

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 occurred 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

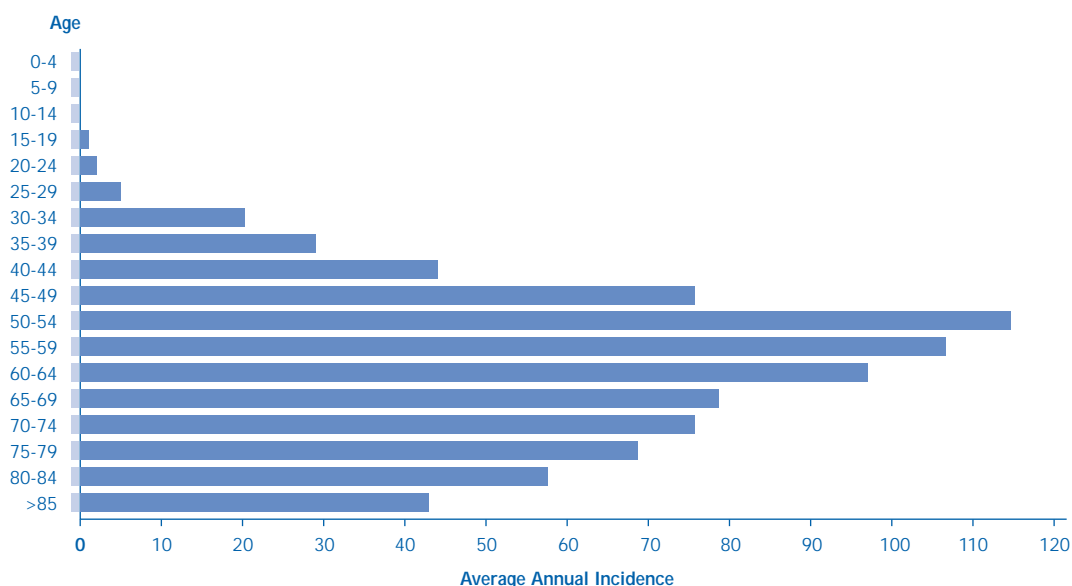
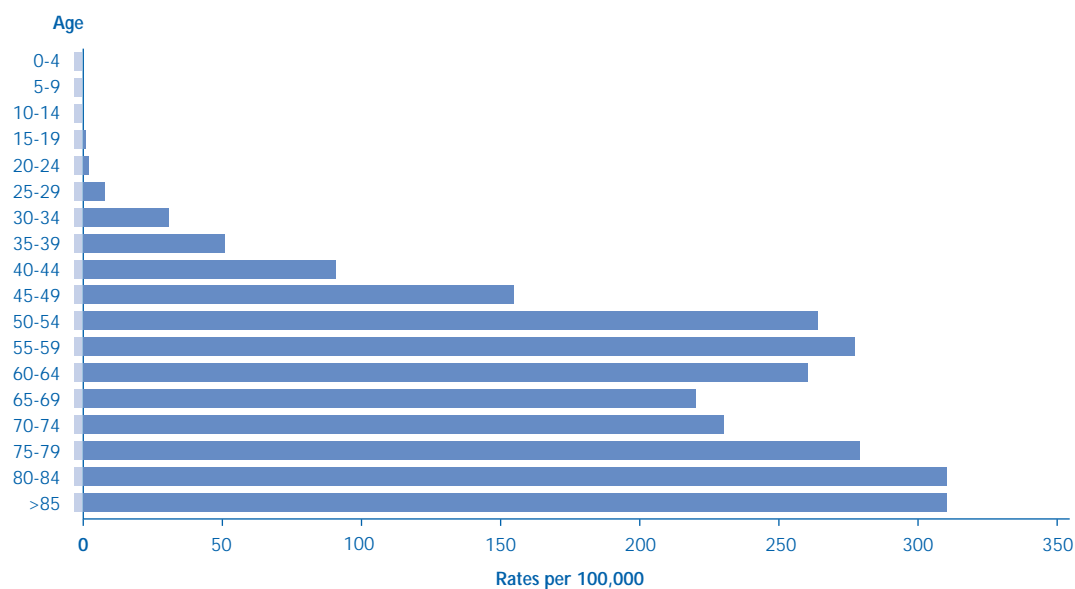


Figure 24 Average Annual Age Specific Rates (per 100,000) 1993-95, Cancer of the Female Breast



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.

