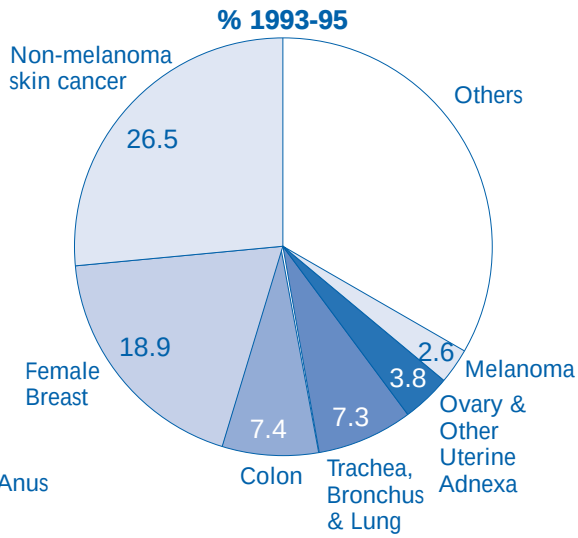


Figure 4 - Most Common Female Cancers



Non-melanoma skin cancers (NMS) accounted for over a quarter of all cancers diagnosed (2,260 cases per year). These cancers are readily treatable and rarely cause death (average deaths: 10 per year). Many cancer registries do not collect data on NMS and it is reasonable therefore, for purposes of analysis, to consider all cancers excluding NMS. This permits the burden of more serious cancers to be assessed more meaningfully.

Excluding NMS there were 6,288 cancers diagnosed annually over the period. Over half of these (51%) were diagnosed in females. However, the rates of cancer, adjusting for the effects of differentials in age distribution, are lower in females. Males also suffer from higher mortality rates than females - males have a 1 in 6 chance of dying from cancer, females a 1 in 8 chance before the age of 75. Irrespective of gender, there is about a 1 in 4 chance of developing some form of cancer (excluding NMS) before age 75. This increases to about 1 in 3 if NMS is included in the calculation.

Table 5 Summary Statistics

	Males			Females		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	3143	3090	2953	3223	3132	3162
Crude Rate (per 100,000)	395.00	385.90	367.85	387.38	374.43	375.95
Cumulative Risk (0-74) (%)	29.22	28.85	26.78	24.34	23.75	24.50
WASR (per 100,000)	299.90	292.92	276.31	253.56	246.18	247.04
EASR (per 100,000)	444.09	432.87	410.70	353.41	343.68	346.34
% of All Cancers	74.96	72.44	72.96	73.26	73.11	73.90
DATA QUALITY						
Mortality : Incidence Ratio	0.60	0.60	0.62	0.54	0.56	0.52
% Death Certificate Only	4.51	2.13	2.53	4.64	2.73	3.03
% Microscopically Verified	77.28	79.02	76.94	79.75	79.78	80.61
MORTALITY						
Number of Deaths	1884	1858	1846	1744	1757	1650
Crude Rate (per 100,000)	236.10	230.49	229.32	207.88	208.94	194.32
Cumulative Risk (0-74) (%)	17.80	20.07	17.20	13.02	12.44	11.94
WASR (per 100,000)	173.63	180.27	169.87	120.84	118.27	110.95
EASR (per 100,000)	266.94	256.96	254.89	177.52	174.94	164.20
% of All Cancer Deaths	99.84	99.46	99.84	99.59	99.94	99.76

WASR = Rates standardised for age to the World standard population

EASR = Rates standardised for age to the European standard population

Age Profile

Including skin cancers the age profile for the diagnosis of cancer is almost the same in males and females. Excluding NMS, cancers are more common in younger females than males. Conversely, male cancers occurred predominantly in old age — over two thirds in those aged over 65 - see Table 6 and Figure 5.

Table 6

Average numbers of new cancers and % of total (excluding Non-Melanoma Skin Cancer) 1993-95 by age and sex.

Age	Males	% Males	Females	% Females
0-44	230	8	345	11
45-64	826	27	1047	33
65+	2006	65	1780	56
Totals	3062	100	3172	100

Sex specific cancers were largely responsible for this differing pattern in age distribution between the sexes. Age specific rates (Figure 6) were highest in the oldest age group (85+ years). Female rates were higher in the 20-60 year age group again reflecting the influence of sex specific cancers (especially breast and cervix). The median age at diagnosis was 69 years for males, 67 for females.

Figure 5 Age Distribution of New Cases 1993-95, All Cancers (excluding NMS)

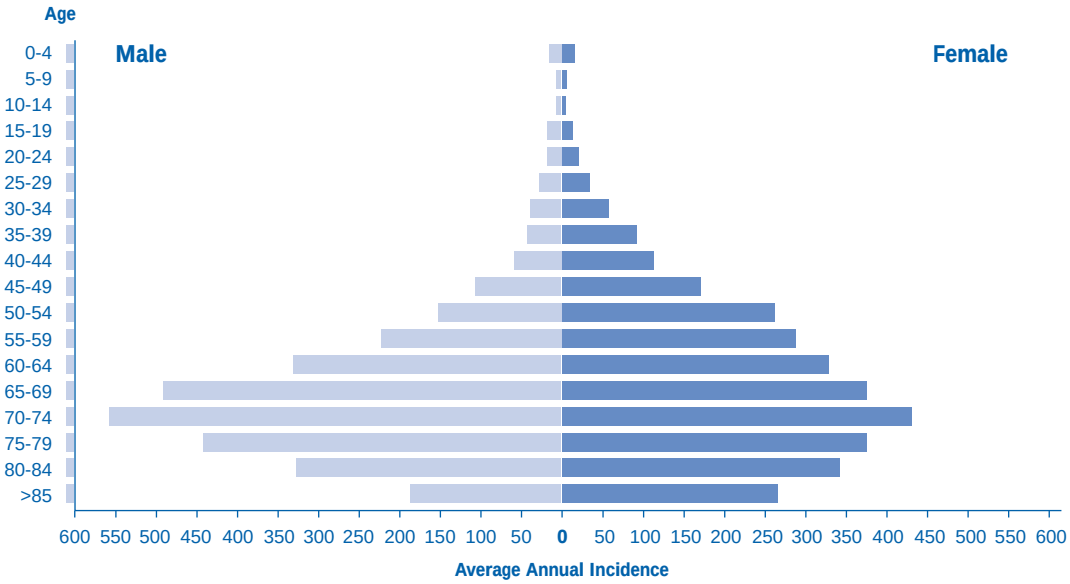
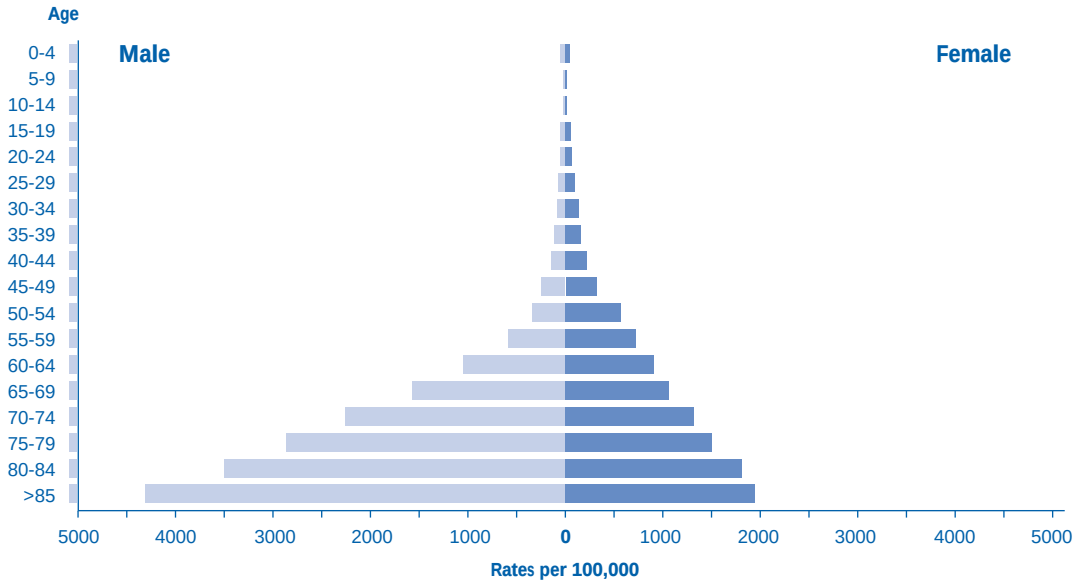


Figure 6 Average Annual Age Specific Rates (per 100,000) 1993-95, All Cancers (excluding NMS)



Geographical Distribution

Variation across Health Boards/District Councils in the observed number of cases due to differences in the age structure of the underlying population has been accounted for by using Standardised Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit respectively over what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

Analysis at Board level did not reveal any Board with higher or lower than expected numbers of cases.

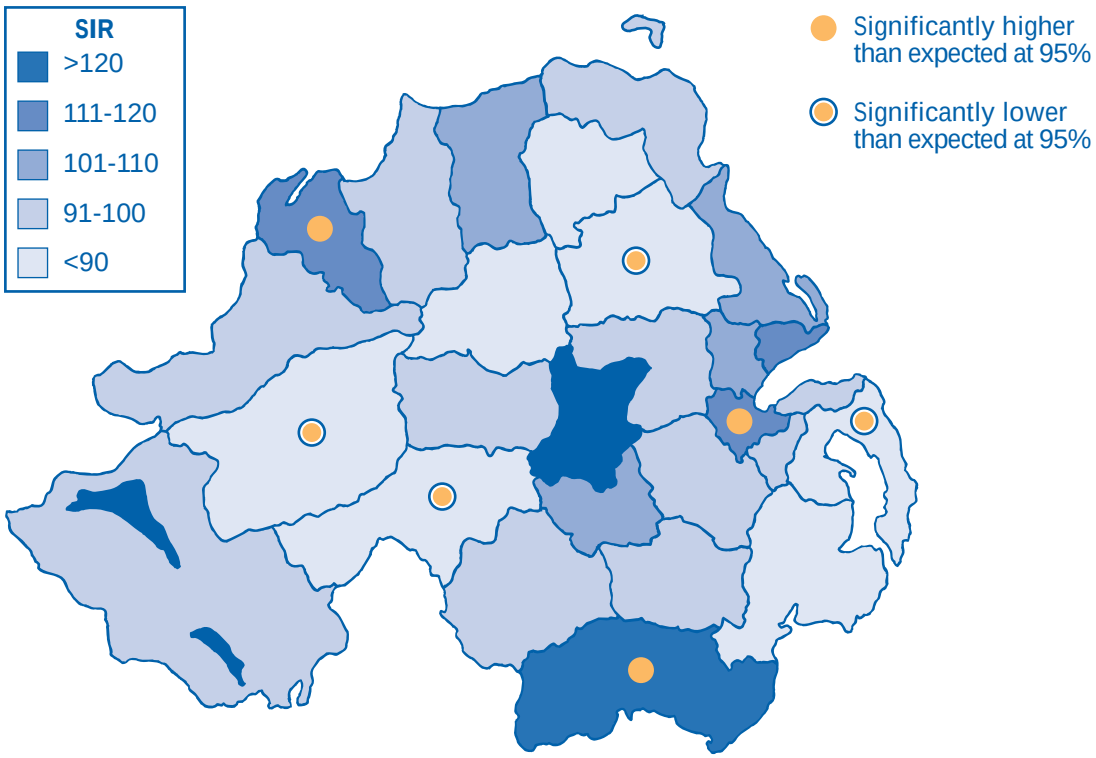
In males, higher than expected numbers for all cancers were registered for the District Council areas of Belfast, Newry & Mourne and Derry - see Map 1.

In females, higher than expected numbers of cancer were registered in the District Council areas of Limavady, Moyle and Derry - see Map 2.

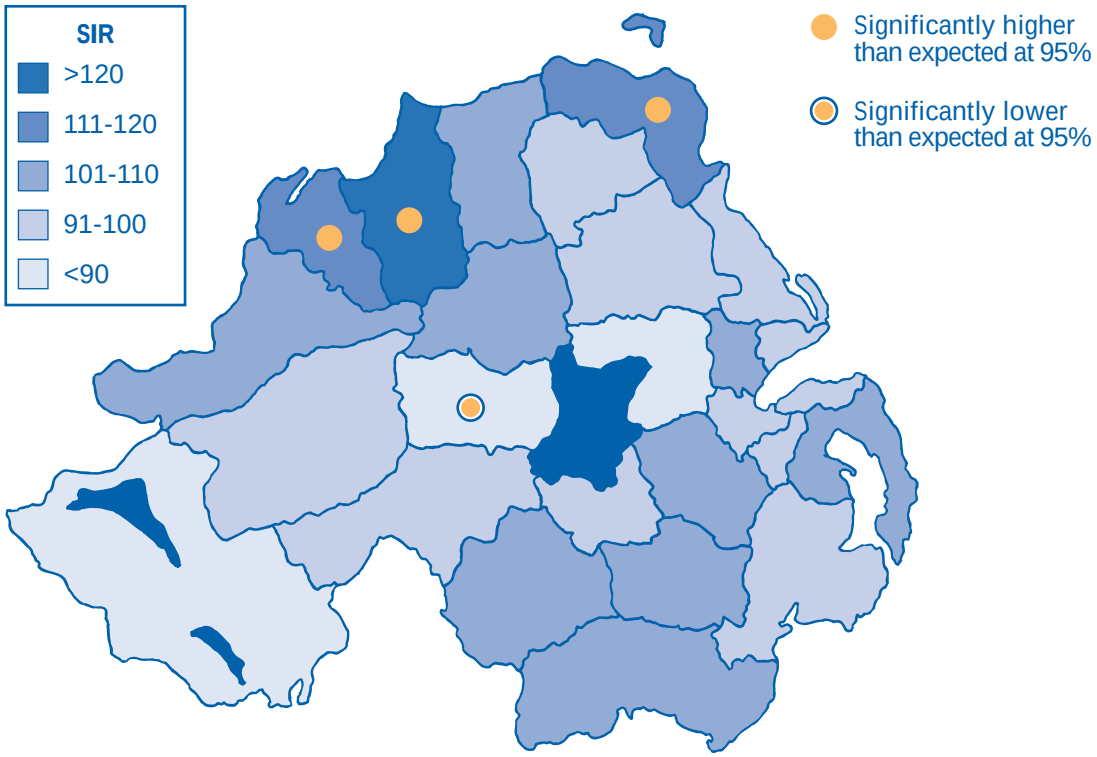
In males, lower than expected numbers for various age categories were noted in the District Council areas of Ards, Ballymena, Ballymoney (<75 years only), Cookstown (<65, <75 years), Armagh (<65 years), Banbridge (<75 years only), Dungannon and Omagh. The pattern of deaths reflect the incidence rates (ref: 1).

In females, lower than expected numbers for various age categories were noted in the District Council areas of Cookstown and Fermanagh (<75 years only).

Map 1. All Age Male Standardised Incidence Ratios (SIRs) by District Council 1993-95, All Cancers (excluding non-melanoma skin cancers)



Map 2. All Age Female Standardised Incidence Ratios (SIRs) by District Council 1993-95, All Cancers (excluding non-melanoma skin cancers)



Data Quality

For all cancers, the percentage of cases notified by Death Certificate Only (DCO) was approximately 2%. About 82% of cases had a pathological diagnosis. Comparable figures for England were 10.9% and 69% and, top of the range, 1.1% and 94% for Switzerland.

Comparison with other Countries

Table 7 Comparative Numbers and Rates for Britain and Ireland 1995 All Cancers (excluding NMS)

	Males		Females	
Country	Cases	EASR (per 100,000)	Cases	EASR (per 100,000)
Scotland	11878	455.60	12553	369.50
England & Wales	102800	363.30	104300	302.40
Republic of Ireland	6193	399.96	6705	377.06
Northern Ireland	2953	410.70	3162	346.34

In Northern Ireland the rates for all cancers (excluding NMS) were lower than Scotland but higher than England & Wales for both males and females. Northern Ireland rates were lower in females but higher in males than the Republic of Ireland.

Comment

The distribution of cases by District Council (higher in Belfast and Derry) in males is similar to that for lung cancer reflecting the impact of tobacco use in inner city areas, though other factors such as deprivation may be important.

The high rate in Limavady amongst females is mainly due to the higher than expected numbers of breast cancers registered for this area. Although statistically significant, there is no immediately plausible explanation for this observation. The Registry will continue monitoring geographical variation in incidence to assess if apparent differences are real or artefactual.

Non-melanoma skin cancers (NMS), although excluded in this analysis, account for over a quarter of all cancers diagnosed. A substantial amount of health service resources are used in its diagnosis and treatment. Although it causes, on average, only 10 deaths per year it causes pain and disfigurement. Skin cancers are largely preventable by preventing unnecessary exposure to UV light and taking care in the sun. Early diagnosis of suspicious skin lesions will improve outcomes.

Health Gain

Reducing tobacco use in Northern Ireland would significantly reduce the total burden of cancer, especially cancers with a poor prognosis such as lung, oesophagus and stomach.

6. Cancer of the Head & Neck

ICD-9 140-149

Cancers of the head and neck were analysed for lip and mouth ICD-9 (140-145) and pharynx ICD-9 (146-149) separately.

KEY FACTS

- On average 111 cancers of the lip and mouth were registered per year.
- Mouth cancers were twice as common in males as females.
- On average 48 cancers of the pharynx registered per year.
- Higher than expected numbers of lip and mouth cancers in males from the Western Board area.
- Higher than expected numbers of pharyngeal cancers in males from the Southern Board area.

Cancer of the Lip and Mouth

ICD-9 140-145

On average, 111 cases of cancer of the lip and mouth were registered per year, two thirds of these in males. Cancer of the lip and mouth accounted for about 1% of all registered cancers. There were about four cases notified for each death recorded. Although survival for lip cancer is good, survival for mouth cancer generally is poor. Incidence increased with age with over 80% of cases occurring in people over 50 years of age - see Figures 7 and 8.

Table 8 Summary Statistics Cancer of the Lip and Mouth

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	76	80	65	43	34	36
Crude Rate (per 100,000)	9.54	9.98	8.07	5.15	4.05	4.27
Cumulative Risk (0-74) (%)	0.78	0.94	0.77	0.26	0.27	0.37
WASR (per 100,000)	7.46	7.53	6.73	2.83	2.63	3.04
EASR (per 100,000)	11.02	10.89	9.58	4.14	3.58	4.21
% of All Cancers	1.79	1.80	1.61	0.97	0.78	0.84
DATA QUALITY						
Mortality : Incidence Ratio	0.24	0.22	0.22	0.12	0.35	0.33
% Death Certificate Only	2.63	0.00	0.00	0.00	0.00	0.00
% Microscopically Verified	94.74	96.25	96.92	93.02	91.18	86.11
MORTALITY						
Number of Deaths	20	18	14	5	12	12
Crude Rate (per 100,000)	2.26	2.25	1.74	0.60	1.43	1.42
Cumulative Risk (0-74) (%)	0.24	0.23	0.15	0.04	0.07	0.11
WASR (per 100,000)	1.85	1.80	1.40	0.28	0.77	0.79
EASR (per 100,000)	2.68	2.64	2.10	0.42	1.10	1.16
% of All Cancer Deaths	0.96	0.97	0.76	0.29	0.68	0.73

WASR = Rates standardised for age to the World standard population

EASR = Rates standardised for age to the European standard population

Age Profile

Figure 7 Age Distribution of New Cases 1993-95, Cancer of the Lip and Mouth

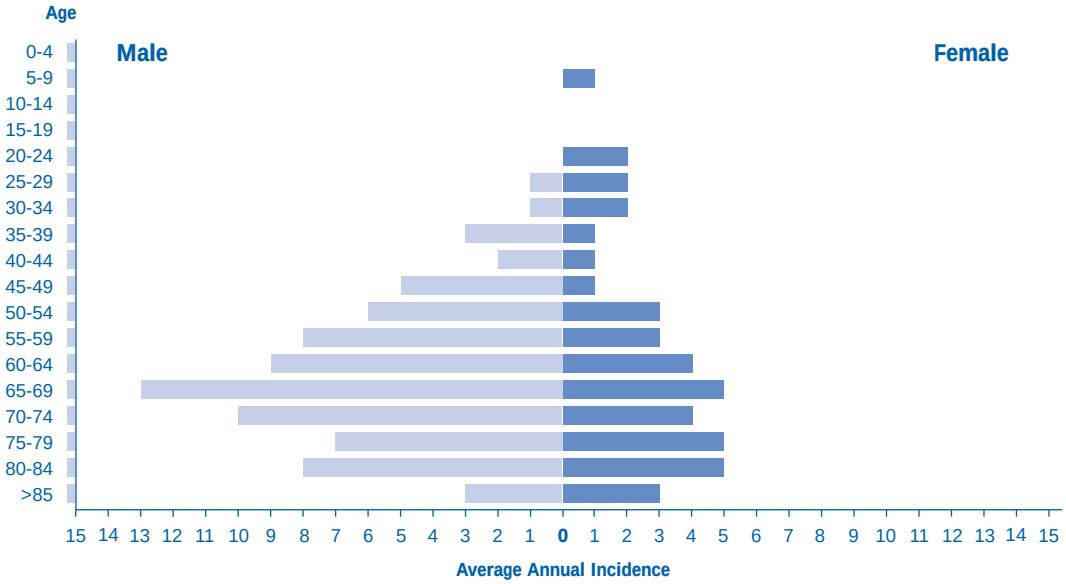
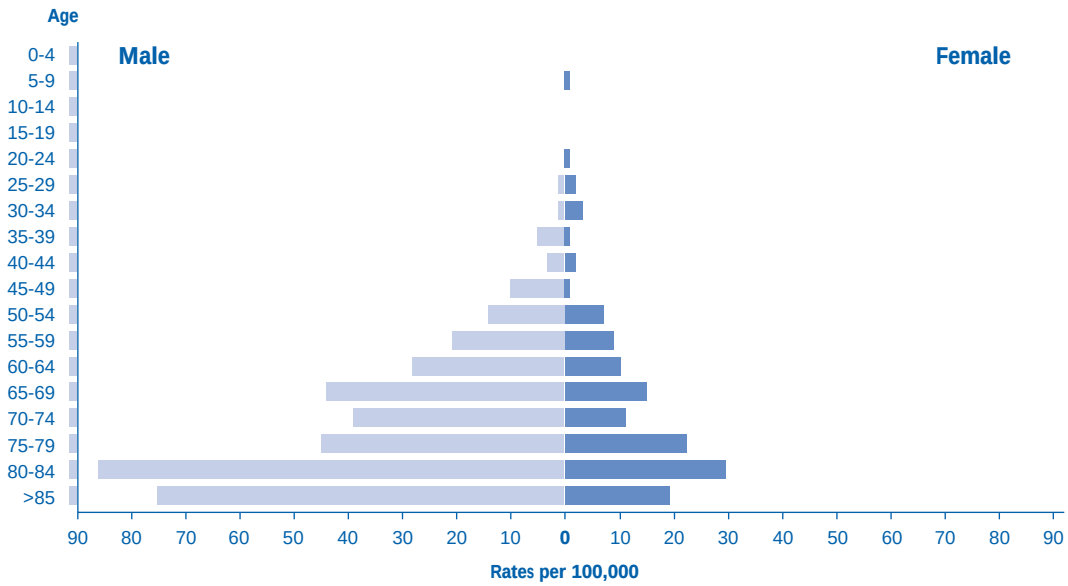


Figure 8 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Lip and Mouth



Cancer of the Pharynx

ICD-9 146-149

There was an average of 48 cases of pharyngeal cancer registered annually 1993-95. Again, two thirds of these were diagnosed in males. These accounted for less than 1% of all cancers diagnosed. More than 80% of cases occurred in people aged over 50 years. The median age at diagnosis was 65 years for both males and females - see Table 9 and Figures 9 and 10.

Table 9 Summary Statistics Cancer of the Pharynx

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	36	29	30	11	14	23
Crude Rate (per 100,000)	4.52	3.62	3.73	1.32	1.67	2.73
Cumulative Risk (0-74) (%)	0.51	0.38	0.38	0.11	0.10	0.26
WASR (per 100,000)	3.81	2.97	3.03	0.86	1.00	2.09
EASR (per 100,000)	5.24	4.29	4.24	1.21	1.39	2.81
% of All Cancers	0.85	0.67	0.73	0.25	0.32	0.53
DATA QUALITY						
Mortality : Incidence Ratio	0.50	0.38	0.50	0.36	0.43	0.22
% Death Certificate Only	2.78	0.00	3.33	0.00	0.00	0.00
% Microscopically Verified	91.67	93.1	83.33	100.00	92.86	91.30
MORTALITY						
Number of Deaths	18	11	15	4	6	5
Crude Rate (per 100,000)	2.26	1.37	1.86	0.48	0.71	0.59
Cumulative Risk (0-74) (%)	0.21	0.13	0.17	0.03	0.04	0.04
WASR (per 100,000)	1.70	1.21	1.45	0.22	0.31	0.34
EASR (per 100,000)	2.46	1.74	2.03	0.33	0.48	0.52
% of All Cancer Deaths	0.95	0.59	0.81	0.23	0.34	0.30

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Figure 9 Age Distribution of New Cases 1993-95, Cancer of the Pharynx

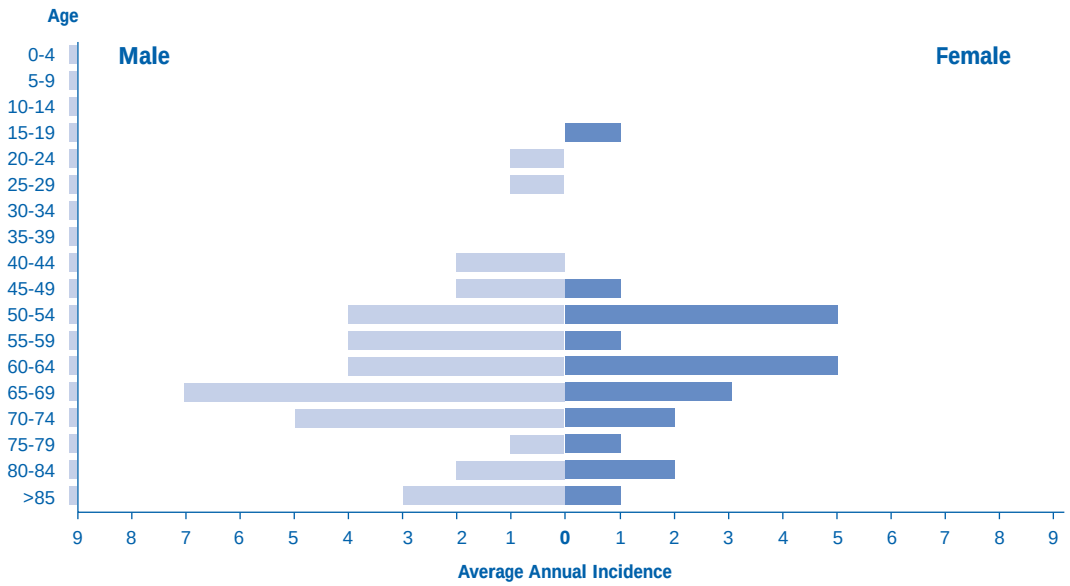
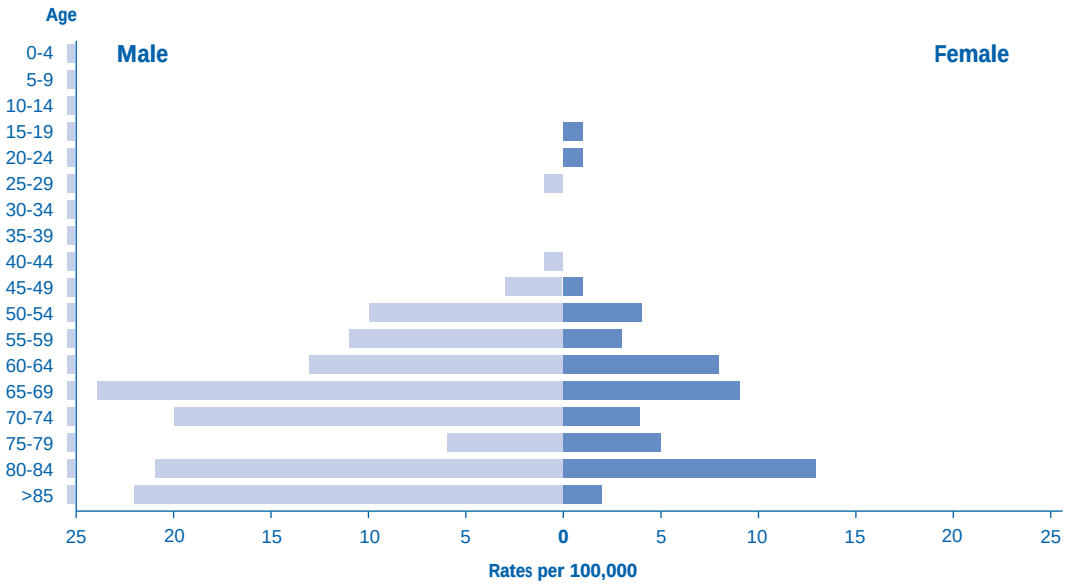


Figure 10 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Pharynx



Morphology

Two thirds (66.5%) of cancers of the head and neck were squamous cell carcinoma.

Geographical Distribution

There was no significant variation by Health Board in females for either lip and mouth or pharyngeal cancer. Males in the Southern Board had higher than expected numbers for cancer of the pharynx while the Western Board had higher than expected numbers for cancer of the lip and mouth. Caution should however be exercised as these were based on 26 and 51 cases respectively.

Data Quality

Data quality was good - there was a high level of Microscopic Verification (over 90%) and the level of Death Certificate Only (DCO) cases was very low.

Comparison with other Countries

Table 10 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995.

Table 10 Comparative Numbers and Rates 1995

Cancer of the Lip and Mouth

	Males		Females	
Country	**Cases**	**EASR (per 100,000)**	**Cases**	**EASR (per 100,000)**
Scotland	258	10.4	163	4.70
England & Wales	1460	5.50	830	2.50
Northern Ireland	**65**	**9.58**	**36**	**4.21**

Cancer of the Pharynx

	Males		Females	
Country	**Cases**	**EASR (per 100,000)**	**Cases**	**EASR (per 100,000)**
Scotland	131	5.30	56	1.80
England & Wales	740	2.80	360	1.10
Northern Ireland	**30**	**4.24**	**23**	**2.81**

Rates of lip and mouth cancer were lower than in Scotland but higher than in England & Wales. The same was true for cancer of the pharynx in males but for females the rate was higher than both England & Wales and Scotland. This pattern (excluding female pharynx) conforms to the established north/south gradient documented for the UK. (ref: 5).

Comment

Cancer of the lip and mouth and pharynx is related to tobacco use and excessive alcohol intake which accounts for an estimated 75-90% of all cases. (ref: 6). An additional risk factor is a diet deficient in vitamins A and C. The role of viruses remains controversial while UV radiation has been implicated in lip cancer.

For Health Gain

- The population should be encouraged to stop smoking, eat a diet with a high level of fresh fruit and vegetables, moderate alcohol consumption, and seek early diagnosis of suspicious symptoms.
- Everyone, but especially older people, should have regular check-ups with a dentist.
- Participation in clinical trials, which can advise on the best outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

7. Cancer of the Oesophagus

ICD-9 150

KEY FACTS

- On average 171 cancers were registered per year.
- More common in males than in females.
- No significant geographical variation.
- Eighth most common cancer in males, fifteenth in females.
- Median age at diagnosis, 67 in males, 73 in females.
- Increasing rates in males.

On average over the 1993-95 period 171 cancers of the oesophagus were registered each year. This represented about 2.5% of cancers in males and less than 1.5% of all cancers in females. The number of deaths represented about two thirds the number of cases. There were almost twice as many cases in males as in females (sex ratio 1.9:1).

Females accounted for 35% of the cases and 40% of the deaths perhaps reflecting the older age at diagnosis in females. The mortality incidence ratio reflects relatively poor survival. Median age at diagnosis was 67 years in males, 73 years in females - see Figures 11 and 12. It was the eighth most commonly diagnosed cancer in males, fifteenth in females.

The incidence rates over the three year period showed a year on year increase in males, although death rates did not show the same trend. The rise in age specific rates among younger males was quite marked. Males in Northern Ireland had around a 1 in 80 chance of developing oesophageal cancer before the age of 75 years, for females the risk was lower at around 1 in 230.

Table 11 Summary Statistics

	Males			Females		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	96	110	117	64	57	67
Crude Rate (per 100,000)	12.05	13.72	14.53	7.66	6.79	7.94
Cumulative Risk (0-74) (%)	1.17	1.25	1.34	0.42	0.37	0.51
WASR (per 100,000)	9.37	10.66	11.70	3.98	3.34	4.09
EASR (per 100,000)	13.65	15.74	16.69	6.11	5.17	6.29
% of All Cancers	2.29	2.58	2.88	1.45	1.32	1.56
DATA QUALITY						
Mortality : Incidence Ratio	0.79	0.79	0.62	0.80	1.03	0.66
% Death Certificate Only	3.13	2.73	1.71	0.00	10.53	2.99
% Microscopically Verified	91.67	85.45	88.89	89.06	78.95	85.07
MORTALITY						
Number of Deaths	76	87	72	50	59	48
Crude Rate (per 100,000)	9.54	10.85	8.94	5.99	7.02	5.69
Cumulative Risk (0-74) (%)	0.82	0.97	0.76	0.30	0.37	0.43
WASR (per 100,000)	7.23	8.12	6.45	2.74	3.50	3.28
EASR (per 100,000)	11.20	12.22	9.63	4.51	5.41	4.82
% of All Cancer Deaths	4.03	4.68	3.90	2.87	3.36	2.91

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

The number of cases and the rate of cancer of the oesophagus increased in males. This is in keeping with the previously observed increase in death rates over 25 years in Northern Ireland (ref: 1).

Age Profile

Oesophageal cancer is predominantly a cancer of old age - only 30% of cases in males and 13% of cases in females occurred before age 60 - see Figures 11 and 12. The age specific rates increased with age, the highest rates occurring in both sexes in the oldest age groups. The median age at diagnosis was 67 years for males and 73 years for females.

Figure 11 Age Distribution of New Cases 1993-95, Cancer of the Oesophagus

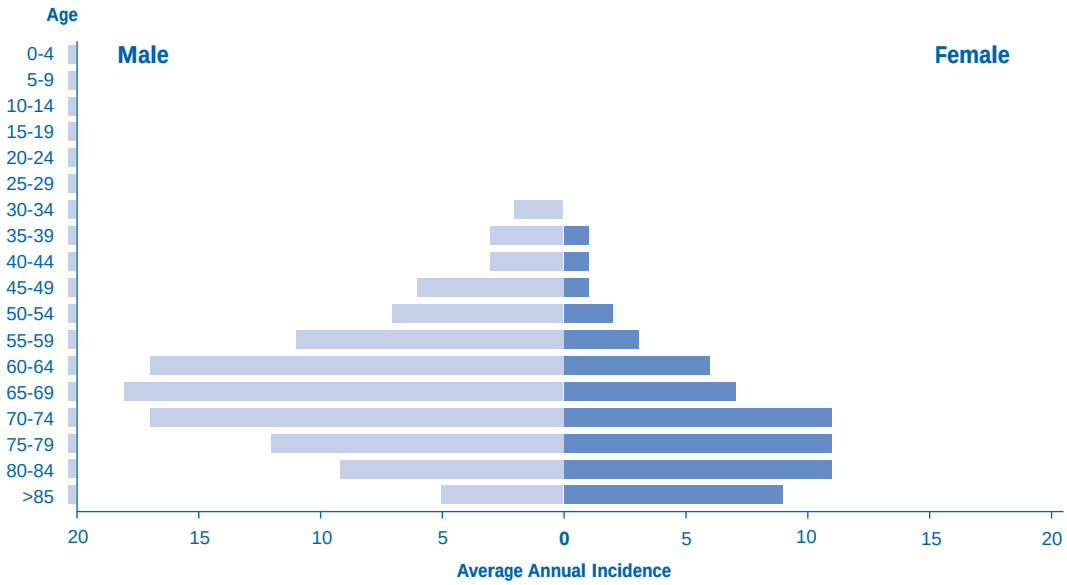
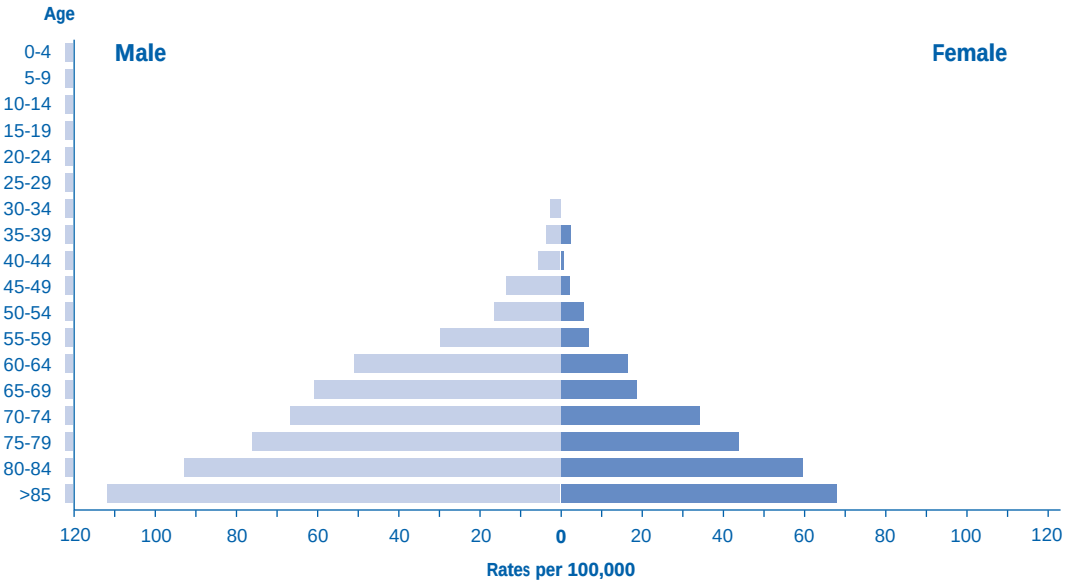


Figure 12 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Oesophagus



Morphology

One in 7 (14%) of oesophageal cancers in females did not have a Microscopic Verification. The figure for males was slightly higher at 17%. In males 44% were classified as adenocarcinoma compared with 25% of cases in females. Squamous cell carcinoma was diagnosed in 17% of tumours in males and 28% of tumours in females. It is suggested that adenocarcinoma may arise in Barrett's oesophagus at the lower end of the oesophagus. Variation in morphology may indicate a different aetiology for this disease in the two sexes (ref: 7).

