

CANCER PREVENTION AND CARE: CLOSING THE GAP

A REVIEW OF CURRENT SERVICES & FUTURE OPTIONS FOR EU NEW MEMBER STATES

Authors:

*Nick Bosanquet, MA, MSc
Professor of Health Policy, Imperial College School of Medicine, London*

*Jim Attridge, BSc, PhD,
Research Fellow, Tanaka Business School, Imperial College, London*

*Karol Sikora, MA, PhD, FRCR, FRCP, FFPM
Professor of Cancer Medicine, Imperial College School of Medicine, Hammersmith Hospital,
London*

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1. INTRODUCTION

1.1 Scope and Limitations

There is currently little awareness outside a very small group of specialists about the specific problems in cancer services of the three largest EU New Member States (NMS): Poland, Hungary and the Czech Republic. For example, the World Cancer Report ¹ only deals with broad regional groupings. We have carried out a review of current cancer services, through meetings with key players, among insurance funders, health professionals in specialist centres and research institutes. We have also carried out a review of the available data sources. We have not been able to carry out primary research in the time available, but we hope that our review will be the starting point of a longer-term research programme, which will contribute to the development of national cancer plans in these countries.

1.2 Objectives

Our aims in this Report are

- To review existing evidence on disease burdens, likely changes in prevalence, prevention, screening, diagnostic and treatment services.
- To define options for investment in cancer services indicating the most cost-effective form for a national cancer strategy based on a feasible and fundable share of national health expenditures.
- To specify how funding can be allocated between cancer prevention, screening, treatment and palliative care.

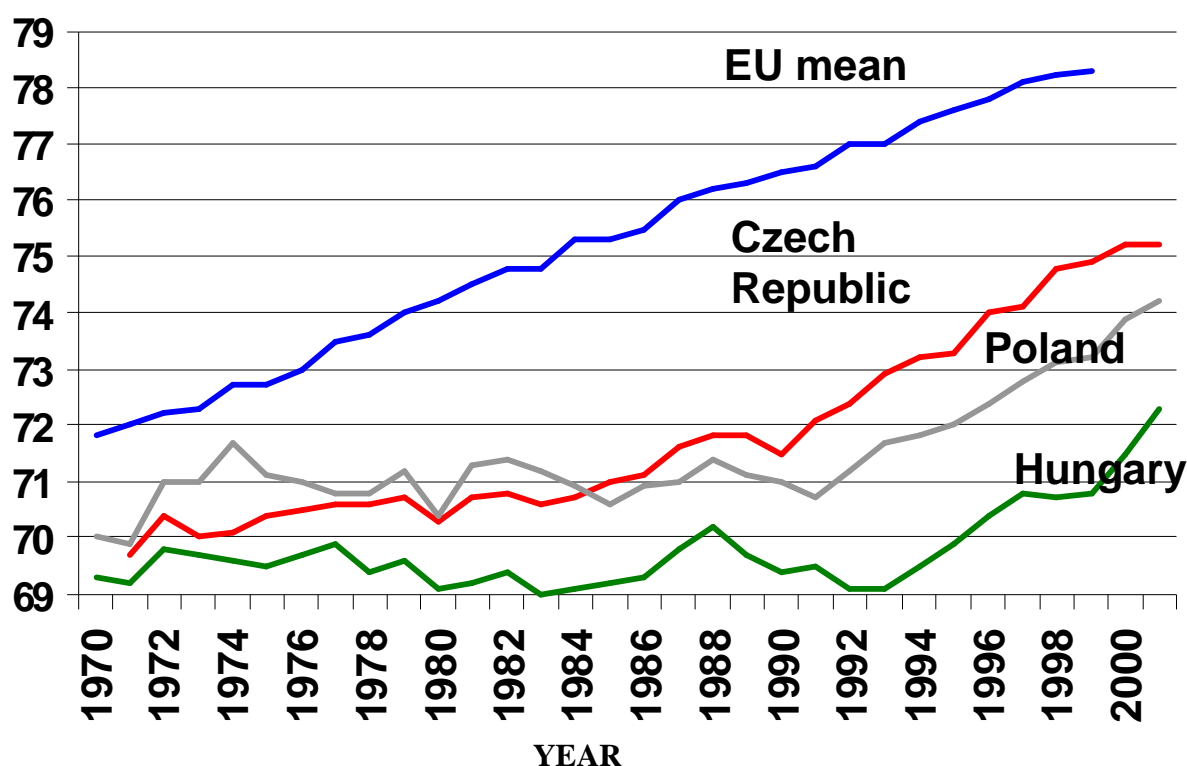
1.3 The Context

Accession to the EU gives an opportunity to new members for appraisal and redirection². The new focus is likely to be on “catching up” - how new members can achieve the hoped for gains in social and economic standard and opportunities. The years of waiting are over and there are now strong expectations of rapid progress. The progress made by the last group of NMS’s – in particular Spain and Ireland - show that much can be achieved, when strategies are developed and followed in a consistent way over five to ten years.

For the latest group of NMS, the issues of differential health standards are much more important than was the case with the first group, where access to health services and levels of funding were more similar to those found in the original member states. Now the new members face a challenge of catching up with much lower levels of funding and in some cases much lower life expectancy. Figure 1 illustrates the extent of the gap in terms of life expectancy.

Figure 1 Life Expectancy at Birth in New Member States

AGE:



Source: P. Jozan³

Throughout the second half of the 20th century, the incidence of cancer has increased greatly; as a result of ageing, public health advances and as a consequence of more effective strategies to deal with infectious diseases and other causes of premature death. Towards the end of this period there was a clear consensus across Europe, including the NMS, that cardiovascular disease and cancer were the two great challenges facing healthcare, both in terms of preventive and curative strategies. In consequence, most countries have substantially increased the share of growing healthcare expenditures allocated to these two domains.

Despite high profile prevention campaigns against smoking and screening programmes for breast cancer, the bulk of the increased expenditure on cancer is in the form of more and larger national cancer institutes and dedicated specialist hospital units. Cancer centres and their associated research units have been concerned with extending the ever growing, technology based, batteries of curative treatments, although the improvements in long term outcomes for common cancers have been modest⁴.

