Section B
Analysis

Key messages

- One Irish person in three will develop invasive cancer, while one in four will die from it
- At present about 20,000 Irish people develop cancer and 7,500 die of the disease each year. There are approximately 120,000 cancer survivors. A substantial proportion of these cases are preventable
- About 60% of cancer patients die of the disease within five years of diagnosis
- Although cancer incidence is falling, the ageing of the population will lead to large increases in the number of people who develop cancer. The number of new cases which the system can expect to deal with by 2020 will represent an increase of 107% on the number dealt with in 2000
- There has been a transformation in the range and capacity of cancer services as a result of the 1996 National Cancer Strategy and the work of the first National Cancer Forum
- There continues to be a need for significant expansion in all aspects of cancer service capacity in order to meet the cancer needs of the population
- With some exceptions, such as paediatric cancer, Ireland performs poorly by international standards in relation to cancer risks, incidence and survival
- The current fragmented arrangements for the delivery of cancer services are not in accordance with best practice and their continuation cannot be recommended
- There is inequity in the provision, availability and performance of cancer services when examined by region, social class, age and sex
- Our cancer control system should have the potential to achieve population and individual outcomes that are on a par with the highest international standards
- This Strategy must focus on quality and accountability requirements which support the implementation and monitoring of its recommendations
- Addressing the significant issues outlined in this Strategy will require strong leadership at professional, managerial and political levels as well as meaningful accountability systems for the overall performance of the services.

B.1 Epidemiology

Cancer is a major cause of mortality and morbidity in Ireland – it accounts for approximately 7,500 deaths each year, a quarter of all deaths, and gives rise to approximately 20,000 new cases, including non-melanoma skin cancer (NMSC). There were almost 81,000 hospital discharges and over 48,000 day cases with a diagnosis of cancer in 2002.

In spite of the scale of the cancer burden in Ireland, there have been improvements both in curtailing the risk of developing cancer and in increasing cancer survival in recent years. The true risk of developing cancer is increasing by 0.5% a year for women and 0.8% for men. A significant part of this increase may be due to increased cancer detection from screening.

Allowing for the effects of population change and ageing, the overall true risk of dying from cancer is decreasing by about 1% per year. Between 1995–1997 and 1998–2000, overall relative survival from cancer (excluding NMSC) increased from 48% to 50% for women and from 38% to 44% for men. For women, there were increases in survival rates for cancers of the breast, colon or rectum, cervix, uterus and melanoma. For men, survival rates improved for many cancers, notably for prostate, colorectal and bladder cancer and for lymphoma.

B.1.1 Cancer incidence

Almost 20,000 cases of cancer (including NMSC) were diagnosed in Ireland each year between 1994 and 2001 (Table B.1). The commonest cancer was NMSC, which made up 25% of all cancers diagnosed. The next commonest cancer was colorectal, comprising 9% of the total, followed by breast (8%) and lung (8%) and prostate (7%) cancers. These five cancers were considerably more frequent than any others, and account for 57% of all cancers, including NMSC (Figure B.1).

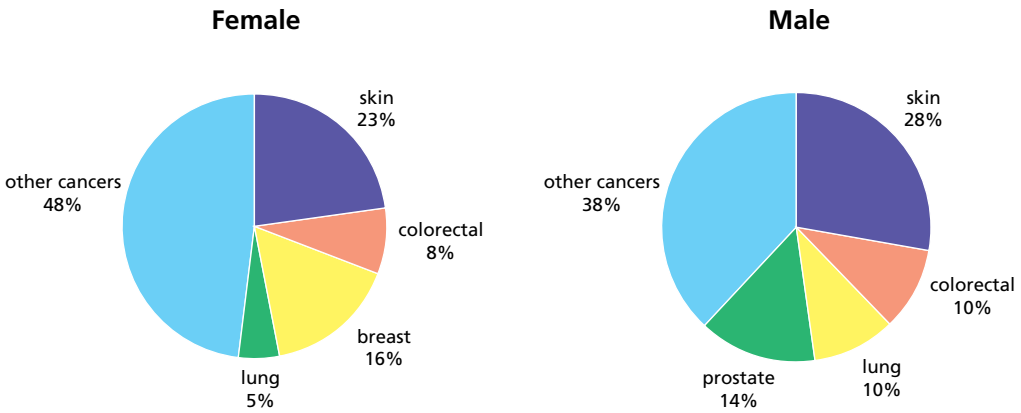
Table B.1: Number of new cancer cases per year (1994 to 2001)