Geographical Distribution of Disease

No significant variation at Health Board level was found for any age grouping for either sex.

Data Quality

The percentage of cases registered as Death Certificate Only (DCO) improved over time and the percentage Microscopically Verified was generally good though variable. Overall, the data quality compares favourably with other UK and European registries.

Note: Assignment of site between stomach and oesophagus pose problems for many cancer registries. It is possible therefore, that a small proportion of oesophageal cancers registered for Northern Ireland were, in reality, stomach cancers despite best efforts to screen these out.

Comparison with other Countries

Table 12 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995.

Table 12 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Oesophagus

	Males		Females	
Country	**Cases**	**EASR (per 100,000)**	**Cases**	**EASR (per 100,000)**
Scotland	**443**	**16.9**	**339**	**8.6**
England & Wales	**3630**	**13.0**	**2480**	**5.9**
Republic of Ireland	**169**	**11.0**	**132**	**6.6**
Northern Ireland	**117**	**16.7**	**67**	**6.3**

The levels of oesophageal cancer in males were higher than in England & Wales and the Republic of Ireland but similar to Scotland. In females the rates were lower than in the Republic of Ireland and Scotland though higher than in England & Wales.

Comment

The major known risk factors for oesophageal cancer are alcohol consumption (especially spirits) and cigarette smoking. These two risk factors exhibit a synergistic relationship i.e. if both together are used the rates increase more than would be expected from either on its own. High incidence and mortality levels in France, especially for males, and the association with raised rates of cancer of the tongue, mouth and throat fit well with the concept of this being an alcohol related disease. Most countries in Europe have shown a rising trend in deaths from oesophageal cancer over the last thirty years, especially in males. It is suggested that this follows the known changes in alcohol consumption in these countries, with a time lag of about 10 years. The rising levels in young males in Northern Ireland require further investigation and initiatives to reduce alcohol consumption.

Cancer of the oesophagus, though rarely curable, has symptoms which can be well managed to enhance quality of life. The most common symptoms are difficulty or pain when swallowing. The survival following diagnosis depends on the stage of the disease and the person's general health, but is usually poor.

A high level of fresh fruit and vegetables in the diet is protective against oesophageal cancer and may have slowed down the rise in oesophageal cancer throughout the rest of Europe. There is no population screening test available for early detection of this disease.

For Health Gain

- The population should be encouraged to stop smoking, eat a diet with a high level of fresh fruit and vegetables, moderate alcohol consumption and seek early diagnosis of symptoms.
- Participation in large clinical trials, which can advise on the best outcomes, should be promoted.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

Recommendation

- The rising levels of oesophageal cancers in young males requires further investigation and initiatives to reduce alcohol consumption.

8. Cancer of the Stomach

ICD-9 151

KEY FACTS

- On average 260 cases of cancer of the stomach were registered per year.
- More common in males than in females.
- No significant geographical variation.
- Half of cases were over 69 years in males, 75 years in females.
- 2.5 times higher risk for males than females.

On average, over the 1993-95 period, 260 cancers of the stomach were registered each year. Cancer of the stomach accounted for about 4% of all cancers in males, 2% in females with a sex ratio of 1.7:1 (a similar ratio to that for deaths). The number of cases and the age standardised rates fell in females but not in males. The Mortality:Incidence ratio was quite high, indicative of the relatively poor survival associated with this cancer which, in turn, is related to late diagnosis in most patients. It was the sixth most common cancer in males, eleventh in females.

Males had a 1 in 63 chance of developing stomach cancer before 75 years, for females the risk was lower at 1 in 161.

The incidence rates appear to have fallen slightly in females although subsequent years' data will be required to determine if this is a real trend.

Table 13 Summary Statistics

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	157	183	154	108	96	81
Crude Rate (per 100,000)	19.33	22.82	19.50	12.93	11.43	9.60
Cumulative Risk (0-74) (%)	1.84	2.19	1.60	0.65	0.56	0.62
WASR (per 100,000)	14.79	16.89	14.47	6.37	5.77	5.51
EASR (per 100,000)	21.98	25.29	22.10	10.03	9.03	8.03
% of All Cancers	3.63	4.28	3.87	2.44	2.22	1.89
DATA QUALITY						
Mortality : Incidence Ratio	0.82	0.70	0.62	0.62	0.75	0.90
% Death Certificate Only	3.25	2.17	3.82	5.56	5.21	7.41
% Microscopically Verified	83.8	83.6	84.1	77.78	79.17	82.72
MORTALITY						
Number of Deaths	126	129	98	67	72	73
Crude Rate (per 100,000)	15.82	16.09	12.17	8.02	8.57	8.65
Cumulative Risk (0-74) (%)	1.42	1.35	1.03	0.37	0.40	0.41
WASR (per 100,000)	11.44	11.98	8.81	3.72	4.15	4.09
EASR (per 100,000)	17.62	18.58	13.71	6.03	6.61	6.56
% of All Cancer Deaths	6.68	6.94	5.31	3.84	4.10	4.42

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

The median age at diagnosis was younger in males (69 years) than females (75 years). Only one third (30%) of stomach cancers in males were diagnosed in elderly patients (over 75 years) while over half (51%) of females were diagnosed over the age of 75. Age specific rates were highest in the oldest age group for both sexes - see Figures 13 and 14.

Figure 13 Age Distribution of New Cases 1993-95, Cancer of the Stomach

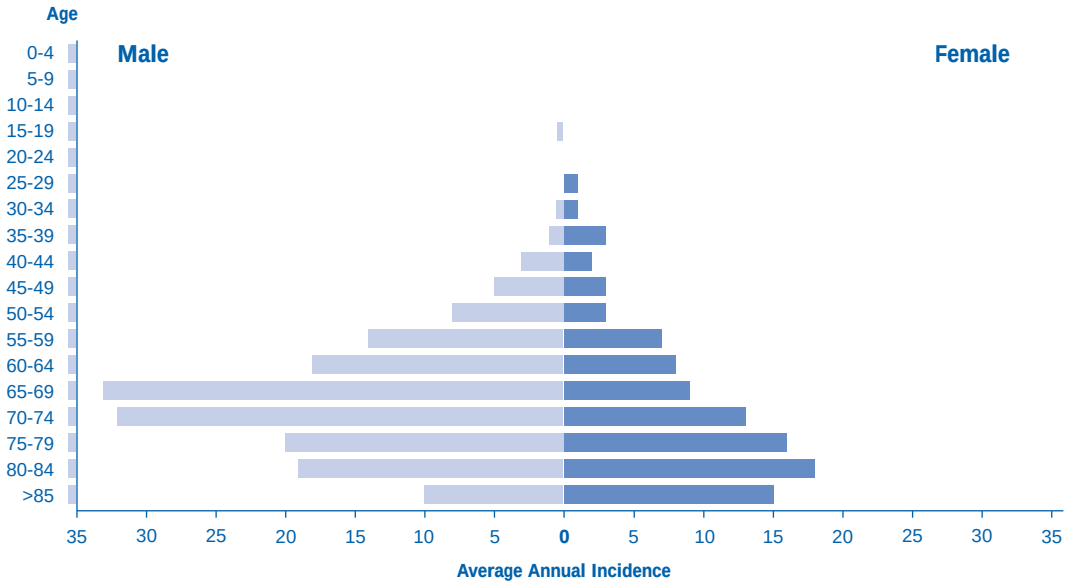
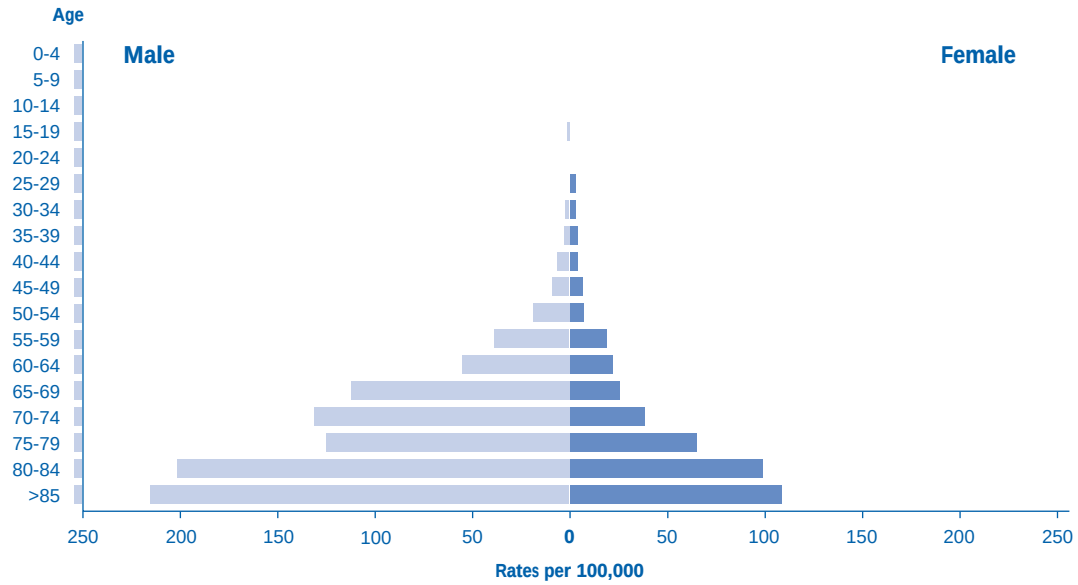


Figure 14 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Stomach



Morphology

Fourteen percent of tumours diagnosed in males and 20% of tumours diagnosed in females did not have histological verification. Adenocarcinoma was the most commonly diagnosed tumour (66% of males and 59% of females). Only 1% were diagnosed as carcinoid.

Geographical Distribution of Disease

No significant variation at Health Board level was found for any age group of either sex.

District Council level analysis of deaths for the aggregated 1989-93 period did, however, reveal higher than expected numbers of male stomach cancer in Belfast and Newry & Mourne (ref: 1).

Data Quality

The percentage of cases registered as Death Certificate Only (DCO), while comparatively low, was higher in females than males and may partly reflect the older age at diagnosis in females. The level of Microscopic Verification of cases was also comparatively good at 80%.

Comparison with other Countries

Table 14 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995. The Northern Ireland rate for males was higher than for the Republic of Ireland and England & Wales but lower than for Scotland. In females the rate was lower than in Scotland and the Republic of Ireland, though higher than in England & Wales.

Table 14 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Stomach

	Males		Females	
Country	Cases	EASR (per 100,000)	Cases	EASR (per 100,000)
Scotland	595	22.70	417	10.30
England & Wales	5400	18.80	3350	7.70
Republic of Ireland	305	20.00	187	9.16
Northern Ireland	157	22.10	81	8.03

Comment

Higher incidence rates in males accords with the picture demonstrated by mortality data where twice as many males as females die from stomach cancer. The age pattern of the disease (more common in younger males and older females) is similar to that for the Republic of Ireland (ref: 8).

Significant falls in death rates were evident for both sexes (ref: 1), though this was more apparent in females than males. Levels of stomach cancer have been falling world-wide.

Stomach cancer rates vary with social class in that those in the lower social classes have a higher rate. Possible risk factors include infection by the bacterium *Helicobacter pylori* and low consumption of fresh fruit and vegetables, both of which are more likely in the manual classes. It is known that the prevalence rates of *Helicobacter pylori*, a bacteria found in the stomach, are particularly high in the Northern Ireland population (ref: 9). Factors which are thought to have contributed to the fall in deaths from stomach cancer include the greater availability of refrigeration which has reduced the need for salting and pickling to preserve food.

There is no population screening test available for early detection of this disease.

Ongoing research is investigating whether the control of *Helicobacter pylori* will prevent the disease.

Clinical trials continue to investigate whether treatment outcomes can be improved.

For Health Gain

- The population should be encouraged to eat a diet with a high content of fresh fruit and vegetables and seek an early diagnosis of symptoms.
- Further research into the pathogenesis and prevention of *Helicobacter pylori* infection should be encouraged.
- Participation in clinical trials, which can advise on the best outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

9. Cancer of the Colon

ICD-9 153

KEY FACTS

- On average 624 cancers of the colon were registered per year.
- Slightly more cases in females (52%).
- 7% of all cancers diagnosed.
- Half of cases were over 71 years in males, 73 years in females.
- Lower numbers than expected in females from the Eastern Board area.
- Higher numbers than expected in females in Ballymoney District Council.

On average, over the 1993-95 period, 624 colon cancers were registered each year, just over half of these occurred in females (52%). Colon cancer was the third most commonly diagnosed cancer in females and the fourth in males and accounted for about 7% of all cancers diagnosed. There were less than twice as many cases diagnosed as deaths recorded reflecting a modest survival.

Table 15 Summary Statistics

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	290	305	307	318	310	342
Crude Rate (per 100,000)	36.4	38.04	38.13	38.08	36.91	40.53
Cumulative Risk (0-74) (%)	2.97	3.36	3.03	2.33	2.34	2.33
WASR (per 100,000)	26.81	28.38	27.58	20.61	20.68	21.78
EASR (per 100,000)	41.56	43.09	43.13	31.28	31.23	33.00
% of All Cancers	6.86	7.10	7.56	7.20	7.19	7.96
DATA QUALITY						
Mortality : Incidence Ratio	0.59	0.51	0.59	0.57	0.54	0.51
% Death Certificate Only	4.14	1.64	3.91	6.92	3.55	5.26
% Microscopically Verified	87.59	87.54	84.04	77.67	83.55	84.50
MORTALITY						
Number of Deaths	170	156	182	181	168	173
Crude Rate (per 100,000)	21.34	19.46	22.60	21.67	20.00	20.50
Cumulative Risk (0-74) (%)	1.62	1.51	1.63	1.13	1.14	1.03
WASR (per 100,000)	15.60	14.48	16.21	10.64	10.35	10.37
EASR (per 100,000)	24.52	22.22	25.80	16.71	15.96	15.98
% of All Cancer Deaths	9.02	8.40	9.86	10.38	9.56	10.48

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

The age at diagnosis was younger in males than in females, half of the cases registered were over 71 years in males, and 73 years in females - see Figures 15 and 16. The majority of cases occurred after the age of 40 years beyond which age specific rates rose continuously, faster in males than in females. The numbers of female cases predominated, at older ages due to the larger numbers of females at risk as females live longer than males.

Figure 15 Age Distribution of New Cases 1993-95, Cancer of the Colon

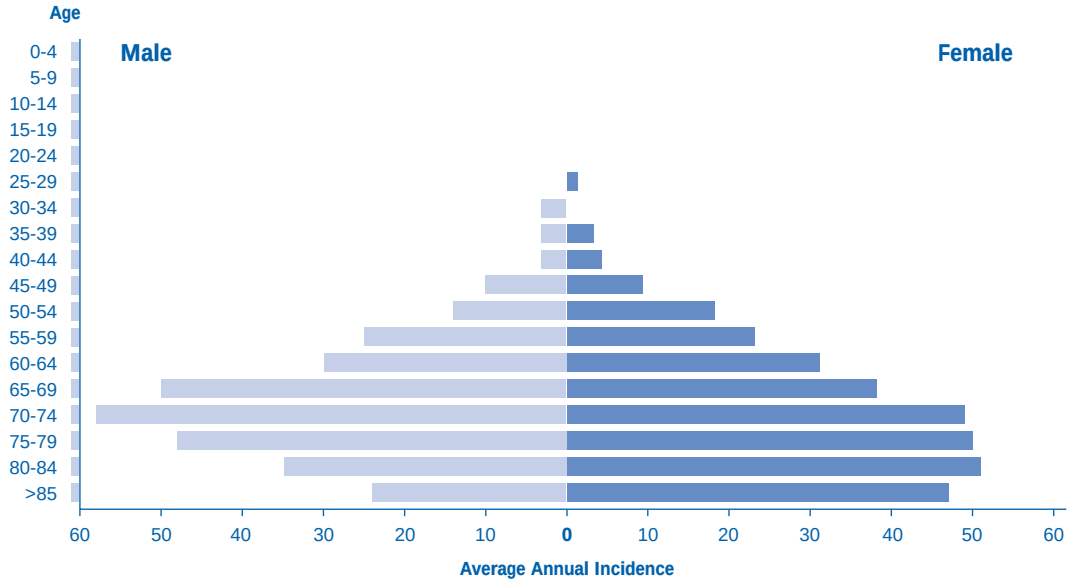
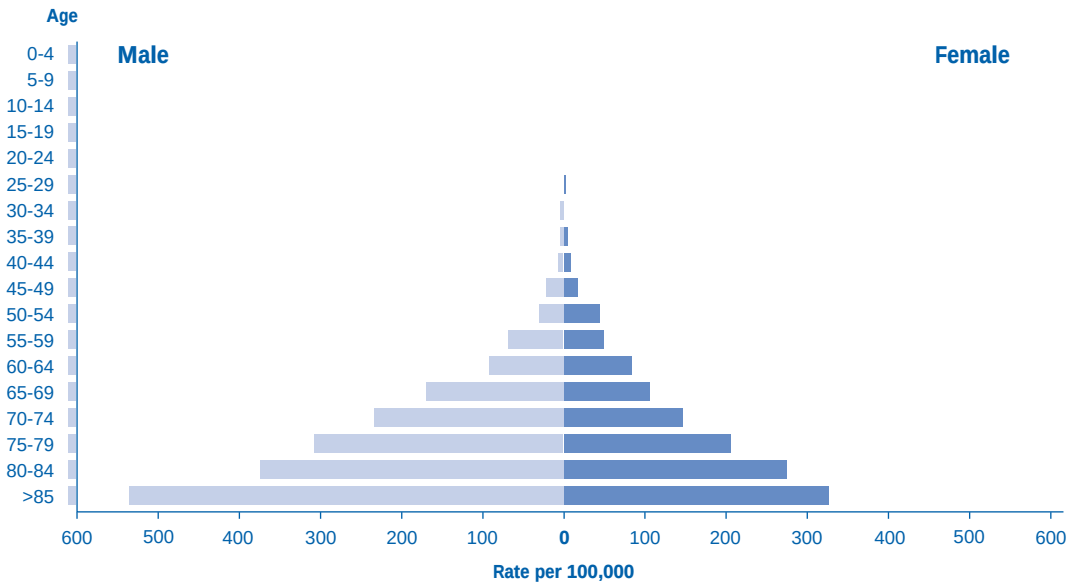


Figure 16 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Colon



Morphology and Site

Microscopic Verification was not available for 15% of tumours diagnosed in males and 18% of tumours diagnosed in females. The majority of tumours (73%) were classified as adenocarcinomas. Carcinoid tumours were diagnosed in only 0.4% of those verified microscopically. This did not include carcinoids of the appendix which were considered to be of borderline malignancy. One third (33.1%) of all colon cancers were right sided tumours, (caecum, appendix, ascending colon and hepatic flexure), whereas 30% were left sided tumours (splenic flexure, descending colon and sigmoid colon). These proportions should be interpreted cautiously as a large number (30%) of colon cancers had no proper assignment of site within the colon.

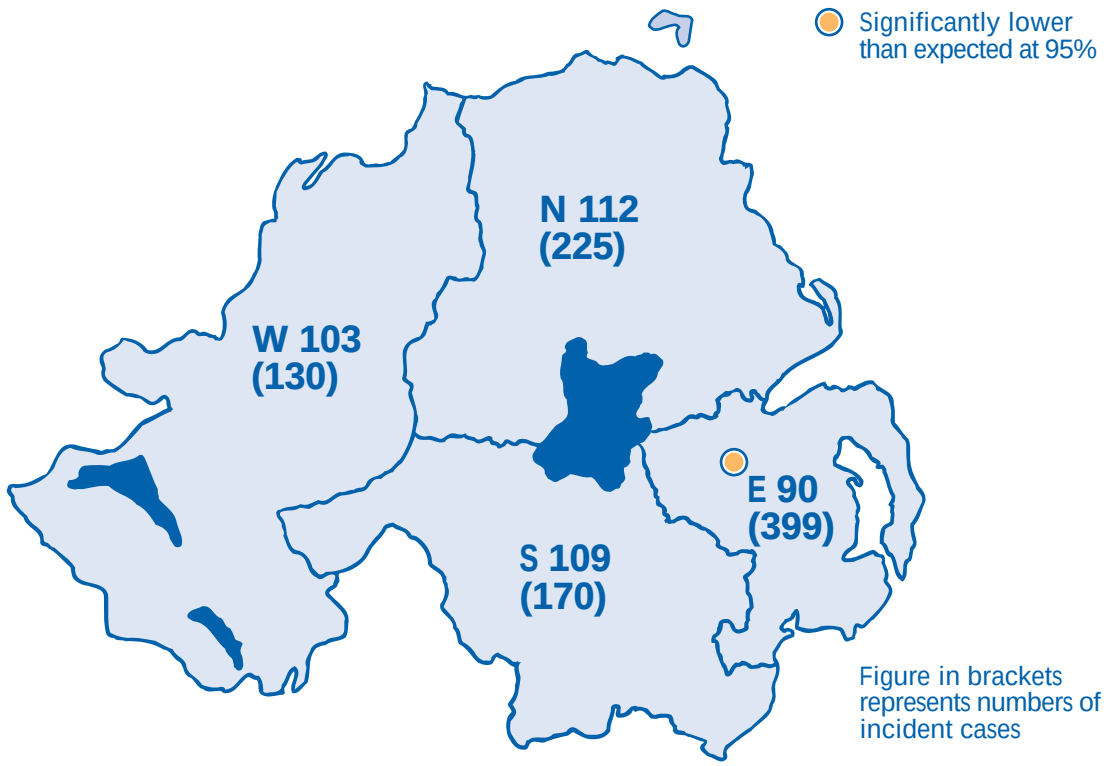
Geographical Distribution of Disease

Variation across Health Boards/District Councils in the observed number of cases that arise because of differences in the age structure of the underlying population has been accounted for by using Standardised Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit over what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

For females, the Eastern Board area had a lower than expected number of cases - see Map 3.

Ballymoney District Council displayed a higher than expected number of cases in females though caution needs to be exercised as this was based on only 26 cases for the period 1993-95. Fermanagh had lower than expected numbers but in younger females only.

Map 3. All Age Female Standardised Incidence Ratios (SIRs) by Health Board 1993-95, Cancer of the Colon



Data Quality

The proportion of Microscopically Verified cases was relatively high at about 84% (the comparative figure for England being 76%). The proportion from Death Certificate Only (DCO) cases was higher in females, perhaps reflecting the later age at diagnosis, but compares favourably with the figure for England of 8% DCO.

Comparison with other Countries

Table 16 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995.

Table 16 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Colon

	Males		Females	
Country	Cases	EASR (per 100,000)	Cases	EASR (per 100,000)
Scotland	1014	38.90	1204	31.00
England & Wales	8350	29.50	9140	22.40
Republic of Ireland	584	38.22	551	29.28
Northern Ireland	307	43.13	342	33.00

In both sexes the standardised rate was higher than Scotland, England & Wales and the Republic of Ireland. This corresponds with the pattern of deaths and that of the incidence for rectal cancer. (Ref: 1).

Comment

The cause of colonic cancer is not completely understood and it is likely due to many factors. There are at least three broadly agreed factors.

(i) Genetic factors are increasingly being recognised as important and these divide into two main groups (a) those associated with hereditary *Polyposis coli* and (b) those associated with hereditary non-polyposis colorectal cancer. The risk of an individual developing colorectal cancer is also dependent on the number of first degree relatives who are similarly affected.

(ii) It is also known that chronic diseases, especially ulcerative colitis, are associated with increased risk of colorectal cancer. The risk of cancer is proportional to the extent and length of time the person has the disease.

(iii) However, for the vast majority of people environmental factors are most important. The evidence for this comes primarily from migration studies where migrants from countries with low levels of cancer risk develop the higher rates of their adopted country over the course of one or two generations. Perhaps two-thirds of all new cases of colorectal cancer in the world occur in westernised countries which contain only about a quarter of the world's population. Dietary factors which are thought to contribute to colonic cancer include a high fat intake and a low intake of fruit and vegetables. There is also a social gradient evident with the risk of colonic cancer tending to be higher in higher social classes (opposite to the pattern for that of stomach cancer).

Colonic cancer is a common, potentially fatal, disease and early intervention can significantly affect the outcome. Two major European trials have been completed recently, showing that population screening based on testing of faeces for the presence of blood (e.g. Haemoccult test) is effective in reducing mortality from colorectal cancer. The UK trial showed that the test was able to detect some asymptomatic, early-stage carcinomas and potentially malignant adenomas. Results of this trial point to a 15% reduction in mortality (ref: 10). Consideration is now being given to the cost effectiveness of such screening.

Other screening methods being evaluated include the use of flexible sigmoidoscopy to view the rectum, the rectosigmoid junction and the colon. A UK multi-centre trial is evaluating this as a form of population screening in which people aged 55 to 64 will be invited to undergo a once-only flexible sigmoidoscopy.

The case for high risk individuals is easier to make. Patients with ulcerative colitis and those with

familial *Polyposis coli* are recommended to have regular colonoscopies and relatives at increased risk of familial colorectal cancer should also have regular surveillance.

For Health Gain

- The population should eat a high fibre, low fat diet consuming at least five portions of fruit or vegetables per day.
- There should be increased awareness that changes in bowel habit, weight loss or passing blood require urgent investigations.
- Those with a family history, especially of a young relative with cancer of the colon, should contact specialists about the advisability of regular surveillance.
- Participation in clinical trials, which can advise on the best treatment outcomes, should be enhanced.
- The organisation of services should be such as to ensure those with the disease have the best chance of a good outcome.
- The full range of palliative care services should be available for those with established disease.

Recommendations

- Further research into the aetiology of colon cancers and the role of diet should be conducted in Northern Ireland.
- The assignment of site within the colon should be as precise as possible.

10. Cancer of the Rectum

ICD-9 154

KEY FACTS

- On average 309 cancers of the rectum were registered per year.
- More common in males than females (1.4:1).
- Half of the cases were over 69 years in males, 73 years in females.
- 4% male, 3% female cancers.
- Older age profile in females.
- Higher than expected number in females from Ards.

On average for the 1993-95 period 309 rectal cancers were registered each year. More cases were registered in males than females (ratio 1.4:1). Rectal cancer accounted for over 4% of male cancers and about 3% of female cancers. There were almost three times as many cases diagnosed as deaths. Rectal cancer was the fourth most commonly diagnosed cancer in males, sixth in females.

Table 17 Summary Statistics

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	185	178	167	129	122	145
Crude Rate (per 100,000)	23.22	22.20	20.74	15.45	14.52	17.19
Cumulative Risk (0-74) (%)	2.14	2.07	1.75	0.93	0.83	1.05
WASR (per 100,000)	17.92	16.51	15.57	8.72	7.97	9.80
EASR (per 100,000)	26.20	24.63	23.37	13.03	12.08	14.62
% of All Cancers	4.38	4.15	4.11	2.92	2.83	3.38
DATA QUALITY						
Mortality : Incidence Ratio	0.37	0.34	0.32	0.43	0.47	0.32
% Death Certificate Only	1.08	0.56	0.00	3.10	1.64	0.69
% Microscopically Verified	95.14	92.70	93.41	84.50	88.52	93.10
MORTALITY						
Number of Deaths	68	60	54	55	57	46
Crude Rate (per 100,000)	8.54	7.48	6.71	6.59	6.79	5.45
Cumulative Risk (0-74) (%)	0.75	0.59	0.50	0.47	0.29	0.26
WASR (per 100,000)	6.50	5.69	4.75	3.66	3.17	2.77
EASR (per 100,000)	10.11	8.64	7.51	5.45	5.07	4.35
% of All Cancer Deaths	3.61	3.23	2.93	3.15	3.24	2.79

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Cases were diagnosed at a younger age in males than in females (median age 69 and 73 years respectively). Similar to the colon, rates were low under the age of 40 years after which they constantly rose into old age and at a faster rate in males. Due to mortality differentials at older ages the sex ratio in older age groups reduced the male bias - see Figures 17 and 18.

Figure 17 Age Distribution of New Cases 1993-95, Cancer of the Rectum

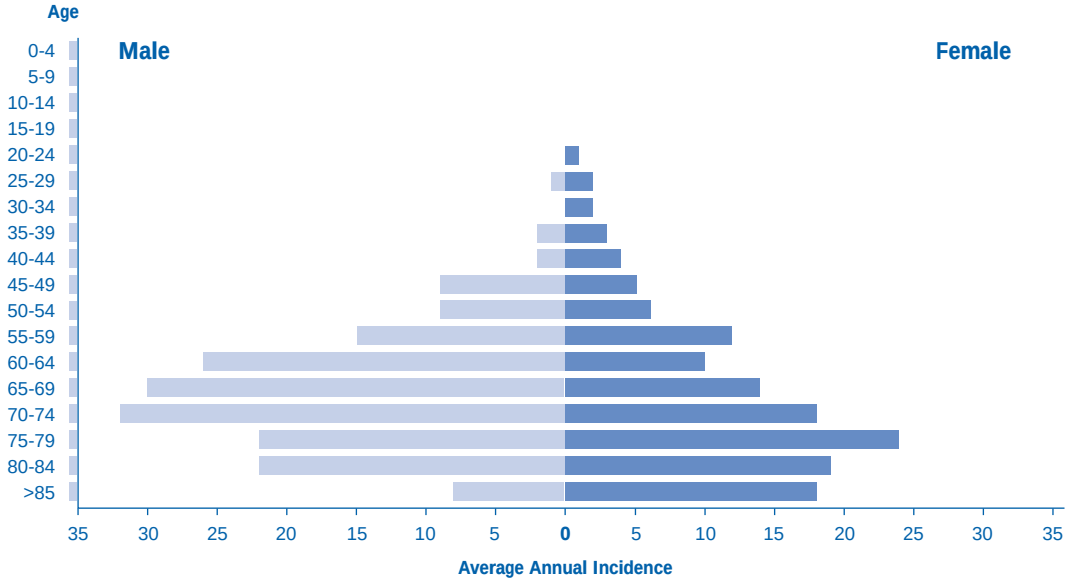
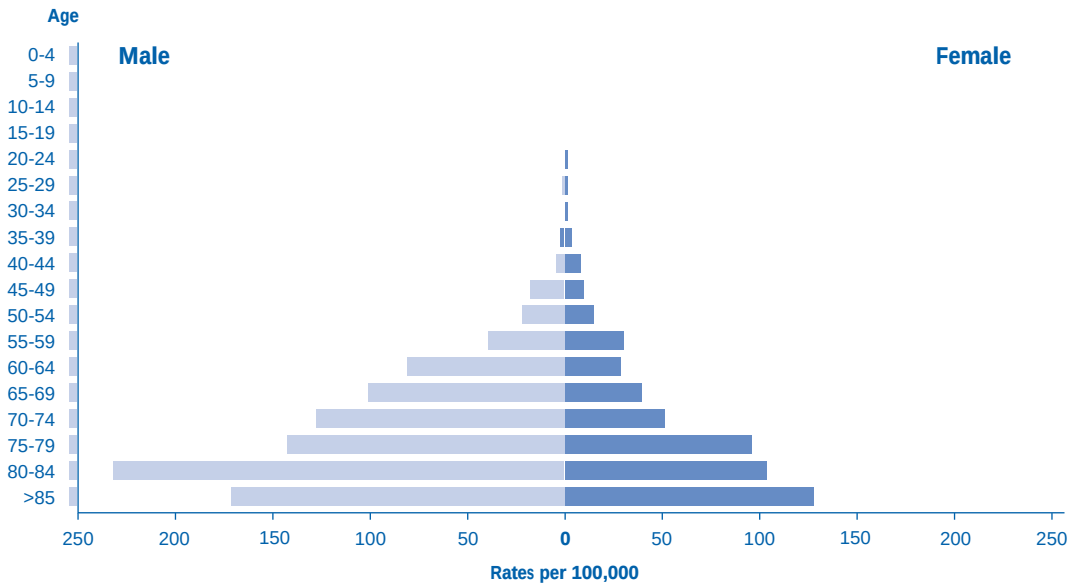


Figure 18 Average Annual Age Specific Rates (per 100,000), Cancer of the Rectum



Morphology

Eleven percent of tumours in females and 6% in males did not have Microscopic Verification. The majority (76%) of tumours of the rectum were adenocarcinomas. All the squamous cell tumours (approximately 2% of total) were in the anus.

Geographical Distribution of Disease

No Health Board area had a higher or lower than expected number of rectal cancers in males or females. Only Ards District Council area recorded a higher than expected number of cases in females under (65 years only). Caution needs to be exercised as this was based on only 24 cases for the period 1993-95.

Data Quality

The quality of data was very good with less than 1% Death Certificate Only (DCO) and 93% with Microscopic Verification.

Comparison with other Countries

Table 18 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995.

Table 18 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Rectum

	Males		Females	
Country	Cases	EASR (per 100,000)	Cases	EASR (per 100,000)
Scotland	590	22.40	443	11.80
England & Wales	5600	20.10	4110	10.40
Republic of Ireland	303	20.16	190	10.54
Northern Ireland	167	23.37	145	14.62

The rate for rectal cancer in males and females was higher in Northern Ireland than Scotland, England & Wales and the Republic of Ireland. This mirrors the pattern for colon cancer incidence, suggesting that the high rates of colorectal cancers in the Province are not simply artefactual and may share common risk factors.

Comment

The cause of rectal cancer is thought to be very similar to that for colon cancer. Lower rates in females may reflect better dietary habits, although the relatively high rate compared to the rest of the British Isles should be a cause for concern and would indicate that there remains substantial room for improvement in the Northern Ireland diet.

For Health Gain

- The population should eat a high fibre, low fat diet consuming at least five portions of fruit or vegetables per day.
- There should be increased awareness that changes in bowel habit, weight loss or passing blood require urgent investigations.
- Participation in clinical trials, which can advise on the best treatment outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

Recommendation

Further research into the aetiology of rectal (and colon) cancers and the role of diet should be conducted in Northern Ireland.

11. Cancer of the Lung

ICD-9 162

KEY FACTS

- On average 895 cancers of the lung were registered per year.
- Most common cancer in males (excluding skin cancers).
- Higher than expected numbers in the Eastern Board area.
- Lower than expected numbers in the Southern Board area for males and females.
- Higher than expected levels in Belfast and Derry District Council areas for males and females.

On average, over the 1993-95 period, 895 lung cancers were registered each year. Lung cancer accounted for 14% of all cancers in males and 7% of all cancers in females. After non-melanoma skin cancer it was the most common cancer in males and the third most common cancer in females. Almost two thirds (65%) of new cases were diagnosed in males.

The number of cases and age standardised rates have fallen in males and also, but to a much smaller extent, in females. Subsequent years data will be necessary to determine if this is a trend. The death data confirms a fall in rates among males but not amongst females. The number of deaths was about 90% the number of cases, indicating poor survival from the disease.

Table 19 Summary Statistics

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	576	624	533	317	314	319
Crude Rate (per 100,000)	72.30	77.83	66.19	37.96	37.38	37.81
Cumulative Risk (0-74) (%)	6.62	7.22	6.08	3.24	3.03	2.96
WASR (per 100,000)	53.98	60.10	48.75	24.08	23.13	22.72
EASR (per 100,000)	81.00	89.26	73.15	34.39	33.15	33.31
% of All Cancers	13.62	14.54	13.13	7.16	7.28	7.43
DATA QUALITY						
Mortality : Incidence Ratio	0.94	0.83	0.92	0.85	0.84	0.85
% Death Certificate Only	4.69	2.72	2.81	5.68	3.82	2.51
% Microscopically Verified	66.32	70.67	66.98	70.35	63.69	64.26
MORTALITY						
Number of Deaths	540	518	490	268	263	269
Crude Rate (per 100,000)	67.78	64.61	60.85	32.09	31.31	31.88
Cumulative Risk (0-74) (%)	6.12	5.78	5.41	2.78	2.20	2.45
WASR (per 100,000)	50.10	48.04	44.31	20.03	17.46	19.18
EASR (per 100,000)	75.84	72.91	67.17	28.68	26.08	28.00
% of All Cancer Deaths	28.70	27.90	26.50	15.37	14.97	16.30

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Before the age of 40 years lung cancer was rare (<1.5% of cases), after 40 years the rates rose steeply. About 15% of cancers were diagnosed in the very elderly (over 80 years of age) - see Figures 19 and 20.