In the USA, which for the most part is under private sector market governance, expenditure growth on healthcare is constrained by ability to pay to a substantial degree. Although the most affluent and well insured segments of society can afford the latest pioneering technologies. Within the predominantly public sector funding and provider systems of Europe, there is no such market mechanism. The high commitment to equity of access and public systems ensures that in the competition for limited public or social insurance funds the emotional appeal to provide the latest high cost cancer therapies is strong.

However, the ever-growing and competing demands from all sectors of healthcare for more resources, means that it is more imperative than ever, to assemble the best possible macro level models and data for cancer, in order to address the three most challenging questions facing healthcare decision makers in the future:-

- What is a reasonable share of total healthcare spending to allocate to a national cancer strategy?
- Within that allocation, how is it best distributed between the many competing demands of the cancer prevention, screening, treatment and palliative care domains?
- How to budget for innovation that will inevitably increase the cost of optimal care?

Cancer care – the next ten years

By 2015 cancer will be considered a chronic disease, joining conditions such as diabetes, heart disease and asthma. These conditions impact on the way people live but will not inexorably lead to death. The model of prostate cancer, where many men develop it, but die with it rather than from it, will be more usual. Progress will be made in preventing cancers. Even greater progress will be made in understanding the myriad causes of cancer. Our concepts will be different to those of today, and the new ways in which cancer will be detected, diagnosed and treated will be crucial to understanding the future.

When a cancer does develop, refinements of current technologies and techniques - in imaging, radiotherapy and surgery - together with the availability of targeted drugs will make it controllable. Cure will still be sought, but will not be the only satisfactory outcome. Patients will be closely monitored after treatment, but fear that cancer will definitely kill, still prevalent in the early years of the twenty-first century, will be replaced by an acceptance that many forms of cancer are a consequence of old age.

Looking into the future is fraught with difficulties. Who could have imagined in the 1980s the impact of mobile phones, the internet and low-cost airlines on global communication. Medicine will be overtaken by unexpected step changes in technology well before 2025. For this reason, economic analysis of the impact of developments in cancer care is difficult. The greatest benefit will be achieved simply by assuring that the best care possible is on offer to the most patients. This would be irrespective of their socio-economic circumstances and of any scientific developments. But this is unrealistic. Technologies are developing fast, particularly in imaging and the exploitation of the human genome. Well-informed patients, with adequate funds, will ensure that they have rapid access to the newest and the best - wherever it is in the world. Nevertheless, in 2025 more patients will benefit from better diagnosis and newer treatments, with greater emphasis on quality of life. Technology will bring more inequality to health. The outcome of the same quality of care differs today between socio-economic groups in all EU countries and will continue to do so.

Clinicians in Europe will continue to be dependent on technologies primarily designed for the major health market in the world – the United States which currently consumes nearly 55 percent of cancer medication, but contains less than five percent of the population. European legislation covering clinical trials could be disastrous for research in the UK, while ethicists - zealously interpreting privacy legislation - could impose restrictions on the use of tissue. Targeted niche drugs will be less appealing to industry, as the costs of bringing each new generation of drugs to market will not be matched by the returns from current blockbusters. The delivery of technologies in 2025 will be underpinned by patient expectation. The well-informed will be equal partners in deciding the health care they will receive. Much of it will take place close to their homes using mechanisms devised by innovative service providers.

This has huge implications for the training of health professionals and the demarcations between specialties. Emerging technologies will drive the change. Intra-professional boundaries will blur - doctors from traditionally quite distinct specialties may find themselves doing the same job. And clinical responsibilities will be taken up by health professionals who will not be medically qualified. All professionals are likely to find challenges to their territory hard to accept. But new ways of working need to be developed soon as the leaders of the health professions of 2025 - doctors, nurses, pharmacists and their support staff, are already in training. The challenges that need to be addressed in order to deliver most health benefit are

- Increasing the focus on prevention.
- Improving screening and diagnosis and the impact of this on treatment.
- New targeted treatments – how effective and affordable will they be?
- How patients and their carers expectations will translate into care delivery
- Reconfiguration of health services to deliver optimal care
- The impact of reconfiguration on professional territories
- Will society accept the financial burden of these opportunities

From an EU perspective the more limited the existing resources the more limited the ability of a state to fund future expansion and the more critical it is to have an objective assessment of the state of play today and the scope for setting the best priorities for future investments. This is very much the challenge that faces the NMS at this time.

It is beyond the scope of this study to present a comprehensive review of the healthcare reform programmes. It is widely understood that the past decade, since the fall of communism, has been one of radical change and often high risk large scale experimentation, in an attempt to accelerate the process of achieving efficiency gains and flexible responsiveness to growing public awareness and demand for better systems and treatment.

However, as a basis for the more detailed discussion to follow, we will sketch out here briefly the essential features of the systems in the major countries and the extent to which they have conditioned policies with regard to cancer.⁵

Poland

In 1997 the tax based, Polish state healthcare system was replaced by a system based upon the Bismarkian model of compulsory participation in a Health Insurance or Sickness Fund. The insured have the right to health services, including primary health care as provided by GPs. The insured can choose a GP from among those contracted by the Sickness Fund. Secondary health services are also free to the insured following referral by a GP, although some secondary services are open to patients without referral such as emergency, gynaecology, maternity and oncology.

The public sector health system is financed by the Sickness Funds and also by central government, municipalities and other public bodies. (In 2002, the National Health Fund was established, which in effect is a centralised form of Sickness Fund.) Non-public sector health insurance companies also exist and are run by churches, employers, foundations, trade unions and professional bodies.

In 2001, there were 22.4 doctors, 6.2 pharmacists, 2.6 dentists and 48.3 nurses per 10,000 people. Outpatient medical services were provided by 5,776 clinics (2,201 public) and 2,235 health centres (1,550 public). Private practices may provide health care under the public system: in 2001 there were 6,419 such practices. There are also occupational medicine practices, offering private preventive examinations, medical treatment and dental services, which are financed only from private funds.

In 2001, there were 210 million outpatient medical consultations; 63.5 percent provided by primary and 34.8 percent by secondary health care units. The number of consultations in public care centres is declining, while the number of private medical practices offering publicly financed health services is growing. The total consultancy rate per capita was 6.1 in 2001.

The number of hospital beds has been declining in recent years and was 48.7 per 10,000 in 2001. Meanwhile, the number of people receiving treatment at general hospitals has been growing. At the end of 2001, there were 736 general hospitals (45 private). The private hospitals had 2,476 beds and treated around 100,000 patients.