	Both sexes		Females		Males	
Cancer	Annual average number of cases	% of total	Annual average number of cases	% of total	Annual average number of cases	% of total
All cancers	20,523		10,509		10,014	
Skin*	5,195	25%	2,404	23%	2,790	28%
Colorectal	1,821	9%	792	8%	1,029	10%
Breast	1,740	8%	1,726	16%	14	<1%
Lung	1,576	8%	563	5%	1,014	10%
Prostate	1,371	7%	–	–	1,371	14%
Other cancers	8,819	43%	5,025	48%	3,795	38%

**Excluding melanoma*

Source: National Cancer Registry

Figure B.1: Sites of common cancers in males and females, showing percentage of all cancers (1994 to 2001)



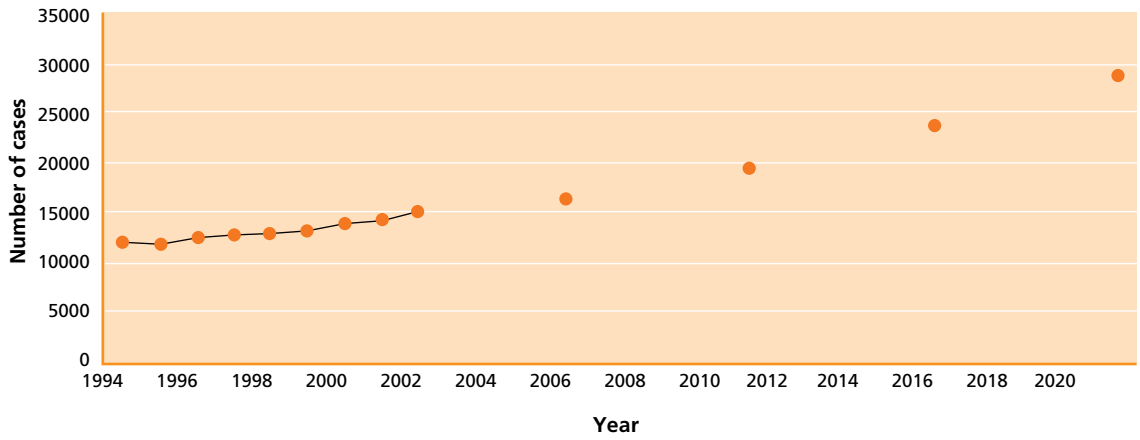
Source: National Cancer Registry

During the same period the lifetime risk of developing any cancer was 36% for women and 39% for men. Excluding NMSC, the overall risk of developing an invasive cancer was about 23% for women and 28% for men. For women, the lifetime risk of developing breast cancer was 8% (one in 13); for men the lifetime risk of prostate cancer was 6% (one in 16). The lifetime risk for women of developing colorectal cancer was 3% (one in 30) and for men 5% (one in 20), while the risk of lung cancer was 2% (one in 50) for women and 5% (one in 20) for men.

B.1.2 Cancer projections to 2020

Figure B.2 shows the increase in new cancer cases from 1994 to 2002 together with selected single-year projections up to 2020. It can be seen that the number of cases of cancer that are diagnosed will rise substantially in the next 15 years. The number of new cancer cases that the system can expect to deal with by 2020 (28,785) will represent an increase of 107% on the number dealt with in 2000 (13,888).