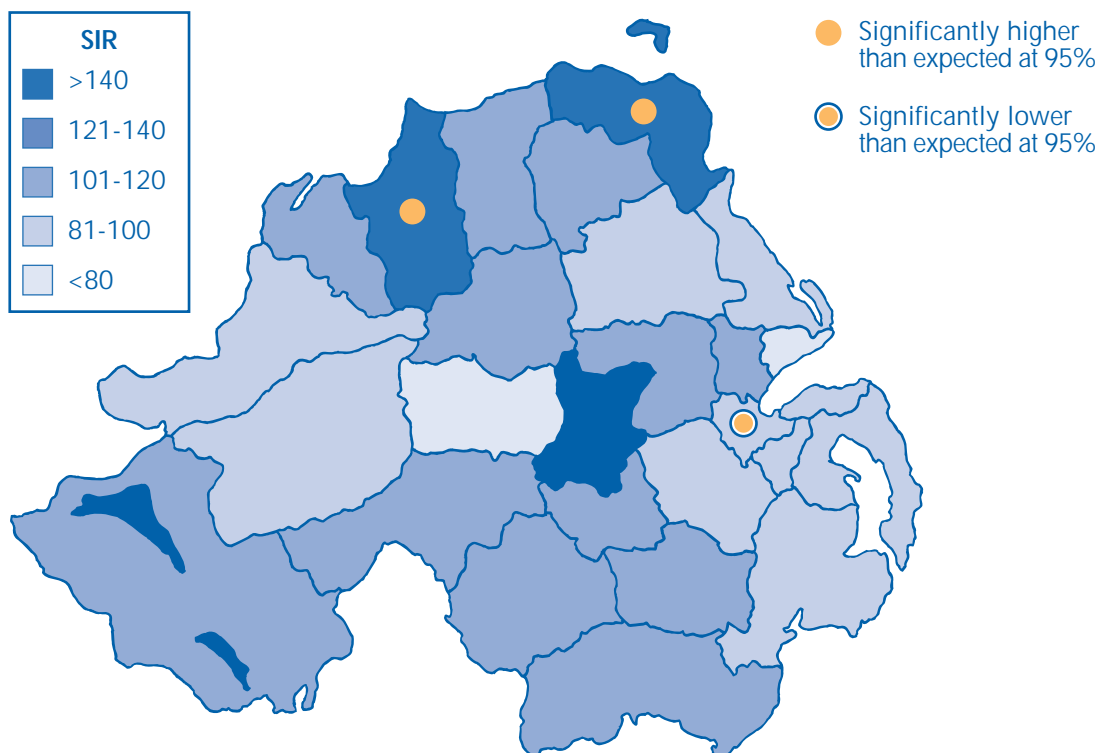
In situ lesions are pre-cancerous states which may eventually turn into fully invasive cancers if not treated. The number of *in situ* lesions averaged 6.5% of the total numbers of breast tumours. The majority (59%) of *in situ* tumours were intraductal - see Annex for detail.

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)					
		1993	%	1994	%	1995	%
INVASIVE CANCERS							
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 <i>in situ</i> , NOS	M80102	13	28.3	27	42.2	21	35.0
Lobular Carcinoma <i>in situ</i>	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

BASIS	Year of Diagnosis			Total 1993-95
	1993	1994	1995	
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 <i>in situ</i>	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 <i>in situ</i> + 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 <i>in situ</i> + invasive)	820	885	925

The number of 'node sampled' cases available to the Registry 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.