Total public health spending was Euro 7,857m in 2001 (4.6 percent of GDP). Of this the Sickness Funds spent Euro 6,587m. The largest components were hospital treatment (47 percent), medicines (20 percent) and primary health care (13 percent). Central budget health spending reached Euro 1,100 m.

Cancer Care in Poland

Cancer control programmes were introduced pre WW II and made the reporting of all cancer case deaths obligatory. The 1976-1990 Cancer Control Programme introduced a three-tier system of cancer care. At the top are the Maria Sklodowska-Curie Memorial Cancer Institutes of Oncology, in Warsaw, Krakow and Gliwice. The second tier consists of Regional Oncology Centres, which provide comprehensive cancer care. The third tier consists of cancer wards, chemotherapy and radiotherapy units in hospitals, which often are attached to university medical schools. In 2001, there were 51 oncological clinics in this last tier. In addition there are 41 consultation centres and outpatient oncology clinics located in most of the larger cities.

Treatment of haematological malignancies is led nationally by the Institute of Haematology in Warsaw and an associated network of units in teaching hospitals. Cancers in children are treated at the Mother and Child's Institute and the Child's Health Centre, as well as in regional hospital paediatric departments. Poland has more than 700 specialist oncologists and over 6,000 oncological beds.

The National Cancer Registry covers the whole of Poland and collects and processes data from regional registries. The population-based Warsaw Cancer Registry was established in 1963 and also performs studies of the effects of intervention measures. The Warsaw and Krakow registries participate in the EURO CARE programme⁶.

Czech Republic

Major political changes in 1989 led to dramatic changes in health care reforms. In particular, health care funding was transferred from the state to Health Insurance Funds, which are however subject to close government control. These funds negotiate contracts with health service providers on behalf of the insured. Health insurance contributions are obligatory for most citizens, but the state pays the contributions of certain groups (children, pensioners and the unemployed). Health care privatisation began with the decline of the former health centres and the development of growing freedom to choose one's own health care provider.

The separation of Czechoslovakia into the Czech Republic and Slovakia in 1993 has had remarkably little effect on health care in practice. At present GP, paediatric and dental services are mostly provided privately under contracts with the insurance funds. The Ministry of Health directly manages university hospitals. Smaller hospitals are still predominantly in public ownership, under the direction of regional or municipal authorities, which involves democratic representatives, professional and administrative teams. There are still only a few private hospitals. The health insurance system finances about 80 percent of all health care. Direct 'out-of-pocket' contributions by patients are required for some medications, but account for less than 10 percent of total expenditure on health. Anecdotal comments suggest that there is also an unquantifiable 'black economy' market, with 'out of pocket' payments for prompt access to leading physicians in some fields.

Cancer Care in the Czech Republic

The current system of cancer care was established by law in 1966. Two leading central institutes, the Masaryk Oncological Institute in Prague and The Oncology Institute in Brno are the focal point for research and advanced treatment techniques. There is also a national Children's Oncology Clinic, in Prah-Motol. An extensive network of oncology units has been established at district and regional levels⁷.

Several preventative programmes were launched in the late 1970s. Whilst these preventive initiatives did not stop the increase in the incidence of cancer, in conjunction with advances in methods of treatment, they did contribute substantially towards containing increasing levels of mortality, as demonstrated by long-term trend statistics (see 'Cancer Incidence in the Czech Republic' at www.uzis.cz). A slightly higher incidence growth rate after 1990 is probably due to improved diagnostic methods and population ageing.

Data collection and processing by the National Oncological Registry (NOR) is based on obligatory notification of all diagnosed tumours. Notification forms contain data on the patient and a description of the cancer with classification according to International Classification of Diseases (ICD) and TNM codes. The forms are sent to local NOR units by the diagnosing physician. The obligatory control notification contains details of treatment, identification of the follow-up health unit and assessment of the efficacy of treatment. Finally notifications are passed to the Institute of Health Information and Statistics (the central NOR unit). Here final data aggregations and analysis is performed, including correlation with mortality data from the Czech Statistical Office, which compiles annual publications. At

present the only regional cancer registry participating in the EURO CARE programme is that covering West Bohemia, one of eight Czech regions.

Since 1990, public awareness of cancer has greatly increased. Fund-raising charities, and non profit NGO's, concerned with more broadly supporting the needs of the growing number of people now 'living with cancer' have been established. The aims of these associations focus particularly upon prevention of cancer, early detection and improving the 'quality-of-life' of cancer patients. Most are now affiliated to the League Against Cancer of the Czech Republic.

Hungary

The grim record of health outcomes trends in Hungary post WW II has been extensively documented⁸. Comparative OECD statistics of years of life lost, due to selected diseases for the leading NMS relative to selected EU countries. are shown in Table 1.

Table 1 Comparison of Life Expectancy and Causes of Mortality for Selected European Countries

2001	Life Expectancy at Birth		Life Expectancy at 65		Infant Mortality	Mortality by Cases per 100,000 population									
	All per 100,000-					All Cases		Malignant Neoplasms		Circulatory Systems (CV)		Respiratory		Digestive	
	M	F	M	F		M	F	M	F	M	F	M	F	M	F
Czech Rep	72.1	78.7	14.0	17.4	4.0	1143	692	316	178	568	382	56	27	51	26
Hungary	68.3	76.8	13.3	17.1	8.1	1392	775	374	192	635	409	52	22	121	50
Poland	70.3	78.5	14.0	17.8	8.1	1219	680	302	158	545	346	61	25	49	26
UK	75.7	80.5	15.9	19.2	5.6	852	570	237	164	330	201	133	88	36	28
Germany	75.2	81.3	16.0	19.7	4.4	877	530	240	144	365	2139	61	27	47	26
France	75.2	87.8	16.7	21.3	4.3	855	547	275	126	229	132	66	31	44	22
Sweden	77.5	82.3	16.8	20.3	3.4	752	492	186	139	330	197	51	32	23	16

Source: OECD
See also trend in life expectancy,

During the 1990's, in line with the other ex-communist countries, Hungary moved from funding based upon taxation to a compulsory Social Insurance Fund model. However, for many years little reform took place in provision systems, which remained exclusively in public ownership. Under a series of national health plans to decentralise responsibility for hospitals to regional authorities, the necessary partnership and raising of funds for modernisation of facilities and equipment was largely unrealised in many areas.