Figure B.2 Number of new cancer cases (1994–2002) [solid line] with projected numbers to 2020



Source: National Cancer Registry

B.1.3 Cancer mortality

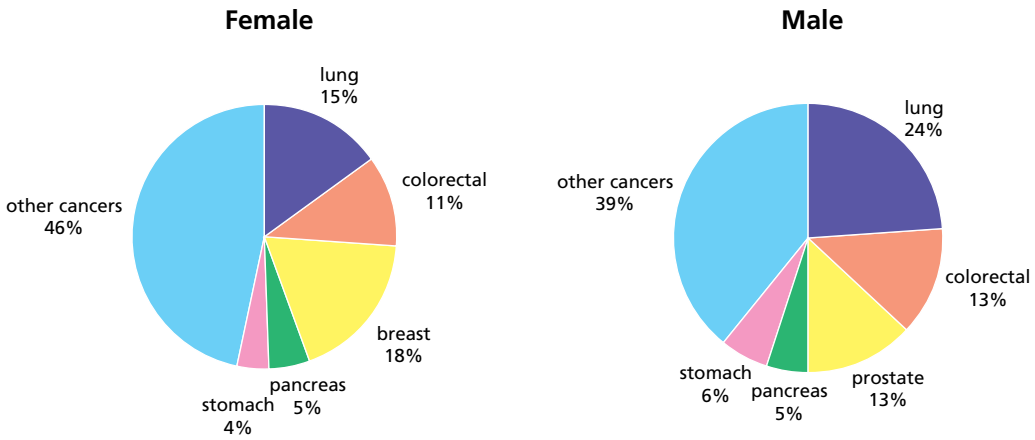
More than 7,500 deaths each year are due to cancer, accounting for about a quarter of all deaths. Between 1994 and 2001 lung cancer was the commonest cause of cancer death overall (20%). It was also the commonest cause of cancer death among men (24%). Breast cancer was the commonest cause of cancer death for women (18%) (Table B.2). Lung, colorectal, breast and prostate cancer accounted for almost half of all cancer deaths over this period (Figure B.3).

Table B.2: Number of cancer deaths per year (1994–2001)

	Both sexes		Females		Males	
Cancer	Annual average number of deaths	% of total	Annual average number of deaths	% of total	Annual average number of deaths	% of total
All cancers	7,584		3522		4,062	
Lung	1,499	20%	534	15%	963	24%
Colorectal	930	12%	404	11%	526	13%
Breast	649	9%	644	18%	5	<1%
Prostate	519	7%	–	–	519	13%
Pancreas	360	5%	176	5%	184	5%
Stomach	375	5%	152	4%	224	6%
All other	3,251	43%	1,612	46%	1,639	40%

Source: National Cancer Registry, Central Statistics Office

Figure B.3: Deaths from common cancers in males and females, by site (1994–2001)



Source: National Cancer Registry

B.1.4 Cancer morbidity

Cancer places a considerable and increasing burden on the health service. The number of discharges from public hospital with a diagnosis of cancer rose from 58,507 in 1998 to 92,508 in 2004. The number of day cases increased by 106% between 1998 and 2004. The number of hospital bed-days used by patients with cancer increased by 16% over the same period (Table B.3).

Table B.3 Hospital in-patient activity for cancer: discharges, day cases and bed-days (1998–2004)

Year	1998	1999	2000	2001	2002	2003	2004
Discharges	58,507	62,509	64,252	70,609	80,789	88,141	92,508
Day cases	28,789	32,554	33,708	39,467	48,260	56,037	59,353
Bed-days	346,737	342,778	357,560	366,875	387,437	385,637	401,442