Figure 19 Age Distribution of New Cases 1993-95, Cancer of the Lung

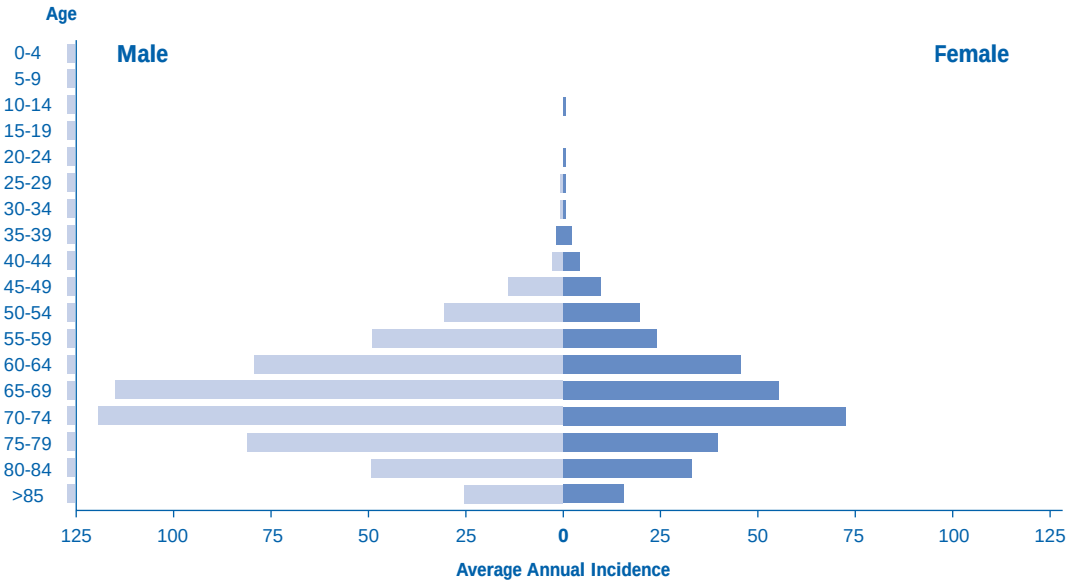
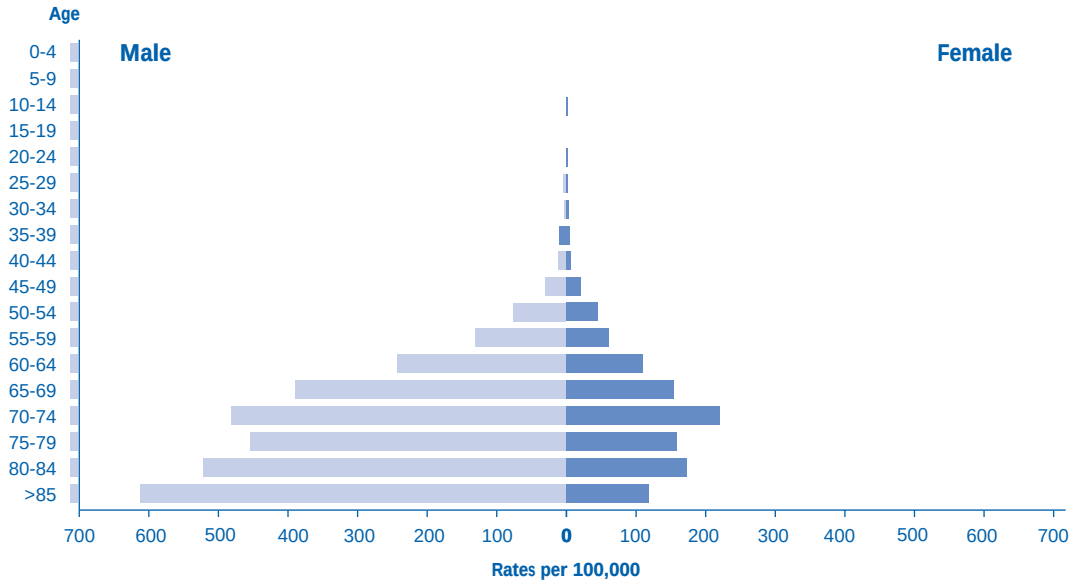


Figure 20 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Lung



Morphology

About one third of cases did not have a Microscopic Verification (34% females, 32% males). Of those with a histological verification, squamous cell tumours were the most commonly diagnosed accounting for 23% of male tumours and 13% of female cancers. Small cell tumours were microscopically confirmed in 6% of male cases, 7% of female cases and oat cell in about 4% of male cases and 5% of female cases. Carcinoid tumours accounted for 1.5% of female lung tumours but was rarely diagnosed in males - see Table 20.

Table 20 Morphologies of Cancer of the Lung in Northern Ireland 1993-95

	Male	Female
Squamous Cell Carcinoma	23.0%	13.0%
Adenocarcinoma	7.7%	12.5%
Small Cell Carcinoma	6.0%	7.0%
Oat Cell Carcinoma	4.0%	5.0%
Carcinoid	0.2%	1.5%
Other carcinomas	15.0%	14.0%
Malignant tumour, NOS*	11.0%	12.0%
Not verified	32.0%	34.0%

*NOS = not otherwise specified

Geographical Distribution of Disease

Variation across Health Boards/District Councils in the observed number of cases due to differences in the age structure of the underlying population has been accounted for by using Standardised Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit over what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

The Eastern Board area had a higher than expected number of lung cancers in males and females while the Southern Board had lower than expected numbers both in males and females. The Northern Board also had a lower level but only in older (>75 years) males and females.

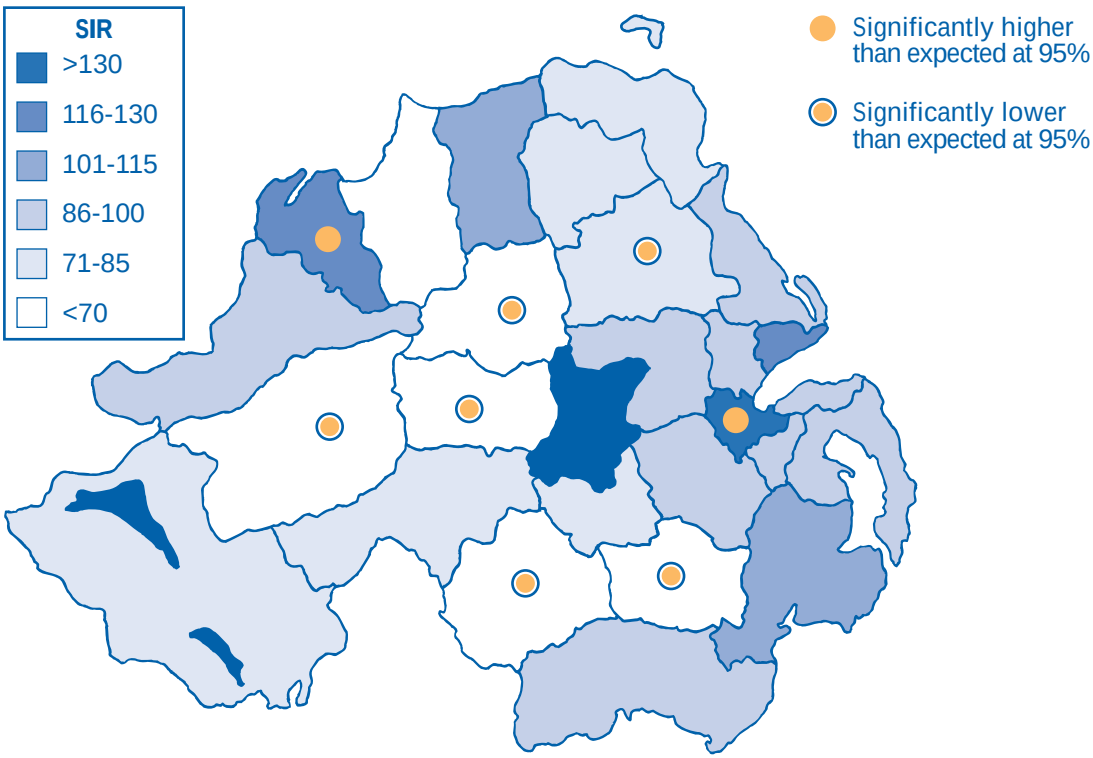
The District Council areas of Belfast and Derry had respectively 40% and 30% higher than expected numbers of lung cancers in both males and females - see Maps 4 and 5.

Lower than expected numbers (all ages) were found for Ballymena, Omagh, Cookstown, Magherafelt, Banbridge and Armagh for males - see Map 4.

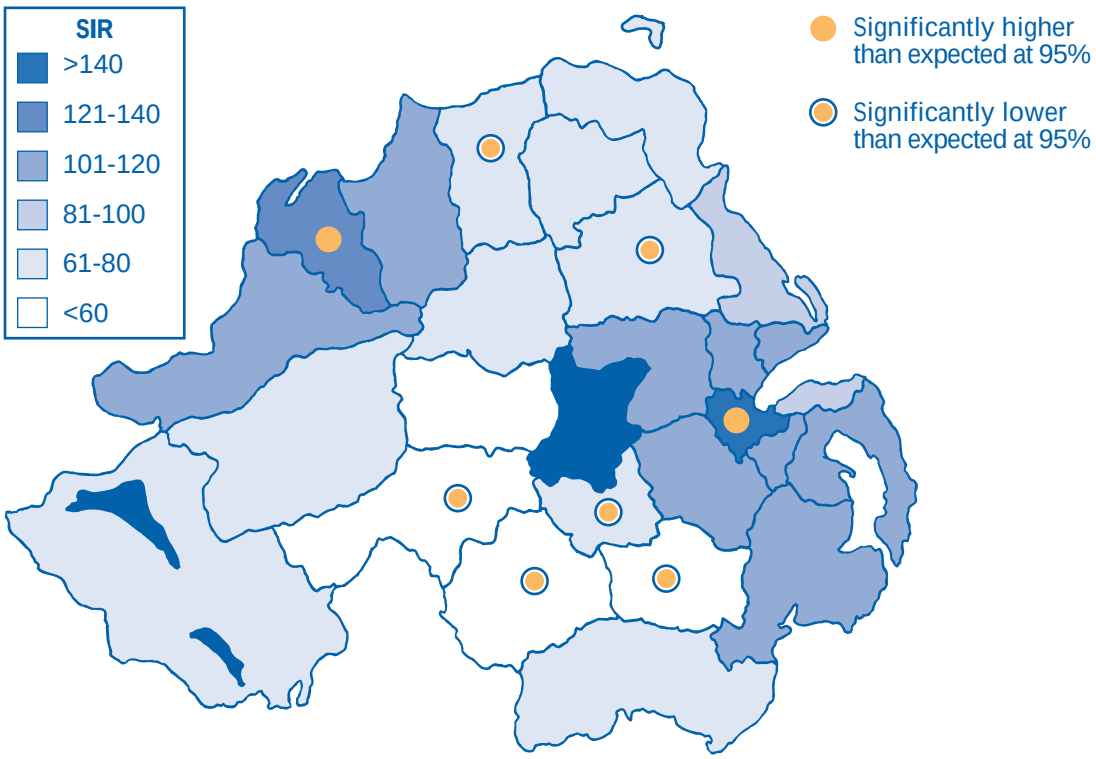
For younger males (<65 years) Ballymena, Ballymoney, Cookstown, Newtownabbey, Armagh, Limavady and Omagh had significantly lower than expected numbers of lung cancer.

Amongst females, Ballymena, Armagh, Coleraine, Craigavon, Banbridge and Dungannon had lower than expected numbers (all ages) - see Map 5. This pattern is similar to that reported for lung cancer deaths (ref: 1) and is largely explicable by variations in smoking habits.

Map 4. All Age Male Standardised Incidence Ratios (SIRs) by District Council 1993-95, Cancer of the Lung



Map 5. All Age Female Standardised Incidence Ratios (SIRs) by District Council 1993-95, Cancer of the Lung



Data Quality

Data quality improved over the period 1993-95. About 65% of cases had a Microscopic Verification of disease and about 3% were notified from Death Certificate Only (DCO). The equivalent figures for England were 65% Microscopically Verified and 10% Death Certificate Only respectively, indicating comparable levels of microscopic verification and a better case capture process in Northern Ireland.

Comparison with other Countries

Table 21 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995.

Table 21 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Lung

	Males		Females	
Country	Cases	EASR (per 100,000)	Cases	EASR (per 100,000)
Scotland	2754	104.70	1822	50.50
England & Wales	22400	78.20	12400	33.20
Republic of Ireland*	936	60.87	465	24.84
Northern Ireland	533	73.15	319	33.31

*ROI figures exclude Death Certificate Only (DCO) registrations

The Northern Ireland rates for males and females were higher than the Republic of Ireland and lower than Scotland. The level in males was also lower than that for England and Wales.

Comment

Over 90% of all lung cancers are caused by tobacco smoking. Exposure to radon gas must also be considered among the risks for lung cancer. Radon gas is released from the earth particularly in granite areas. This usually escapes to the atmosphere and becomes undetectable. High levels may however, be found in poorly ventilated houses in granite areas.

The geographical distribution of the incidence and mortality and the recent trends that are seen throughout Europe are largely explained by differences in smoking patterns. Because of the delay between exposure and disease presentation, even better correlations are found between rates now and smoking patterns that existed twenty to thirty years ago.

Smoking is more common in lower socio-economic groups. In Northern Ireland there are large pockets of deprivation (a good surrogate indicator for smoking levels in the population) to be found in the cities of Belfast and Londonderry. This may explain much of the geographical pattern seen here. Differences in smoking levels may also explain the geographical pattern seen throughout Europe. In Western Europe smoking is becoming much less popular and the falling smoking prevalence is matched by a corresponding fall in new cases and deaths from lung cancer. In Eastern Europe smoking levels are high and increasing and these countries have been experiencing marked rises in lung cancer.

Certain occupations also carry an increased risk of lung cancer, though it is often difficult to separate the effects from those associated with smoking. Exposure to potential carcinogens at work, e.g. electroplaters, labourers in coke ovens or occupations associated with asbestos, increases the risk of lung cancer. Environmental tobacco smoke exposure (passive smoking) is now known to contribute to lung cancer risk and may explain part of the excess risk of lung cancer found amongst publicans and bar staff.

Cancer of the lung, though rarely curable, has symptoms which can be well managed to enhance quality of life. The survival following diagnosis is generally poor and depends on the stage of the disease and the person's general health.

There is no population screening test for this disease.

For Health Gain

The focus for reducing incidence and deaths from lung cancer must be on prevention.

- Actions to reduce smoking levels include:
  - Reducing the numbers who start to smoke by banning advertising, increasing taxation, reducing availability of tobacco products and enhancing health education.
  - Helping those who smoke to stop.
- Controlling environmental (passive) tobacco smoke will reduce the levels of lung cancer and deaths in Northern Ireland.
- Those with symptoms of persistent cough, pain etc. should be encouraged to seek advice from a doctor, especially if they smoke.
- Participation in clinical trials, which can advise on the best outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

12. Malignant Melanoma of Skin

ICD-9 172

KEY FACTS

- On average 160 melanomas of the skin were registered per year.
- Twice as common in females than in males.
- Higher than expected numbers in Southern Board area for females, North Down for males.
- Falling levels of invasive disease and rising levels of *in situ* disease in females.
- Rising levels of invasive and *in situ* disease in males.

On average, over the 1993-95 period, 160 cases of malignant melanoma were registered each year. Malignant Melanoma accounted for about 1.5% of cancers in males and about 2.5% in females. It was the ninth most commonly diagnosed cancer in females, twelfth in males. Almost two thirds of cases (64%) were diagnosed in females. Deaths recorded in the period 1993-95 were a sixth of the number of cases reflecting a relatively high level of survival for the disease. The number and rates of melanoma increased in males and fell significantly in females.

Table 22 Summary Statistics

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	54	61	64	113	102	93
Crude Rate (per 100,000)	6.78	7.61	7.95	13.53	12.14	11.02
Cumulative Risk (0-74) (%)	0.62	0.64	0.67	0.96	0.83	0.88
WASR (per 100,000)	5.86	6.44	6.57	10.63	9.35	8.23
EASR (per 100,000)	7.94	8.36	9.07	12.99	11.78	10.45
% of All Cancers	1.40	1.50	1.50	2.80	2.70	2.20
DATA QUALITY						
Mortality: Incidence Ratio	0.13	0.23	0.14	0.17	0.20	0.17
% Death Certificate Only	0.00	0.00	0.00	0.00	0.00	0.00
% Microscopically Verified	100.00	100.00	100.00	100.00	100.00	100.00
MORTALITY						
Number of Deaths	7	14	9	20	21	16
Crude Rate (per 100,000)	0.88	1.75	1.12	2.39	2.50	1.90
Cumulative Risk (0-74) (%)	0.07	0.11	0.09	0.18	0.17	0.10
WASR (per 100,000)	0.66	1.39	0.90	1.57	1.67	1.05
EASR (per 100,000)	0.97	2.08	1.22	2.16	2.33	1.51
% of All Cancers	0.37	0.75	0.49	1.15	1.19	0.97

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Melanoma was more frequent in young females than young males - almost one third of cases in females are diagnosed before the age of 40 (as opposed to one fifth of cases in males). Age specific rates, although somewhat higher in older age groups were relatively stable across all adult age groups - especially so in females. Median age at diagnosis was 56 years for males and 54 years for females - a much younger age than in the Republic of Ireland (62 and 61 years for median age respectively) - see Figures 21 and 22.

Figure 21 Age Distribution of New Cases 1993-95, Malignant Melanoma

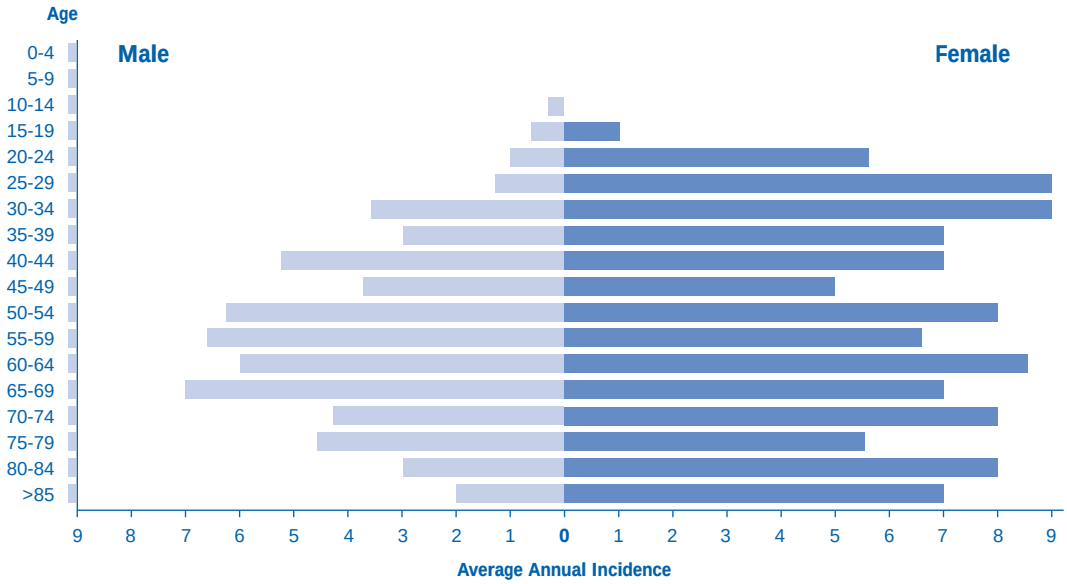
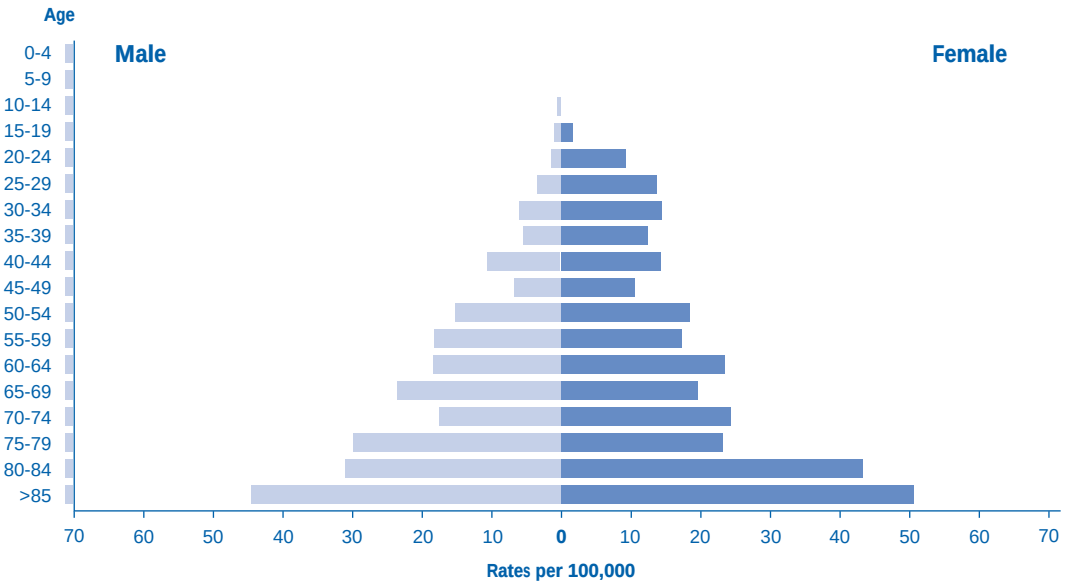


Figure 22 Average Annual Age Specific Rates (per 100,000) 1993-95, Malignant Melanoma



Morphology

All tumours had a Microscopic Verification. In addition to the 160 cases per year of invasive malignant melanoma there were on average, 39 *non-invasive* cases diagnosed in females and 21 in males. Superficial spreading malignant melanoma was the most commonly diagnosed type accounting for 45% of invasive cases in females, 36% of cases in males - see Annex to this section for more detail.

Geographical Distribution

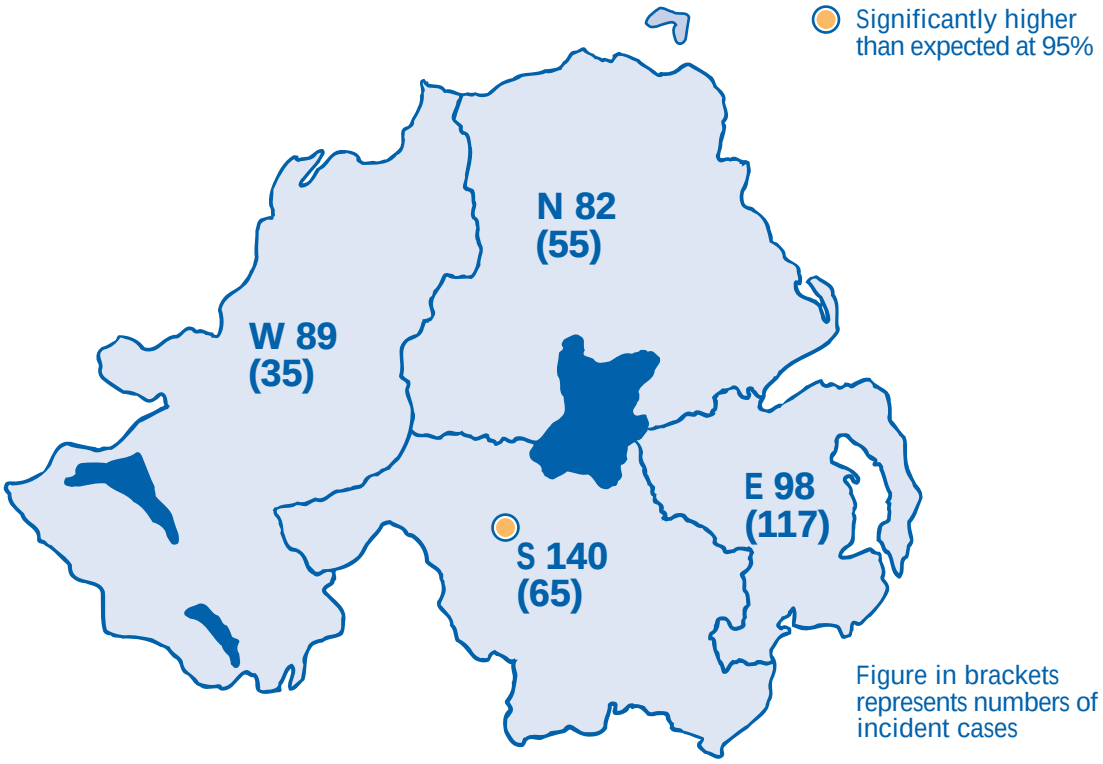
Variation across Health Boards/District Councils in the observed number of cases due to differences in the age structure of the underlying population has been accounted for by using Standardised Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit over what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

There was no significant geographical variation by Health Board in Northern Ireland for males. For females the numbers were higher than expected in the Southern Board area (based on 65 cases) - see Map 6.

Higher than expected numbers in males were found in the District Council areas of North Down (based on 15 cases) and in females from Armagh (based on 15 cases) and Newry & Mourne (based on 26 cases).

Lower than expected numbers were found in Ballymoney District Council for males and females and in Limavady for males only.

Map 6. All Age Female Standardised Incidence Ratios (SIRs) by District Council 1993-95, Malignant Melanoma of the Skin



Data Quality

The data quality was excellent, in part thanks to the existence of an Ulster Cancer Foundation funded Malignant Melanoma Registry and the work of Dr Pauline Pedlow. The proportion of Microscopically Verified cases remained consistent at 100%, reflecting the investment in the disease specific Melanoma register. Figures compare well with those from Denmark and the Netherlands which have long established population cancer registries and are generally regarded as having amongst the best measures of data quality in the world.

Comparison with other Countries

Table 23 provides comparative figures for the numbers of cases and European Age Standardised Rates for the year 1995. The Northern Ireland rate for males was lower than that in the Republic of Ireland or Scotland, but higher than for England & Wales. The same was true for females.

Table 23 Comparative Numbers and Rates for Britain and Ireland 1995, Malignant Melanoma of Skin

	Males		Females	
Country	**Cases**	**EASR (per 100,000)**	**Cases**	**EASR (per 100,000)**
Scotland	**238**	**9.40**	**393**	**13.10**
England & Wales	**1730**	**6.60**	**2550**	**8.20**
Republic of Ireland*	**169**	**11.00**	**329**	**19.14**
Northern Ireland	**64**	**9.07**	**93**	**10.45**

* ROI figures include *in situ* tumours.

Comment

The number of cases of malignant melanoma has increased rapidly in Northern Ireland over the past 25 years from an average of 48 cases per year (1974-1978) to 160 cases per year. World-wide, melanoma incidence is rising by around 4% a year.

Malignant melanoma is largely preventable by avoiding excessive sun exposure, while early detection and adequate treatment can dramatically improve survival.

The pattern of increasing cases in males and falling rates in females in Northern Ireland has been known for some time (due to the pre-existing Melanoma Register) and is similar to the trends observed in Scottish data (ref: 11). The increase was greatest among those under 50 but was especially marked in young females under 30 years of age.

The most important factor with regard to favourable prognosis is the clinical stage at which the patient first presents to a clinician. The patterns of falling numbers of invasive and rising numbers of *in situ* cases in females is indicative of earlier detection of the disease. Unfortunately the same does not apply to males.

Numbers of melanomas are small and trends are difficult to assess. However, over the 3 years the numbers of females with malignant skin melanomas have fallen and presentation is at an earlier pathological stage, suggesting that public efforts to reduce the avoidable burden of the disease is taking effect.

A DHSS strategy for the prevention, diagnosis and treatment of malignant melanoma and other skin cancers, launched in 1997 (ref: 12), aims to address this rising trend. The strategy builds on health promotion programmes which have been ongoing in the Province since 1990. It also aims to encourage earlier detection of melanoma and promote treatment according to agreed protocols by dermatologists and plastic surgeons.

For Health Gain

- The public must be encouraged to take 'Care in the Sun' at home and abroad by:
  - avoiding the sun 11 am - 3 pm and seeking shade
  - covering up with hat, T-shirt, sunglasses
  - using minimum factor 15 sunscreen.
- The public must be encouraged to become aware of changes in the skin which could indicate the presence of skin cancer and especially malignant melanoma.
- Professionals must ensure a fast track approach to the diagnosis of suspicious lesions and treatment according to agreed guidelines.
- Participation in clinical trials, which can advise on the best outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

Annex

Melanoma of the Skin

Histological Types

Pathologists can tell something about how a melanoma is likely to behave by looking at the way the tumour cells have spread. This description provides a number of types or morphologies. In skin melanomas, patients whose tumour has a morphology of lentigo maligna melanoma have the best prognosis, nodular melanoma the worst, and superficial spreading melanoma an intermediate position. Acral melanomas are rare and occur in places such as nail bed and the soles of the feet. Table 24 below shows the morphological types for melanoma of the skin only.

Table 24 Melanoma of Skin, Morphology of Tumour by Year of Diagnosis

Morphology Description	SNOMED Code	Nos. (% of Total) by year		
MALES		**1993**	**1994**	**1995**
INVASIVE CANCERS				
Melanoma, NOS	M87203	17 (31.5%)	12 (19.8%)	13(20.3%)
Nodular Melanoma	M87213	8 (14.8%)	17 (27.9%)	11 (17.2%)
Superficial Spreading Melanoma	M87433	21 (38.9%)	23 (37.7%)	27 (42.2%)
Lentigo Maligna Melanoma	M87423	7 (13.0%)	9 (14.8%)	10 (15.6%)
Acral Lentiginous Melanoma	M87443	1 (1.9%)	0 (0%)	3 (4.7%)
TOTAL INVASIVE CASES		54	61	64
***IN SITU* CANCERS**				
Melanoma *in situ*	M87202	1 (5.9%)	2 (9.1%)	6 (24.0%)
Lentigo Maligna *in situ*	M87422	14 (82.4%)	15 (68.2%)	15 (60.0%)
Superficial Spreading Melanoma *in situ*	M87432	2 (11.8%)	5 (22.7%)	4 (16.0%)
TOTAL *IN SITU*		17	22	25
		Nos. (% of Total) by year		
FEMALES		**1993**	**1994**	**1995**
INVASIVE CANCERS				
Melanoma, NOS	M87203	14 (12.4%)	30 (29.4%)	16 (17.2%)
Nodular Melanoma	M87213	19 (16.8%)	13 (12.7%)	18 (19.4%)
Superficial Spreading Melanoma	M87433	67 (59.3%)	44 (43.1%)	45 (48.4%)
Lentigo Maligna Melanoma	M87423	10 (8.8%)	12 (11.8%)	11 (11.8%)
Acral Lentiginous Melanoma	M87443	3 (2.7%)	3 (2.9%)	3 (3.2%)
TOTAL INVASIVE CASES		113	102	93
IN SITU CANCERS				
Melanoma *in situ*	M87202	7 (25.0%)	15 (31.9%)	8 (19.5%)
Lentigo maligna *in situ*	M87422	14 (50.0%)	23 (48.9%)	22 (53.7%)
Superficial Spreading Melanoma *in situ*	M87432	7 (25.0%)	9 (19.2%)	11 (26.8%)
TOTAL *IN SITU*		28	47	41

In both sexes, superficial spreading melanoma was the most common morphological type accounting for nearly half of all female malignant melanomas (48.7%) and 40% of all male malignant melanomas.

Pathological Staging

The prognosis of patients with melanoma is dependent on the stage of the disease at diagnosis. The staging of malignant melanomas was restricted to primary skin melanocytic lesions only. The stage is derived from two measurements:

1) the Clark's level, which was derived from the pathologist's description of how far the tumour had invaded the underlying layers of skin, and

2) the Breslow thickness, which gives the vertical depth of the tumour measured by the pathologist under the microscope.

A combination of the Clark's level and the Breslow thickness is used to estimate the pT of the tumour (ref: 13). Where possible nodal and metastatic involvement were noted at time of diagnosis. Table 25 provides details of staging by year of diagnosis and sex.

Table 25 Melanoma of Skin, Staging of Tumour by Year of Diagnosis

pT Stage:
MALES

	Nos. (% of Total) by year		
	1993	1994	1995
pTis Non invasive *in situ*	17 (23.9%)	22 (26.5%)	25 (28.1%)
pT1 Tumour low level of invasion <0.75mm	10 (14.1%)	2 (2.4%)	9 (10.1%)
pT2 Tumour invasion 0.75 - 1.49mm	7 (9.9%)	15 (18.1%)	12 (13.5%)
pT3a Tumour invasion 1.5 - 2.9mm	17 (23.9%)	28 (33.7%)	23 (25.8%)
pT3b Tumour invasion 3.0 - 3.9mm	5 (7.0%)	4 (4.8%)	6 (6.7%)
pT4a Tumour invasion >4.0mm	5 (7.0%)	5 (6.0%)	4 (4.5%)
pT4b Satellite tumour present	0 (0%)	1 (1.2%)	1 (1.1%)
pTX Tumour invasion not assessed	10 (14.1%)	6 (7.2%)	9 (10.1%)
Total (Includes *in situ* + invasive)	71	83	89

FEMALES

	Nos. (% of Total) by year		
	1993	1994	1995
pTis Non invasive *in situ*	28 (19.9%)	47 (31.5%)	41 (30.6%)
pT1 Tumour low level of invasion <0.75mm	15 (10.6%)	6 (4.0%)	9 (6.7%)
pT2 Tumour invasion 0.75 - 1.49mm	30 (21.3%)	26 (17.4%)	24 (17.9%)
pT3a Tumour invasion 1.5 - 2.9mm	47 (33.3%)	38 (25.5%)	27 (20.1%)
pT3b Tumour invasion 3.0 - 3.9mm	7 (5.0%)	8 (5.4%)	8 (6.0%)
pT4a Tumour invasion >4.0mm	6 (4.3%)	9 (6.0%)	8 (6.0%)
pT4b Satellite tumour present	2 (1.4%)	0 (0%)	2 (1.5%)
pTX Tumour invasion not assessed	6 (4.3%)	15 (10.1%)	15 (11.2%)
Total (Includes *in situ* + invasive)	141	149	134

Nodal involvement at diagnosis was very low with only one case every year for both males and females, except for 1995 females when no node positive cases were detected in that year. Only those cases with positive nodes were available to the Registry. Nodal involvement for node negative cases was not recorded.

13. Cancer of Female Breast

ICD-9 174

KEY FACTS

- On average 820 female breast cancers were registered per year.
- Breast cancer accounted for 19% of all new cancers diagnosed in females.
- Four fifths of cases occur in post menopausal females.
- Higher than expected levels were found in the District Council areas of Limavady and Moyle (based on small numbers).

On average, over the 1993-95 period, 820 breast cancers were diagnosed annually. Breast cancer was the most common cancer in females (excluding non-melanoma skin cancer). It rarely occured in males although an annual average of 8 male breast cancers (ICD9 175) were diagnosed 1993-95.

Breast cancer in females accounted for around 19% of all new cases of cancer in females. It is therefore a significant disease both in terms of its impact upon individuals and the health care required to manage and treat it. Additionally, as two thirds of patients survive at least five years, there are further implications in terms of treatment regimes and the resources required.

The actual number of cases and the age standardised rates have risen among females between 1993-95. This may reflect the earlier detection of the disease due to the Breast Screening Programme. In England & Wales it is estimated that incidence increased at around 4.5% per annum after the inception of national screening (ref: 14) see also Cancer Research Campaign (CRC) factsheet (ref: 15). Caution should, however, be exercised when inferring trend for such a limited time series, as numbers of cases will naturally fluctuate from year to year.

Table 26 Summary Statistics

Year	1993	1994	1995
INCIDENCE			
Incident Cases	774	821	865
Crude Rate (per 100,000)	92.68	97.74	102.52
Cumulative Risk (0-74) (%)	7.27	7.59	8.12
WASR (per 100,000)	68.59	73.42	75.70
EASR (per 100,000)	94.20	100.64	104.20
% of All Cancers	17.5	19.1	20.2
DATA QUALITY			
Mortality: Incidence Ratio	0.42	0.41	0.38
% Death Certificate Only	3.49	1.71	1.73
% Microscopically Verified	90.6	92.1	91.6
MORTALITY			
Number of deaths	328	338	328
Crude Rate (per 100,000)	39.30	40.20	38.9
Cumulative Risk (0-74) (%)	3.00	2.80	2.80
WASR (per 100,000)	27.10	26.30	25.60
EASR (per 100,000)	38.20	37.50	36.10
% of All Cancers	18.80	19.30	19.90

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Half of the females diagnosed with breast cancer 1993-95 were under 60 years of age and 7% were under 40 years of age. Figure 23 shows the age distribution of new cases and this demonstrates the typical picture of increasing rates of disease with age. The peak in middle age, around menopause, is a common pattern (Clemmenson's hook), although the magnitude here may reflect additional cases detected by the Breast Screening Programme. Over a third (39%) of cases occurred in females in the screening age population 50-64 years, 39% over the eligible screening age and 22% below the screening age.