Due to limited economic growth, unemployment has remained high and many people evaded tax and social insurance contributions by declaring themselves 'self employed'. As a result, the Health Insurance Fund developed chronic deficits and an alternative 'black market' private health sector began to emerge. OECD estimates for 2001 suggest that in Hungary 23 percent of healthcare was privately financed, compared to corresponding figures for the Czech republic of 5 percent and 71 percent for Poland. Much of this expenditure is attributed to out of pocket payments to physicians⁹. In consequence, although total health care expenditure in 2001 at 6.8 percent of GDP is similar to other NMS, public expenditure is low at 5.2 percent.

Municipal hospital costs still account for ca. 60 percent of all healthcare expenditure, despite a series of initiatives to close the excessive number of hospital beds (81,000 in 2001 - equal to 80 per 10,000 inhabitants compared to an EU average of 60). More recent efforts by the Social Insurance Fund to limit expenditures by an adapted, US style, DRG based payment system offers some hope of further progress in driving efficiency gains in this area.

As noted by one local expert, fundamentally we still have a 'hospital led', healthcare system rather than a primary care, patient centred one.

Currently there are ambitious plans to move towards a much more 'streamlined' system of Healthcare Provider Organizations (HPO's), which would contract with both GP's and Hospitals for services. Hungary appears to have been marginally more successful than the Czech Republic and Poland in improving the status of GP's and giving them a 'gatekeeper' role and this plan would further strengthen the GP role.

2. ESTIMATING THE CANCER DISEASE BURDEN

2.1 Current Data Bases and Their Limitations

Incidence is the number of new cases, which occur in a given time period. It can be expressed as an absolute number of cases per year, or as a rate per 100,000 people per year.

Mortality is the number of deaths occurring and the mortality rate is the number of deaths per 100,000 per year.

Prevalence of cancer is defined as the number of persons in whom the disease has been diagnosed and who are alive at a particular point in time.

Our main source of comparative international data is the Eurocare 3 survey⁵. This is based on returns from cancer registries, which are highly variable between countries with some, such as Germany and France, basing their returns on less than 5 percent of the population. In addition, we have also used data from national databases in NMS for cancer or general sources such as annual reports of national healthcare statistics.

Overall, the sources here provided a reasonable perspective on the past trends in the incidence rates of most types of cancer. In compiling summary data in this report, we have excluded data on non-malignant melanomas in aggregate statistics.

It has proved more difficult to obtain trend data on ‘staging of cancer diagnosis’, which is undoubtedly a key variable in interpreting comparative survival data between countries, and as a guide to setting future expenditure priorities.

Both in terms of providing further comparative data on the scope for improving five year survival outcomes and some indication as to their relationship to the stage of diagnosis, we have drawn upon the latest US data taken from ‘The Annual Report to the Nation on the State of Cancer, 1975-2001’¹⁰.

2.2 Past Trends in Incidence of Main Cancer Types

For EU 15 old Europe deaths from cancer on data unadjusted for age accounted for 25.9 percent of total deaths. For the Czech Republic cancer deaths were 26 percent of the total: for Hungary 24.5 percent and for Poland 23.4 percent.

However on an age adjusted basis the rates are clearly much higher, as shown in Table 2.

Table 2 Age Standardized Mortality rates per 100,000 Population, Year 2000

	All Causes	As Percent of Euro Rate	Malignant Neoplasms	As Percent of Euro Rate
EU 15	668	-	188	-
Czech Republic	891	119	239	133
Hungary	1123	168	282	150
Poland	940	140	220	117

Compared with old Europe the most distinctive features were

- The high incidence of lung cancer, although most recently with some switch between genders with male cancers declining and lung cancer increasing among females.
- The high level of colorectal cancer.
- The continued high level of cancer of the cervix. Incidence of cancer of the cervix in 2000 was about the same as in the early 1980s at around 21 cases per 1000 population.

Detailed data are most available for the Czech Republic: in Hungary cancer mortality per 100,000 is 28 percent higher than in the Czech Republic and in Poland 8 percent lower. The Czech data in terms of types are broadly representative.

The data show the size of the challenge. The countries face a mixture of old and new problems. Incidence of lung and colorectal cancers are much higher than in Western Europe and cancers, which have shown rising incidence over those in Western Europe - breast and prostate are likely to show rising incidence.

Disease burdens can be estimated in terms of premature mortality. Many of the cancer deaths are of people in younger age groups. Our estimates are that 45-50 percent of premature life years lost in NMS are due to cancer and this weight is likely to rise as prevention and improve treatment reduce mortality from coronary heart disease. There are also significant costs in disability and reduced quality of life for survivors.

Table 3 and Table 4 illustrate trend data for major cancers over the period 1985 to 2001, showing large increases in the number of notified cases for most cancers, the only noticeable exception being a decline in the incidence of stomach cancer for both men and women and marginal reductions in lung cancer for men and cervical cancer for women. We have roughly computed the annual percentage change (APC) for the period 1990 to 2001 and provided the latest comparable US APC data for the period 1992 to 2001. This offers a crude indication of the 'lag' in Cancer Status during this decade, in which the Czech Republic is 'catching up' in terms of diagnosis. The US data also provides a beacon of hope for the future, suggesting that, with continued investment in a balanced national plan of public awareness and prevention, significant declines in incidence rates can be achieved - maybe in the current decade.