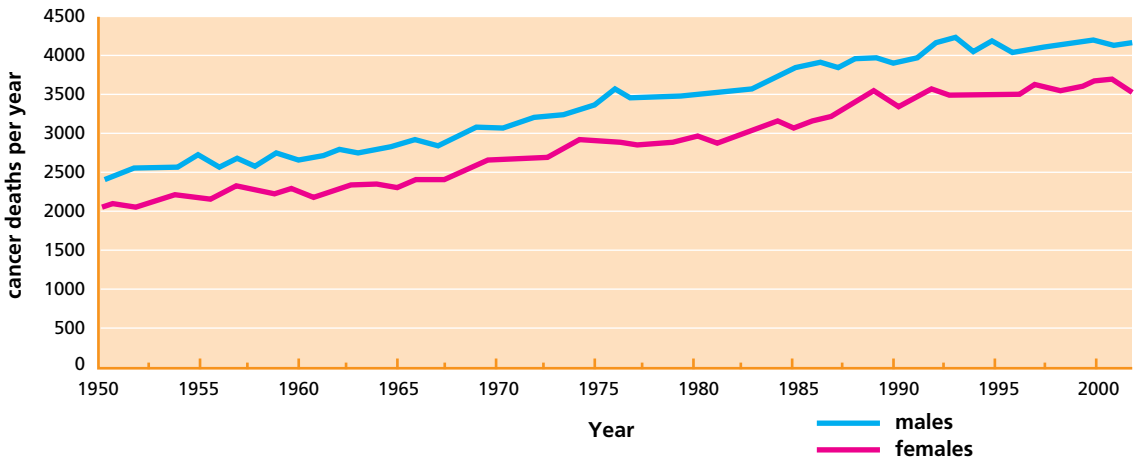
Source: Public Health Information System, version 8

B.1.5 Time trends

Long-term trends: Mortality

Information on the annual number of deaths in Ireland from cancer is available for at least the past century. The figures show deaths from cancer have increased from 4,300 in 1951 to 7,726 in 2001 (Figure B.4). Much of this increase may be explained by population growth and, to a lesser extent, the ageing of the population. As cancer registration in Ireland only began in 1994, comparable long-term trends in cancer incidence are not available.

Figure B.4: Number of cancer deaths in males and females, 1950 to 2002



Source: Central Statistics Office

Recent trends: Incidence and mortality

Most common cancers increased in number between 1994 and 2001. The largest increase in cancer numbers was in cancer of the prostate, which increased by an average of 7.6% per year from 1,089 cases in 1994 to 1,824 cases in 2001. The total number of cancer cases increased at an annual rate of 2.6% for women and 2.0% for men between 1994 and 2001 (Table B.4). However, as with the long-term trends, much of the increase noted was due to population growth and ageing. Between 1994 and 2001 age-standardised incidence rates for many cancers including cancers of the gastrointestinal tract, head and neck, bladder and cervix decreased.

Table B.4: Numbers, cancer cases and deaths, including the lifetime risk of developing cancer by age 75 (1994–2001)*

	Cases				Deaths			
	Number		Risk to age 75		Number		Risk to age 75	
Year	Males	Females	Males	Females	Males	Females	Males	Females
1994	9,505	9,785	35.2%	38.8%	3,980	3,453	13.1%	17.7%
1995	9,427	9,605	34.0%	38.1%	4,109	3,435	12.8%	17.4%
1996	9,727	10,212	35.5%	38.7%	4,006	3,425	12.4%	17.2%
1997	9,942	10,501	35.8%	38.4%	4,023	3,541	13.0%	17.2%
1998	9,888	10,426	35.0%	38.5%	4,059	3,490	12.6%	17.1%
1999	10,101	10,642	35.4%	38.4%	4,111	3,534	12.2%	17.2%
2000	10,678	11,268	36.3%	39.7%	4,132	3,647	13.4%	17.3%
2001	10,841	11,632	36.7%	40.0%	4,074	3,652	12.6%	16.5%
Annual rate of change	2.0%	2.6%	0.7%	0.5%	0.3%	0.9%	-0.1%	-0.6%