Figure 23 Age Distribution of New Cases 1993-95, Cancer of the Female Breast

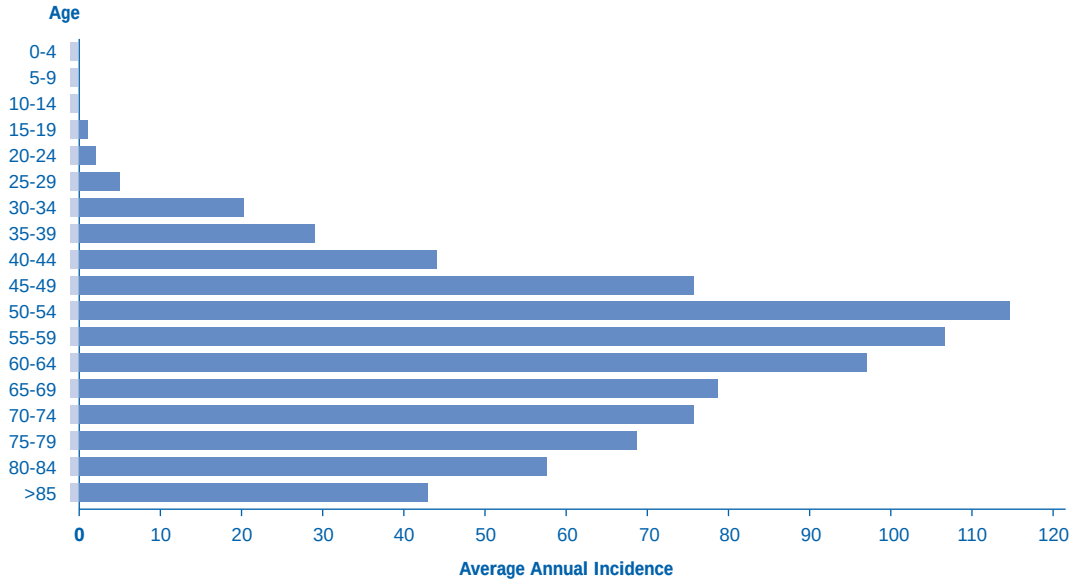
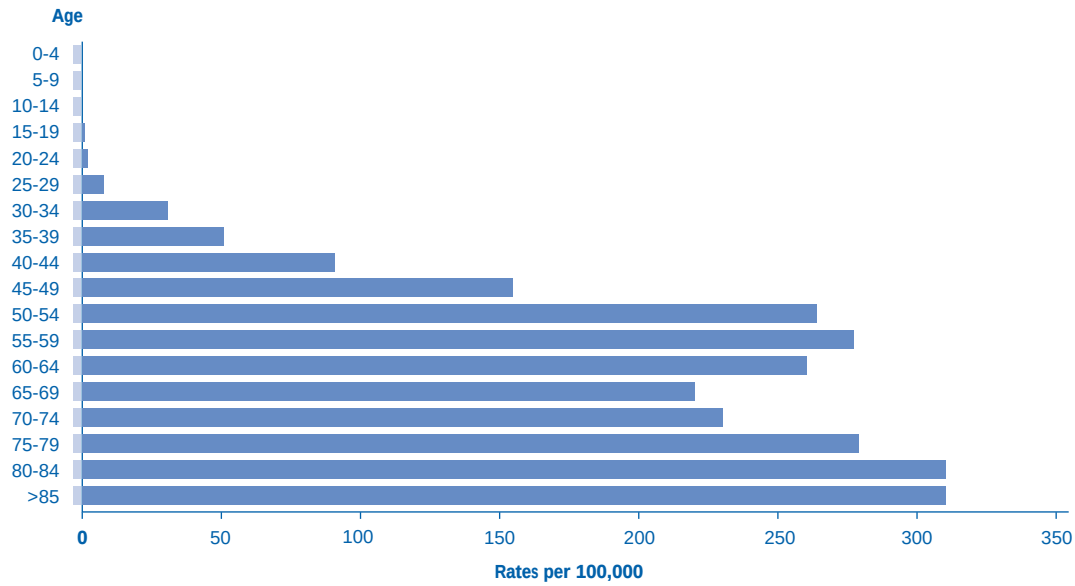


Figure 24 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Female Breast



Morphology

Eight percent of cases did not have a pathological verification of diagnosis. Infiltrating ductal carcinoma was the most common type of breast cancer and accounted for 65% of all invasive breast cancers. The next most common group was lobular carcinomas (9%). More rarely (accounting for approximately 1% each) were mucinous carcinoma, Paget's disease of nipple and tubular carcinoma. The distribution of cases broadly agreed with published data for breast cancer for other areas.

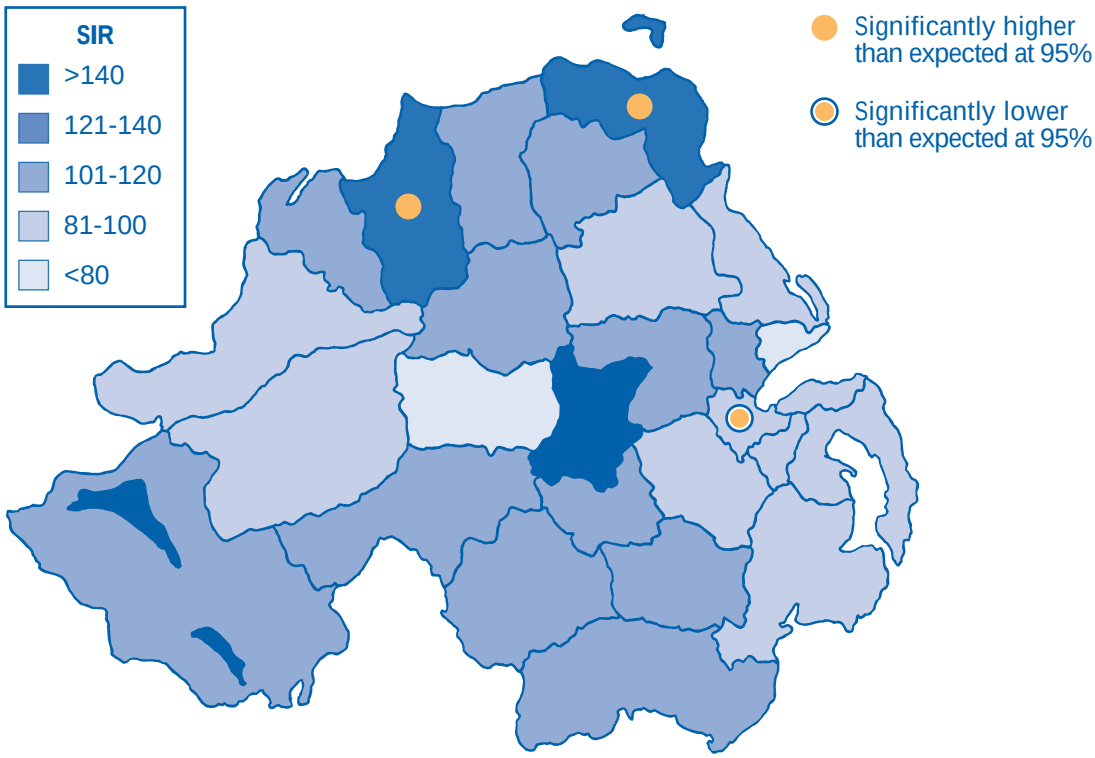
In situ lesions are pre-cancerous states which may eventually turn into fully invasive cancers if not treated. The number of *in situ* lesions averaged 6.5% of the total numbers of breast tumours. The majority (59%) of *in situ* tumours were intraductal - see Annex for detail.

Geographical Distribution of Disease

Variation across Health Boards/District Council areas in the observed numbers of cases due to differences in the age structure of the underlying population has been accounted for by using Standardised Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit over what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

There was no significant variation by Health Board. However Belfast District Council had lower than expected numbers while the District Council areas of Moyle and Limavady had higher than expected numbers of female breast cancer. As the actual numbers were relatively small, (35 and 53 cases respectively for the three year period) caution should be exercised in their interpretation - see Map 7.

Map 7. All Age Standardised Incidence Ratios (SIRs) by District Council 1993-95, Cancer of the Female Breast



Data Sources and Quality

Data quality was good with about 90% of cases having a Microscopic Verification. A low level of Death Certificate Only (DCO) registrations was also achieved.

Pathological Staging

At the time of diagnosis about a third of tumours were under 2 cm while 4% of tumours were over 5 cm in size. There were fewer of these larger tumours in 1995 compared with 1993. At diagnosis 1 in 20 tumours had invaded muscle or skin - see Annex for details.

If breast cancer spreads, it usually appears in the local lymph nodes first. Part of the staging process involves examination of at least five lymph nodes. Over the three year period, the Registry received information on node status for just over half (51%) of breast cancers. The number of cases with nodes examined increased by 40% from 1993-95 and is likely to reflect changes in clinical practice. Unfortunately however even by 1995, 43% of cases did not have a record of node status. Of those patients whose nodal status could be assessed, nearly half (48%) had at least five lymph nodes free of tumour.

Comparison with other Countries

Table 27 provides comparative figures for the numbers of cases and European Age Standardised Rates for the year 1995. In a UK context Northern Ireland compared favourably with Scotland, although less favourably with England & Wales. The lower rate in the Republic of Ireland may reflect the lack of a population screening programme which is known to increase detection of early cases and consequently overall rates.

Table 27 Comparative Numbers and Rates for Britain and Ireland 1995

Country	Cases	EASR (per 100,000)
Scotland	3168	105.6
England & Wales	29200	96.9
Republic of Ireland*	1555	94.7
Northern Ireland	866	104.2

*ROI registrations include *in situ* cases

Comment

Female breast cancer represents almost one in five of female cancers and is the most common cause of cancer death in females here. The higher number of registrations in Moyle and Limavady may reflect higher levels of disease surveillance in those areas although it will require a longer run of data to assess the full validity of this finding.

Incidence in Western Europe generally is increasing and although some of this is directly attributable to earlier detection with mass population screening programmes, there does appear to be a real, though slight, increase in incidence internationally. As reliable Northern Ireland incidence data are only now available, it is too early to detect even a short term trend - random fluctuation from year to year is to be expected. It is however likely that the situation here reflects the wider European experience with the figures suggesting a small (though not statistically significant) increase in the incidence of breast cancer.

The cause of breast cancer is not completely known. Although less than 10% of all breast cancers are hereditary in nature, females with a strong family history have an increased risk of early and bilateral disease. Migration studies show that descendants of those who have migrated tend to attain the incidence rates of females living in the host country within a couple of generations. Hormonal balance in females is thought to be important as well and females who have had many pregnancies or who have their pregnancy early in life are at reduced risk. Females who have had their ovaries removed before the age of 40 are also at reduced risk.

Studies have shown that breast cancer is more common in females who consume a diet which is high in saturated fat. Also, certain religious sects who have a low fat intake show particularly low

levels of breast cancer. Adults, however, who enter the sect in adult life do not acquire these low rates. This indicates that the protective factors appear to operate before adult life. While this confirms the importance of environmental factors, it also suggests that perhaps events occurring in childhood may be more important than those occurring in later life.

As a result of findings in other countries, the NHS Breast Screening Programme was implemented throughout the UK commencing in 1987 and was fully operational in Northern Ireland by 1993. The aim is to reduce breast cancer deaths among the screened population by 25% before the year 2000. Females aged between 50 and 64 years are routinely invited every 3 years for a breast x-ray (mammogram). It is hoped that detecting smaller cancers (less than 1.5 cm) at an earlier stage and before metastatic spread has occurred, will significantly reduce the death rate. Older females over age 65 may attend although are not specifically invited for mammogram. More information is needed to determine the benefit of extending the programme as over 60% of cancers occur in females outside the screening ages.

For Health Gain

- Females should ensure that they eat a healthy diet and do not exceed the recommended levels of fat intake.
- Females aged 50-64 should attend for breast screening when invited.
- Those with a strong family history should seek professional advice on the value of mammography at a younger age.
- Females should be advised to seek early diagnosis for symptoms of breast cancer (a lump, discharge from the nipple, puckering of the skin, thickening of breast tissue).
- Participation in clinical trials, which can advise on the best treatment outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

Recommendation

- Females with suspected breast cancer should have their disease stage, including lymph node status, assessed at diagnosis.

Breast Cancer

Histological Types

A pathologist can indicate how a tumour is likely to behave by examining the pattern of cells and their type (morphology).

Infiltrating ductal carcinoma was the most common type of breast cancer, accounting for 65% of all invasive breast cancers. The next most common group was lobular carcinomas (9%). More rarely (accounting for approximately 1% each) are mucinous carcinoma, Paget's disease of nipple and tubular carcinoma. The distribution of cases were in broad agreement with published data for breast cancer for other areas.

In situ lesions are pre-cancerous states which may eventually turn into fully invasive cancers if not treated. The number of *in situ* lesions averaged 6.5% of total breast tumours. The majority (59%) of *in situ* tumours were intraductal.

Table 28 Cancer of Female Breast, Morphology of Tumour by Year of Diagnosis

Morphology	SNOMED	No. (% Total)					
INVASIVE CANCERS		**1993**	**%**	**1994**	**%**	**1995**	**%**
Infiltrating ductal carcinoma	M85003	498	64.2	559	68.1	550	63.5
Lobular Carcinoma	M85203	71	9.2	75	9.1	82	9.5
Carcinoma, NOS	M80103	27	3.5	40	4.9	66	7.6
Tubular Carcinoma	M82113	15	1.9	12	1.4	10	1.2
Mixed Lobular & Ductal Carcinoma	M85223	12	1.5	12	1.4	10	1.2
Mucinous Carcinoma	M84803	9	1.2	13	1.6	13	1.5
Adenocarcinoma	M81403	5	0.6	2	0.2	8	0.9
Paget's Disease of Nipple	M85403	6	0.8	8	1.0	10	1.2
Other Morphologies		16	2.1	3	0.4	7	0.8
Malignant Neoplasm, NOS	M80003	25	3.2	26	3.2	23	2.6
Non-Microscopically Verified		91	11.7	73	8.9	79	9.1
TOTAL INVASIVE CASES		774		821		865	
***IN SITU* CANCERS**							
Intraductal Carcinoma	M85002	30	65.2	34	53.1	36	60.0
Carcinoma *in situ*, NOS	M80102	13	28.3	27	42.2	21	35.0
Lobular Carcinoma *in situ*	M85202	3	6.5	3	4.7	3	5.0
TOTAL *IN SITU* CASES		46		64		60	

NOS = not otherwise specified

Breast cancers diagnosed without Microscopic Verification were categorised as follows. They occurred mainly in older females, (55% were over 70 years at diagnosis, 37% were over 80 years) although 5 cases were recorded in those under 40 years. In all 5 cases the only source of information was the hospital discharge summary which is not definitive. Clinical opinion was the method of diagnosis in 16% (39 cases) - 3 of these cases were in females under 60 years. Of the total 242 cases without histological verification, almost a third were obtained solely from hospital discharge records while 23% were registered from a Death Certificate Only (DCO) - see Table 29.

Table 29

SOURCE OF CONFIRMATION FOR CANCERS OF THE FEMALE BREAST (1993-95) WITHOUT MICROSCOPIC VERIFICATION TUMOURS BY YEAR OF DIAGNOSIS

	Year of Diagnosis			
BASIS	**1993**	**1994**	**1995**	**Total 1993-95**
Unknown	18	7	5	30
Clinical Opinion	19	11	9	39
CSA Notes	10	10	6	26
CAT Scan		1	1	2
Death Certificate	27	14	15	56
GP	2			2
Hospital PAS	13	27	38	78
Post Mortem	1		1	2
Surgery			1	1
Tamoxifen		1		1
Ultrasound	1			1
X-Ray	1	1	2	4
Grand Total	**92**	**72**	**78**	**242**

Pathological Staging and Grading

The stage of a tumour is a measure of how advanced the cancer is at diagnosis with earlier stages having a better prognosis. Staging was comprised of a combination of three measurements:

1) The size of the tumour and whether it was involved with adjacent skin or underlying muscle (pT).

2) Assessment of whether the tumour had spread to lymph nodes (pN).

3) Whether it had spread to distant sites (M).

At the time of diagnosis over a third, (35%), of tumours were under 2 cm while 4% of tumours were over 5 cm in size. There were fewer of these larger tumours in 1995 compared with 1993. At diagnosis 1 in 20 tumours had invaded muscle or skin.

Breast cancer, if it spreads, usually appears in local lymph nodes first. Part of the staging process involves examination of at least five lymph nodes. The Registry received information on nodal status for just over half, 51%, of breast cancers. The number of cases with nodes examined increased by 40% from 1993-95. This is likely to reflect changes in clinical practice. Unfortunately, even by 1995, 43% of cases did not have a record of node status, although it is recognised that some patients with very small tumours may not need nodal assessment carried out. Of those patients whose nodal status could be assessed, nearly half (48%) had at least five lymph nodes free of tumour - see Tables 30 and 31.

The grade of the tumour is assessed by microscopic examination. Histopathologists define grading as how far the tumour cells have diverged from normal. Tumours of a low grade are well differentiated and tend to look more like normal breast tissue. Similarly tumours of a higher grade are poorly differentiated and more abnormal. Patients with low grade tumours tend to have better survival than those of a higher grade. One in 8 (12%) of tumours were well differentiated while 20% were poorly differentiated. The grades of tumours from 1993-95 are presented in Table 32.

Table 30 Cancer of Female Breast, Staging by Year of Diagnosis

pT Stage:	Nos. (% of Total) By Year		
	1993	1994	1995
Tis Non invasive *in situ*	46 (5.6%)	64 (7.2%)	60 (6.5%)
T1a Microinvasive	28 (3.4%)	23 (2.6%)	23 (2.5%)
T1 Under 2cm	272 (33.1%)	311(35.1%)	332 (35.8%)
T2 2-5 cm	225 (27.4%)	214 (24.2%)	254 (27.4%)
T3 Over 5 cm	34 (4.1%)	29 (3.3%)	26 (2.8%)
T4a Invades muscle	6 (0.7%)	17 (1.9%)	7 (0.7%)
T4b Invades skin	30 (3.7%)	23 (2.6%)	25 (2.7%)
T4c Invades muscle + skin	2 (0.2%)	4 (0.5%)	4 (0.4%)
T4d Inflammatory tumour	0 (0.0%)	1 (0.1%)	0 (0.0%)
TX Tumour unsized pathologically	85 (10.5%)	127 (14.4%)	116 (12.6%)
TX Non microscopically verified	92 (11.2%)	72 (8.1%)	78 (8.4%)
Total (Includes *in situ* + invasive)	820	885	925

Over a third of breast tumours detected are under 2 cm.
Note: These tumours may include some microinvasive tumours (less malignant) as we found it impossible to distinguish all microinvasive cases by reading pathology reports.

Table 31 Cancer of Female Breast, Nodal Status by Year of Diagnosis.

N Stage:	Nos. (% of Total) By Year		
	1993	1994	1995
N0 Lymph nodes free from tumour	158 (19.2%)	204 (23.1%)	285 (30.7%)
N1 Tumour spread to lymph nodes	199 (24.2%)	277 (31.3%)	222 (24.0%)
N2 Tumour spread to lymph nodes & fixed	5 (0.6%)	7 (0.8%)	3(0.3%)
NX Extent of lymph node involvement not available to the Registry	366 (44.7%)	325 (36.8%)	337 (34.9%)
NX Non microscopically verified	92 (11.2%)	72 (8.1%)	78 (8.4%)
Total (Includes *in situ* + invasive)	820	885	925

The number of 'node sampled' cases available to the Registrty has increased during the 3 years of study. This may reflect changes in clinical practice. Nonetheless a large proportion, over 40% of females may not have had their nodal status assessed.
Note: The Registry does not receive information on negative nodes if their report is not linked to a previous breast biopsy.

Table 32 Cancer of Female Breast, Grade of Tumour by Year of Diagnosis.

Grade of Tumour:	Nos. (% of Total) By Year		
	1993	1994	1995
Not Graded	276 (35.6%)	265 (32.3%)	306 (35.3%)
1 Well differentiated	98 (12.6%)	90 (11.0%)	100 (11.5%)
2 Moderately differentiated	247 (31.9%)	283 (34.5%)	302 (34.9%)
3 Poorly differentiated	154 (19.9%)	183 (22.3%)	158 (18.2%)
Total (Includes invasive tumours only)	774	821	865

Thanks are due to Andrea Murray, medical student, for assistance with this section.

14. Cancer of the Cervix Uteri

ICD-9 180

KEY FACTS

- On average 78 cases of invasive cervical cancer were registered per year.
- Half of cases occurred under 49 years of age.
- 2% of female cancers.
- Higher than expected numbers in the Eastern Board.

These figures refer to invasive and microinvasive cases of cervical cancer but not CIN I, II, III. Levels of CIN III are indicated separately at the foot of Table 33. On average, 78 cases of invasive cervical cancer were registered each year 1993-95. This accounted for almost 2% of all cancer cases in females. There were 2.5 times more cases than deaths for the period 1993-95. The Registry was also notified of an average of 419 CIN III, non-invasive lesions per year 1993-95. It was the twelfth most commonly diagnosed cancer in females.

Table 33 Summary Statistics

Year	1993	1994	1995
INCIDENCE			
Incident Cases	83	75	77
Crude Rate (per 100,000)	9.94	8.93	9.13
Cumulative Risk (0-74) (%)	0.76	0.70	0.80
WASR (per 100,000)	7.97	7.35	7.79
EASR (per 100,000)	10.35	9.11	9.83
% of All Cancers	1.88	1.74	1.79
DATA QUALITY			
Mortality : Incidence Ratio	0.41	0.49	0.26
% Death Certificate Only	4.82	2.67	0.00
% Microscopically Verified	95.18	97.3	100.0
MORTALITY			
Number of Deaths	34	37	20
Crude Rate (per 100,000)	4.07	4.41	2.37
Cumulative Risk (0-74) (%)	0.32	0.30	0.20
WASR (per 100,000)	2.87	3.18	1.79
EASR (per 100,000)	3.88	4.50	2.39
% of All Cancer Deaths	1.95	2.10	1.21
NON INVASIVE CASES (see Annex for further details)			
Non Invasive CIN III lesions	416	433	409

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Half of the cases of cervical cancer were under 49 years of age - see Figure 25.

Figure 25 Age Distribution of New Cases 1993-95, Cancer of the Cervix

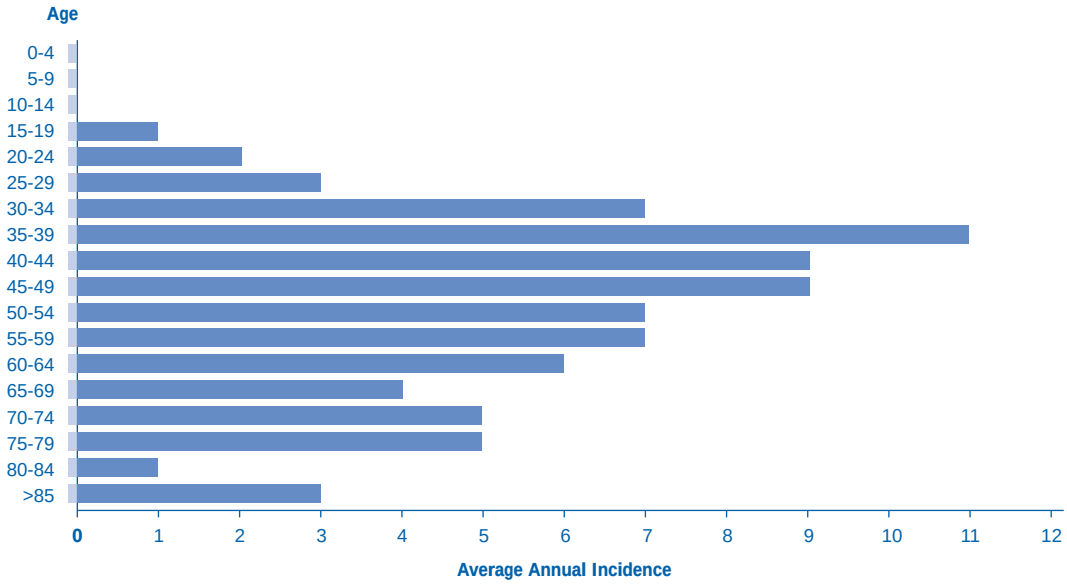
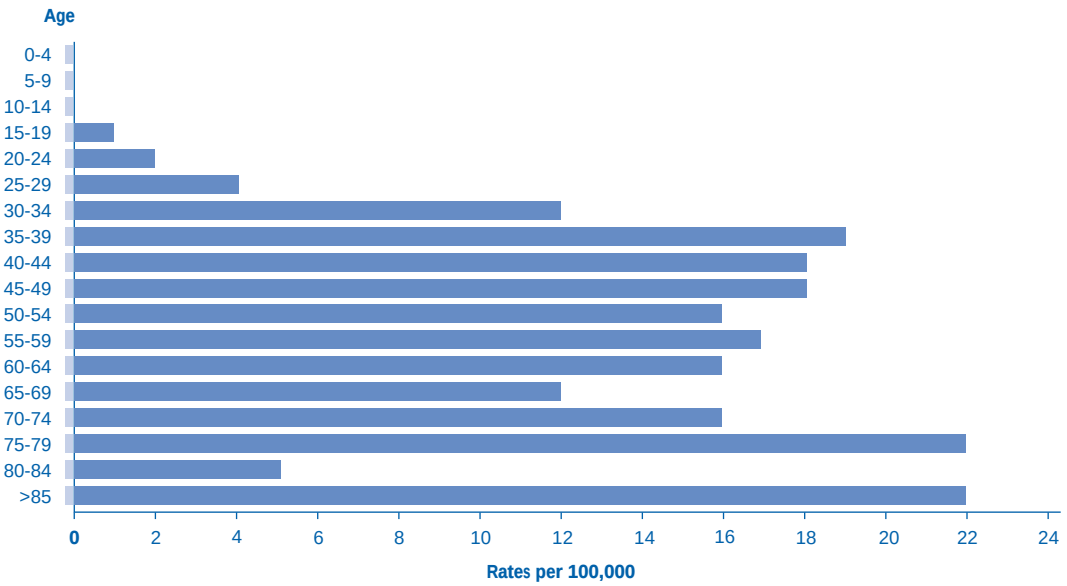


Figure 26 Average Annual Age Specific Rates (per 100,000), Cancer of the Cervix



Morphology & Stage

Two thirds of invasive cancers were squamous cell with about 20% adenocarcinomas.

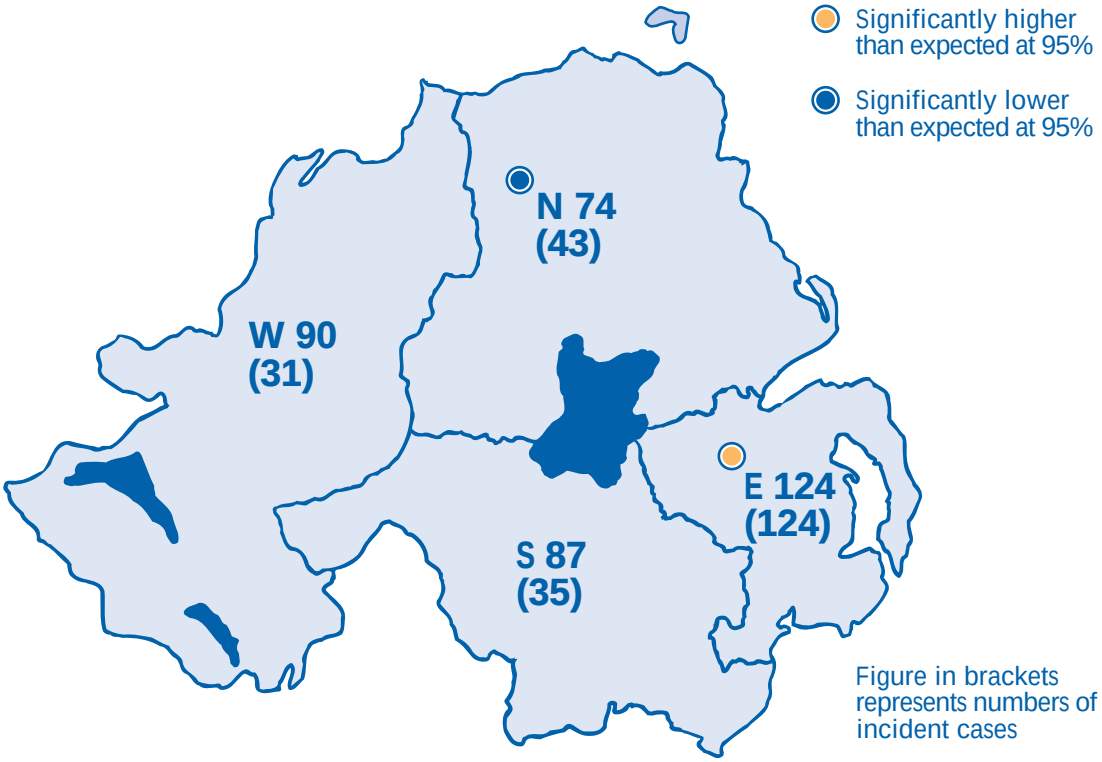
A quarter of invasive tumours were classed as microinvasive however 40% of invasive tumours had spread beyond the uterus at diagnosis (1995 data) - see Annex for fuller details.

Geographical Distribution

Variation across Health Boards/District Councils in the observed number of cases due to differences in the age structure of the underlying population has been accounted for by using Standardised Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit over what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

Standardised Incidence Ratios for cervical cancer revealed higher than expected numbers for the Eastern Board area while the Northern Board had lower than expected numbers - see Map 8.

Map 8. All Age Standardised Incidence Ratios (SIRs) by Health Board 1993-95, Cancer of the Cervix



Data Quality

Data quality was good with a falling level of Death Certificate Only (DCO) to 0% and an improving proportion of Microscopically Verified cases rising to 100%.

Comparison with other Countries

Table 34 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Cervix

Country	Cases	EASR (per 100,000)
Scotland	338	11.60
England & Wales	3050	10.40
Republic of Ireland	149	8.96
Northern Ireland	77	9.83

Standardised rates for cancer of the cervix were lower than Scotland, England & Wales but higher than the Republic of Ireland. The pattern was similar to that for the standardised mortality ratios (age 30-74 1989-1993) (ref: 1).

Comment

The major risk factor for development of pre-invasive or invasive carcinoma of the cervix is human papilloma virus infection. This outweighs other known risk factors such as a high parity (number of children), number of sexual partners, smoking history and socio-economic status (cervical cancer is more common in lower socio-economic groups). The vast majority (over 90%) of cases of cervical

cancer can be detected early by the use of the PAP smear which allows an examination of cells from the cervix.

In Northern Ireland there is a population based screening programme where females aged 20 to 64 are invited to have a cervical smear every five years. This was introduced in 1988 and replaced the community cervical screening programme which had begun in 1965.

Information from a regional audit project indicates that half of these cancers occur in the 30% of females who have never had a smear.

For Health Gain

- All eligible females should be encouraged to attend for a cervical smear.
- Measures to reduce smoking including special programmes targeted for females should be promoted.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- Participation in clinical trials which can advise on the best outcomes should be enhanced.
- The full range of palliative care services should be available for those with established disease.

Recommendation

Pathologically diagnosed CIN III (severe dysplasia) tumours should be consistently coded as, SNOMED code M80772.

Cancer of the Cervix

Table 35 Morphology of Invasive and *In Situ* Cancer of the Cervix

MORPHOLOGY DESCRIPTION	SNOMED		YEAR	
INVASIVE CANCERS	**Code**	**1993**	**1994**	**1995**
Microinvasive squamous carcinoma	M80763	15 (18.0%)	11 (14.7%)	19 (24.6%)
Squamous cell carcinoma	M80703	40 (48.2%)	36 (48.0%)	38 (49.4%)
Adenocarcinoma, NOS*	M81403	13 (15.6%)	5 (6.7%)	14 (18.2%)
Adenosquamous carcinoma	M85603	2 (2.4%)	7 (9.3%)	4 (5.2%)
Carcinoma, NOS	M80103	6 (7.2%)	9 (12.0%)	0 (0.0%)
Malignant tumour, NOS	M80003	3 (3.6%)	4 (5.3%)	2 (2.6%)
Carcinosarcoma	M89803	0 (0.0%)	1 (1.3%)	0 (0.0%)
Non microscopically verified (DCO)		4 (4.8%)	2 (2.7%)	0 (0.0%)
TOTAL INVASIVE		83	75	77
IN SITU CANCERS (Pathologically verified only)				
Severe Dysplasia (CIN III)	M74008	359 (86.3%)	420 (97.0%)	397 (97.1%)
Carcinoma *in situ*, NOS	M80102	54 (13.0%)	11 (2.5%)	7 (1.7%)
Adenocarcinoma *in situ*	M81402	3 (0.7%)	1 (0.2%)	5 (1.2%)
Squamous cell carcinoma *in situ* with questionable stromal invasion	M80762	0 (0%)	1 (0.2%)	0 (0%)
TOTAL *IN SITU* TUMOURS		416	433	409

* NOS = not otherwise specified

Comment

The commonest types of invasive cervical cancer were the squamous cell carcinomas accounting for an average of 67% when adding together the micro and fully invasive states. This was slightly lower than might be expected as normally squamous cell carcinomas can make up as much as 80% of the invasive cancers, but compared well with the 68% found in the Republic of Ireland.

The number of adenocarcinomas and adenosquamous carcinomas were between 18.0% and 23.4 % of the total invasive cancers. These are more difficult to detect using the standard smear test. The relatively high numbers may indicate a shift towards the adenocarcinomas which has already been noted in Northern Ireland (ref: 16). However, the numbers are small and a longer time period may be required to be confident of a trend. There were also an appreciable number of tumours described as “carcinoma, NOS” and “malignant tumour” which could also affect the ratio of squamous cell / adenocarcinoma cases.

The description of *in situ* cancers as “severe dysplasia” is by far the most common description the Registry obtained (93.5% of all cases) from pathology reports.

Table 36 Cancer of the Cervix, staging by year of diagnosis

Stage of Tumour	Nos. (% of Total) By Year		
	1993	1994	1995*
is Non invasive *in situ*	416 (83.4%)	433 (85.2%)	409 (84.2%)
1a Microinvasive	15 (3.0%)	11 (2.2%)	19 (4.0%)
1 Tumour confined to uterus	12 (2.4%)	26 (5.1%)	27 (5.6%)
2 Tumour invades beyond uterus	2 (0.4%)	6 (1.2%)	22 (4.5%)
3 Tumour extends to pelvic wall	2 (0.4%)	1 (0.2%)	5 (1.0%)
4 Tumour invades other organs	3 (0.6%)	0 (0%)	4 (0.8%)
X Tumour could not be assessed	45 (9.0%)	29 (5.7%)	0 (0%)
X Tumour not pathologically assessed (DCO)	4 (0.8%)	2 (0.4%)	0 (0%)
Total (includes invasive + *in situ*)	499	508	486

* Data for invasive cancers 1995 kindly supplied by Dr Glenda Mock

84.3% of all pathologically verified cases were of the *in situ* CIN III stage. In addition 2-4% of all cases, (or 14-25% of invasive tumours), were of the very early malignant microinvasive tumours. It is also clear from comparing the figures for 1993 and 1994 with Dr Mock's figures for 1995, the Registry was unable to adequately stage cervical cancers using the pathology reports alone. This was particularly so for tumours of stage 2 or above.

Cytological Screening

In addition to the pathologically verified severe dysplasia (CIN III), a large number of cytologically dyskaryosis cases were registered. These cases did not have a positive biopsy. The quality of information on these two categories was not investigated - see Table 37.

Table 37 Cytological Severe Dyskaryosis and Moderate Dyskaryosis Numbers by Registered Year.

	Year		
	1993	**1994**	**1995***
Severe dyskaryosis	330	261	343
Moderate dyskaryosis	551	816	845

15. Cancer of the Ovary

ICD-9 183

KEY FACTS

- On average 164 cases of cancer of the ovary were registered per year.
- 4% of female cancers.
- Half of cases aged over 62 years.
- Lower than expected numbers in Western Board.

On average for the period 1993-95, 164 ovarian cancers were registered each year. It was the fourth most commonly diagnosed cancer in females (excluding NMS). It accounts for almost 4% of all cancers. There were almost twice as many cases registered per year as deaths recorded.

Table 38 Summary Statistics

Year	1993	1994	1995
INCIDENCE			
Incident Cases	160	168	165
Crude Rate (per 100,000)	19.16	20.00	19.56
Cumulative Risk (0-74) (%)	1.54	1.64	1.70
WASR (per 100,000)	14.28	14.59	14.60
EASR (per 100,000)	19.09	19.73	19.61
% of All Cancers	3.62	3.90	3.84
DATA QUALITY			
Mortality : Incidence Ratio	0.58	0.54	0.60
% Death Certificate Only	5.00	1.79	0.61
% Microscopically Verified	76.88	75.00	73.84
MORTALITY			
Number of Deaths	92	90	99
Crude Rate (per 100,000)	11.02	10.71	11.73
Cumulative Risk (0-74) (%)	0.85	0.85	1.02
WASR (per 100,000)	7.18	6.73	8.21
EASR (per 100,000)	10.22	9.68	11.63
% of All Cancer Deaths	5.27	5.12	6.00

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Half of the cases were diagnosed in those over 62 years, 20% over the age of 75 years. Age specific rates characteristically tailed off in the mid/late 70 age group - see Figures 27 and 28.