Table 3 Notified Cases in the Czech Republic of the Most Common Types of Cancer in Females per 100k Females, 1985-2001

Cancer Type	1985	1990	1995	2001	APC 1990-2001	USA APC 1992-2001
Breast	57.5	65.1	83.8	93.5	+4.0	+0.6
Colon	23.4	28.2	33.6	36.1	+2.6	-0.5
Rectum	18.8	19.0	22.7	23.0	+1.9	
Uterus	24.5	24.2	28.9	30.8	+2.5	
Lung	12.9	15.8	21.1	25.5	+5.6	-0.2
Ovary	18.2	20.4	23.4	22.6	+1.0	-1.0
Cervix	21.7	20.7	21.6	19.1	-0.70	-2.6
Stomach	19.0	17.7	17.4	13.7	-2.05	-0.9

Table 4 Notified Cases in the Czech Republic of Most Common Cancer Types per 100k Males, 1985-2001

Cancer Type	1985	1990	1995	2001	APC 1990-2001	USA APC 1992-2001
Lung & Bronchus	99.1	99.6	94.2	87.1	-1.1	-2.3
Prostate	26.3	32.0	44.4	58.5	+7.5	-2.5
Colon	24.2	29.3	37.6	47.0	+5.5	-1.1
Rectum	29.4	30.9	35.5	36.8	+1.7	
Bladder	17.1	20.0	25.4	28.0	+3.6	-0.1
Kidney & Renal	14.9	19.1	27.9	27.3	+3.9	+1.3
Stomach	28.7	24.8	23.8	18.9	-2.3	-2.2
Malignant Melanoma	6.0	8.1	11.1	14.4	+7.7	+2.7

2.3 Current Evidence on Outcome

The main source on longer-term outcomes is the Eurocare-3 study. However we would stress more than the usual caution on the reliability of these figures for NMS.

- The survey is based on results from patients diagnosed in the 1990-94 periods and measures survival over the five years to 1999. We are looking incidence and access up to 15 years ago.
- The results are based on relative survival - the ratio of survival observed in cancer patients compared to the survival that would be expected in the general population of the same age, sex and residence. 'Relative survival can be interpreted as an estimate of the proportion of patients who survive, after correction for background mortality'. Such estimates are difficult to make in countries where the general level of adult mortality was high as it was in NMS in the early 1990s. It has since fallen steeply in Poland and the Czech republic has fallen.
- There are questions about the reliability of the incidence and mortality data. However, in this case the data from central Europe are more, rather than less, reliable as national estimates. For example, estimates for France are based only on registries from Calvados and Isere and those from Germany on the Saar region.

The data from Eurocare 3 (see Table 5) could be interpreted as showing gaps and lags between central Europe, but they could also show that the services were achieving rather good results, given the very limited resources at the time and the high rates of smoking in a population with poor diets and low living standards. In addition to high rates of smoking, overcrowded housing and overburdened transport systems would have increased the effects of passive smoking.

Table 5 Comparative Five Year Survival Data (%) for Europe and the USA for 2001

	USA*	USA*	Europe**	Czech Rep**	Poland**	Slovakia**	Estonia**	Slovenia**
Prostate (M)	70.0	99.3	65.4	50.1	38.6	47.3	52.1	48.8
Colon & Rectum (M)	50.3	63.7	47.6	32.3	26.8	32.7	35.5	33.9
Lung (M)	11.6	13.6	9.7	6.3	6.1	6.9	6.8	8.0
Bladder (urinary) (M)	75.7	83.7	69.5	51.9	41.8	50.6	42.2	42.8
Non Hodgkin Lymphoma (M)	46.8	57.0	47.7	44.2	29.8	40.4	30.7	48.2
Breast (F)	74.9	87.7	76.1	64.0	63.1	59.5	61.9	67.4
Lung (F)	16.6	17.2	9.6	8.2	6.8	12.0	11.9	9.3
Colon & Rectum (F)	52.3	63.1	50;5	37.1	28.6	37.7	33.5	36.3
Cordus & Uterus (F)	86.4	84.4	76.0	73.5	66.9	65.0	63.7	75.4
Non Hodgkin Lymphoma (F)	49.9	61.7	53.7	50.6	35.9	41.8	37.4	47.5
All M	42.7	64.0	39.8	29.3	21.9	27.0	25.7	27.5
All F	56.6	64.3	51.2	43.4	35.3	41.6	38.3	42.9

* US Annual Report to the Nation on Cancer Status 1975-2001, published 2004

** Eurocare 3 Study, 2003

The table's main findings are:-

- Outcomes for patients diagnosed in the 1990-94 were poorest in Poland followed by Estonia. The gradient within Central Europe is almost as great as between old and new Europe.
- In general the survival rates by gender were higher for women than for men for cancers, which affect both sexes.
- For cancers, which affect mainly women - breast, cervix and ovary, the survival rates were much lower for some NMS. In breast cancer the five-year survival rate for women in the Czech Republic were 64.0 percent as compared to 76.1 percent in Europe. For cancer of the cervix the survival rate was 48.2 percent in Poland compared to 62.1 percent in Europe and for ovarian cancer the survival rate in Estonian was 25.6 percent compared to 36.7 percent in Europe.
- For melanoma survival rates were much lower in Estonia (60.0 percent), Poland (57.9 percent) and Slovakia (65 percent) compared to Europe (84.6 percent).
- There is also a significant gap for the leukaemias for Poland where the one-year survival rate was 30.9 percent for men and 29.6 percent for women compared to 60.1 percent in Europe for men and 58.5 percent for women.
- There were significant gaps for colorectal cancer where 5 year survival rates in Poland were about half those in Europe (28.6 percent for women compared to 50.5 percent). This was also one of the few cancers where survival rates in the Czech Republic were low at 37.1 percent.

2.4. Changes in Prevalence

The evidence on current disease burdens point to the high levels of “old “ cancers. The NMS face double challenge of old and new problems. The prevalence of lung and colorectal cancer are much higher than in Western Europe: at the same time, changes in lifestyle and in demography are likely to increase breast and prostate cancer.

The central estimate from IARC ¹¹ is that the world cancer burden is expected to increase from the current level of about 10 million new cancer cases diagnosed annually to about 15 million in 2020. For 2000 there were 227,169 cases new cases in the three main NMS. Within ten years the numbers would be rising towards 350,000 a year. However the change in prevalence - the total number of survivors who have had cancer at any time - is likely to be greater. Prevalence is likely to rise faster than incidence as a result of three factors:-

- Possible improvement in survival for old cancers.
- As a result of population aging an increased incidence of prostate cancer where survival is high.
- An increased incidence of breast cancer. Overall prevalence is likely to double over the next ten years in Poland and on current policies may increase even more in the Czech Republic and in Hungary.

International comparisons show the likely challenges for NMS.