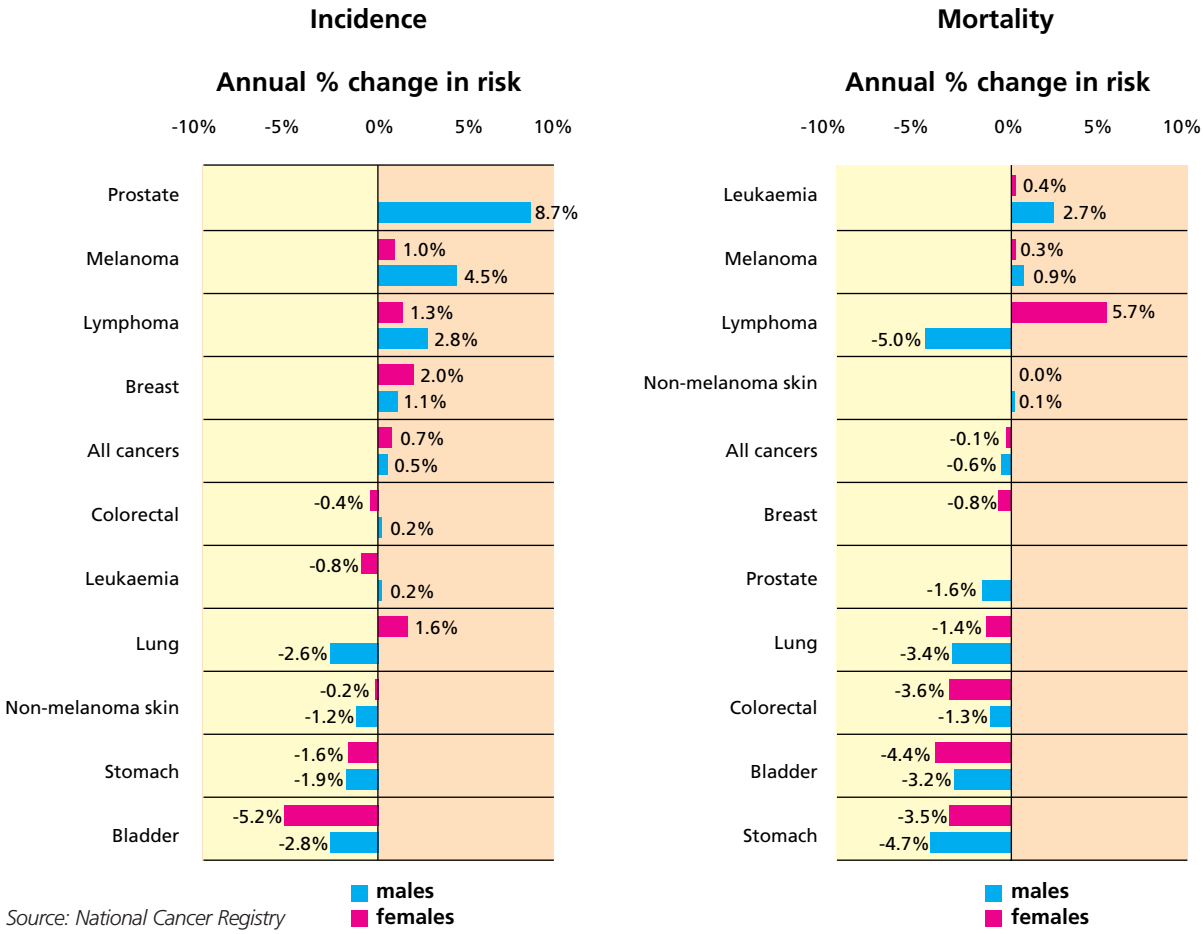
** Not all trends are statistically significant*

Source: National Cancer Registry

There was little change in the number of cancer deaths between 1994 and 2001. The true risk of dying from cancer before age 75 (allowing for the effects of population change and ageing) is decreasing by about 0.1% per year for men and 0.6% for women.

Lung cancer remains the leading cause of cancer death overall, although the risk seems to be decreasing for men. Breast cancer remains the most important cause of cancer death for women, but is also decreasing in frequency (Figure B.5).

Figure B.5: Trends in risk of developing or dying of cancer before age 75, 1994 - 2001



Source: National Cancer Registry

The true risk of developing cancer before the age of 75 (allowing for the effects of population change and ageing) is increasing by 0.7% per year for women and by 0.5% per year for men (Table B.5).