Figure 27 Age Distribution of New Cases 1993-95, Cancer of the Ovary

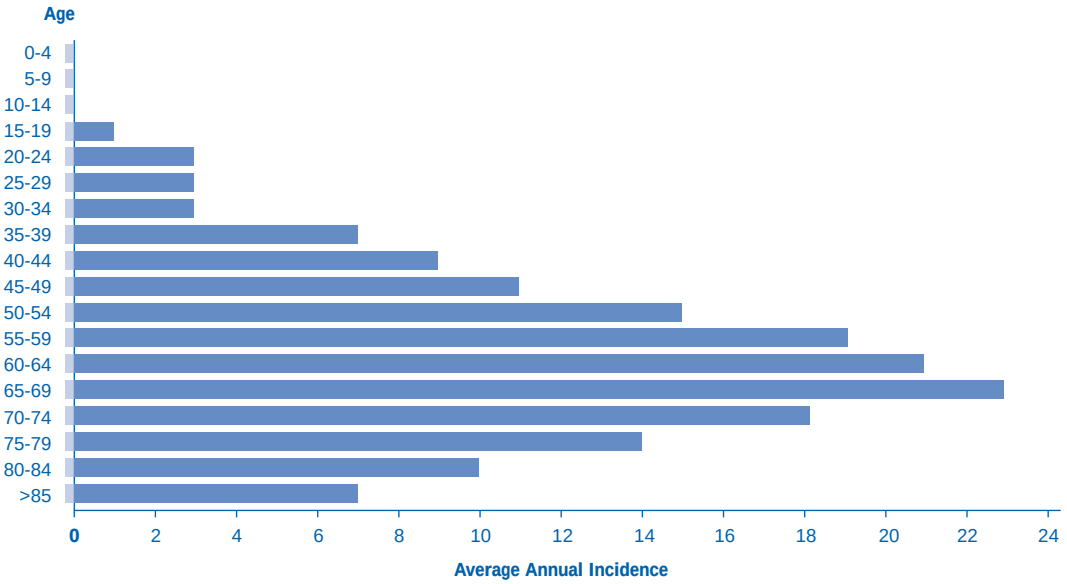
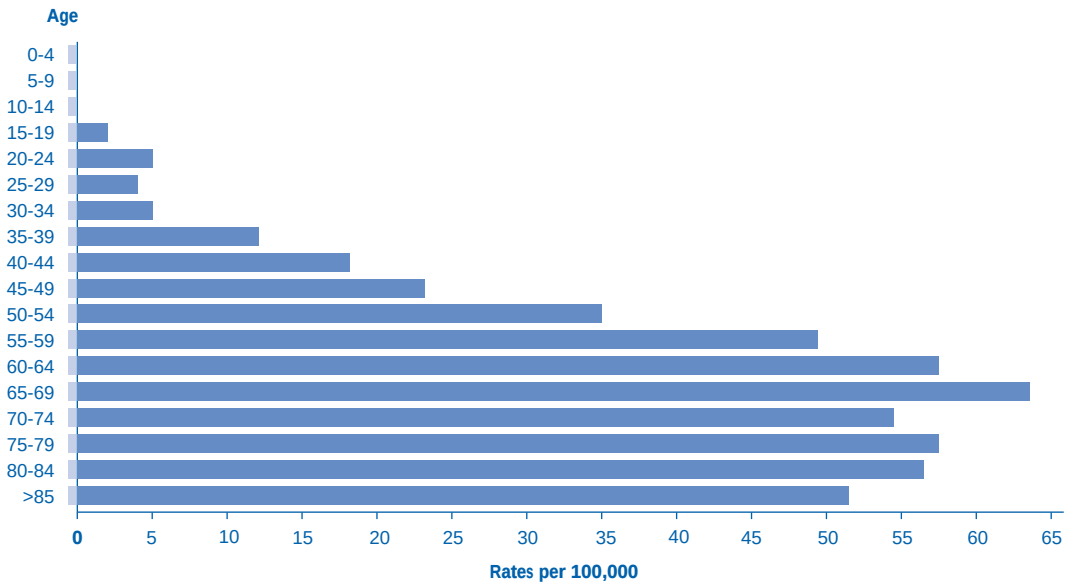


Figure 28 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Ovary



Morphology

On average, during the period 1993-95, 86% of tumours of the ovary had Microscopic Verification. Papillary mucinous cystadenocarcinoma, endometrioid carcinoma, serous cystadenocarcinoma, adenocarcinoma and low malignancy tumour each made up about 10% of the total tumours. Borderline tumours of the ovary are considered, by IARC rules, to be fully malignant and appear as such in the figures.

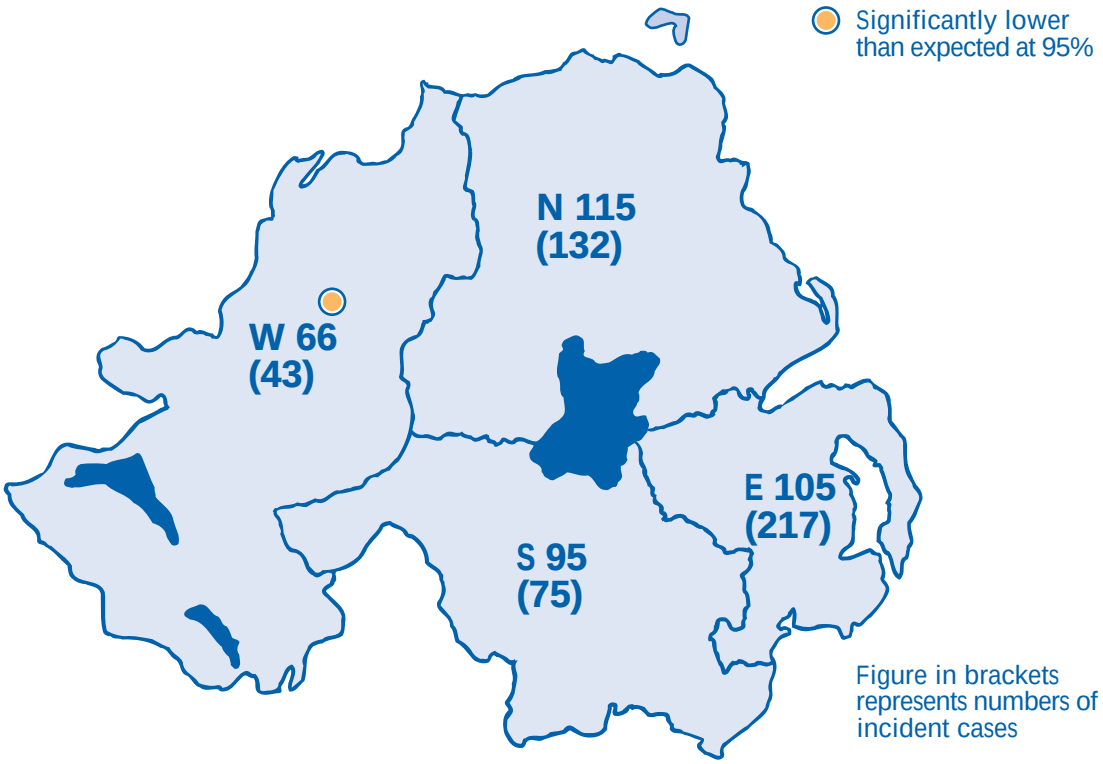
Geographical Distribution of Disease

Variation across Health Boards/District Councils in the observed number of cases due to differences in the age structure of the underlying population has been accounted for by using Standardised Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit over

what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

Numbers were lower than expected in the Western Health Board area in older females only - see Map 9.

Map 9. All Age Standardised Incidence Ratios (SIRs) by Health Board 1993-95, Cancer of the Ovary



Data Quality

This improved with a falling level of Death Certificate Only cases (DCOs) to less than 1% and Microscopically Verified cases constituting 74% of the total.

Comparison with other Countries

Table 39 provides comparative figures for the numbers of cases and European Age Standardised Rates for the year 1995.

Table 39 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Ovary

Country	Cases	EASR (per 100,000)
Scotland	508	15.80
England & Wales	5300	16.80
Republic of Ireland	332	19.8
Northern Ireland	165	19.60

Rates for ovarian cancer were similar to the Republic of Ireland but higher than rates for Scotland and England & Wales.

Comment

Ovarian cancer occurs most frequently in white affluent countries, especially North America and North West Europe. There is a reduced risk among Japanese females. In most European countries the incidence and mortality was either increasing or stable between 1975 and 1988, though the mortality rates for both Scotland and England & Wales showed a modest decline of 0.2% and 1.3% respectively.

The cause of ovarian cancer is poorly understood. A slight familial risk has been shown but environmental factors are thought to be more important. Two protective factors have been consistently demonstrated: the number of pregnancies and use of the combined oral contraceptive. Pregnancy, especially two or more children, has been shown to be protective against ovarian cancer. Oral contraceptive use, for as long as five years, may reduce the risk of ovarian cancer by approximately half.

Because ovarian cancer is often asymptomatic in its early stages, most patients have widespread disease at the time of diagnosis, consequently prognosis is generally poor.

Research is ongoing to identify markers for this tumour and to develop a screening test.

For Health Gain

- Ensure symptoms are investigated as early as possible.
- Participation in clinical trials, which can advise on the best outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

16. Cancer of the Prostate

ICD-9 185

KEY FACTS

- On average 450 cancers of the prostate were registered per year.
- Half of cases were diagnosed over 75 years of age.
- 11% of male cancers.
- Second most commonly diagnosed male cancer (excluding NMS).
- Higher than expected numbers in Southern Health Board area.

Prostate cancer was the second most commonly diagnosed cancer in males (excluding NMS). On average there were, 450 cases of prostate cancer registered each year 1993-95 representing about 11% of all male cancers. There were twice as many cases of prostate cancer registered as deaths, indicating moderate survival for the disease.

Table 40 Summary Statistics

Year	1993	1994	1995
INCIDENCE			
Incident Cases	462	443	445
Crude Rate (per 100,000)	57.99	55.25	55.26
Cumulative Risk (0-74) (%)	3.78	4.02	3.62
WASR (per 100,000)	39.39	37.16	36.49
EASR (per 100,000)	65.24	60.99	61.37
% of All Cancers	11.00	10.40	10.96
DATA QUALITY			
Mortality : Incidence Ratio	0.39	0.48	0.49
% Death Certificate Only	6.06	2.94	2.47
% Microscopically Verified	76.62	77.65	79.33
MORTALITY			
Number of Deaths	181	211	219
Crude Rate (per 100,000)	22.72	26.32	27.20
Cumulative Risk (0-74) (%)	0.98	1.31	1.23
WASR (per 100,000)	14.53	17.28	17.46
EASR (per 100,000)	25.71	29.97	31.26
% of All Cancer Deaths	9.61	11.36	11.86

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Cancer of the prostate mainly occurred in older males - half of the cases are diagnosed over the age of 75 years - see Figure 29. Nearly 12% occured in those over 85 years of age. The age specific rates rose steadily after the age of 60 and peaked in the very elderly (85 years +) - see Figure 30.

Figure 29 Age Distribution of New Cases 1993-95, Cancer of the Prostate

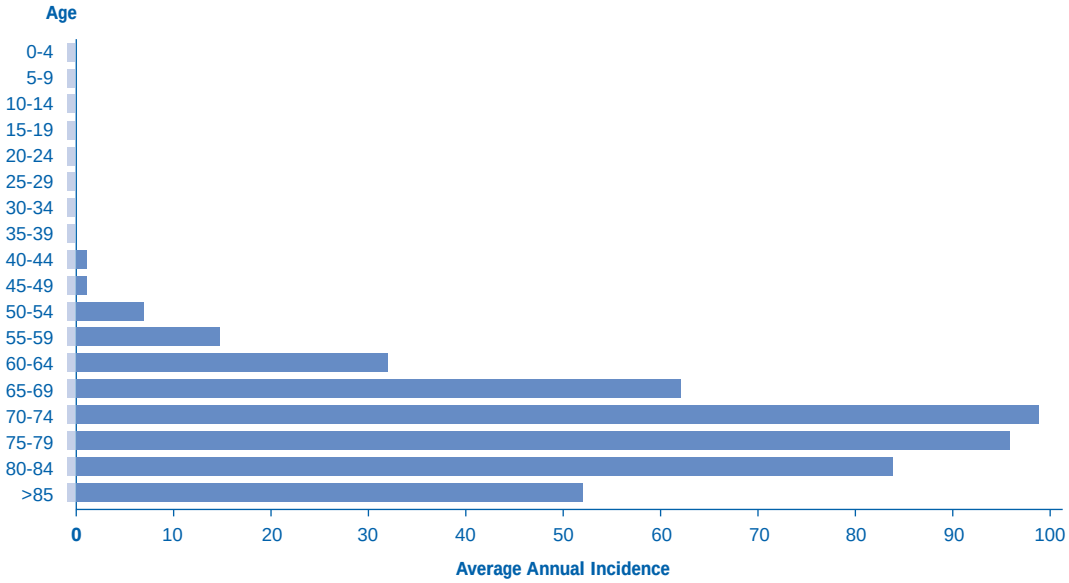
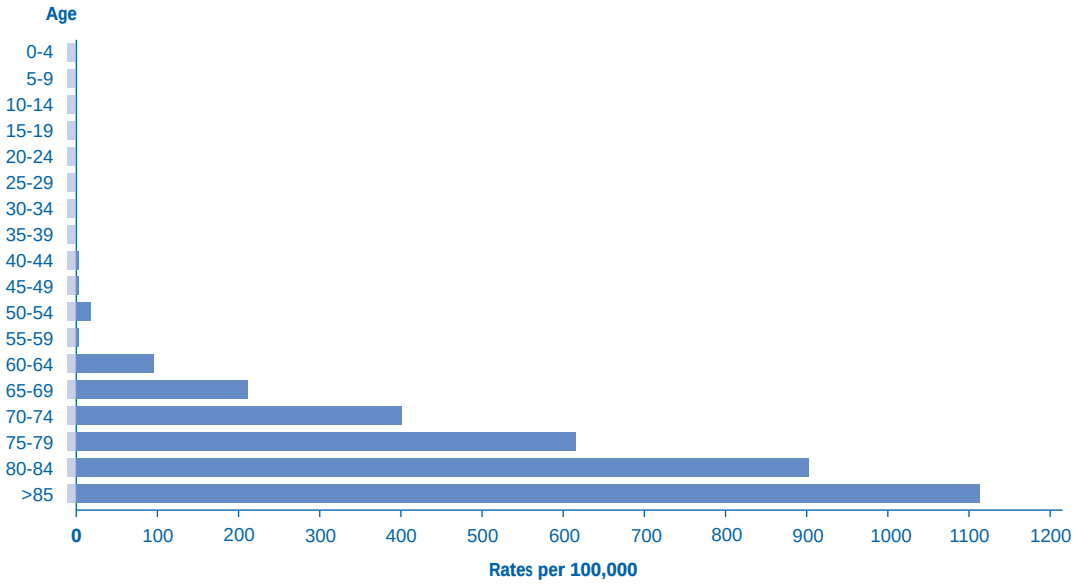


Figure 30 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Prostate



Morphology

Over 20% of tumours did not have Microscopic Verification. Almost 70% of tumours were classified as adenocarcinoma with about 5% carcinomas not otherwise specified.

Note: Prostate Transitional Cell Carcinomas were reassigned to their tissue of origin, the urethra.

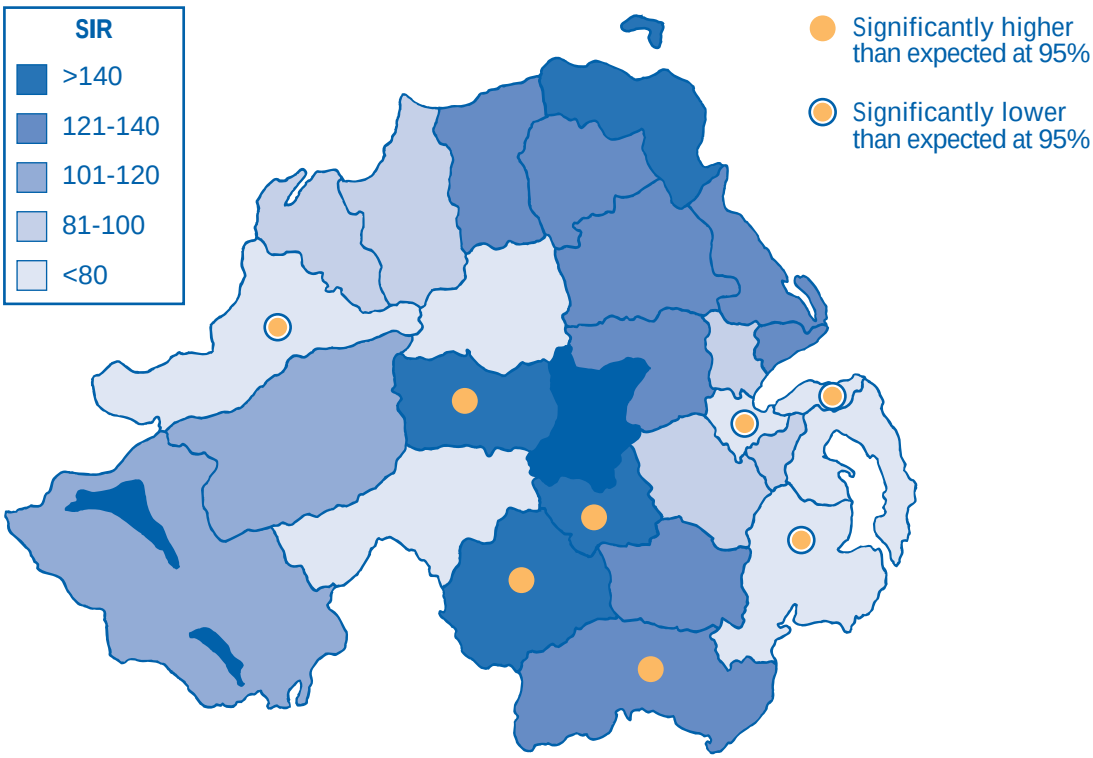
Geographical Distribution

Variation across District Councils/Health Boards in the observed number of cases due to differences in the age structure of the underlying population has been accounted for by using Standardised Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit over what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

The Southern Board had higher than expected numbers of prostate cancers.

Males from the District Council areas of Armagh, Craigavon, Cookstown and Newry & Mourne had higher than expected numbers of prostate cancer while males from Belfast, Down, North Down and Strabane had lower than expected numbers - see Map 10.

Map 10. All Age Standardised Incidence Ratios (SIRs) by District Council 1993-95, Cancer of the Prostate



Data Quality

Data Quality improved over time. Only 2.5% of registrations came from Death Certificates in later years when almost 80% were Microscopically Verified.

Comparison with other Countries

Table 41 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995.

Table 41 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Prostate

Country	Cases	EASR (per 100,000)
Scotland	1703	63.80
England & Wales	16700	56.10
Republic of Ireland	1083	68.89
Northern Ireland	445	61.37

Northern Ireland levels of prostate cancer were higher than in England & Wales while lower than those in Scotland and the Republic of Ireland.

Comment

The cause of prostatic cancer is not well understood. There is evidence that endocrine/hormonal factors play a significant part. There are also marked geographical variations and the disease is much less common in Asian populations than other races e.g. Afro-Americans. However, environmental factors are thought to be much more important than genetic ones as migrant studies have shown that Japanese males who have migrated to Hawaii developed, within the space of one or two generations, the much higher disease rates of the adopted country.

Prostatic cancer is a very common tumour which responds well to treatment even when widespread and may be cured when localised. The issue of screening asymptomatic prostatic cancer is still controversial. Rectal examination is not particularly sensitive while ultrasound and/or biochemical markers such as Prostate Specific Antigen (PSA) are associated with high false positive rates and may identify some tumours which will not threaten the patient's health. There are also considerable costs both to the Health Service and to the patient associated with the extra work of investigation and treatment of such tumours which militates against mass population screening.

A multi-centre trial in the USA is presently under way to test the value of early detection in reducing mortality. The use of PSA testing has resulted in increased detection of slow growing disease which is unlikely to cause serious health problems. Prostate Specific Antigen (PSA) testing while useful in monitoring the effect of the treatment for established disease, is not applicable for use as a population screening test. Selective application of PSA testing may, in part, be responsible for the observed geographical variation in Northern Ireland.

For Health Gain

- Male health, including raised awareness of the importance of early investigation of symptoms, should be a focus for a general health education programme.
- Participation in clinical trials, which can advise on the best outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

17. Cancer of the Testis

(ICD-9 186)

KEY FACTS

- On average 47 cases of cancer of the testis were registered per year.
- Excellent survival under modern treatment regimes.
- A disease of young males.
- Half of cases occurred in those under 33 years of age.
- Most common cancer in males aged 25-34 years.
- No significant variation by area.

There were an average of 47 cancers of the testis registered each year 1993-95. It was the sixteenth most commonly diagnosed cancer accounting for about 1% of all male cancers. Incidence appeared to fall but the numbers were small and the time period studied short. Survival was very good with deaths representing only 8% of registrations reflecting the major advances in the treatment of this cancer.

Table 42 Summary Statistics

Year	1993	1994	1995
INCIDENCE			
Incident Cases	54	47	41
Crude Rate (per 100,000)	6.78	5.86	5.09
Cumulative Risk (0-74) (%)	0.48	0.42	0.36
WASR (per 100,000)	6.18	5.41	4.75
EASR (per 100,000)	6.81	5.76	4.97
% of All Cancers	1.28	1.09	1.01
DATA QUALITY			
Mortality : Incidence Ratio	0.05	0.10	0.09
% Death Certificate Only	1.85	0.00	0.00
% Microscopically Verified	98.15	100	92.68
MORTALITY			
Number of Deaths	3	5	4
Crude Rate (per 100,000)	0.38	0.62	0.50
Cumulative Risk (0-74) (%)	0.03	0.04	0.03
WASR (per 100,000)	0.35	0.54	0.48
EASR (per 100,000)	0.37	0.68	0.49
% of All Cancer Deaths	0.16	0.27	0.22

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Cancer of the testis is a disease of young males. Half of the cases of cancer of the testis were under 33 years of age - 1 in 7 was less than 25 years of age. The peak age of incidence was 20-34 years at which age it was the commonest cancer in males - see Figures 31 and 32.

Figure 31 Age Distribution of New Cases 1993-95, Cancer of the Testis

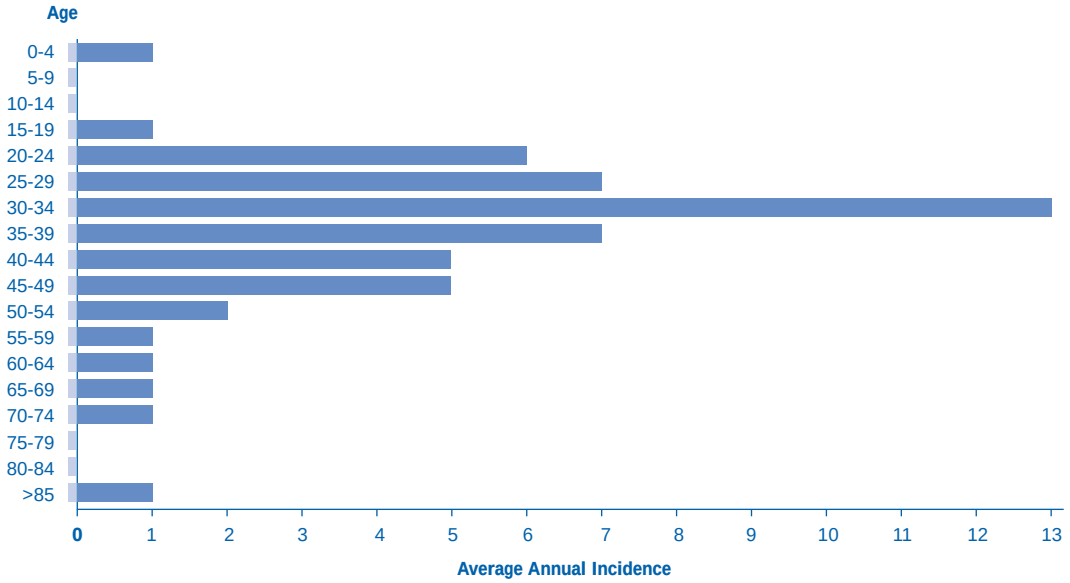
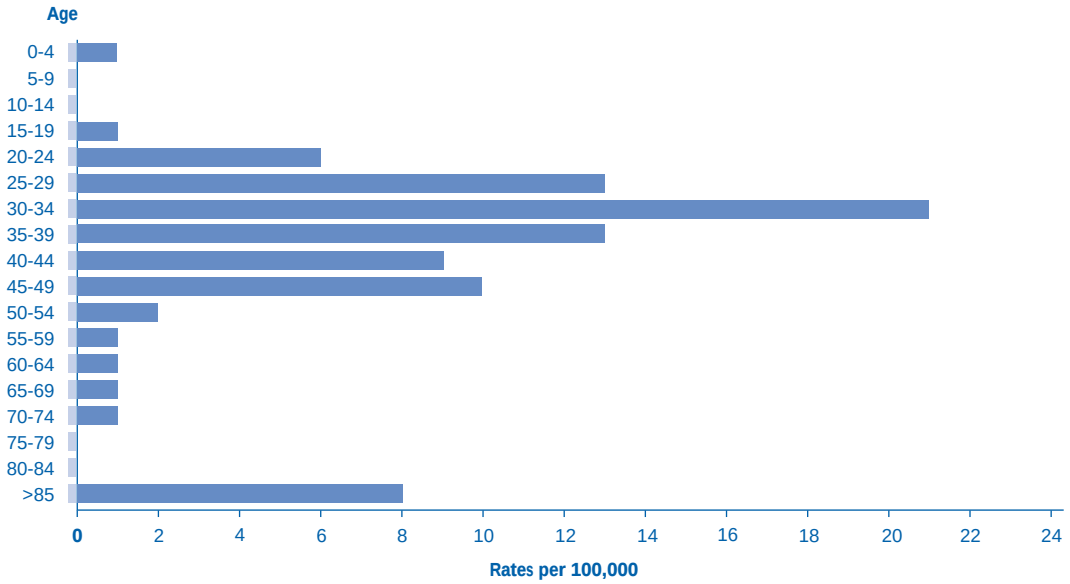


Figure 32 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Testis



Morphology

Only 3% of tumours did not have Microscopic Verification. The majority, (63%), were diagnosed as seminomas which are of low malignant potential - patients with this form have a good prognosis. Malignant teratomas were the other major group (21%). Those of undifferentiated type, (7%) represent a more aggressive form of the disease.

Geographical Distribution of Disease

No significant variation at Health Board level was found for any age group.

Comparison with other Countries

Table 43 provides comparative figures for the numbers of cases and European Age Standardised Rates for the year 1995.

Table 43 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Testis

Country	Cases	EASR (per 100,000)
Scotland	171	6.40
England & Wales	1170	4.50
Republic of Ireland	89	4.90
Northern Ireland	41	4.97

The rates for testicular cancer were very similar to the Republic of Ireland and were lower than in Scotland while higher than in England & Wales.

Comment

Most western populations, including Scotland and England & Wales, have recorded an increase in incidence associated, in part, with better detection. As the Northern Ireland numbers are small, it is difficult to assess whether the seeming downward trend in incidence is actually real. The low level of deaths is probably due to the dramatic improvement in survival brought about by Cisplatin drug treatment introduced after the 1970s.

The association between undescended testis and cancer has been known for some time. The risk of testicular cancer in males with undescended testis is thought to be about ten times higher than that of the general population. Interestingly, in cases where only one testis is undescended, this increased risk is observed in both testes suggesting common causal factors.

For Health Gain

- Men should be encouraged to perform regular self-examination to detect any testicular change.
- Male health, including raised awareness of the importance of early investigation of symptoms (including lumps), should be a focus for a general health education programme.
- Clinical trials continue to identify regimens which will enhance survival.

18. Cancer of the Bladder

ICD-9 188

KEY FACTS

- On average 203 cases of cancer of the bladder were registered per year.
- 2 in 3 cases occur in males.
- 3% male cancers, 1% female cancers.
- No significant variation by area.

On average, over the 1993-95 period, 203 cases of bladder cancer were registered each year. Over two thirds (68%) of cases occurred in males. Bladder cancer was the seventh most commonly diagnosed cancer in males, thirteenth in females and accounted for over 3% of all male cancers and over 1% of all female cancers. The number of cases diagnosed was about 2.5 times the number of deaths registered.

Table 44 Summary Statistics

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	152	129	145	53	60	70
Crude Rate (per 100,000)	19.08	16.09	18.01	6.35	7.14	8.30
Cumulative Risk (0-74) (%)	1.64	1.37	1.50	0.42	0.36	0.60
WASR (per 100,000)	14.20	11.71	13.02	3.23	3.25	4.72
EASR (per 100,000)	21.90	18.29	19.73	4.96	5.20	6.93
% of All Cancers	3.60	3.00	3.57	1.20	1.39	1.63
DATA QUALITY						
Mortality : Incidence Ratio	0.40	0.40	0.52	0.53	0.53	0.46
% Death Certificate Only	2.63	0.00	1.38	1.89	3.33	2.86
% Microscopically Verified	88.82	82.95	73.79	83.02	75.00	70.00
MORTALITY						
Number of Deaths	61	52	75	28	32	34
Crude Rate (per 100,000)	7.66	6.49	9.31	3.35	3.81	4.03
Cumulative Risk (0-74) (%)	0.58	0.40	0.64	0.20	0.14	0.20
WASR (per 100,000)	5.48	4.23	6.27	1.69	1.51	1.81
EASR (per 100,000)	8.85	7.12	10.47	2.68	2.54	2.97
% of All Cancer Deaths	3.24	2.80	4.06	1.61	1.82	2.06

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

This disease predominantly occurs in late adulthood - age specific rates in both sexes continually rose after about 60 years, peaking in the oldest age groups - see Figures 33 and 34.

Figure 33 Age Distribution of New Cases 1993-95, Cancer of the Bladder

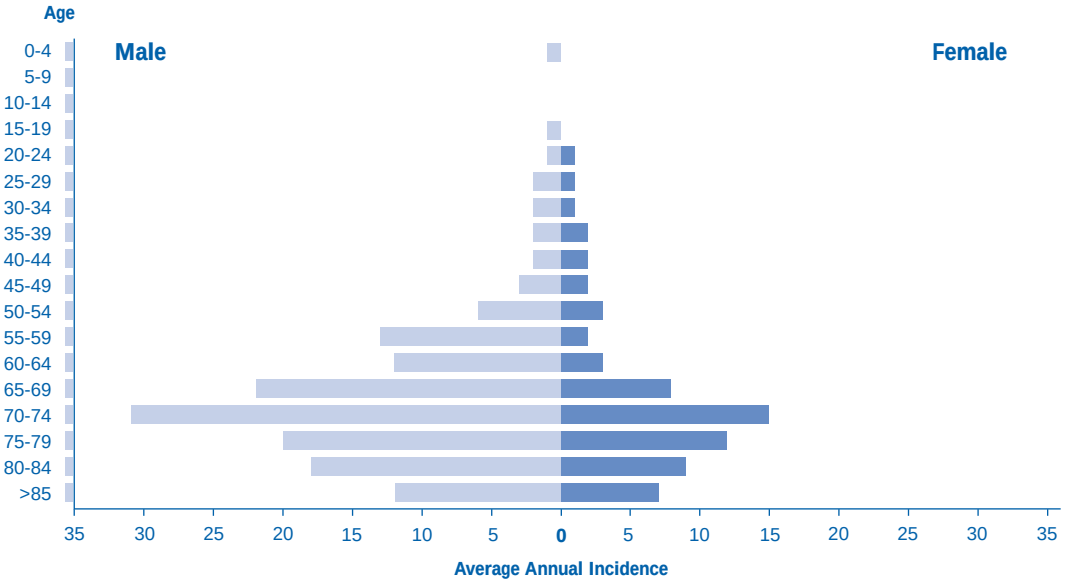
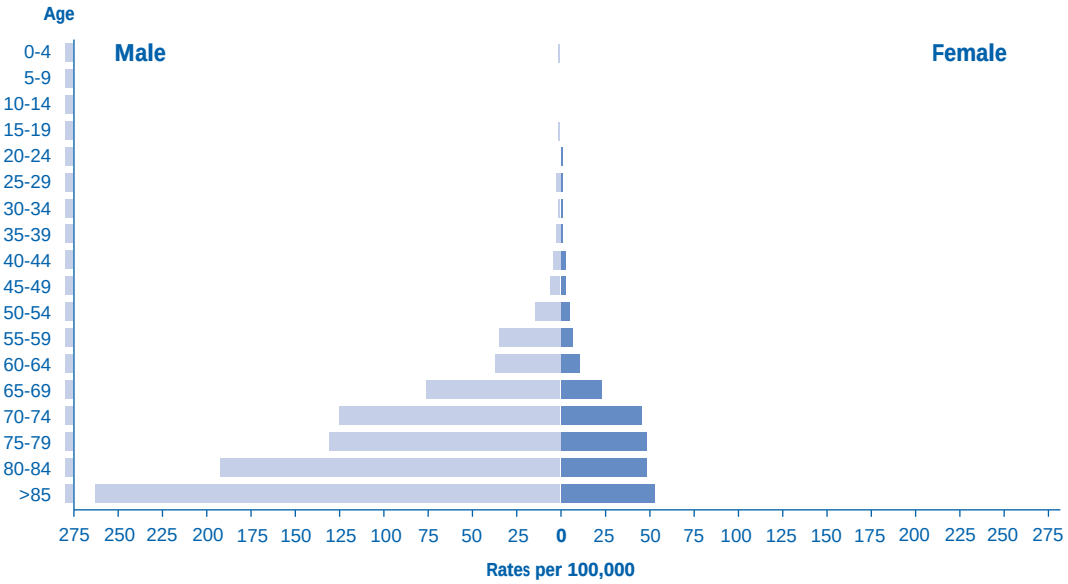


Figure 34 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Bladder



Geographical Distribution of Disease

No significant variation at Health Board level was found for any age group for either sex.

Data Quality

The level of Death Certificate Only (DCO) registration was low at 2%. However, the numbers Microscopically Verified were also low. This is under investigation.

Comparison with other Countries

Table 45 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995.

Table 45 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Bladder

	Males		Females	
Country	**Cases**	**EASR (per 100,000)**	**Cases**	**EASR (per 100,000)**
Scotland	**929**	**35.40**	**454**	**12.10**
England & Wales	**8280**	**29.00**	**3290**	**8.00**
Republic of Ireland	**337**	**22.39**	**109**	**5.73**
Northern Ireland	**145**	**19.73**	**70**	**6.93**

The rates for Northern Ireland were lower for males than in Scotland, England & Wales and the Republic of Ireland.

In females the rate for the Republic of Ireland was lower than that for Northern Ireland.

Comment

Cigarette smoking is a recognised risk factor for bladder cancer, though the population-attributable risk is lower than that for lung cancer: approximately 45% for males and 30% for females. Some industrial processes are associated with increased risk of bladder cancer, especially those associated with the use of aromatic amines as in the manufacture of dyes, pigments and rubber etc. In some tropical countries infection with Schistosomiasis Haematobium increases the risk of bladder cancer of the squamous cell variety.

For Health Gain

- Actions to reduce smoking levels include:
  - Reducing the numbers who start to smoke by banning advertising, increasing taxation, reducing availability of tobacco products and enhancing health education.
  - Helping those who smoke to stop.
- Increased awareness among the population about the importance of early investigation of symptoms.
- Participation in clinical trials, which can advise on the best outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

Annex

Bladder Cancer

Histological Types

Pathologists can tell something about how a tumour is likely to behave by looking at the type of tissue the tumour arises from and in the case of bladder tumours, the shape of the tumour is also important. This description provides a number of types or morphologies - see Table 46.

Table 46 Cancer of the Bladder, Morphology by year of diagnosis

Morphology Description	SNOMED Code	Nos. (% of Total) by year		
MALES		**1993**	**1994**	**1995**
INVASIVE CANCERS				
Transitional cell carcinoma	M81203	86 (56.6%)	72 (55.8%)	65 (44.8%)
Papillary transitional cell ca.	M81303	21 (13.8%)	19 (14.7%)	16 (11.0%)
Carcinoma, NOS*	M80103	7 (4.6%)	8 (6.2%)	7 (4.8%)
Squamous cell carcinoma	M80703	1 (0.7%)	4 (3.1%)	3 (2.1%)
Adenocarcinoma	M81403	11 (7.2%)	2 (1.6%)	7 (4.8%)
Other Morphologies		2 (1.3%)	2 (1.6%)	2 (1.4%)
Non microscopically verified		24 (15.8%)	22 (17.1%)	45 (31.0%)
TOTAL INVASIVE CANCERS		152	129	145
NON INVASIVE CANCERS				
Urothelial papilloma	M81201	122 (89.7%)	109 (92.3%)	97 (95.1%)
Transitional cell ca. *in situ*	M81202	9 (6.6%)	6 (5.1%)	2 (2.0%)
Carcinoma *in situ*	M80102	5 (3.7%)	3 (2.5%)	3 (2.9%)
TOTAL NON INVASIVE CANCERS		136	118	102
		Nos. (% of Total) by year		
FEMALES		**1993**	**1994**	**1995**
INVASIVE CANCERS				
Transitional cell carcinoma	M81203	22 (41.5%)	24 (40.0%)	35 (50.0%)
Papillary transitional cell ca.	M81303	13 (24.5%)	7 (11.7%)	5 (7.1%)
Carcinoma, NOS	M80103	3 (5.7%)	6 (10.0%)	4 (5.7%)
Squamous cell carcinoma	M80703	2 (3.8%)	4 (6.7%)	5 (7.1%)
Adenocarcinoma	M81403	3 (5.7%)	2 (3.3%)	0 (0.0%)
Other Morphologies		1 (1.9%)	0 (0.0%)	1 (1.4%)
Non microscopically verified		9 (17.0%)	17 (28.3%)	20 (28.6%)
TOTAL INVASIVE CANCERS		53	60	70
NON INVASIVE CANCERS	M81201	35 (100%)	45 (97.8%)	36 (92.3%)
Transitional cell ca. *in situ*	M81202	0 (0.0%)	1 (2.2%)	3 (7.7%)
Carcinoma *in situ*	M80102	0 (0.0%)	0 (0.0%)	0 (0.0%)
TOTAL NON INVASIVE CANCERS		35	46	39

*NOS - not otherwise specified

Comment

The Registry receives electronic notification of bladder cancer patients from the PAS (Patient Administration System) and Pathology reports. Both sources use a coded form which does not distinguish invasive carcinomas and non-invasive carcinomas. Due to the inclusion of non-invasive tumours, bladder cancer rates would have been considerably higher than expected. The pathology reports for all urinary bladder cancers were examined by Tumour Verification Officers (TVOs) and if a carcinoma was described as being “non-malignant” or “non-invasive”, it was recoded to be uncertain or a borderline malignancy (ICD-9 code of 236.7) and assigned the SNOMED code M81201. This is in agreement with international standards for this site (AJCC Cancer Staging Manual). (ref: 17)

Stage

When examining the pathology reports for the presence or absence of fully malignant tumours, pathologists sometimes mentioned the stage of the tumour. Where this was the case, the stage was recorded. It was also possible to translate the non-invasive, non-malignant tumours to being pathological stage pTa and the flat , *in situ* tumours to being pTis - see Table 47.