- The UK records show increases in incidence together with improvements in mortality. Between 1971 and 2000, cancer incidence rose by 31 percent while mortality fell by 12 percent.
- Europe in the 1990s shows a rapid improvement in survival. For example in Sweden and Finland the improvement was from around 40 percent to 50 to 5 percent. In Slovakia and Slovenia it was from 30 to 40 percent.
- There is growing agreement that three main variables drive rapid improvements where these take place:
 - Smoking prevention policies, which in the UK have contributed to a much bigger fall in mortality for men. (18 percent compared to 7 percent)
 - ‘Staging’ with increased detection at earlier stages through screening programmes.
 - Improved access to ‘evidence based’ therapies.

The NMS now have the chance to move toward a further rapid catching up. The impact of these variables is currently weak. The key challenge will be that of leverage to improve survival rates to those found in Scandinavia/UK, within a probable context of continued increase in incidence over the next decade, albeit at slower rates. To gain maximal impact on survival requires a different emphasis for different cancers. For lung cancer where treatment of established disease is expensive and gives poor results the priority is prevention by smoking control. For cervical cancer, early detection and the recognition of precancer changes is a priority. For treatable cancers such as Hodgkin’s disease and testicular teratoma the development of centres of excellence and the availability of the correct drugs is vital.

Table 6 Priorities to improve survival for different cancers

Prevention	Early Detection	Treatment
Lung - smoking control	Breast – mammography	Hodgkin's - chemotherapy
Gastric – helicobacter eradication	Cervix – cytology	Leukaemia - chemotherapy
Hepatoma – hepatitis immunisation	Colon – endoscopy	Testis - chemotherapy
	Prostate – PSA Test?	Childhood - chemotherapy

Table 7 US Data on the Benefits (Five Year Survival Rates 1995-2000) of Early Diagnosis for Major Cancers

	All Stages 5 yr%	Localised 5 yr%	Regional 5 yr%	Distant 5 yr%	Unstaged 5 yr%
Prostate (M)	99.3	100.0	-	33.5	81.3
Colon & Rectum*	63.4	90.5	67.9	9.4	35.2
Urinary Bladder*	81.7	89.7	36.9	5.5	59.0
Non-Hodgkin Lymphoma*	59.1	71.5	63.5	47.7	66.3
Breast (F)	87.7	97.5	79.1	20.4	56.7
Corpus & Uterus (F)	84.4	95.8	67.0	22.5	56.0
Lung*	13.2	48.8	22.8	3.3	8.7
Cervic Uteri (F)	72.7	92.2	55.1	17.2	59.2
Ovary (F)	44.0	94.2	77.6	28.5	23.9
Kidney & Renal Pelvis*	63.9	90.9	59.7	9.5	31.6
Stomach*	23.3	59.9	23.9	3.3	12.6

* Male and Female Combined

** Regional combined with Local

With increased prevalence will come increased requirement for monitoring risk and for informed discussion of options with patients. Cancer will become more of a long-term illness requiring repeated interventions and new measures to reduce risk of recurrence. These changes will have impacts on requirements for service and on their information base. Services will have to build greater continuity and extend across a wider span with diagnostics and treatment services.

There is also evidence that costs are likely to raise with improved survival, as patients require recurrent treatment. For example, a model was developed for patients covered by Medicare in the US to estimate the lifetime costs of colorectal cancer treatment. This showed that the initial phase treatment cost was \$19,000 while total treatment cost was \$62,000 on average ¹². There were similar increases for breast and prostate cancer so that long-term treatment costs were at least three times treatment costs in the first phase. Thus changes in prevalence are likely to increase requirements for new systems and higher expenditure.

3. ENVIRONMENTAL CAUSATIVE FACTORS AND PREVENTION PROGRAMMES

3.1 Risk Factors

National cancer strategy must include measures to reduce risk factors which increase cancer incidence. Such measures could, as a minimum, involve measures to reduce smoking which is directly responsible for 50 percent at least of cancer mortality. The combination of smoking with heavy alcohol use is also an independent risk factor as are certain type of diet. For Tobacco Control the WHO has set out a 10 point programme covering the use of fiscal policies to discourage the use of tobacco, health promotion, reduction in passive smoking and controls on advertising.

Currently 10 million people in the world developed cancer each year. The cause of these cancers is known in roughly 75 per cent of cases: 3 million are tobacco-related; 3 million are a result of diet; and 1.5 million are caused by infection. In the EU, 2 million people died from cancer each year, even though many were preventable - with a third related to smoking. In 2004 cancer prevention absorbed only 2 per cent of the total funding of cancer care and research in Western Europe. Anti-smoking initiatives are considered to be successful in the UK - although it has taken 50 years from the time the association between smoking and cancer was first identified. In the 1960s, 80 per cent of the population smoked; by 2004 the average was under 30 per cent. This masks real health inequality - the percentage of smokers in the higher socio-economic classes are in low single figures, while the percentage in the deprived is still about 50 per cent in parts of the country. Despite the known risks, if friends and family smoked and there was no social pressure to stop, there was no incentive. Banning smoking in public places will lead to a further drop of about 4 per cent. Increases in tax had been a powerful disincentive to smoke but the price of a packet of cigarettes was so high by 2004 that smokers were turning to the black market: as many as one in five cigarettes smoked was smuggled into the country. Lung cancer, for example, is a rare disease in higher socio-economic groups and it remained a disease associated with poverty.

Lessons from anti-smoking initiatives will be instructive for prevention in the future. Although the link between poor diet, obesity and lack of exercise and cancer had not been confirmed, there is sufficient circumstantial evidence to suggest that strong associations will be found. Long before 2025 there will be bans on advertising for crisps, sweets and soft drinks on television, the introduction of a health tax on these products and a ban on sponsorship of any public event by manufacturers of these products. By 2010, obesity among the middle classes will be socially unacceptable, but it will remain common among the economically disadvantaged. Creating meaningful, imaginative incentives for people to adopt healthy lifestyles will be a challenge.

The future prevention picture will be coloured by post-genomic research. It is now accepted that about 100 genes are associated with the development of a whole range of cancers. Carrying a changed version of a particular gene – or combination of changed genes - will not necessarily lead to the development of that cancer but will increase the risk. By 2025 most people in the EU will be genetically mapped. The information – gained from a simple blood test - will be easily stored on a smart-card. Legislation will be required to prevent this information being used to determine an individual's future health status for mortgage, insurance and employment purposes. However, the process of mapping will reveal that every person who has been screened will carry a predisposition to certain diseases. People will learn to live with risk.