Table B.5: Trends in risk of developing or dying of cancer before age 75 (1994–2001)*

	% annual change			
	New cases		Deaths	
Cancer	Female	Male	Female	Male
All cancers	0.7%	0.5%	-0.1%	-0.6%
Non-melanoma skin	-0.2%	-1.2%	0.03%	0.08%
Colorectal	-0.4%	0.2%	-3.6%	-1.3%
Breast	2.0%	1.1%	-0.8%	–
Lung	1.6%	-2.6%	-1.4%	-3.4%
Prostate	–	8.7%	–	-1.6%
Lymphoma	1.3%	2.8%	5.7%	-5.0%
Stomach	-1.6%	-1.9%	-3.5%	-4.7%
Bladder	-5.2%	-2.8%	-4.4%	-3.2%
Melanoma	1.0%	4.5%	0.3%	0.9%
Leukaemia	-0.8%	0.2%	0.4%	2.7%

** Not all trends are statistically significant*

Source: National Cancer Registry

B.1.6 Cancer survival

Overall cause-specific survival from cancer (excluding NMSC) increased from 48% for women diagnosed 1994–1996 to 50% for those diagnosed 1998–1999, and from 38% to 44% for men. For women, the greatest increases in survival were observed in cancers of breast, colorectum, cervix and uterus. For men, survival improved for many cancers, notably for prostate, colorectal and bladder cancer and for lymphoma.

Table B.6 shows the percentage of cancer patients diagnosed 1994–1996 who have survived their cancer for at least five years after diagnosis, excluding patients who have died from other causes. Overall, 38% of male cancer patients and 48% of female cancer patients have survived for five years. For men, this is almost identical to the European average, but for women, it is poorer than the average.

Table B.6: Five-year relative survival for Ireland (1994-1996) and European population (1991-1994)

		Ireland		European average	
Cancer	Sex	Five-year survival	95% C.I.**	Five-year survival	95% C.I. **
All cancers excluding	Male	38.4	37.4–39.4	39.6	39.3–39.8
NMSC*	Female	47.7	46.8–48.6	51.9	51.6–52.1
Colorectal	Male	47.4	44.6–50.2	48.6	47.8–49.4
	Female	50.8	48.0–53.5	51.2	50.5–51.9
Lung	Male	8.5	7.3–9.7	11.3	10.8–11.8
	Female	10.0	8.2–11.7	10.6	9.8–11.6
Breast	Female	72.8	71.1–74.5	77.4	76.8–78.1
Prostate	Male	64.1	61.2–67.0	67.0	65.1–67.0

**non-melanoma skin cancer*

*** 95% confidence intervals of the survival estimate*

Source: National Cancer Registry

By far the best survival for the common cancers was for female breast cancer (73%), although survival in Ireland was well below the European average (Table B.6). The poorest survival rate was for lung cancer (8% in men and 10% in women). Survival for colorectal and prostate cancer was close to the European average. Survival for all cancers, other than breast, was better for women than for men.

B.1.7 Cancer survivors

The term 'cancer survivors' refers to the total number of people alive at any time who have ever had cancer. It is not possible to measure this directly. The figures given here are estimates and are provided as a general guide only. They exclude NMSC.

In 2002, it is estimated that there were approximately 120,000 cancer survivors in Ireland, 3.3% of the population (Table B.7). The largest number of survivors was for breast cancer (more than 24,000 women or 1.3% of the female population). On average, there were about nine cancer survivors in the population for each new cancer case. This figure was highest for breast cancer (13 to1) and lowest for lung cancer (1.3 to 1), as few patients survived for more than a year.

Table B.7: Cancer survivors in Ireland (2002)

Cancer	Estimated number of cancer survivors	Survivors/ incidence ratio	Survivors %
All cancers excluding NMSC*	118,000	9.1	3.3%
Colorectal	13,000	7.2	0.4%
Lung	2,100	1.3	0.1%
Female breast	24,000	13.5	**1.3%
Male prostate	11,000	7.5	***0.6%
All other cancers	67,900	8.9	1.9%

** non-melanoma skin cancer*

***females only*

**** males only*

Source: National Cancer Registry

B.2 Cancer service provision in Ireland

In developing this Strategy to reflect best international practice in cancer control, the National Cancer Forum's considerations were informed by the following:

- A review of the current status of cancer care, including an evaluation of the 1996 National Cancer Strategy involving a broadly based consultation process; an analysis of Hospital In-Patient Enquiry (HIPE) data; the report *Patterns of Care and Survival in Ireland 1994 to 1998*
- A review of international approaches to cancer strategies and policies.