Table 47 Cancer of the Bladder Staging by Year of Diagnosis

pT Stage:
MALES

		Nos. (% of Total) by year		
		1993	1994	1995
pTa	Non-invasive, non-malignant	122 (42.3%)	109(44.1%)	97(39.7%)
pTis	Flat or in situ tumour	14 (4.9%)	9 (3.6%)	5 (2.0%)
pT1	Tumour invades connective tissue	8 (2.8%)	6 (2.4%)	4 (1.6%)
pT2	Tumour invades superficial muscle	6 (2.1%)	12 (4.8%)	7 (2.8%)
pT3	Tumour invades deep muscle	3 (1.0%)	1(0.4%)	3 (1.2%)
pT4	Tumour invades other organs	0 (0.0%)	0 (0.0%)	0 (0.0%)
pTX	Tumour could not be assessed	135 (46.9%)	110(44.5%)	131(53.0%)
TOTAL INVASIVE + NON-INVASIVE		288	247	247

FEMALES

		Nos. (% of Total) by year		
		1993	1994	1995
pTa	Non-invasive, non-malignant	35 (39.8%)	45 (42.5%)	36 (33.0%)
pTis	Flat or in situ tumour	0 (0.0%)	1 (0.9%)	3 (2.8%)
pT1	Tumour invades connective tissue	2 (2.3%)	2 (1.9%)	2 (1.8%)
pT2	Tumour invades superficial muscle	4 (4.5%)	7 (6.6%)	6 (5.5%)
pT3	Tumour invades deep muscle	2 (2.3%)	2 (1.9%)	2 (1.8%)
pT4	Tumour invades other organs	0 (0.0%)	0 (0.0%)	0 (0.0%)
pTX	Tumour could not be assessed	45 (51.1%)	49 (46.2%)	60 (55.0%)
TOTAL INVASIVE + NON-INVASIVE		88	106	109

Just over 40% of all bladder tumours were of the non invasive form of the cancer. Patients with this type of tumour have an extremely good prognosis. Forty-eight percent of all bladder tumours were not staged.

Grade

The grade of the tumour is a measurement made by the pathologist. The higher the grade of the tumour, the more abnormal it looks from the tissue it arises from. Tumours of a higher grade tend to behave more aggressively than those of a lower grade - Table 48 provides detail.

Table 48 Cancer of the Bladder, Morphological Grade by Year 1993-95

Grade:		Nos. (% of Total) By Year		
		1993	1994	1995
WHO Grade 1	Well Differentiated	53 (18.4%)	54 (21.9%)	39 (15.8%)
WHO Grade 2	Moderate Differentiation	130 (45.1%)	111 (44.9%)	97 (39.3%)
WHO Grade 3	Poor Differentiation	95 (33.0%)	79 (32.0%)	81(32.8%)
	Ungraded	10 (3.5%)	3 (1.2%)	30 (12.1%)

Grade & Stage:	Nos. (% Total for that Grade)		
	Grade1	Grade2	Grade3
Stage			
pTa	136 (93.1%)	265 (78.4%)	26 (10.1%)
pTis	0 (0.0%)	9 (2.6%)	10 (3.9%)
pT1	0 (0.0%)	9 (2.6%)	15 (5.8%)
pT2	0 (0.0%)	1 (0.3%)	37 (14.5%)
pT3	0 (0.0%)	1 (0.3%)	9 (3.5%)
pTX	10 (6.8%)	53 (15.6%)	158 (62.0%)
TOTAL Graded	146	338	255

Of the total 1,085 bladder tumours 739 (68.1%) were graded. The lower the grade the more likely a tumour is to be a lower stage and the patient to have a better prognosis. Of the grade 1 tumours 73.1% were of the “non-invasive” pTa type, although it should be noted that 10.1% of the grade 3 tumours were also pTa. Similarly, the higher staged tumours, pT2 and pT3 were almost entirely grade 3 tumours.

Recommendation

Clear distinction should be made between invasive and non-invasive bladder tumours.

19. Cancer of the Kidney

ICD-9 189

KEY FACTS

- On average 174 cancers of the Kidney were registered per year.
- 2 in 3 cases occurred in males.
- 3% male cancers.
- 1% female cancers.
- Lower than expected numbers of males in Western Board area and higher in the Southern Board area.
- Half of cases over age 68 years.

On average, for the period 1993-95, 174 cancers of the kidney were registered each year. Almost two thirds of these (64%) were diagnosed in males. Kidney cancer was the eleventh most commonly diagnosed cancer in males, fourteenth in females. It accounted for almost 3% of male cancers and just over 1% of female cancers. Death certifications were about a third of the number of incident cases.

Table 49 Summary Statistics

	MALES			FEMALES		
Year	**1993**	**1994**	**1995**	**1993**	**1994**	**1995**
INCIDENCE						
Incident Cases	112	125	99	72	47	68
Crude Rate (per 100,000)	14.06	15.59	12.29	8.62	5.60	8.06
Cumulative Risk (0-74) (%)	1.41	1.48	1.19	0.65	0.43	0.69
WASR (per 100,000)	10.78	12.42	9.85	5.97	3.49	5.33
EASR (per 100,000)	15.55	17.63	13.80	8.06	5.00	7.58
% of All Cancers	2.65	2.91	2.44	1.6	1.09	1.58
DATA QUALITY						
Mortality : Incidence Ratio	0.38	0.30	0.48	0.39	0.47	0.35
% Death Certificate Only	6.25	0.00	1.01	4.17	0.00	1.47
% Microscopically Verified	78.57	84.8	77.78	83.33	68.09	77.94
MORTALITY						
Number of Deaths	42	38	48	28	22	24
Crude Rate (per 100,000)	5.27	4.74	5.96	3.35	2.62	2.84
Cumulative Risk (0-74) (%)	0.47	0.48	0.53	0.27	0.19	0.19
WASR (per 100,000)	3.87	3.85	4.53	2.24	1.73	1.61
EASR (per 100,000)	5.81	5.41	6.60	3.01	2.41	2.39
% of All Cancer Deaths	2.22	2.04	2.60	1.61	1.25	1.45

WASR = Rates standardised for age to the World standard population
EASR = Rates standardised for age to the European standard population

Age Profile

Kidney cancer occured mainly in mid to late adulthood (after 50 years), half of the cases occurred in both males and females over the age of 68 years. Peak age specific rates occurred in the 75-79 age group in females and the 85+ age group in males - see Figures 35 and 36.

Figure 35 Age Distribution of New Cases 1993-95, Cancer of the Kidney

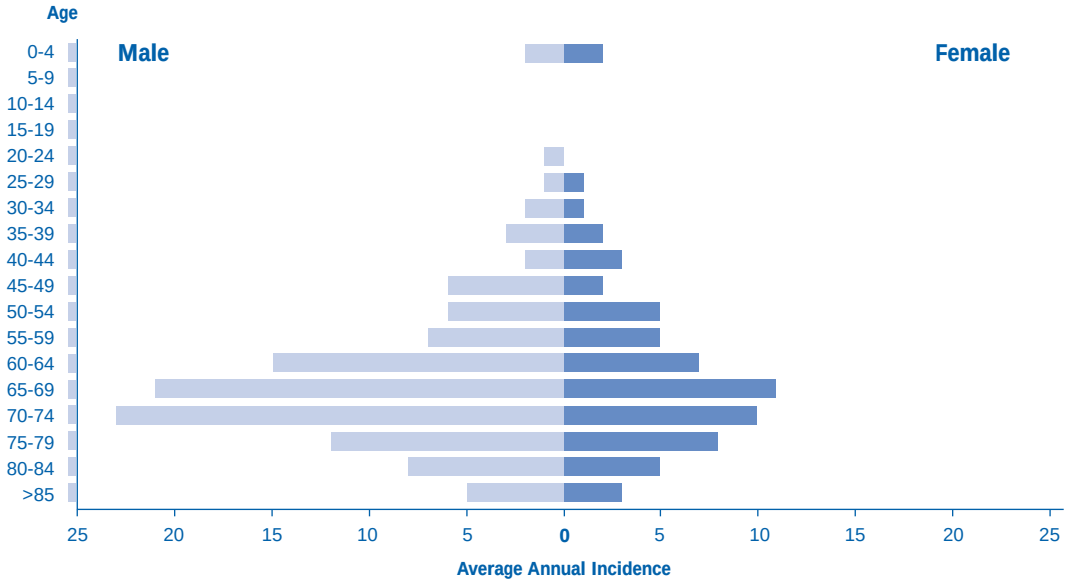
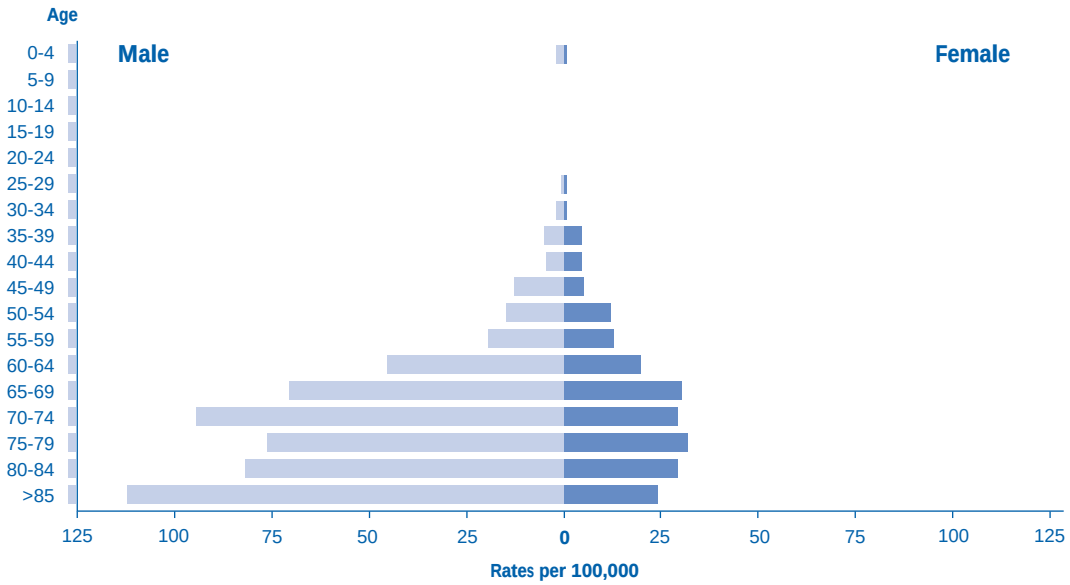


Figure 36 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Kidney



Morphology

About 20% of cases did not have Microscopic Verification. The most common morphology recorded was renal cell carcinoma accounting for 38.4% of all tumours at these sites. The next commonest was transitional cell carcinoma, the slightly higher percentage in these sites in males (20%) than females (13%) may be due to transitional cell carcinoma of the prostate being recoded to urethra. Clear cell carcinoma accounted for about 3% of tumours. Wilm's tumour, a childhood cancer, occurred in less than 1% of cases, more commonly in boys than girls.

Geographical Distribution

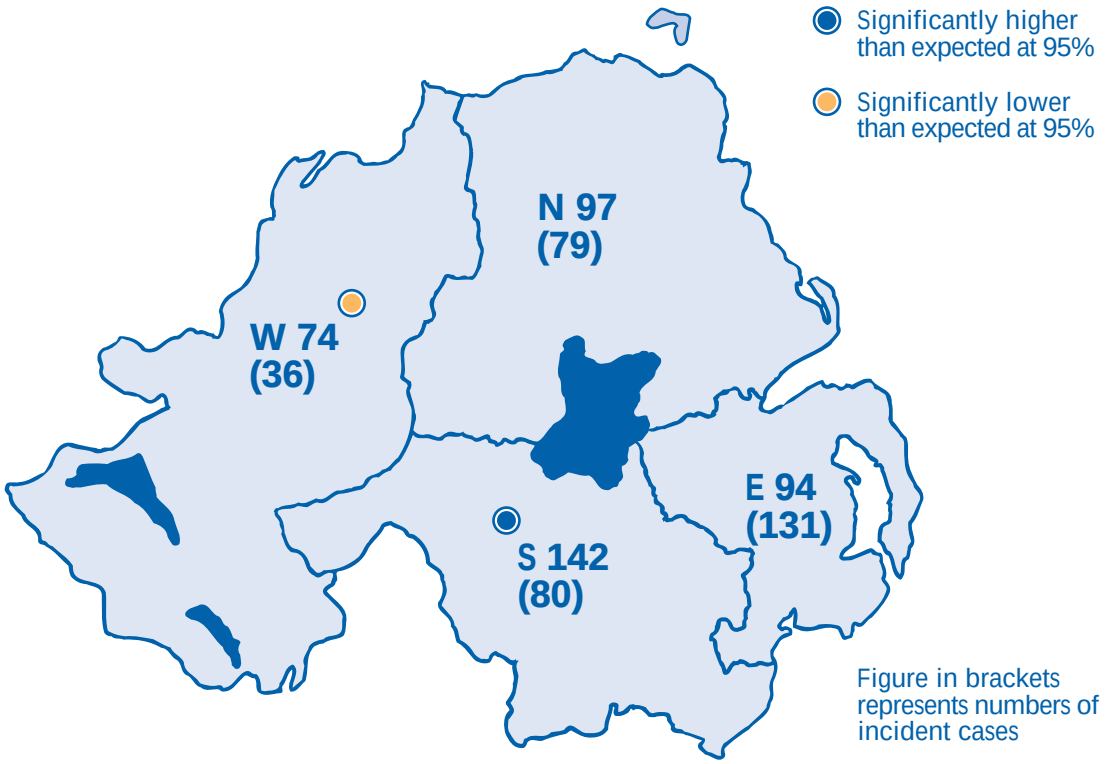
Variation across Health Boards/District Councils in the observed number of cases due to differences in the age structure of the underlying population has been accounted for by using Standardised

Incidence Ratios (SIRs) - see Appendix ii. Values above or below 100 indicate an excess/deficit over what would be expected if that area experienced the same level of incidence as Northern Ireland as a whole.

The Western Board had lower than expected numbers of kidney cancers in males, (based on 36 cases). The Southern Board had a higher than expected number of male cases based on 80 cases over the three year period - see Map 11.

No significant variation at Board level was apparent for females.

Map 11. All Age Standardised Incidence Ratios (SIRs) by District Council 1993-95, Cancer of the Kidney



Data Quality

Data quality improved from 1993 with a very low level of Death Certificate Only (DCO) registrations in 1994 and 1995. The percentage Microscopically Verified fluctuates but was at a respectable level at around 78% in 1995.

Comparison with other Countries

Table 50 provides comparative figures for the number of cases and European Age Standardised Rates for the year 1995.

Table 50 Comparative Numbers and Rates for Britain and Ireland 1995, Cancer of the Kidney

	Males		Females	
Country	Cases	EASR (per 100,000)	Cases	EASR (per 100,000)
Scotland	315	12.60	226	6.40
England & Wales	2850	10.30	1740	5.00
Republic of Ireland	117	7.70	89	5.00
Northern Ireland	99	13.80	68	7.58

Rates for Northern Ireland were higher than in England & Wales, Scotland and Republic of Ireland in males and females. This pattern accords with the established pattern for mortality in Northern Ireland (ref: 1).

Comment

A large proportion (probably over a third) of kidney cancers are associated with tobacco use. In Europe the incidence and mortality of renal cancer are generally increasing, though improved survival may have contributed to some divergence in the two trends. Incidence levels are particularly high in France and the Nordic countries.

For Health Gain

- Actions to reduce smoking levels including:
  - Reducing the numbers who start to smoke by banning advertising, increasing taxation, reducing availability of tobacco products and enhancing health education.
  - Helping those who smoke to stop.
- Increased awareness among the population about the importance of early investigation of symptoms.
- Participation in clinical trials, which can advise on the best outcomes, should be enhanced.
- The organisation of services should be such as to ensure that those with the disease have as good an outcome as possible.
- The full range of palliative care services should be available for those with established disease.

20. Childhood Cancers

KEY FACTS

- On average 52 childhood cancers were registered per year.
- Rare cancers - 0.6 % of tumours.
- Northern Ireland age specific rates in accepted normal range.
- Higher rates for boys.
- 0-4 age group at greatest risk.
- Good prognosis for majority of cases.

Cancers in childhood (i.e. children under the age of 15years) averaged 28 cases per year for boys and 24 for girls over the 1993-95 period. Childhood cancer was rare, accounting for only 0.6% of all cancers. Mortality, more so than incidence, was variable from year to year reflecting changes in the small numbers concerned.

Age Profile

The age specific rates of childhood cancer are remarkably consistent world wide and a 'normal' range for the rates based on this has been proposed (ref: 18). The Northern Ireland age specific rates fall within this 'normal' range. As elsewhere, boys in the 0-4 age group are at greatest risk and in general have higher rates than girls.

Geographical Distribution of Disease

The number of cases were too small to permit meaningful comparisons across areas at a local scale. However, in a wider European context the crude rates for both girls and boys are middle ranking. Table 51 gives the 1995 Northern Ireland crude rates by sex compared to the highest and lowest ranked European rates.

Table 51 - Comparative Crude Rates for 0-14 Year Olds for Males and Females

Males **Rank**	**Country**	**Crude Rate (per 100,000)**
Lowest	Latvia	9.59
	Northern Ireland	13.52
Highest	Croatia	17.63
Females **Rank**	**Country**	
Lowest	Malta	6.27
	Northern Ireland	11.04
Highest	Sweden	15.16

Sites

Leukaemia and brain tumours account for half the childhood cancers in both sexes. Of the remaining, most are embryonal in origin with common solid adult tumours occurring infrequently. In all cases tumours were Microscopically Verified (a small number of tumours without microscopic verification were explicitly excluded from the analysis). Tables 52 and 53 provide details for the sites of childhood cancer.

Table 52 Numbers of Male Childhood Cancers (1993-95 totals) by Age Group and Site

SITE	ICD-9	0-4	5-9	10-14	Total 0-14yrs
Bone	170	0	0	3	3
Connective Tissue	171	3	3	1	7
Melanoma	172	0	1	0	1
Testis	186	2	0	0	2
Bladder	188	1	0	0	1
Kidney & Other Urinary	189	5	0	0	5
Eye	190	2	0	0	2
Brain	191	9	5	4	18
Other Endocrine	194	5	0	0	5
Other ill-defined	195	1	0	0	1
Lymphosarcoma	200	1	0	0	1
Hodgkin's	201	1	1	0	2
Other Lymphoid	202	1	3	0	4
Lymphoid Leukaemia	204	14	3	10	27
Myeloid Leukaemia	205	1	1	0	2
Monocytic Leukaemia	206	0	2	1	3
Totals		46	19	19	84

Table 53 Numbers of Female Childhood Cancers (1993-95 totals) by Age Group and Site

SITE	ICD-9	0-4	5-9	10-14	Total 0-14yrs
Bone	170	1	0	1	2
Connective Tissue	171	2	0	2	4
Kidney & Other Urinary	189	2	0	0	2
Eye	190	6	0	0	6
Brain	191	8	1	8	17
Other Nervous	192	1	0	1	2
Thyroid	193	0	2	0	2
Other Endocrine	194	3	2	1	6
Other ill-defined	195	2	0	0	2
Secondary unspecified	198	1	0	0	1
Hodgkin's	201	0	1	0	1
Other Lymphoid	202	1	2	0	3
Lymphoid Leukaemia	204	12	2	4	18
Myeloid Leukaemia	205	1	2	2	5
Monocytic Leukaemia	206	2	0	0	2
Totals		42	12	19	73

Comment

Despite the high profile coverage that childhood cancer receives due to its emotional and psychological consequences on patients and their families, its occurrence is extremely rare. In most cases there are no known causes although around 5% may have an attributable genetic component linked to family history.

Concern has been expressed over the effect of electromagnetic fields (such as power lines and pylons) and the relationship with childhood cancers. To date the bulk of the evidence suggests either no effect or an insignificant one. Research continues in an attempt to categorically specify the relationship, if any.

Similarly, the known risk of exposure to ionising radiation does not explain elevated childhood cancers around the Seascale Nuclear Reprocessing Plant. An alternative hypothesis linked to infection in areas of high population mobility also remains unsubstantiated.

In Northern Ireland a joint research project between the Registry and the National Cancer Registry of Ireland is underway to investigate the spatial distribution of selected cancers including childhood and adult leukaemias.

Modern treatment regimes have resulted in a high survival rate and the prognosis for childhood cancer is now very good.

21. Summary of Recommendations

Experience gleaned from data acquisition and analysis 1993-95 suggest that a number of practical measures should be implemented in order to reduce the burden of cancer and enhance cancer registration in Northern Ireland. The following recommendations should be considered by the relevant authorities.

- Tobacco use, which is responsible for the majority of preventable cancers must be addressed in line with the Government White Paper on tobacco control.
- The rising levels of oesophageal cancer in young males requires further investigation and initiatives to reduce alcohol consumption.
- Further research into the aetiology of colon and rectal cancers and the role of diet in Northern Ireland should be conducted.

- The recording of stage at diagnosis for all tumours be enhanced.
- A Unique Patient Client Identifier should be introduced as soon as possible to improve identification of individuals and avoid duplication.
- Females with suspected breast cancer should have their disease stage, including lymph node status, assessed at diagnosis.
- Pathologically diagnosed CIN III (severe dysplasia) tumours should be consistently coded as SNOMED code M80772.
- A clear distinction should be made between invasive and non-invasive bladder tumours.
- Address information should conform to the British Standard BS6667.
- Pathology systems should endeavour to improve completeness of address information, particularly with regard to the recording of postcodes.
- Haematology bone marrow records should be computerised.
- Trusts should ensure that key data items on stage of disease, occupation and postcode are routinely and accurately collected.
- Hospital records should be stored in a manner so they are readily accessible and not mislaid.
- The radiology departments should routinely use the coding system available to them.
- Barrett's oesophagus should be consistently coded using the internationally agreed SNOMED code M73330.
- The assignment of site within the colon should be as precise as possible.

22. Tables

TABLE A Numbers of New Cases and Deaths by Year and Site, Northern Ireland, Males

Site		Incidence				Deaths			
	ICD - 9	1993	1994	1995	Average Incidence 1993-95	1993	1994	1995	Average Deaths 1993-95
LIP	140	25	21	19	21.7	2	0	2	1.3
TONGUE	141	13	27	17	19.0	13	11	9	11.0
SALIVARY GLANDS	142	12	10	8	10.0	1	2	0	1.0
GUM	143	5	2	5	4.0	0	0	0	0.0
MOUTH-FLOOR	144	9	7	10	8.7	0	3	2	1.7
MOUTH OTHER	145	12	13	6	10.3	4	2	1	2.3
OROPHARYNX	146	12	16	10	12.7	1	3	6	3.3
NASOPHARYNX	147	7	2	3	4.0	6	1	3	3.3
HYPOPHARYNX	148	8	3	5	5.3	3	1	1	1.7
OTHER LIP, ORAL, PHARYNX	149	9	8	12	9.7	8	6	5	6.3
OESOPHAGUS	150	96	110	117	107.7	76	87	72	78.3
STOMACH	151	154	183	157	164.7	126	129	98	117.7
SMALL INTESTINE	152	13	8	20	13.7	4	5	3	4.0
COLON	153	290	305	307	300.7	170	156	182	169.3
RECTUM	154	185	178	167	176.7	68	60	54	60.7
LIVER	155	32	25	29	28.7	34	38	40	37.3
GALLBLADDER	156	9	21	21	17.0	5	4	8	5.7
PANCREAS	157	90	64	56	70.0	72	69	70	70.3
RETROPERITONEUM	158	3	2	1	2.0	5	6	5	5.3
OTHER DIGESTIVE	159	9	16	4	9.7	37	37	36	36.7
NASAL etc.	160	11	7	7	8.3	3	2	3	2.7
LARYNX	161	62	49	61	57.3	17	18	17	17.3
TRACHEA, BRONCHUS,LUNG	162	576	624	533	577.7	540	518	490	516.0
PLEURA	163	31	26	22	26.3	31	24	28	27.7
THYMUS, HEART	164	1	2	1	1.3	3	0	4	2.3
BONE	170	5	9	15	9.7	6	5	5	5.3
CONNECTIVE TISSUE	171	18	25	22	21.7	3	6	6	5.0
MELANOMA	172	54	61	64	59.7	7	14	9	10.0
OTHER SKIN	173	1055	1181	1107	1114.3	3	9	3	5.0
BREAST - MALE	175	8	6	11	8.3	8	0	4	4.0
PROSTATE	185	462	443	445	450.0	181	211	219	203.7
TESTIS	186	54	47	41	47.3	3	5	4	4.0
PENIS	187	14	19	14	15.7	2	5	4	3.7
BLADDER	188	152	129	145	142.0	61	52	75	62.7
KIDNEY & OTHER URINARY	189	112	125	99	112.0	42	38	48	42.7
EYE	190	7	7	9	7.7	2	0	3	0.7
BRAIN	191	62	55	51	56.0	49	38	43	43.3
OTHER NERVOUS	192	1	4	2	2.3	0	0	0	0.0
THYROID	193	23	16	10	16.3	8	5	5	6.0
OTHER ENDOCRINE	194	22	8	13	14.3	5	3	3	3.7
OTHER ILL-DEFINED	195	7	9	5	7.0	5	10	6	7.0
SECONDARY LYMPH NODES	196	7	2	4	4.3	0	0	1	0.3
SECONDARY RESP & DIGEST	197	30	13	20	21.0	0	0	3	1.0
SECONDARY UNSPECIFIED	198	8	16	17	17.0	0	1	0	0.3
NO SITE SPECIFIED	199	122	109	113	114.7	126	111	111	116.0
LYMPHOSARCOMA	200	4	13	14	10.3	5	6	6	5.7
HODGKIN'S	201	30	15	29	24.7	8	6	5	6.3
OTHER LYMPHOID	202	129	96	108	111.0	59	62	54	58.3
MULTIPLE MYELOMA etc.	203	46	43	33	40.7	31	31	39	33.7
LYMPHOID LEUKAEMIA	204	39	46	40	41.7	17	21	19	19.0
MYELOID LEUKAEMIA	205	35	38	24	32.3	18	31	24	24.3
MONOCYTIC LEUKAEMIA	206	3	3	1	2.3	2	0	0	0.7
OTHER SPECIFIED LEUKAEMIA	207	3	2	1	2.0	0	0	0	0.0
LEUKAEMIA UNSPECIFIED	208	2	2	5	3.0	4	6	8	6.0
Grand Total		**4198**	**4271**	**4060**	**4176**	**1884**	**1858**	**1846**	**1863**

TABLE B Numbers of New Cases and Deaths by Year and Site, Northern Ireland, Females

Site		Incidence				Deaths			
	ICD - 9	1993	1994	1995	Average Incidence 1993-95	1993	1994	1995	Average Deaths 1993-95
LIP	140	5	1	5	3.7	0	1	0	0.3
TONGUE	141	8	13	9	10.0	1	7	8	5.3
SALIVARY GLANDS	142	7	6	7	6.7	1	2	2	1.7
GUM	143	9	3	2	4.7	0	0	1	0.3
MOUTH -FLOOR	144	8	1	3	4.0	1	0	0	0.3
MOUTH OTHER	145	6	10	10	8.7	2	3	1	2.0
OROPHARYNX	146	1	2	6	3.0	0	1	0	0.3
NASOPHARYNX	147	1	4	6	3.7	0	1	1	0.7
HYPOPHARYNX	148	3	7	5	5.0	1	1	3	1.7
OTHER LIP, ORAL,PHARYNX	149	6	1	6	4.3	3	3	1	2.3
OESOPHAGUS	150	64	57	67	62.7	50	59	48	52.3
STOMACH	151	108	96	81	95.0	67	72	73	70.7
SMALL INTESTINE	152	4	11	10	8.3	1	4	6	3.7
COLON	153	318	310	342	323.3	181	168	173	174.0
RECTUM	154	129	122	145	132.0	55	57	46	52.7
LIVER	155	33	29	17	26.3	37	39	26	34.0
GALLBLADDER	156	45	24	22	30.3	22	19	12	17.7
PANCREAS	157	85	81	67	77.7	83	80	71	78.0
RETROPERITONEUM	158	2	0	0	0.7	3	2	0	1.7
OTHER DIGESTIVE	159	12	19	10	13.7	41	39	39	39.7
NASAL etc.	160	5	6	6	5.7	0	2	1	1.0
LARYNX	161	17	9	17	14.3	8	8	3	6.3
TRACHEA, BRONCHUS AND LUNG	162	317	314	319	316.7	268	263	269	266.7
PLEURA	163	2	1	1	1.3	3	0	2	1.7
THYMUS, HEART	164	1	0	1.0	1.0	0	1	2	1.0
BONE	170	6	6	7	6.3	3	4	4	3.7
CONNECTIVE TISSUE	171	16	16	20	17.3	16	13	9	12.7
MELANOMA	172	113	102	93	102.7	20	21	16	19.0
OTHER SKIN	173	1193	1170	1130	1164.3	8	2	4	4.7
BREAST- FEMALE	174	774	821	865	820.0	328	338	328	331.3
UTERUS-UNSPECIFIED	179	31	19	28	26.0	26	19	18	21.0
CERVIX UTERI	180	83	75	77	78.3	34	37	20	30.3
PLACENTA	181	0	0	1	0.3	0	0	0	0.0
BODY OF UTERUS	182	97	112	96	101.7	6	17	9	10.7
OVARY	183	160	168	165	164.3	92	90	99	93.7
OTHER GENITAL-FEMALE	184	41	41	34	38.7	7	11	13	10.3
BLADDER	188	53	60	70	61.0	28	32	34	31.3
KIDNEY & OTHER URINARY	189	72	47	68	62.3	28	22	24	24.7
EYE	190	7	10	4	7.0	3	0	0	1.0
BRAIN	191	43	60	24	42.3	29	37	30	32.0
OTHER NERVOUS	192	4	1	1	2.0	0	2	0	0.7
THYROID	193	43	37	33	37.7	8	7	2	5.7
OTHER ENDOCRINE	194	19	9	9	12.3	2	4	1	2.3
OTHER ILL-DEFINED	195	15	11	7	11.0	8	19	13	13.3
SECONDARY LYMPH NODES	196	6	6	12	8.0	1	0	0	0.3
SECONDARY RESP & DIGEST	197	38	36	27	33.7	3	4	0	2.3
SECONDARY UNSPECIFIED	198	44	13	32	29.7	0	0	2	0.7
NO SITE SPECIFIED	199	133	128	119	126.7	143	127	122	130.7
LYMPHOSARCOMA	200	7	10	9	8.7	2	2	2	2.0
HODGKIN'S	201	24	15	13	17.3	6	5	3	4.7
OTHER LYMPHOID	202	97	112	89	99.3	40	41	38	39.7
MULTIPLE MYELOMA etc.	203	46	41	31	39.3	33	35	36	34.7
LYMPHOID LEUKAEMIA	204	30	18	31	26.3	19	14	6	13.0
MYELOID LEUKAEMIA	205	23	23	27	24.3	20	20	22	20.7
MONOCYTIC LEUKAEMIA	206	0	3	0	1	0	1	0	0.3
OTHER SPECIFIED LEUKAEMIA	207	1	1	1	1.0	0	0	0	0.0
LEUKAEMIA UNSPECIFIED	208	1	4	5	3.3	3	1	6	3.3
Grand Total		**4416**	**4302**	**4292**	**4337**	**1744**	**1757**	**1650**	**1717**

TABLE C Percentage Contribution by Site to New Cases and Deaths by Year **Northern Ireland, Males**

Site		incidence % of all cancer			deaths % of all cancers		
	ICD - 9	1993	1994	1995	1993	1994	1995
LIP	140	0.6	0.5	0.5	0.1	0.0	0.1
TONGUE	141	0.3	0.6	0.4	0.7	0.6	0.5
SALIVARY GLANDS	142	0.3	0.2	0.2	0.1	0.1	0.0
GUM	143	0.1	0.0	0.1	0.0	0.0	0.0
MOUTH-FLOOR	144	0.2	0.2	0.2	0.0	0.2	0.1
MOUTH OTHER	145	0.3	0.3	0.1	0.2	0.1	0.1
OROPHARYNX	146	0.3	0.4	0.2	0.1	0.2	0.3
NASOPHARYNX	147	0.2	0.0	0.1	0.3	0.1	0.2
HYPOPHARYNX	148	0.2	0.1	0.1	0.2	0.1	0.1
OTHER LIP, ORAL, PHARYNX	149	0.2	0.2	0.3	0.4	0.3	0.3
OESOPHAGUS	150	2.3	2.6	2.9	4.0	4.7	3.9
STOMACH	151	3.7	4.3	3.9	6.7	6.9	5.3
SMALL INTESTINE	152	0.3	0.2	0.5	0.2	0.3	0.2
COLON	153	6.9	7.1	7.6	9.0	8.4	9.9
RECTUM	154	4.4	4.2	4.1	3.6	3.2	2.9
LIVER	155	0.8	0.6	0.7	1.8	2.0	2.2
GALLBLADDER	156	0.2	0.5	0.5	0.3	0.2	0.4
PANCREAS	157	2.1	1.5	1.4	3.8	3.7	3.8
RETROPERITONEUM	158	0.1	0.0	0.0	0.3	0.3	0.3
OTHER DIGESTIVE	159	0.2	0.4	0.1	2.0	2.0	2.0
NASAL etc.	160	0.3	0.2	0.2	0.2	0.1	0.2
LARYNX	161	1.5	1.1	1.5	0.9	1.0	0.9
TRACHEA, BRONCHUS,LUNG	162	13.7	14.6	13.1	28.7	27.9	26.5
PLEURA	163	0.7	0.6	0.5	1.6	1.3	1.5
THYMUS, HEART	164	0.0	0.0	0.0	0.2	0.0	0.2
BONE	170	0.1	0.2	0.4	0.3	0.3	0.3
CONNECTIVE TISSUE	171	0.4	0.6	0.5	0.2	0.3	0.3
MELANOMA	172	1.4	1.5	1.5	0.4	0.8	0.5
OTHER SKIN	173	25.0	27.6	27.0	0.2	0.5	0.2
BREAST - MALE	175	0.2	0.1	0.3	0.4	0.0	0.2
PROSTATE	185	11.0	10.4	11.0	9.6	11.4	11.9
TESTIS	186	1.3	1.1	1.0	0.2	0.3	0.2
PENIS	187	0.3	0.4	0.3	0.1	0.3	0.2
BLADDER	188	3.6	3.0	3.6	3.2	2.8	4.1
KIDNEY & OTHER URINARY	189	2.7	2.9	2.4	2.2	2.0	2.6
EYE	190	0.2	0.2	0.2	0.1	0.0	0.2
BRAIN	191	1.5	1.3	1.3	2.6	2.0	2.3
OTHER NERVOUS	192	0.0	0.1	0.0	0.0	0.0	0.0
THYROID	193	0.5	0.4	0.2	0.4	0.3	0.3
OTHER ENDOCRINE	194	0.5	0.2	0.3	0.3	0.2	0.2
OTHER ILL-DEFINED	195	0.2	0.2	0.1	0.3	0.5	0.3
SECONDARY LYMPH NODES	196	0.2	0.0	0.1	0.0	0.0	0.1
SECONDARY RESP & DIGEST	197	0.7	0.3	0.5	0.0	0.0	0.2
SECONDARY UNSPECIFIED	198	0.4	0.4	0.4	0.0	0.1	0.0
NO SITE SPECIFIED	199	2.9	2.6	2.8	6.7	6.0	6.0
LYMPHOSARCOMA	200	0.1	0.3	0.3	0.3	0.3	0.3
HODGKIN'S	201	0.7	0.4	0.7	0.4	0.3	0.3
OTHER LYMPHOID	202	3.1	2.2	2.7	3.1	3.3	2.9
MULTIPLE MYELOMA etc.	203	1.1	1.0	0.8	1.6	1.7	2.1
LYMPHOID LEUKAEMIA	204	0.9	1.1	1.0	0.9	1.1	1.0
MYELOID LEUKAEMIA	205	0.8	0.9	0.6	1.0	1.7	1.3
MONOCYTIC LEUKAEMIA	206	0.1	0.1	0.0	0.1	0.0	0.0
OTHER SPECIFIED LEUKAEMIA	207	0.1	0.0	0.0	0.0	0.0	0.0
LEUKAEMIA UNSPECIFIED	208	0.0	0.0	0.1	0.2	0.3	0.4
Grand Total		**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

TABLE D Percentage Contribution by Site to New Cases and Deaths by Year **Northern Ireland, Females**