Today the average age of diagnosis of cancer in the EU is 68. By 2025, improvements in screening, detection and diagnosis will reduce this. A predisposition for some cancers, that used to manifest themselves in a patient's 70s or 80s, will be found in young adult life and detected and corrected successfully in the patient's 30s. Increasing age will remain the strongest risk predictor. Little of what has been described is not happening already in some form but the computing power of the future will bring accurate calculation of risk and predictions will take place on an unimaginable scale. Screening programmes will be developed on a national basis if they are simple, robust and cheap. Patients will expect the screening to take place at a convenient venue for them – in shopping malls and not be painful or overly time-consuming. Health professionals will demand that any programme is accurate and does not give misleading results, and governments will demand that its costs will lead to more effective use of other resources. Novel providers of risk assessment services are likely to emerge.

Balancing cancer risk

- Great health inequity exists in smoking related diseases
- Novel prevention strategies are likely to lead to similar inequity
- Creating meaningful incentives to reduce risk will be essential
- Individually tailored messages will have greater power to change lifestyles
- Biomarkers of risk will enhance the validation of cancer preventive drugs
- Novel providers of risk assessment and correction will emerge

3.2 Priorities and Prevention Programmes

Poland has been most active in smoking prevention with policies over the past decade, which has raised the prices of cigarettes, controls on advertising and health promotion programmes. Such measures have produced results in a 20 percent reduction in lung cancer incidence among males.

For the Czech Republic and Hungary smoking prevention policies are at a much less developed stage. Cigarette prices are low and there are few constraints on tobacco advertising.

Poland has also made some progress in the area of diet in encouraging consumption of more fruit and vegetables. However there is clearly long way to go in reducing risk factors. The diet with high components of red meat and carbohydrates probably contributes to the high levels of colorectal cancer found in the Czech Republic and Hungary.

In 2002, the fourth Czech Republic survey of the health status of the population also conducted an assessment of lifestyle and risk factors. Table 8 shows indicative trend data for the period 1993 to 2002 for Body Mass, Diet, Smoking, Alcohol Consumption and Exercise.

Table 8 Trends in Health Risk Factors for the Czech Republic, 1993-2002

		Body Mass Index (%)			Diet Index (%)			Smoking (%)				Alcohol Consumption (%)			Exercise (%)		
		Low	Av.	High	Good	Av.	Poor	Never	Former	Light	Heavy	Rarely	Reasonable	Excess	Hard/Recreational	Light	Sedentary
1993	M	3	67	30	43	38	19	35	23	29	11	40	45	16	35	35	30
	F	10	61	29	55	35	10	5	14	28	3	73	75	2	20	39	41
1996	M	3	69	28	46	41	13	37	22	28	13	39	48	13	30	32	38
	F	11	62	27	64	29	7	56	15	25	4	73	25	3	15	37	48
1999	M	5	59	37	54	37	9	37	24	27	12	42	49	9	32	33	35
	F	13	58	29	67	28	5	61	15	22	2	81	17	2	18	37	45
2002	M	4	60	36	52	40	8	38	25	28	9	35	53	12	-	-	-
	F	12	57	31	70	26	4	59	17	22	2	78	19	3	-	-	-

Source: Czech Health Statistics Year Book, 2002

4. AWARENESS AND DETECTION

4.1 Public Awareness Programmes

In calling for change in cancer services, the World Cancer Report stresses that ‘Ultimately the programme should involve the general public, whose knowledge and awareness of the problem should become major force in combating cancer.’¹³ Indeed, within the US and the UK, greater public awareness and concern about cancer has helped to change the policy environment so that there is now a broad consensus about the need for active policies for prevention and for improving treatment. In the USA in particular, as the data in Table 5 indicates, there has been dramatic progress in overcoming the reluctance of men to come forward for testing for prostate, testicular and other cancers associated with sexual function.

Public awareness of the sheer size of the cancer problem in the EU NMS seemed to be low. Debate about health care had a focus almost exclusively on the short-term problems of funding, deficits in insurance funds and co-payments. There was also little sign of any strong lead on smoking prevention and cancer control from local medical associations. Only in Poland has there been a strong professional lead on cancer control leading to distinctive and positive results. If Poland has continued with the same incidence as in the early 1990s there would now be many more cases a year.

The immediate outlook could be for some sort term worsening of the policy environment for active public health measures in tobacco and alcoholism as a result of market integration. McKee et al¹⁴ have carefully analysed the precedents in Scandinavia and shown that policies for raising cigarette prices were undermined by smuggling and cross border trade. Thus a new awareness will be needed simply to maintain any gains already made. In the absence of informed and assertive public and professional opinion there may be little that legislators and Ministers of Health can do. Thus raising public awareness is likely to be an essential prerequisite step towards more active policies on cancer prevention.

4.2 Screening

There has been some progress in raising awareness about screening programmes, for example through an extensive advertising campaign financed in part by healthcare companies in the Czech Republic.

There has been some progress towards developing screening programmes in mammography in all three countries.

The Health Fund (OEP) in Hungary has carried out some modelling of the possible gains from increase coverage. The programme started in 2001 and screening rates for women aged 45-65 were 7 percent in 2001 and 21.7 percent in 202. In this age group 10 percent mortality decline would save 509 lives up to 1,582 lives saved with a 30 percent mortality decline. Costs per life year saved would be in the range Euro 1057-3299, depending on the numbers of lives

saved. There are also savings in treatment costs. ‘The cost effectiveness of breast cancer screening seems to be acceptable for the purchaser’¹⁵.

Colorectal cancer screening is not yet a formal programme but modelling data also suggest this could be cost effective with costs per life year saved ranging from Euro 1200 to Euro 4891¹⁶. Detailed modelling for a cervical cancer screening showed that results were highly dependent on the degree of coverage. The cost per life year gained was halved by an extension of coverage. Similar results have been found for screening programmes in Denmark¹⁷.

There has also been some development of screening for breast cancer in the Czech Republic and Poland. Some clinicians already report positive results. The impact of these initiatives was confirmed in our interviews with oncologists.

‘Last month I saw four patients with early stage breast cancer, who had been referred through mammography’.