While the elements of the analysis were quite separate, key themes and issues emerged which suggest clear ways in which cancer control could be strengthened in order to build upon the successes of the first National Cancer Strategy.

B.2.1 Review of the current status of cancer care

Evaluation of 1996 National Cancer Strategy

An evaluation of the 1996 Strategy, including a broadly based consultation process, was commissioned by the Department of Health and Children on behalf of the National Cancer Forum. The evaluation found that the target of the 1996 National Cancer Strategy to reduce the death rate from cancer in the under-65 age group by 15% in the ten-year period from 1994 was achieved by 2001. The key achievement of the 1996 National Cancer Strategy most commonly attributed by those consulted was that it provided a framework for the development and funding of cancer services in Ireland.

In summary, the review concluded that the 1996 National Cancer Cancer Strategy has delivered:

- a major reduction in premature cancer mortality ahead of target
- significant year-on-year increasing spend on cancer services
- increasing activity in chemotherapy, radiotherapy and surgery
- a more coordinated and structured approach to the delivery of cancer care
- a significant increase in the number of cancer care professionals.

In relation to the organisation of cancer services, the review of the 1996 National Cancer Strategy concluded that:

- there is a lack of clarity concerning the scope and complexity of acute services that should be provided at different levels in the acute sector

- there should be a broad understanding within the health system – among providers, general practitioners and patients – of the services that are available and their locations
- to provide the essential requirement of assured quality in line with international norms, evidence should be the deciding principle and should not be compromised for geographic reasons
- international research has consistently demonstrated that better outcomes are achieved in larger centres through the centralisation of resources, skills and expertise, facilitated by a critical mass of patients.

HIPE Analysis of Surgical Activity

The National Cancer Forum examined data relating to four indicators for a range of ten common site-specific cancers in Ireland between 1997 and 2004 using data from the HIPE system. The analysis was carried out in respect of specific procedures performed on people whose primary diagnosis was a specific cancer. The indicators were chosen to provide a regional perspective on workload at unit level and a national perspective on workload at surgeon level. They also provide a view of cross-boundary flow of cancer-related surgical workload between former health board areas.

The Forum's conclusions based on its consideration of this data are as follows:

- international experience in oncology surgery, especially in relation to complex procedures, is that it should be limited to the hospitals that have adequate case volume and the appropriate skill mix and support services in the various modalities of care
- there is insufficient case volume to support the number of consultants and hospitals engaged in oncology surgery
- the current arrangements for the delivery of cancer services are not generally in accordance with best practice and cannot be recommended to deliver best-quality cancer care.

The Forum and the Department of Health and Children also sought the views of bodies such as the Royal College of Surgeons in Ireland, Comhairle na nOspidéal and the Irish Society of Medical Oncology in relation to this data.

Their responses emphasised the need to organise services on a basis that clearly recognises that for many cancer types there is a relationship between the volume of activity in cancer care and the outcomes that patients experience from that care. They believe that cancer care should be delivered through more specialised services provided by multidisciplinary teams of clinicians in fewer locations.

Patterns of Care and Survival from Cancer in Ireland: 1994 to 1998

The National Cancer Registry published a report in 2003 entitled *Patterns of Care and Survival from Cancer in Ireland, 1994-1998*, which found many significant differences in treatment patterns for all kinds of cancer between former health board areas. It established that there are clear differences in treatment and survival depending on area of residence. The report explored the many possible reasons why survival may vary between geographical areas. An important additional finding was the lack of consistency in treating the same cancer at the same stage.

B.3 International trends in cancer control

Cancer services have developed along broadly similar lines internationally. In recent years, the development of a strategic, planned approach to the delivery of health services has been seen in most developed parts of the world. Key to the success of these strategies is the existence of a high-level policy-oriented body, comprising medical professionals and other stakeholders. The purpose of such national bodies is largely to provide clear and evidence-based policy direction for all aspects of cancer services.