Site		incidence % of all cancer			deaths % of all cancers		
	ICD - 9	1993	1994	1995	1993	1994	1995
LIP	140	0.1	0.0	0.1	0.0	0.1	0.0
TONGUE	141	0.2	0.3	0.2	0.1	0.4	0.5
SALIVARY GLANDS	142	0.2	0.1	0.2	0.1	0.1	0.1
GUM	143	0.2	0.1	0.0	0.0	0.0	0.1
MOUTH -FLOOR	144	0.2	0.0	0.1	0.1	0.0	0.0
MOUTH OTHER	145	0.1	0.2	0.2	0.1	0.2	0.1
OROPHARYNX	146	0.0	0.0	0.1	0.0	0.1	0.0
NASOPHARYNX	147	0.0	0.1	0.1	0.0	0.1	0.1
HYPOPHARYNX	148	0.1	0.2	0.1	0.1	0.1	0.2
OTHER LIP, ORAL,PHARYNX	149	0.1	0.0	0.1	0.2	0.2	0.1
OESOPHAGUS	150	1.4	1.3	1.6	2.9	3.4	2.9
STOMACH	151	2.4	2.2	1.9	3.8	4.1	4.4
SMALL INTESTINE	152	0.1	0.3	0.2	0.1	0.2	0.4
COLON	153	7.2	7.2	8.0	10.4	9.6	10.5
RECTUM	154	2.9	2.8	3.4	3.2	3.2	2.8
LIVER	155	0.7	0.7	0.4	2.1	2.2	1.6
GALLBLADDER	156	1.0	0.6	0.5	1.3	1.1	0.7
PANCREAS	157	1.9	1.9	1.6	4.8	4.6	4.3
RETROPERITONEUM	158	0.0	0.0	0.0	0.2	0.1	0.0
OTHER DIGESTIVE	159	0.3	0.4	0.2	2.4	2.2	2.4
NASAL etc.	160	0.1	0.1	0.1	0.0	0.1	0.1
LARYNX	161	0.4	0.2	0.4	0.5	0.5	0.2
TRACHEA, BRONCHUS AND LUNG	162	7.2	7.3	7.4	15.4	15.0	16.3
PLEURA	163	0.0	0.0	0.0	0.2	0.0	0.1
THYMUS, HEART	164	0.0	0.0	0.0	0.0	0.1	0.1
BONE	170	0.1	0.1	0.2	0.2	0.2	0.2
CONNECTIVE TISSUE	171	0.4	0.4	0.5	0.9	0.7	0.5
MELANOMA	172	2.8	2.7	2.2	1.1	1.2	1.0
OTHER SKIN	173	26.7	26.9	26.1	0.5	0.1	0.2
BREAST- FEMALE	174	17.5	19.1	20.2	18.8	19.2	19.9
UTERUS-UNSPECIFIED	179	0.7	0.4	0.7	1.5	1.1	1.1
CERVIX UTERI	180	1.9	1.7	1.8	1.9	2.1	1.2
PLACENTA	181	0.0	0.0	0.0	0.0	0.0	0.0
BODY OF UTERUS	182	2.2	2.6	2.2	0.3	1.0	0.5
OVARY	183	3.6	3.9	3.8	5.3	5.1	6.0
OTHER GENITAL-FEMALE	184	0.9	1.0	0.8	0.4	0.6	0.8
BLADDER	188	1.2	1.4	1.6	1.6	1.8	2.1
KIDNEY & OTHER URINARY	189	1.6	1.1	1.6	1.6	1.3	1.5
EYE	190	0.2	0.2	0.1	0.2	0.0	0.0
BRAIN	191	1.0	1.4	0.6	1.7	2.1	1.8
OTHER NERVOUS	192	0.1	0.0	0.0	0.0	0.1	0.0
THYROID	193	1.0	0.9	0.8	0.5	0.4	0.1
OTHER ENDOCRINE	194	0.4	0.2	0.2	0.1	0.2	0.1
OTHER ILL-DEFINED	195	0.3	0.3	0.2	0.5	1.1	0.8
SECONDARY LYMPH NODES	196	0.1	0.1	0.3	0.1	0.0	0.0
SECONDARY RESP & DIGEST	197	0.9	0.8	0.6	0.2	0.2	0.0
SECONDARY UNSPECIFIED	198	1.0	0.3	0.7	0.0	0.0	0.1
NO SITE SPECIFIED	199	3.0	3.0	2.8	8.2	7.2	7.4
LYMPHOSARCOMA	200	0.2	0.2	0.2	0.1	0.1	0.1
HODGKIN'S	201	0.5	0.3	0.3	0.3	0.3	0.2
OTHER LYMPHOID	202	2.2	2.6	2.1	2.3	2.3	2.3
MULTIPLE MYELOMA etc.	203	1.0	1.0	0.7	1.9	2.0	2.2
LYMPHOID LEUKAEMIA	204	0.7	0.4	0.7	1.1	0.8	0.4
MYELOID LEUKAEMIA	205	0.5	0.5	0.6	1.1	1.1	1.3
MONOCYTIC LEUKAEMIA	206	0.0	0.1	0.0	0.0	0.1	0.0
OTHER SPECIFIED LEUKAEMIA	207	0.0	0.0	0.0	0.0	0.0	0.0
LEUKAEMIA UNSPECIFIED	208	0.0	0.1	0.1	0.2	0.1	0.4
Grand Total		**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

TABLE E Selected Data Quality Measures, by Site and Year — **Northern Ireland, Males**

Site		Mortality:Incidence Ratio			Percentage Death Certificate Only			Percentage Microscopically Verified		
		1993	1994	1995	1993	1994	1995	1993	1994	1995
	ICD - 9	M:I Ratio	M:I Ratio	M:I Ratio	%DCO	%DCO	%DCO	%MV	%MV	%MV
LIP	140	0.1	0.0	0.1	8.0	0.0	0.0	92.0	90.5	100.0
TONGUE	141	1.0	0.4	0.5	0.0	0.0	0.0	100.0	100.0	94.1
SALIVARY GLANDS	142	0.1	0.2	0.0	0.0	0.0	0.0	91.7	100.0	87.5
GUM	143	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	100.0
MOUTH-FLOOR	144	0.0	0.4	0.2	0.0	0.0	0.0	88.9	100.0	100.0
MOUTH OTHER	145	0.3	0.2	0.2	0.0	0.0	0.0	100.0	92.3	100.0
OROPHARYNX	146	0.1	0.2	0.6	0.0	0.0	0.0	91.7	100.0	80.0
NASOPHARYNX	147	0.9	0.5	1.0	0.0	0.0	0.0	85.7	50.0	100.0
HYPOPHARYNX	148	0.4	0.3	0.2	0.0	0.0	0.0	100.0	100.0	100.0
OTHER LIP, ORAL, PHARYNX	149	0.9	0.8	0.4	11.1	0.0	8.3	88.9	87.5	75.0
OESOPHAGUS	150	0.8	0.8	0.6	3.1	2.7	1.7	91.7	85.5	88.9
STOMACH	151	0.8	0.7	0.6	3.2	2.2	3.8	83.8	83.6	84.1
SMALL INTESTINE	152	0.3	0.6	0.2	0.0	0.0	0.0	92.3	87.5	95.0
COLON	153	0.6	0.5	0.6	4.1	1.6	3.9	87.6	87.5	84.0
RECTUM	154	0.4	0.3	0.3	1.1	0.6	0.0	95.1	92.7	93.4
LIVER	155	1.1	1.5	1.4	9.4	12.0	6.9	37.5	40.0	48.3
GALLBLADDER	156	0.6	0.2	0.4	11.1	0.0	0.0	44.4	81.0	57.1
PANCREAS	157	0.8	1.1	1.3	3.3	0.0	7.1	43.3	37.5	25.0
RETROPERITONEUM	158	1.7	3.0	5.0	0.0	0.0	0.0	66.7	100.0	100.0
OTHER DIGESTIVE	159	4.1	2.3	9.0	22.2	25.0	25.0	22.2	31.3	25.0
NASAL etc.	160	0.3	0.3	0.4	0.0	0.0	28.6	90.9	100.0	71.4
LARYNX	161	0.3	0.4	0.3	1.6	0.0	0.0	95.2	95.9	96.7
TRACHEA, BRONCHUS,LUNG	162	0.9	0.8	0.9	4.7	2.7	2.8	66.3	70.7	67.0
PLEURA	163	1.0	0.9	1.3	12.9	3.8	4.5	48.4	69.2	54.5
THYMUS, HEART	164	3.0	0.0	4.0	0.0	0.0	0.0	0.0	50.0	100.0
BONE	170	1.2	0.6	0.3	0.0	0.0	0.0	100.0	77.8	100.0
CONNECTIVE TISSUE	171	0.2	0.2	0.3	5.6	4.0	0.0	94.4	80.0	86.4
MELANOMA	172	0.1	0.2	0.1	0.0	0.0	0.0	100.0	100.0	100.0
OTHER SKIN	173	0.0	0.0	0.0	0.0	0.0	0.0	91.3	91.2	94.0
BREAST - MALE	175	1.0	0.0	0.4	0.0	0.0	0.0	87.5	66.7	81.8
PROSTATE	185	0.4	0.5	0.5	6.1	2.9	2.5	76.6	77.7	79.3
TESTIS	186	0.1	0.1	0.1	1.9	0.0	0.0	98.1	100.0	92.7
PENIS	187	0.1	0.3	0.3	7.1	5.3	0.0	92.9	94.7	92.9
BLADDER	188	0.4	0.4	0.5	2.6	0.0	1.4	88.8	82.9	73.8
KIDNEY & OTHER URINARY	189	0.4	0.3	0.5	6.3	0.0	1.0	78.6	84.8	77.8
EYE	190	0.3	0.0	0.3	0.0	0.0	0.0	85.7	85.7	66.7
BRAIN	191	0.8	0.7	0.8	3.2	1.8	5.9	79.0	70.9	66.7
OTHER NERVOUS	192	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	50.0
THYROID	193	0.3	0.3	0.5	4.3	0.0	0.0	82.6	87.5	90.0
OTHER ENDOCRINE	194	0.2	0.4	0.2	9.1	0.0	0.0	45.5	87.5	53.8
OTHER ILL-DEFINED	195	0.7	1.1	1.2	0.0	0.0	0.0	71.4	100.0	60.0
SECONDARY LYMPH NODES	196	0.0	0.0	0.3	0.0	0.0	0.0	85.7	50.0	100.0
SECONDARY RESP & DIGEST	197	0.0	0.0	0.2	6.7	7.7	0.0	73.3	46.2	65.0
SECONDARY UNSPECIFIED	198	0.0	0.1	0.0	16.7	6.3	0.0	77.8	87.5	70.6
NO SITE SPECIFIED	199	1.0	1.0	1.0	12.3	6.4	3.5	34.4	39.4	35.4
LYMPHOSARCOMA	200	1.3	0.5	0.4	0.0	0.0	0.0	100.0	92.3	92.9
HODGKIN'S	201	0.3	0.4	0.2	0.0	0.0	0.0	86.7	100.0	100.0
OTHER LYMPHOID	202	0.5	0.6	0.5	1.6	1.0	1.9	88.4	92.7	89.8
MULTIPLE MYELOMA etc.	203	0.7	0.7	1.2	8.7	0.0	6.1	73.9	72.1	75.8
LYMPHOID LEUKAEMIA	204	0.4	0.5	0.5	7.7	2.2	2.5	71.8	87.0	82.5
MYELOID LEUKAEMIA	205	0.5	0.8	1.0	0.0	0.0	0.0	88.6	89.5	75.0
MONOCYTIC LEUKAEMIA	206	0.7	0.0	0.0	0.0	0.0	0.0	66.7	66.7	0.0
OTHER SPECIFIED LEUKAEMIA	207	0.0	0.0	0.0	0.0	50.0	0.0	33.3	0.0	0.0
LEUKAEMIA UNSPECIFIED	208	2.0	3.0	1.6	0.0	0.0	40.0	0.0	50.0	20.0
Grand Total		**0.4**	**0.4**	**0.5**	**3.4**	**1.5**	**1.8**	**80.8**	**82.4**	**81.6**

TABLE F Selected Data Quality Measures, by Site and Year **Northern Ireland, Females**

Site		Mortality:Incidence Ratio			Percentage Death Certificate Only			Percentage Microscopically Verified		
		1993	1994	1995	1993	1994	1995	1993	1994	1995
	ICD - 9	M:I Ratio	M:I Ratio	M:I Ratio	%DCO	%DCO	%DCO	%MV	%MV	%MV
LIP	140	0.0	1.0	0.0	0.0	0.0	0.0	80.0	100.0	80.0
TONGUE	141	0.1	0.5	0.9	0.0	0.0	0.0	100.0	84.6	88.9
SALIVARY GLANDS	142	0.1	0.3	0.3	0.0	0.0	0.0	85.7	100.0	85.7
GUM	143	0.0	0.0	0.5	0.0	0.0	0.0	100.0	100.0	100.0
MOUTH -FLOOR	144	0.1	0.0	0.0	0.0	0.0	0.0	100.0	100.0	66.7
MOUTH OTHER	145	0.3	0.3	0.1	0.0	0.0	0.0	83.3	90.0	90.0
OROPHARYNX	146	0.0	0.5	0.0	0.0	0.0	0.0	100.0	100.0	100.0
NASOPHARYNX	147	0.0	0.3	0.2	0.0	0.0	0.0	100.0	100.0	83.3
HYPOPHARYNX	148	0.3	0.1	0.6	0.0	0.0	0.0	100.0	85.7	100.0
OTHER LIP, ORAL,PHARYNX	149	0.5	3.0	0.2	0.0	0.0	0.0	100.0	100.0	83.3
OESOPHAGUS	150	0.8	1.0	0.7	0.0	10.5	3.0	89.1	78.9	85.1
STOMACH	151	0.6	0.8	0.9	5.6	5.2	7.4	77.8	79.2	82.7
SMALL INTESTINE	152	0.3	0.4	0.6	0.0	9.1	0.0	100.0	81.8	100.0
COLON	153	0.6	0.5	0.5	6.9	3.5	5.3	77.7	83.5	84.5
RECTUM	154	0.4	0.5	0.3	3.1	1.6	0.7	84.5	88.5	93.1
LIVER	155	1.1	1.3	1.5	18.2	6.9	0.0	24.2	37.9	52.9
GALLBLADDER	156	0.5	0.8	0.5	4.4	0.0	9.1	62.2	75.0	50.0
PANCREAS	157	1.0	1.0	1.1	8.2	2.5	9.0	35.3	29.6	20.9
RETROPERITONEUM	158	1.5	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0
OTHER DIGESTIVE	159	3.4	2.1	3.9	58.3	26.3	30.0	16.7	26.3	20.0
NASAL etc.	160	0.0	0.3	0.2	0.0	0.0	0.0	80.0	100.0	100.0
LARYNX	161	0.5	0.9	0.2	5.9	0.0	0.0	94.1	77.8	88.2
TRACHEA, BRONCHUS AND LUNG	162	0.8	0.8	0.8	5.7	3.8	2.5	70.3	63.7	64.3
PLEURA	163	1.5	0.0	2.0	50.0	0.0	0.0	50.0	100.0	100.0
THYMUS, HEART	164	0.0	0.0	2.0	0.0	0.0	0.0	100.0	0.0	0.0
BONE	170	0.5	0.7	0.6	0.0	0.0	14.3	50.0	83.3	71.4
CONNECTIVE TISSUE	171	1.0	0.8	0.5	6.3	0.0	0.0	81.3	93.8	100.0
MELANOMA	172	0.2	0.2	0.2	0.0	0.0	0.0	100.0	100.0	100.0
OTHER SKIN	173	0.0	0.0	0.0	0.3	0.1	0.0	90.5	88.3	91.2
BREAST- FEMALE	174	0.4	0.4	0.4	3.5	1.7	1.7	90.6	92.1	91.6
UTERUS-UNSPECIFIED	179	0.8	1.0	0.6	19.4	15.8	14.3	71.0	73.7	82.1
CERVIX UTERI	180	0.4	0.5	0.3	4.8	2.7	0.0	95.2	94.7	94.8
PLACENTA	181	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BODY OF UTERUS	182	0.1	0.2	0.1	2.1	0.9	1.0	93.8	95.5	95.8
OVARY	183	0.6	0.5	0.6	5.0	1.8	0.6	76.9	75.0	73.9
OTHER GENITAL-FEMALE	184	0.2	0.3	0.4	2.4	0.0	2.9	92.7	95.1	91.2
BLADDER	188	0.5	0.5	0.5	1.9	3.3	2.9	83.0	75.0	70.0
KIDNEY & OTHER URINARY	189	0.4	0.5	0.4	4.2	0.0	1.5	83.3	68.1	77.9
EYE	190	0.4	0.0	0.0	0.0	0.0	0.0	71.4	50.0	50.0
BRAIN	191	0.7	0.6	1.3	4.7	0.0	4.2	72.1	61.7	58.3
OTHER NERVOUS	192	0.0	2.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0
THYROID	193	0.2	0.2	0.1	4.7	0.0	3.0	93.0	100.0	90.9
OTHER ENDOCRINE	194	0.1	0.4	0.1	0.0	11.1	0.0	73.7	44.4	33.3
OTHER ILL-DEFINED	195	0.5	1.7	1.9	6.7	0.0	14.3	73.3	72.7	71.4
SECONDARY LYMPH NODES	196	0.2	0.0	0.0	0.0	0.0	0.0	50.0	100.0	100.0
SECONDARY RESP & DIGEST	197	0.1	0.1	0.0	10.5	8.3	3.7	68.4	55.6	70.4
SECONDARY UNSPECIFIED	198	0.0	0.0	0.1	4.5	0.0	3.1	84.1	76.9	81.3
NO SITE SPECIFIED	199	1.1	1.0	1.0	6.0	5.5	10.9	35.3	39.1	32.8
LYMPHOSARCOMA	200	0.3	0.2	0.2	0.0	0.0	0.0	100.0	80.0	100.0
HODGKIN'S	201	0.3	0.3	0.2	0.0	0.0	0.0	100.0	100.0	92.3
OTHER LYMPHOID	202	0.4	0.4	0.4	1.0	1.8	2.2	95.9	94.6	88.8
MULTIPLE MYELOMA etc.	203	0.7	0.9	1.2	2.2	2.4	3.2	69.6	75.6	74.2
LYMPHOID LEUKAEMIA	204	0.6	0.8	0.2	3.3	5.6	0.0	76.7	83.3	90.3
MYELOID LEUKAEMIA	205	0.9	0.9	0.8	0.0	0.0	7.4	91.3	78.3	63.0
MONOCYTIC LEUKAEMIA	206	0.0	0.3	0.0	0.0	0.0	0.0	0.0	100.0	0.0
OTHER SPECIFIED LEUKAEMIA	207	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
LEUKAEMIA UNSPECIFIED	208	3.0	0.3	1.2	0.0	0.0	20.0	0.0	0.0	40.0
Grand Total		**0.4**	**0.4**	**0.4**	**3.5**	**2.0**	**2.2**	**82.6**	**82.1**	**83.4**

TABLE G Numbers of New Cases 1995 by Age Group and Site **Northern Ireland, Males**

Site	ICD - 9	Age Group 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
LIP	140						1		1		1		1	3	3	4		2	3	19
TONGUE	141								1	1	2	3	3	2	1	2	2			17
SALIVARY GLANDS	142											1	1		2	1	1		2	8
GUM	143										1		1	1	1	1				5
MOUTH-FLOOR	144								1		2	1	3	1		1	1			10
MOUTH OTHER	145									1				2	2		1			6
OROPHARYNX	146									1	2	1	1		2	2		1		10
NASOPHARYNX	147									1			1		1					3
HYPOPHARYNX	148											1	2	1	1					5
OTHER LIP, ORAL, PHARYNX	149											2	1	2	2	2	1	2		12
OESOPHAGUS	150							1	5	4	9	9	14	19	16	15	15	6	4	117
STOMACH	151							1	1	2	5	8	13	17	33	21	29	16	11	157
SMALL INTESTINE	152						1			1	1	1	1	1	3	8	1	1	1	20
COLON	153							4	2	3	13	10	24	25	44	63	52	37	30	307
RECTUM	154						1			3	10	8	16	24	22	28	27	19	9	167
LIVER	155				1		1				1	1	5	6	3	2	3	4	2	29
GALLBLADDER	156											1	1	2	6	1	3	2	5	21
PANCREAS	157									1		2	3	8	6	8	15	10	3	56
RETROPERITONEUM	158															1				1
OTHER DIGESTIVE	159											1			1		1		1	4
NASAL etc.	160										1	2	1	1			1		1	7
LARYNX	161										2	3	9	14	16	7	7	2	1	61
TRACHEA, BRONCHUS,LUNG	162						1	1	7	4	12	29	39	62	104	120	83	50	21	533
PLEURA	163									1	1	2	2	2	6	1	5	1	1	22
THYMUS, HEART	164								1											1
BONE	170		3		4	2		2		1	1			1		1				15
CONNECTIVE TISSUE	171	1		2	1		1	1	1		1	3	2	2	1	4		1	1	22
MELANOMA	172			1		2	2	2	3	3	4	5	11	6	8	4	5	5	3	64
OTHER SKIN	173			1	1	1	5	10	13	34	43	55	97	119	159	188	159	123	99	1107
BREAST - MALE	175										1			1	1	2	5	1		11
PROSTATE	185										2	3	20	24	56	100	103	81	56	445
TESTIS	186	1			1	6	7	8	9	3	3	2			1					41
PENIS	187									1	1	2	1	2	1	1	2	2	1	14
BLADDER	188	1			1		2		2	3	3	4	17	9	23	29	21	22	8	145
KIDNEY & OTHER URINARY	189	1					1	1	3	3	6	8	6	14	21	15	11	6	3	99
EYE	190	2					1							1	1	3		1		9
BRAIN	191	3	1	1	1	2	1	2	5	1	4	3	7	6	9	2	2	1		51
OTHER NERVOUS	192									1	1									2
THYROID	193							1	1	1	1	2		1		3				10
OTHER ENDOCRINE	194	1						2	1		1	1	1		3	2			1	13
OTHER ILL-DEFINED	195													1	1	2			1	5
SECONDARY LYMPH NODES	196										1					1	1	1		4
SECONDARY RESP & DIGEST	197						1					1	2	3	5	2	2	4		20
SECONDARY UNSPECIFIED	198									1	1	1	1	3	3	4	1	2		17
NO SITE SPECIFIED	199							1	1	2	4	3	7	12	16	28	17	15	7	113
LYMPHOSARCOMA	200	1									2	2	1		2	1	5			14
HODGKIN'S	201				2	2	4	2		5	2	2	1	2	2	1	2		2	29
OTHER LYMPHOID	202					1	3	5	3	2	4	14	9	15	10	16	14	6	6	108
MULTIPLE MYELOMA etc.	203								2		2	2	3	3	7	3	6	3	2	33
LYMPHOID LEUKAEMIA	204	3	4	1		1	2		1	1		2	1	3	4	4	9	4		40
MYELOID LEUKAEMIA	205					1				2	1		3	3	2	1	5	4	2	24
MONOCYTIC LEUKAEMIA	206																1			1
OTHER SPECIFIED LEUKAEMIA	207																	1		1
LEUKAEMIA UNSPECIFIED											1			1			2		1	5
Total		**14**	**8**	**6**	**12**	**18**	**35**	**44**	**64**	**87**	**153**	**201**	**332**	**425**	**611**	**705**	**621**	**436**	**288**	**4060**

TABLE H Numbers of New Cases 1995 by Age Group and Site **Northern Ireland, Females**

Site	ICD - 9	Age Group 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
LIP	140									1				1	3					5
TONGUE	141										1	1		1	2	1	1	1	1	9
SALIVARY GLANDS	142							1					1	1	1	2	1			7
GUM	143											1		1						2
MOUTH -FLOOR	144												2		1					3
MOUTH OTHER	145							1				2		2	2		2		1	10
OROPHARYNX	146												1	2		2	1			6
NASOPHARYNX	147					1						2		2	1					6
HYPOPHARYNX	148											2			1	1		1		5
OTHER LIP, ORAL,PHARYNX	149											1		3	1			1		6
OESOPHAGUS	150								1		1	4	4	3	10	14	10	13	7	67
STOMACH	151							1	3	2	5	2	6	7	10	12	8	14	11	81
SMALL INTESTINE	152												1	3	1	1	2	1	1	10
COLON	153						1		3	5	10	18	24	33	38	45	50	64	51	342
RECTUM	154					1		2	4	3	3	7	13	14	16	18	27	16	21	145
LIVER	155										2		1	3	4	2	3	1	1	17
GALLBLADDER	156											1	1	1	4	6	4	2	3	22
PANCREAS	157						1					1	2	7	11	11	17	13	4	67
RETROPERITONEUM	158																			
OTHER DIGESTIVE	159															1	3	4	2	10
NASAL etc.	160										1	1				2	1	1		6
LARYNX	161										2	1	1		4	3	3	3		17
TRACHEA, BRONCHUS & LUNG	162					1	1		1	1	10	25	24	30	54	74	49	27	22	319
PLEURA	163										1									1
THYMUS, HEART	164										1									1
BONE	170	1			1	1								1		1		1	1	7
CONNECTIVE TISSUE	171	1	1		1			1	1	4	3		1	2		1	1	1	2	20
MELANOMA	172					4	9	7	5	4	3	7	7	8	11	12	3	6	7	93
OTHER SKIN	173				2	5	2	12	17	16	40	60	61	87	123	191	167	151	196	1130
BREAST- FEMALE	174				1	1	5	18	31	40	86	117	114	106	74	97	78	55	42	865
UTERUS-UNSPECIFIED	179						1	2	1		2	3	3	4	3	1	2	2	4	28
CERVIX UTERI	180					1	2	6	8	10	11	9	6	9	3	7	3	1	1	77
PLACENTA	181							1												1
BODY OF UTERUS	182							1			3	8	22	15	10	16	6	8	7	96
OVARY	183				2	5	2	2	6	9	8	19	21	18	23	23	14	8	5	165
OTHER GENITAL-FEMALE	184					1		1		1		1	5	1	5	6	4	7	2	34
BLADDER	188						1	1	2	2	1	4	3	3	12	16	13	8	4	70
KIDNEY & OTHER URINARY	189								1	3	1	6	7	8	15	11	7	5	4	68
EYE	190	2								1									1	4
BRAIN	191	1						1	3	2	3	1	1	1	2		5	4		24
OTHER NERVOUS	192		1																	1
THYROID	193			2		1	2	3	7	2	2	4	1	1	3	2	1	1	1	33
OTHER ENDOCRINE	194	1		2			1						2	2		1				9
OTHER ILL-DEFINED	195							1							1	1	1	2	1	7
SECONDARY LYMPH NODES	196											1	1	1	4	3			2	12
SECONDARY RESP & DIGEST	197					1					2		3	4	3	2	4	4	4	27
SECONDARY UNSPECIFIED	198						1		3		3	6	6	2	5	3	1	1	1	32
NO SITE SPECIFIED	199								1	1	1	3	6	6	12	19	18	27	25	119
LYMPHOSARCOMA	200											1	1	3	1		1	2		9
HODGKIN'S	201			1		2	2			1		1	2	1		1	1	1		13
OTHER LYMPHOID	202			1			1	1	2	2	2	6	9	10	10	21	11	7	6	89
MULTIPLE MYELOMA etc.	203			1								1	1	2	9	5	4	5	3	31
LYMPHOID LEUKAEMIA	204	4	2						1	2	1	2	1	2	2	7	3	2	2	31
MYELOID LEUKAEMIA	205				2		1			2		2	3	2	3	3	5	2	2	27
MONOCYTIC LEUKAEMIA	206																			
OTHER SPECIFIED LEUKAEMIA	207																	1		1
LEUKAEMIA UNSPECIFIED	208															2		1	2	5
Total		**10**	**4**	**7**	**9**	**25**	**33**	**63**	**101**	**114**	**209**	**331**	**368**	**413**	**498**	**647**	**535**	**475**	**450**	**4292**

TABLE I Number of Cases and Percentage 1995 Ranked by Contribution **Northern Ireland, Males**

Site	ICD - 9	Incident cases	% of all incident cases	Rank
ALL CANCERS	140-208	4060	100.00	
OTHER SKIN	173	1109	27.32	1
TRACHEA, BRONCHUS,LUNG	162	533	13.13	2
PROSTATE	185	445	10.96	3
COLON	153	307	7.56	4
RECTUM	154	167	4.11	5
STOMACH	151	157	3.87	6
BLADDER	188	145	3.57	7
OESOPHAGUS	150	117	2.88	8
NO SITE SPECIFIED	199	113	2.78	9
OTHER LYMPHOID	202	108	2.66	10
KIDNEY & OTHER URINARY	189	99	2.44	11
MELANOMA	172	64	1.58	12
LARYNX	161	61	1.50	13
PANCREAS	157	56	1.38	14
BRAIN	191	51	1.26	15
TESTIS	186	41	1.01	16
LYMPHOID LEUKAEMIA	204	40	0.99	17
MULTIPLE MYELOMA etc.	203	33	0.81	18
LIVER	155	29	0.71	19
HODGKIN'S	201	29	0.71	20
MYELOID LEUKAEMIA	205	24	0.59	21
PLEURA	163	22	0.54	22
CONNECTIVE TISSUE	171	22	0.54	23
GALLBLADDER	156	21	0.52	24
SMALL INTESTINE	152	20	0.49	25
SECONDARY RESP & DIGEST	197	20	0.49	26
LIP	140	19	0.47	27
TONGUE	141	17	0.42	28
SECONDARY UNSPECIFIED	198	17	0.42	29
BONE	170	15	0.37	30
PENIS	187	14	0.34	31
LYMPHOSARCOMA	200	14	0.34	32
OTHER ENDOCRINE	194	13	0.32	33
OTHER LIP, ORAL, PHARYNX	149	12	0.30	34
BREAST - MALE	175	11	0.27	35
MOUTH-FLOOR	144	10	0.25	36
OROPHARYNX	146	10	0.25	37
THYROID	193	10	0.25	38
EYE	190	9	0.22	39
SALIVARY GLANDS	142	8	0.20	40
NASAL etc.	160	7	0.17	41
MOUTH OTHER	145	6	0.15	42
GUM	143	5	0.12	43
HYPOPHARYNX	148	5	0.12	44
OTHER ILL-DEFINED	195	5	0.12	45
LEUKAEMIA UNSPECIFIED	208	5	0.12	46
OTHER DIGESTIVE	159	4	0.10	47
SECONDARY LYMPH NODES	196	4	0.10	48
NASOPHARYNX	147	3	0.07	49
OTHER NERVOUS	192	2	0.05	50
RETROPERITONEUM	158	1	0.02	51
THYMUS, HEART	164	1	0.02	52
MONOCYTIC LEUKAEMIA	206	1	0.02	53
OTHER SPECIFIED LEUKAEMIA	207	1	0.02	54

NB. Ranking reported in text may differ as it is based on rank for 1993-95 period

TABLE J Number of Cases and Percentage 1995 Ranked by Contribution **Northern Ireland, Females**

Site	ICD - 9	Incident cases	% of all incident cases	Rank
ALL CANCERS	140-208	4292	100.00	
OTHER SKIN	173	1130	26.33	1
BREAST- FEMALE	174	865	20.15	2
COLON	153	342	7.97	3
TRACHEA, BRONCHUS AND LUNG	162	319	7.43	4
OVARY	183	165	3.84	5
RECTUM	154	145	3.38	6
NO SITE SPECIFIED	199	119	2.77	7
BODY OF UTERUS	182	96	2.24	8
MELANOMA	172	93	2.17	9
OTHER LYMPHOID	202	89	2.07	10
STOMACH	151	81	1.89	11
CERVIX UTERI	180	77	1.79	12
BLADDER	188	70	1.63	13
KIDNEY & OTHER URINARY	189	68	1.58	14
OESOPHAGUS	150	67	1.56	15
PANCREAS	157	67	1.56	16
OTHER GENITAL-FEMALE	184	34	0.79	17
THYROID	193	33	0.77	18
SECONDARY UNSPECIFIED	198	32	0.75	19
MULTIPLE MYELOMA etc.	203	31	0.72	20
LYMPHOID LEUKAEMIA	204	31	0.72	21
UTERUS-UNSPECIFIED	179	28	0.65	22
SECONDARY RESP & DIGEST	197	27	0.63	23
MYELOID LEUKAEMIA	205	27	0.63	24
BRAIN	191	24	0.56	25
GALLBLADDER	156	22	0.51	26
CONNECTIVE TISSUE	171	20	0.47	27
LIVER	155	17	0.40	28
LARYNX	161	17	0.40	29
HODGKIN'S	201	13	0.30	30
SECONDARY LYMPH NODES	196	12	0.28	31
MOUTH OTHER	145	10	0.23	32
SMALL INTESTINE	152	10	0.23	33
OTHER DIGESTIVE	159	10	0.23	34
TONGUE	141	9	0.21	35
OTHER ENDOCRINE	194	9	0.21	36
LYMPHOSARCOMA	200	9	0.21	37
SALIVARY GLANDS	142	7	0.16	38
BONE	170	7	0.16	39
OTHER ILL-DEFINED	195	7	0.16	40
OROPHARYNX	146	6	0.14	41
NASOPHARYNX	147	6	0.14	42
OTHER LIP, ORAL,PHARYNX	149	6	0.14	43
NASAL etc.	160	6	0.14	44
LIP	140	5	0.12	45
HYPOPHARYNX	148	5	0.12	46
LEUKAEMIA UNSPECIFIED	208	5	0.12	47
EYE	190	4	0.09	48
MOUTH -FLOOR	144	3	0.07	49
GUM	143	2	0.05	50
PLEURA	163	1	0.02	51
THYMUS, HEART	164	1	0.02	52
PLACENTA	181	1	0.02	53
OTHER NERVOUS	192	1	0.02	54
OTHER SPECIFIED LEUKAEMIA	207	1	0.02	55
RETROPERITONEUM	158		0.00	56
MONOCYTIC LEUKAEMIA	206		0.00	57

NB. Ranking reported in text may differ as it is based on rank for 1993-95 period

TABLE K Age Standardised Rates and Cumulative Risk (0-74 years) by Site 1995 — **Northern Ireland, Males**

Site	ICD - 9	Nos.	Crude Rate	WASR*	EASR**	Cumulative Risk (0-74 yrs)	Odds,1 in:
LIP	140	19	2.36	1.91	2.78	0.22%	455
TONGUE	141	17	2.11	1.79	2.47	0.20%	500
SALIVARY GLANDS	142	8	0.99	0.8	1.29	0.08%	1250
GUM	143	5	0.62	0.54	0.72	0.08%	1250
MOUTH-FLOOR	144	10	1.24	1.07	1.47	0.12%	833
MOUTH OTHER	145	6	0.75	0.64	0.85	0.08%	1250
MOUTH	140-145	65	8.07	6.73	9.58	0.77%	130
OROPHARYNX	146	10	1.24	1.01	1.38	0.13%	769
NASOPHARYNX	147	3	0.37	0.33	0.44	0.04%	2500
HYPOPHARYNX	148	5	0.62	0.56	0.78	0.07%	1429
OTHER LIP, ORAL, PHARYNX	149	12	1.49	1.12	1.65	0.14%	714
PHARYNX	146-149	30	3.73	3.03	4.24	0.38%	263
OESOPHAGUS	150	117	14.53	11.70	16.69	1.34%	74
STOMACH	151	157	19.5	14.47	22.1	1.60%	63
SMALL INTESTINE	152	20	2.48	1.9	2.71	0.28%	357
COLON	153	307	38.13	27.58	43.13	3.03%	33
RECTUM	154	167	20.74	15.57	23.37	1.75%	57
COLORECTAL	153-154	474	58.87	43.15	66.5	4.72%	21
LIVER	155	29	3.6	2.88	4.16	0.29%	345
GALLBLADDER	156	21	2.61	2.01	3.27	0.18%	556
PANCREAS	157	56	6.95	4.73	7.57	0.46%	217
RETROPERITONEUM	158	1	0.12	0.08	0.12	0.02%	5000
OTHER DIGESTIVE	159	4	0.5	0.39	0.65	0.03%	3333
NASAL etc.	160	7	0.87	0.76	1.13	0.06%	1667
LARYNX	161	61	7.58	6.17	8.75	0.81%	123
TRACHEA, BRONCHUS,LUNG	162	533	66.19	48.75	73.15	6.08%	16
PLEURA	163	22	2.73	2.11	3.14	0.22%	455
THYMUS, HEART	164	1	0.12	0.11	0.13	0.01%	10000
BONE	170	15	1.86	1.89	1.75	0.14%	714
CONNECTIVE TISSUE	171	22	2.73	2.45	3.01	0.26%	385
MELANOMA	172	64	7.95	6.57	9.07	0.67%	159
OTHER SKIN	173	1107	136.36	102.38	155.13	10.75%	9
BREAST - MALE	175	11	1.37	0.88	1.41	0.08%	1250
PROSTATE	185	445	55.26	36.49	61.37	3.62%	28
TESTIS	186	41	5.09	4.75	4.97	0.36%	278
PENIS	187	14	1.74	1.36	2.02	0.13%	769
BLADDER	188	145	18.01	13.02	19.73	1.50%	67
KIDNEY & OTHER URINARY	189	99	12.29	9.85	13.8	1.19%	84
EYE	190	9	1.12	1.02	1.12	0.12%	833
BRAIN	191	51	6.33	5.81	6.97	0.60%	167
OTHER NERVOUS	192	2	0.25	0.25	0.29	0.02%	5000
THYROID	193	10	1.24	1.05	1.37	0.14%	714
OTHER ENDOCRINE	194	13	1.61	1.42	1.82	0.16%	625
OTHER ILL-DEFINED	195	5	0.62	0.5	0.76	0.07%	1429
SECONDARY LYMPH NODES	196	4	0.5	0.32	0.5	0.03%	3333
SECONDARY RESP & DIGEST	197	20	2.48	1.84	2.66	0.22%	455
SECONDARY UNSPECIFIED	198	17	2.11	1.64	2.31	0.22%	455
NO SITE SPECIFIED	199	113	14.03	10.07	15.43	1.23%	81
LYMPHOSARCOMA	200	14	1.74	1.37	1.92	0.12%	833
HODGKIN'S	201	29	3.6	3.29	3.98	0.27%	370
OTHER LYMPHOID	202	108	13.41	10.68	15.32	1.16%	86
MULTIPLE MYELOMA etc.	203	33	4.1	3.11	4.65	0.33%	303
LYMPHOID LEUKAEMIA	204	40	4.97	4.10	5.01	0.33%	299
MYELOID LEUKAEMIA	205	24	2.98	2.21	3.37	0.18%	556
MONOCYTIC LEUKAEMIA	206	1	0.12	0.06	0.13	0.00%	-
OTHER SPECIFIED LEUKAEMIA	207	1	0.12	0.05	0.1	0.00%	-
LEUKAEMIA UNSPECIFIED	208	5	0.62	0.48	0.77	0.03%	3333
CHILDHOOD CANCERS	-	27	13.52	.45	3.08	0.20%	500
ALL CANCERS	140-208	4060	504.21	378.69	565.83	34.53%	3
ALL CANCERS EXC. NON MELANOMA SKIN CANCER	140-208 (exc.173)	2953	367.85	276.31	410.7	26.65%	4