B.3.1 Prevention

Most countries recognise that cancer prevention depends on research, lifestyle, and environment. The majority have implemented or are planning anti-smoking campaigns. Some countries are backing public-awareness initiatives with legislation to regulate tobacco prices, limit or prevent tobacco advertising and restrict the availability of tobacco for certain age groups. Partnerships often develop between non-governmental organisations and government bodies to implement health promotion initiatives in smoking, diet and sun exposure.

B.3.2 Screening

National breast and cervical cancer screening initiatives occur in the majority of developed countries, although target populations may vary. Pilot screening programmes have been established in many countries for cancers such as colorectal cancer, melanoma and prostate cancer. In most countries, screening programmes face common difficulties that include ensuring lower socio-economic groups get equitable geographical access and equal screening and treatment options and ensuring there is appropriate uptake in the target population.

B.3.3 Diagnosis and treatment

There are some consistent trends in evidence that show that most countries are now seeking to develop cancer control programmes that enable care to take place in centres characterised by high caseload, earlier access to care, multidisciplinary care, integration of care delivery, availability of sub-specialty expertise, availability of support services (e.g. intensive care, specialist nurses, specialist therapy services, support services), availability and quality of technology, and the existence of training and research facilities.

Most national cancer control programmes are founded on the acceptance that these requirements can best be captured in a model of cancer control that locates multi-modal, multidisciplinary, integrated and quality-assured care in large and appropriately staffed and equipped centres. These initiatives are often underpinned by arrangements for the development and implementation of best-practice guidance and quality assurance.

B.3.4 Palliative care

Palliative care is seldom addressed in national cancer-specific strategies. Internationally, there are no standards available that could be applied to regional or nationwide services for palliative care. The guidelines that do exist generally relate to individual clinical services rather than high-level strategic standards.

B.3.5 Supportive care

Many countries recognise the importance of cancer support services that include self-care, caregiver support, psychological support, physiotherapy, occupational therapy, dietetics, speech therapy, patient education and health promotion, appliance fitting, nursing services, and community liaison. However, in most countries, this has not translated into a specific national strategy to develop and support such services. In the main, countries support non-governmental organisations in their efforts to directly provide such services. Very often, many of these services are not directly provided by government bodies.

B.4 Conclusion of analysis

There have been major strides forward in cancer care following the first National Cancer Strategy. The range of services and their performance have continued to improve in recent years. Cancer care is undergoing a major and positive transformation. That success must, however, be consolidated and built on. Major developments which are being planned, such as the extension of screening for breast and cervical cancer, various policies in health promotion, symptomatic breast cancer services and palliative care, as well as the much-needed expansion of radiation oncology services, must be implemented without delay.

This Strategy is faced with some new priorities. It is clear from the analysis undertaken that a comprehensive cancer control strategy that addresses all aspects of cancer care is required, through health promotion and prevention as well as diagnosis and management. The ageing of the population will lead to a substantial increase in the number of people who will develop cancer. There needs to be significant expansion in all aspects of cancer service capacity in order to meet this need.

There is inequity in the availability of, access to, and performance of cancer services throughout the country. This must be addressed as part of the expansion and development of services. It should not, however, lead to small-scale developments that do not meet the requirements of evidence and best international practice and, as a result, cannot be sustainable.

The first requirement of a cancer control system is that it should have the potential to achieve population and individual outcomes that are on a par with the highest international standards. One of the most significant strategic issues facing cancer services is the variation in survival rates within Ireland and our relatively poor survival rates for many common cancers (with notable exceptions such as paediatric oncology) when compared to other European countries. In part, this can be attributed to the fragmentation of cancer services, which leads to too many hospitals and too many consultants being involved in the provision of treatment for cancer sufferers. This is not in accordance with best practice. In terms of the delivery and future development of cancer services, the continuation of current arrangements cannot be recommended.

The Forum's view is that addressing these significant issues will require strong leadership at professional, managerial and political levels as well as meaningful accountability systems for the overall performance of the services.