* World Age Standardised Rate
** European Age Standardised Rate

TABLE L Age Standardised Rates and Cumulative Risk (0-74 years) by Site 1995 **Northern Ireland, Females**

Site	ICD - 9	Nos.	Crude Rate	WASR*	EASR**	Cumulative Risk (0-74 yrs)	Odds,1 in:
LIP	140	5	0.59	0.48	0.61	0.07%	1429
TONGUE	141	9	1.07	0.67	0.95	0.08%	1250
SALIVARY GLANDS	142	7	0.83	0.55	0.77	0.08%	1250
GUM	143	2	0.24	0.22	0.29	0.02%	5000
MOUTH -FLOOR	144	3	0.36	0.29	0.42	0.04%	2500
MOUTH OTHER	145	10	1.19	0.82	1.15	0.09%	1111
MOUTH	140-145	36	4.27	3.04	4.21	0.37%	270
OROPHARYNX	146	6	0.71	0.48	0.69	0.07%	1429
NASOPHARYNX	147	6	0.71	0.66	0.81	0.07%	1429
HYPOPHARYNX	148	5	0.59	0.39	0.57	0.05%	2000
OTHER LIP, ORAL,PHARYNX	149	6	0.71	0.55	0.73	0.07%	1429
PHARYNX	146-149	23	2.73	2.09	2.81	0.26%	385
OESOPHAGUS	150	67	7.94	4.09	6.29	0.51%	196
STOMACH	151	81	9.60	5.51	8.03	0.62%	161
SMALL INTESTINE	152	10	1.19	0.72	1.05	0.08%	1250
COLON	153	342	40.53	21.78	33	2.33%	43
RECTUM	154	145	17.19	9.80	14.62	1.05%	95
COLORECTAL	153-154	487	57.72	31.58	47.62	3.35%	30
LIVER	155	17	2.01	1.31	1.84	0.16%	625
GALLBLADDER	156	22	2.61	1.34	2.08	0.18%	556
PANCREAS	157	67	7.94	3.97	6.10	0.46%	217
RETROPERITONEUM	158						
OTHER DIGESTIVE	159	10	1.19	0.36	0.69	0.02%	5000
NASAL etc.	160	6	0.71	0.42	0.61	0.05%	2000
LARYNX	161	17	2.01	1.17	1.71	0.15%	667
TRACHEA, BRONCHUS AND LUNG	162	319	37.81	22.72	33.31	2.96%	34
PLEURA	163	1	0.12	0.12	0.14	0.01%	10000
THYMUS, HEART	164	1	0.12	0.12	0.14	0.01%	10000
BONE	170	7	0.83	0.71	0.71	0.05%	2000
CONNECTIVE TISSUE	171	20	2.37	2.06	2.37	0.17%	588
MELANOMA	172	93	11.02	8.23	10.45	0.88%	115
OTHER SKIN	173	1130	132.74	72.59	108.77	7.81%	13
BREAST- FEMALE	174	865	102.52	75.70	104.02	8.12%	12
UTERUS-UNSPECIFIED	179	28	3.32	2.33	3.19	0.24%	417
CERVIX UTERI	180	77	9.13	7.79	9.83	0.80%	125
PLACENTA	181	1	0.12	0.09	0.11	0.01%	10000
BODY OF UTERUS	182	96	11.38	7.77	11.21	0.99%	101
OVARY	183	165	19.56	14.60	19.61	1.70%	59
OTHER GENITAL-FEMALE	184	34	4.03	2.28	3.36	0.28%	357
BLADDER	188	70	8.30	4.72	6.93	0.60%	167
KIDNEY & OTHER URINARY	189	68	8.06	5.33	7.58	0.69%	145
EYE	190	4	0.47	0.54	0.47	0.03%	3333
BRAIN	191	24	2.84	2	2.59	0.16%	625
OTHER NERVOUS	192	1	0.12	0.16	0.11	0.01%	10000
THYROID	193	33	3.91	3.29	3.93	0.31%	323
OTHER ENDOCRINE	194	9	1.07	1.09	1.13	0.10%	1000
OTHER ILL-DEFINED	195	7	0.83	0.37	0.57	0.04%	2500
SECONDARY LYMPH NODES	196	12	1.42	0.91	1.31	0.14%	714
SECONDARY RESP & DIGEST	197	27	3.20	1.90	2.74	0.19%	526
SECONDARY UNSPECIFIED	198	32	3.79	3.01	4.07	0.35%	286
NO SITE SPECIFIED	199	119	14.10	6.44	10.34	0.67%	149
LYMPHOSARCOMA	200	9	1.07	0.72	1.02	0.08%	1250
HODGKIN'S	201	13	1.54	1.33	1.52	0.12%	833
OTHER LYMPHOID	202	89	10.55	6.69	9.54	0.85%	118
MULTIPLE MYELOMA etc.	203	31	3.67	2.03	2.95	0.26%	385
LYMPHOID LEUKAEMIA	204	31	3.67	2.94	3.37	0.28%	357
MYELOID LEUKAEMIA	205	27	3.20	2.17	2.93	0.22%	455
MONOCYTIC LEUKAEMIA	206						
OTHER SPECIFIED LEUKAEMIA	207	1	0.12	0.03	0.05	0.00%	-
LEUKAEMIA UNSPECIFIED	208	5	0.59	0.22	0.38	0.03%	3333
CHILDHOOD CANCERS	-	21	11.04	3.55	2.23	0.17%	588
ALL CANCERS	140-208	4292	508.69	319.63	455.11	30.40%	3
ALL CANCERS EXC. NON MELANOMA SKIN CANCER	140-208(exc. 173)	3162	375.95	247.04	346.34	24.50%	4

* World Age Standardised Rate
** European Age Standardised Rate

TABLE M Average Numbers of New Cancers (Selected Sites) Per Annum 1993-95 for Males by Health Board and District Council

HEALTH BOARD	DISTRICT COUNCIL	Oesophagus ICD - 9 150	Stomach ICD - 9 151	Colon ICD - 9 153	Rectum ICD - 9 154	Pancreas ICD - 9 157	Lung ICD - 9 162	Prostate ICD - 9 185	Bladder ICD - 9 188	Kidney ICD - 9 189	All Cancers ICD - 9 140-208
Eastern	ARDS	2.67	7.00	9.33	7.00	3.33	24.33	12.67	4.67	2.67	122.67
	BELFAST	24.67	33.33	64.00	34.33	15.33	164.00	62.00	36.67	20.33	767.00
	CASTLEREAGH	6.00	8.00	12.33	6.67	2.33	25.67	15.67	6.00	4.00	153.67
	DOWN	3.67	5.67	11.00	5.33	1.00	23.00	9.33	3.67	3.00	122.67
	LISBURN	6.33	8.33	13.67	12.00	4.67	27.33	16.67	8.00	8.33	194.67
	NORTH DOWN	5.00	5.67	15.00	11.33	3.33	26.67	14.33	7.67	5.33	166.33
Totals		48.33	68.00	125.33	76.67	30.00	291.00	130.67	66.67	43.67	1527.00
Northern	ANTRIM	3.00	2.00	7.00	4.33	1.67	13.67	10.67	2.33	4.33	86.33
	BALLYMENA	3.00	7.67	12.00	3.00	1.33	15.33	17.33	2.67	3.33	121.67
	BALLYMONEY	2.67	2.67	5.67	1.00	1.00	6.67	7.00	1.33	1.33	53.33
	CARRICKFERGUS	2.67	2.67	5.33	2.67	0.67	14.00	9.33	3.00	3.00	75.67
	COLERAINE	3.67	3.33	10.67	4.67	3.33	20.00	14.67	7.00	2.67	125.00
	COOKSTOWN	0.67	2.67	4.67	3.67	1.00	7.00	11.67	3.00	1.33	68.33
	LARNE	2.33	2.00	8.33	5.00	2.33	11.33	8.00	3.33	3.00	75.33
	MAGHERAFELT	1.67	4.00	6.33	3.00	1.67	8.33	6.00	1.67	1.00	69.67
	MOYLE	1.33	1.00	3.00	0.67	1.00	5.00	6.67	1.33	0.67	36.67
	NEWTOWNABBEY	3.00	9.33	14.33	8.67	5.00	23.67	15.67	6.33	5.67	161.00
Totals		24.00	37.33	77.33	36.67	19.00	125.00	107.00	32.00	26.33	873.00
Southern	ARMAGH	1.33	3.67	8.33	4.67	1.00	10.33	21.33	3.00	5.67	120.33
	BANBRIDGE	2.33	2.67	4.33	2.33	0.33	8.33	11.33	2.67	3.67	82.67
	CRAIGAVON	4.33	6.00	10.00	10.00	1.00	20.00	25.33	4.33	7.67	188.33
	DUNGANNON	1.67	6.33	7.00	3.33	2.33	12.67	8.67	4.33	1.67	104.00
	NEWRY & MOURNE	6.33	12.67	17.67	8.33	6.33	26.33	24.00	8.00	8.00	233.00
Totals		16.00	31.33	47.33	28.67	11.00	77.67	90.67	22.33	26.67	728.33
Western	FERMANAGH	5.67	7.00	11.67	9.67	3.67	17.67	18.00	4.33	2.33	146.33
	LIMAVADY	1.33	4.00	5.00	1.67	0.33	5.67	5.00	2.00	1.33	57.67
	DERRY	6.33	8.00	11.00	6.67	2.67	32.00	13.33	6.33	4.33	178.33
	OMAGH	2.67	3.67	8.33	6.00	1.33	9.00	12.67	4.00	3.00	98.33
	STRABANE	2.33	2.00	5.67	4.67	1.67	11.67	5.00	1.33	1.00	79.33
Totals		18.33	24.67	41.67	28.67	9.67	76.00	54.00	18.00	12.00	560.00
Grand Total		106.67	161.33	291.67	170.67	69.67	569.67	382.33	139.00	108.67	3688.33

NB: Numbers may vary with incident cases reported elsewhere as numbers are based on only those cases capable of being assigned to a District Council (i.e. with sufficient address information)

TABLE N Average Numbers of New Cancers (Selected Sites) Per Annum 1993-95 for Females by Health Board and District Council

HEALTH BOARD	DISTRICT COUNCIL	Oesophagus ICD - 9 150	Stomach ICD - 9 151	Colon ICD - 9 153	Rectum ICD - 9 154	Lung ICD - 9 162	Breast ICD - 9 174	Cervix ICD - 9 180	Ovary ICD - 9 183	Bladder ICD - 9 188	Kidney ICD - 9 189	All Cancers ICD - 9 140-208
Eastern	ARDS	2.67	2.33	12.33	8.00	14.33	32.67	5.67	8.33	1.33	2.00	171.33
	BELFAST	17.00	24.00	59.33	30.33	99.67	150.00	20.00	29.00	16.33	12.00	822.67
	CASTLEREAGH	2.00	5.00	14.00	4.00	16.00	31.33	3.67	7.33	3.00	5.33	170.00
	DOWN	2.67	4.00	10.67	3.33	11.67	24.67	3.33	6.67	0.67	1.00	147.00
	LISBURN	2.33	5.33	17.33	6.67	18.33	42.33	4.33	12.00	3.67	4.33	244.33
	NORTH DOWN	4.00	4.00	19.33	5.33	16.00	40.33	4.33	9.00	3.33	3.67	216.67
Totals		30.67	44.67	133.00	57.67	176.00	321.33	41.33	72.33	28.33	28.33	1772.00
Northern	ANTRIM	2.67	1.67	7.00	1.67	7.67	20.33	1.33	3.33	0.33	1.33	84.00
	BALLYMENA	2.00	2.33	13.67	6.00	7.00	29.00	2.33	8.67	1.67	3.00	139.00
	BALLYMONEY	0.00	1.67	8.67	0.67	3.00	14.00	1.33	3.00	0.00	1.00	59.67
	CARRICKFERGUS	1.33	1.67	7.33	4.00	7.00	13.33	0.67	3.00	1.00	1.00	85.33
	COLERAINE	0.67	3.33	13.67	4.00	6.67	30.33	2.33	3.33	2.33	3.00	139.00
	COOKSTOWN	1.00	3.67	3.67	1.33	3.00	10.67	1.67	2.33	1.33	0.33	57.00
	LARNE	1.33	0.67	6.67	2.67	6.00	15.33	0.67	3.67	2.00	1.67	74.33
	MAGHERAFELT	1.33	0.33	6.67	2.00	3.67	18.33	0.67	5.33	0.33	1.67	79.33
	MOYLE	0.67	0.33	2.67	1.67	2.00	11.67	0.67	2.00	1.00	1.00	42.67
	NEWTOWNABBEY	3.00	3.00	15.00	9.00	15.67	43.67	2.67	9.33	2.67	3.00	194.33
Totals		14.00	18.67	85.00	33.00	61.67	206.67	14.33	44.00	12.67	17.00	954.67
Southern	ARMAGH	2.00	2.33	10.33	4.00	5.00	28.00	1.00	5.33	1.67	3.00	130.33
	BANBRIDGE	0.33	2.33	7.00	3.67	3.67	18.00	2.33	2.33	2.00	1.00	89.67
	CRAIGAVON	2.67	3.67	10.67	5.67	9.00	39.67	4.33	6.33	1.67	2.33	191.67
	DUNGANNON	0.00	3.00	11.00	4.00	2.67	22.33	1.67	2.67	1.00	1.00	100.33
	NEWRY & MOURNE	3.33	6.00	17.67	5.67	10.67	40.33	2.33	8.33	3.67	1.33	219.00
Totals		8.33	17.33	56.67	23.00	31.00	148.33	11.67	25.00	10.00	8.67	731.00
Western	FERMANAGH	1.67	2.33	7.33	2.67	7.33	29.33	2.33	1.33	1.67	1.67	121.00
	LIMAVADY	2.00	1.00	4.00	2.67	4.33	17.67	2.33	2.67	0.67	0.33	68.67
	DERRY	2.00	4.67	17.00	5.00	19.67	45.67	3.00	7.67	4.00	2.00	214.33
	OMAGH	1.33	2.33	7.00	2.00	5.33	19.00	2.00	1.33	0.67	1.00	103.33
	STRABANE	1.33	2.00	8.00	2.67	5.33	14.67	0.67	1.33	1.67	2.00	82.00
Totals		8.33	12.33	43.33	15.00	42.00	126.33	10.33	14.33	8.67	7.00	589.33
Grand Total		61.33	93.00	318.00	128.67	310.67	802.67	77.67	155.67	59.67	61.00	4047.00

NB: Numbers may vary with incident cases reported elsewhere as numbers are based on only those cases capable of being assigned to a District Council (i.e. with sufficient address information)

TABLE O 1995 Northern Ireland Population and Standard World and European Populations

Age Group	World Standard Population	European Standard Population	N.I. Male Mid-Year Estimates 1995	N.I. Female Mid-Year Estimates 1995	N.I. Total 1995
0-4	12000	8000	64566	61787	126353
5-9	10000	7000	67865	64408	132273
10-14	9000	7000	67275	64105	131380
15-19	9000	7000	63981	60546	124527
20-24	8000	7000	66509	61258	127767
25-29	8000	7000	63600	63829	127429
30-34	6000	7000	61441	64227	125668
35-39	6000	7000	55735	57832	113567
40-44	6000	7000	49644	49648	99292
45-49	6000	7000	48229	49273	97502
50-54	5000	7000	43268	44661	87929
55-59	4000	6000	36772	38991	75763
60-64	4000	5000	32437	36379	68816
65-69	3000	4000	29230	35907	65137
70-74	2000	3000	24649	33055	57704
75-79	1000	2000	15930	24834	40764
80-84	500	1000	9576	18948	28524
>85	500	1000	4515	14050	18565
	100000	**100000**	**805222**	**843738**	**1648960**

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Appendices

i. Useful Addresses

ii. Methods and Glossary of Statistical Terms

iii. Map of District Councils

iv. List of Abbreviations

v. European Code Against Cancer

vi. Members of the Registry Council and Management Group

Appendix i

Useful Addresses

		ADDRESS	TELEPHONE
BENEFITS	Advice on Benefits	Social Security Agency Castle Court Royal Avenue BELFAST BT1 1SB	01232 336000
BEREAVEMENT	CRUSE	ARMAGH & DUNGANNON (MOY) BALLYCASTLE BALLYMENA BANGOR BELFAST LONDONDERRY OMAGH	01868 784004 01265 666686 01266 630900 01247 272444 01232 232695 01504 262941 01662 244414
BEREAVED CHILDREN	Treetops	Desney Cromey 8 Upper Crescent BELFAST BT7 1NT	01232 325008
BEREAVED PARENTS	Compassionate Friends	Mrs Claire Wray 5 Tullyhubbert Road Moneyreagh NEWTOWNARDS BT23 6LY	01232 448618
	Compassionate Friends	Ms Sue McCartney 32 Lower Ballinderry Road Ballinderry LISBURN BT28 2JH	01846 652044
BREAST CANCER	Specialist Units with Hospital Based Breast Care Nurses	Antrim Area Hospital 45 Bush Road ANTRIM BT41 2RL	01849 424000
		Ulster Independent Clinic 245 Stranmillis Road BELFAST BT9 5JH	01232 661212
		Royal Victoria Hospital Grosvenor Road BELFAST BT12 6BA	01232 240503
		Belfast City Hospital Tower Block Lisburn Road BELFAST BT9 7AB	01232 329241
		Ulster Hospital Upper Newtownards Road DUNDONALD BT16 1RH	01232 484511
		Altnagelvin Hospital Glenshane Road LONDONDERRY BT47 6SB	01504 45171
		Tyrone County Hospital Hospital Road OMAGH BT79 0AP	01662 245211

Breast Cancer Continued		Craigavon Area Hospital 68 Lurgan Road PORTADOWN BT63 5QQ	01762 334444
CANCER INFORMATION	Helpline	Ulster Cancer Foundation 40-42 Eglantine Avenue BELFAST BT9 6DX	01232 663439
CANCER REGISTRATION		N Ireland Cancer Registry Department of Epidemiology The Queen's University of Belfast	01232 263136
CANCER SUPPORT SERVICES	Childhood Cancer, Breast Cancer,Ovarian Cancer, Lymphomas, Urostomy Association	Ulster Cancer Foundation 40-42 Eglantine Avenue BELFAST BT9 6DX	01232 663281
CHILDREN	Children's Cancer Unit	Royal Belfast Hospital for Sick Children Royal Victoria Hospital Grosvenor Road BELFAST BT12 6BA	01232 240503 Ext 2402
	Malcolm Sargeant Social Worker	Royal Belfast Hospital for Sick Children Royal Victoria Hospital Grosvenor Road BELFAST BT12 6BA	01232 240503 Ext 3399
CITIZENS ADVICE	Citizens Advice Bureau	Regional Office 11 Upper Crescent BELFAST BT7 1NT Contact above for Local Numbers	01232 231120
COLOSTOMY	Colostomy Association for N. Ireland	Mrs E Willey 4 Carnalea Avenue BANGOR BT19 1HF	01247 451243
DEPRESSION	N. Ireland Association for Mental Health	80 University Street BELFAST BT7 1HE	01232 328474
	The Samaritans	BALLYMENA BANGOR BELFAST COLERAINE LONDONDERRY NEWRY OMAGH PORTADOWN	01266 650000 01247 464646 01232 664422 01265 320000 01504 265511 01693 66367 01662 244944 01762 333555
DIET	Community Dieticians Office Eastern Board Area	Iveagh Building 67 Broadway BELFAST BT12 6HF	01232 327103

Diet Continued	Western Board Area	15 Elliott Place Coleshill ENNISKILLEN	01365 344093
		Omagh Health Centre Mountjoy Road OMAGH BT79 7BA	01662 243521
	Shantallow Health Centre	Racecourse Road LONDONDERRY BT48 8NL	01504 351350
	Southern Board Area	Beechfield House Craigavon Area Hospital Portadown CRAIGAVON	01762 361100
		John Mitchell Place NEWRY BT34 2BU	01693 67030
		Health Promotion Department Ward 4, St Lukes Hospital Loughall Road ARMAGH	01861 522381
	Northern Board Area	Coleraine Health Centre Castlerock Road COLERAINE	01265 44831
		Route Hospital Coleraine Road BALLYMONEY	01265 66600
		Dalriada Hospital BALLYCASTLE Co. Antrim	01265 762666
		Mid Ulster Hospital MAGHERAFELT	01648 31031
		Braid Valley Hospital BALLYMENA BT43 6HH	01849 42400
		Whiteabbey Hospital Doagh Road NEWTOWNABBEY	01232 865181
ENVIRONMENTAL HEALTH		Contact Local District Council Office	

HEALTH PROMOTION SERVICES	Health Promotion Agency for N. Ireland Some services available from Trusts. Contact directly.	180 Ormeau Road BELFAST BT7 2ED	01232 311611
		SHSSB Health Promotion and Education, St Luke's Loughall Road ARMAGH BT61 7NQ	01861 522341
		NHSSB Central Health Promotion Dept Homefirst Community Trust Spruce House Cushendall Road BALLYMENA BT43 6HL	01266 635575
		EHSSB Health Promotion Unit Champion House 12-22 Linenhall Street BELFAST BT2 8BS	01232 321313 Ext 2011
		WHSSB Health Promotion Dept Lilac Villa 12c Gransha Park LONDONDERRY BT47 6WJ	01504 865127
HEALTH AND SOCIAL SERVICES	Information Helpline	EHSSB Champion House 12-22 Linenhall Street BELFAST BT2 8BS	0800 665544
		NHSSB 182 Galgorm Road Ballymena BT42 1QB	0345 626428
		WHSSB 15 Gransha Park Clooney Road LONDONDERRY BT47 1GT	0800 585329
		SHSSB Tower Hill Armagh BT61 9DR	0800 665544
HOSPICE CARE		N. Ireland Hospice 74 Somerton Road BELFAST BT15 3LH	01232 781836
		N. I. Hospice Children's Service 525 Antrim Road BELFAST BT15 3BS	01232 777635

Hospices Continued		Marie Curie Centre Kensington Road BELFAST BT5 6NF	01232 794200
		Foyle Hospice 61 Culmore Road LONDONDERRY BT48 8JE	01504 351010
		Newry Hospice St John of God Hospital Courtney Hill NEWRY BT84 2EB	01693 67711
HYSTERECTOMY	Hysterectomy Support Group	Mrs Anna Jaminson 33 Lenaghan Park BELFAST BT8 4JB	01232 702542
ILEOSTOMY	Ileostomy Association of N. Ireland	Mr J McIlwaine 9 James Mount BANGOR BT20 4NR	01247 459233
LEUKAEMIA	Leukaemia Research Fund	c/o Dept of Haematology Royal Victoria Hospital Grosvenor Road BELFAST BT12 6BA	01232 240503 Ext 3534
MARRIAGE GUIDANCE	Relate All other areas contact:	LONDONDERRY Relate Head Office 76 Dublin Road BELFAST BT2 7HP	01504 371502 01232 323454
NURSING SERVICES	MacMillan Nurses Home Care Services	Hospice Home Care Braid Valley Hospital Cushendall Road BALLYMENA BT43 6HL	01266 41199
		Hospice Home Care 7F Castlerock Road COLERAINE BT51 3HP	01265 42492
		Hospice Home Care North Down & Ards 32-34 Main Street BANGOR BT20 5AG	01247 270227
		c/o N. Ireland Hospice 74 Somerton Road BELFAST BT15 3LH	01232 781836
		MacMillan Service Gilford Health Centre Castleview Gilford CRAIGAVON BT63 6JS	01762 832091
		MacMillan Liaison Nurse Erne Hospital ENNISKILLEN BT74 6AY	01365 324711 Ext 3497

Nursing Services Continued		MacMillan Service Moy Health Centre Charlemont Road MOY BT71 7SL	01868 784551
		MacMillan Liaison Service County Hospital OMAGH BT79 0AP	01662 245211
	MacMillan Nurses Hospital Based Services	Altnagelvin Hospital Belfast City Hospital Belvoir Park Hospital Erne Hospital South Tyrone Hospital Tyrone County Hospital Ulster Hospital Addresses as previously stated.	01504 45171 01232 329241 01232 491942 01365 324711 01868 722821 01662 245211 01232 484511
	Marie Curie Nursing Service	Nurse Manager Marie Curie Centre Kensington Road BELFAST BT5 6NF	01232 401817/ 01232 403811
PATIENT GRANTS	Cancer Relief MacMillan Fund	219 Upper Newtownards Rd BELFAST BT4 3JD or Hospital Social Worker	01232 654654
PHYSICAL DISABILITY	Disability Action	2 Annadale Avenue BELFAST BT7 3JH	01232 491011
RADIATION	Radon Advice	Dept of the Environment Environment Service Environmental Protection Calvert House 23 Castle Place BELFAST BT1 1FY or local District Council.	01232 254754
		National Radiation Protection Board NRPB Chilton Didcot OXON OX11 0RQ	01235 831600
RADIOTHERAPY	N. Ireland Centre for Clinical Oncology	Belvoir Park Hospital Hospital Road BELFAST BT8 8JR	01232 491942
		Medical Oncology University Floor, BCH Tower Lisburn Road Belfast BT9 7AB	01232 329241 Ext 2229

RESEARCH	Cancer Research	Ulster Cancer Foundation 40-42 Eglantine Avenue BELFAST BT9 6DX	01232 663281
		Cancer Research Campaign Unit 1 The Pavilions 22A Kinnegar Drive HOLYWOOD BT18 9JQ	01232 426667
		Dept of Oncology University Floor BCH Tower Lisburn Road Belfast BT9 7AB	01232 263911 Fax: 01232 314055
		Leukaemia Research c/o Dept of Haematology Royal Victoria Hospital Grosvenor Road BELFAST BT12 6BA	01232 240503 Ext 3534
		N Ireland Cancer Registry Department of Epidemiology and Public Health The Queen's University of Belfast	01232 263136
		School of Biomedical Sciences University of Ulster COLERAINE BT52 1SA	01265 44141
SAFETY	Health & Safety Agency for N. Ireland	83 Ladas Drive BELFAST BT6 9FR	01232 243249
	Health & Safety Inspectorate	83 Ladas Drive BELFAST BT6 9FR	01232 251333
SCREENING	N. Ireland Population Screening	NI Screening Programme Breast and Cervical Cancer 12-22 Linenhall Street BELFAST BT2 8BS	01232 333700
SMOKING	Action on Smoking and Health, Stop Smoking Advice and Clinic, Stop Smoking Training Courses for Health Professionals	Ulster Cancer Foundation 40-42 Eglantine Avenue BELFAST BT9 6DX	01232 663281
	Contact GP or local Health Promotion Department		
SPEECH THERAPISTS		Adult Services Coordinator S&E Belfast Community Trust 17 Wellington Park BELFAST BT9 6EA	01232 381781

SPORT	Sports Council	House of Sport Upper Malone Road BELFAST BT9 5LA	01232 381222
STOMA	Stoma Care Advisor	c/o Sangers Ltd 2 Marshalls Road BELFAST BT5 6SR or contact Local Hospital or Community Health Centre	01232 401111
WIGS	N. Ireland Centre for Clinical Oncology	Surgical Appliances Officer Belvoir Park Hospital Hospital Road BELFAST BT8 8JR	01232 491942
WILLS	Probate Office	Royal Courts of Justice Chichester Street BELFAST BT1 3JF	01232 235111
WORKPLACE	Employment Medical Advisory Service (EMAS)	83 Ladas Drive BELFAST BT6 9FJ	01232 542122

Appendix ii

Methods and Glossary of Statistical Terms

Incident Cases - newly diagnosed cases of cancer.

Crude Rate - the numbers of incident cases per 100,000 of population per year calculated as:

$$C = \frac{R}{N} \times 100{,}000$$

where: R is the total number of the;
N is the total number of person-years of observation

Age Specific Rates - the rates per 100,000 per year specific to particular age groups (0-4,5-9 or 80-84,85+) calculated as:

$$a_i = \frac{r_i}{n_i} \times 100{,}000$$

where: a_i is the age specific rate;
r_i is the number of incident cases in age group i:
n_i is the number of person-years of observation;

Age Standardised Rates - (World and European) Rate used to permit international comparisons by adjusting for differences in national population age structures by adopting a notional standard population. Reported as a rate per 100,000. The direct method employed here calculates theoretical rates which would apply if the age specific rates for Northern Ireland applied in the standard population. The standard populations used are the World and European Populations. The world standard population has a younger age structure see Table 0. The purpose of the standard populations is to provide an accepted standard set of population 'weights' which permit national and international comparisons to be made by taking account of in age structure between diverse populations. They are calculated as follows:

$$ASR = \frac{\sum_{i=1}^{A} a_i w_i}{\sum_{i=1}^{A} w_i}$$

where: a_i is the age specific rate in age class i;
w_i is the standard population in age class i;
A represents the number of age intervals;

Cumulative Risk - Generally expressed as a percentage, this measure represents the risk an individual would have of developing the disease in question over a given age span. For childhood cancers the age span of 0-14 is used; for overall lifespan the measure is usually taken from 0-74 years. It is defined as:

Cumulative Risk = 100 x[1 - exp (-cumulative rate/100)]

where:
The cumulative rate = $\sum_{i=1}^{A} a_i t_i$

and a_i is the age specific incident rate in the *ith* class which is 4 years long (generally five years)

Standardised Incidence Ratio - The ratio is calculated by comparing the observed number of cases with that expected:

$$\frac{O}{E} \text{ x100}$$

The expected number of cases is calculated by applying a standard set of age-specific rates (a_i) (in this context, Northern Ireland rates) to the population of interest:

$$\sum_{i=1}^{A} ei = \sum_{i=1}^{A} a_i n_i/100{,}000$$

where:

ei is the number of expected cases in age class i and is the product of the 'standard rate' and the number of persons in age class i in the population:

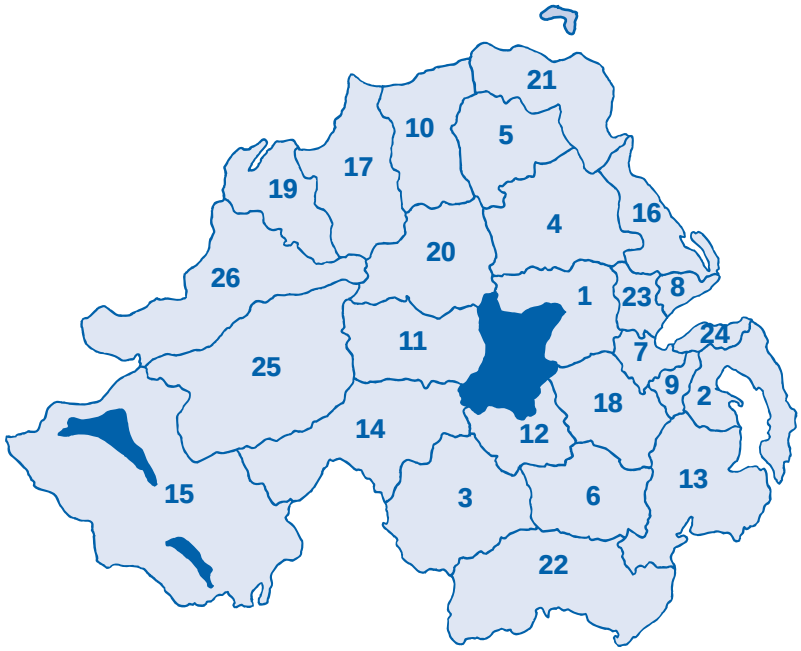
To compare observed number with expected.

$$M = \frac{\sum_{i=1}^{A} r_i}{\sum_{i=1}^{A} e_i} = \frac{\sum_{i=1}^{A} r_i}{\sum_{i=1}^{A} a_i n_i /100{,}000}$$

The result is generally expressed as a percentage by multiplying by 100. When applied to incidence data it is referred to as the **Standardised Incidence Ratio (SIR)** and when applied to deaths, **Standardised Mortality Ratio (SMR).**

Appendix iii

Map of District Councils



Health Board N = Northern Board
S = Southern Board
E = Eastern Board
W = Western Board

Code	Health Board	District Council	1991 Census Population
1	N	Antrim	44,516
2	E	Ards	64,764
3	S	Armagh	51,817
4	N	Ballymena	56,641
5	N	Ballymoney	24,198
6	S	Banbridge	33,482
7	E	Belfast	279,237
8	N	Carrickfergus	32,750
9	E	Castlereagh	60,799
10	N	Coleraine	50,438
11	N	Cookstown	31,082
12	S	Craigavon	74,986
13	E	Down	58,008
14	S	Dungannon	45,428
15	W	Fermanagh	54,033
16	N	Larne	29,419
17	W	Limavady	29,567
18	E	Lisburn	99,458
19	W	Derry	95,371
20	N	Magherafelt	36,293
21	N	Moyle	14,789
22	S	Newry/Mourne	82,943
23	N	Newtownabbey	74,035
24	E	North Down	71,832
25	W	Omagh	45,809
26	W	Strabane	36,141

List of Abbreviations

CIN	Cervical Interstitial Neoplasia
CPD	Central Postcode Directory
CRC	Cancer Research Campaign
CSA	Central Services Agency
DCI	Death Certificate Initiated. The Registry learned of the case first from a death registration but may subsequently have received additional information on the case.
DCO	Death Certificate Only. (Cases in which the Registry learned of a case only from death registrations.)
DIS	Directorate of Information Systems
EASR	European Age Standardised Rates
IACR	International Association of Cancer Registries
IARC	International Association for Research on Cancer
ICD	International Classification of Diseases
NICR	Northern Ireland Cancer Registry
NMS	Non-Melanoma Skin Cancers
ONS	Office of National Statistics
OSNI	Ordnance Survey for Northern Ireland
PAS	Patient Administration System
SEER	Surveillance, Epidemiology and End Results Programme
SIR	Standardised Incidence Ratio
SNOMED	Systemised Nomenclature of Medicine
WASR	World Age Standardised Rates

Appendix v

European Code Against Cancer

Certain cancers may be avoided and general health improved if you adopt a healthier lifestyle

1. Do not smoke. Smokers, stop as quickly as possible and do not smoke in the presence of others.
2. If you drink alcohol, whether beer, wine or spirits, moderate your consumption.
3. Increase your daily intake of vegetables and fresh fruits. Eat cereals with a high fibre content frequently.
4. Avoid becoming overweight, increase physical activity and limit intake of fatty foods.
5. Avoid excessive exposure to the sun and avoid sunburn especially in children.
6. Apply strict regulations aimed at preventing any exposure to known cancer-causing substances. Follow all health and safety instructions on substances which may cause cancer.

More cancers may be cured if detected early

7. See a doctor if you notice a lump, a sore which does not heal (including in the mouth), a mole which changes in shape, size or colour or any abnormal bleeding.
8. See a doctor if you have persistent problems, such as a persistent cough, persistent hoarseness, a change in bowel or urinary habits or an unexplained weight loss.

For females

9. Have a cervical smear regularly. Participate in organised screening programmes for cervical cancer.
10. Check your breasts regularly. Participate in organised mammographic screening programmes if you are over 50.

Revised following EC Cancer Experts Meeting, Bonn 28-29 November 1994.

Members of the Registry Council and Management Group

COUNCIL MEMBERSHIP LIST as at 1 January 1999:

Role "to pursue the aims of the Registry and to identify and enhance opportunities for use of the Registry data" Frequency of meetings - twice a year.

Professor Gary Love (Chair)	Nominated by the UCF
Dr Henrietta Campbell	Chief Medical Officer, DHSS
Mrs Katrina Godfrey	DHSS
Dr Harry Comber	Director National Cancer Registry, Ireland
Dr Anna Gavin	Director N. Ireland Cancer Registry
Professor Ciaran Woodman	Director North Western Cancer Registry, Manchester
Mr John Moorehead	Director Northern Ireland Colorectal Registry
Professor Peter Toner	Pathology
Dr Zureena Desai	Haematology
Dr Linda Caughley	Cytology
Dr Colm Rafferty	General Practice
Professor Alun Evans	Department of Epidemiology & Public Health
Dr Ronnie Atkinson	Department of Oncology
Mr Roy A Spence	Surgery
Dr Russell Houston	Radiotherapy
Mr Gerry Cowan	Dental
Dr John Price	Obstetrics and Gynaecology
Dr Ann Bingham	Dermatology
Mr Robin Johnson	Urology
Dr Janet Little	Public Health Medicine, Eastern Health & SSB
Dr Anne Marie Telford	Director of Public Health, Southern Health & SSB
Professor Frank Kee	Public Health Medicine, Northern Health & SSB
Dr William McConnell	Director of Public Health, Western Health & SSB
Dr Tom Gardiner	In attendance from DHSS

MANAGEMENT GROUP MEMBERSHIP LIST as at 1 January 1999:

Professor Alun Evans (Chair)	Department of Epidemiology & Public Health
Dr Anna Gavin	Director, N. Ireland Cancer Registry
Professor Roy McClelland	Assistant Head of School of Medicine, QUB (Planning & Resources)
Dr Anne Marie Telford	Representing Directors of Public Health
Dr Margaret Boyle	Senior Medical Officer, DHSS
Dr Ronnie Atkinson	Department of Oncology, BCH
Mr Michael Wood	Director General, Ulster Cancer Foundation
Dr Chris Morris	Information and Research Policy Branch
Dr Tom Gardiner	In attendance from DHSS

N. Ireland Cancer Registry
Department of Epidemiology & Public Health, The Queen's University of Belfast
Mulhouse Building, Institute of Clinical Science
Grosvenor Road, Belfast, N. Ireland BT12 6BJ
Tel: 01232 263136 or 240503 Ext. 2573 Fax: 01232 248017 E.Mail: nicr@qub.ac.uk
http://quis.qub.ac.uk/nicr/intro.htm

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