There are major challenges in achieving population coverage with adequate coverage of high-risk groups. For example, in the Czech Republic mammography is mainly carried out by gynaecologists: under fee for service incentives there may be repeated screening of the same patients with low risk rather than a full coverage of the population. In all three countries there is likely to be considerable investment in extending screening: the challenge is to ensure that possible gains in cancer prevention are achieved.

In contrast to the high level of commitment to extending existing mammography screening programmes and the introduction of new colorectal screening programmes, there was little evidence of corresponding efforts to raise male awareness of the risks and symptoms of prostate cancer and the considerable potential benefits of PSA testing.

4.3 Funding, Infrastructure and Human Resources

The initial stages of the screening programme for breast cancer, relies mainly on assessment by gynaecologists. This achieved a significant level of coverage quickly: however it is doubtful whether this method in itself will result in the coverage level which would make the programme fully cost effective. The challenge of achieving population coverage remains a serious one.

In Hungary and Poland the programmes are paid for through payments from the insurance funds. In the Czech Republic the payment is made by regional governments, which are said to be “surprised at the cost”. Currently in Hungary, letters are being sent out inviting all women in the 45-65 age group for screening.

Further investment is needed to set quality standards, increase take up among minority groups, and audit results. Funding through fees for mammography will be still an important source of funding for the programme but in the next stage a greater element of purposive management will be required, which will require more support funding. This is even more the case for any

expansion of screening for cervical cancer, where there seems to have been much less progress.

There seems to have been little difficulty so far in expanding capacity in mammography. In Hungary this has been done through inviting bids from centres for additional procedures: however, in all three countries there is a need to define quality standards and reporting systems. There is much to be learnt here from the management of programmes in Finland, Denmark and Sweden.

4.4 The Role of Patient Groups

We were able to meet patient groups in the Czech Republic and Hungary and we were able to appreciate how they were becoming a distinctive influence perhaps somewhat more insistent on the need for change.

In the view of the patient group in the Czech Republic ‘there could be anger because the state of things had not changed much in oncology in the last 15 years’: 40 percent of women were still being diagnosed with late stage breast cancer.

They had some problems with the quality of service. Some patients were put in the clear but were later found to have cancer. Among the specific criticisms which were found in both the Czech Republic and Hungary were:-

- The lack of psychosocial and supportive care. In fact in the Czech Republic the medical profession had fought against its reimbursement by the insurance funds.
- Communication problems with doctors who often appeared to be overloaded with patients and lacking adequate administrative and professional support staff.
- Lack of agreed and supported protocols even in specialist areas such as kidney cancer.
- Poor pain control. The patient’s Group in Hungary had helped to sponsor survey, which showed that Hungary was not exempt from the problems shown in similar surveys in the UK, France and the US.
- Media interest and influence had been positive in bringing about improvements. It was important to inform patients about new therapies.
- It was felt, both in Czech Republic and in Hungary, that it would be in the interests of patients to concentrate services on fewer sites. The range of treatments available in smaller hospitals was often restricted. It was suggested that this might take the form of more regional specialist oncology centres to overcome a growing problem of patient overload at leading institutes, particularly in Poland and, to a degree, the Czech Republic, where patients were free to ‘self-refer’ themselves to the centre of their choice.

Our discussions revealed that, generally, patients groups were well informed, despite limited funding and administrative support. In Hungary they were beginning to offer additional services, such as a telephone help lines. Overall they were a vital influence in pointing the way ahead and increasing the discussion of options for change in systems which were described without much contradiction as 'medically dominated'.

5. NATIONAL CANCER SERVICES: FUNDING AND INFRASTRUCTURE

5.1 Expenditure Levels and Sources

Overall total expenditure on health services was 30-50 percent of the Euro average in 2002.

Table 9 Health Care Expenditures per Capita

	Total Health Care (PPP – US\$)	Estimated Cancer Care (PPP –US\$)
Czech Republic	1106	55
Hungary	911	45
Poland	629	31
OECD Average	2100	105

Source: OECD

We can seek to estimate how much of this was spent on cancer treatment. By comparison, for the US treatment costs of cancer were 5 percent of total expenditures in 2000. It might seem that cancer treatment would account for a higher proportion of expenditure in the NMS: however, the relatively low cost of surgery together with low levels of hospitalisation for many patients would tend to pull spending towards the US proportion. If the ratio of spending on cancer patients were the same as in the US, spending would be?

It is possible to check the reliability of these estimates for Hungary. The cost of treatment of breast cancer is estimated by the Health Insurance Fund at \$30 m US dollars on an unadjusted basis and for colorectal cancer \$35 m dollars. These cancers would account for 20 percent of total cases, which would point to a total expenditure of \$325 m. With adjustment for PPP and for overheads and other costs not fully taken into account for the disease based estimates the data suggest that the Hungarian estimate is plausible. However, this would indicate that the NMS are spending little more than 5 percent of total healthcare spending given the small number of specialized units and the limited access to high tech therapies.

For Hungary the estimates by the health Fund for spending on costs of cancer care:-

Table 10 Estimated Expenditure on all Cancer Care, Hungary 2002, US\$ m

Outpatient Care	9.08
Acute In-Patient Care	120.00
Chronic In-Patient Care	1.45
Sickness Pay	14.4
Drugs (Outpatient Care)	46.7
Total	191.5

Source: Hungarian Health Insurance Fund

Allowing for costs not fully covered, such as radiotherapy and drugs by special permit, the estimate for Hungary suggests that cancer treatment is certainly no more than 5 percent of total spending. The global top down estimate appears to be compatible with the estimate from the detailed accounts from the Health Insurance Fund.

For Hungary this would imply a spending of \$600 a case for the year.

In all three countries, the main source of funding is overwhelmingly from insurance funds, with little explicit private payment. However, in all countries there is some mention of private informal payments to gain access to treatment by leading experts.

5.2 Cancer Centres and Care Providers

Chyba! Nenalezen zdroj odkazů. provides a general schema for patient progression through the diagnosis and treatment systems.

In all three countries there have been some moves towards co-ordination of care for a few specialist areas, such as cancer of the testes but, apart from this, the pattern of spending and organization seems to reflect historical patterns.

There are well known lead centres of high reputation - in Poland in Warsaw, Gliwice, Krakow; in the Czech Republic in Prague and Brno and in Hungary in Budapest but, apart from these, there seems little fit between need/workload and actual location of centres.

A number of our respondents in the interview programme spoke of the system as 'fragmented' and 'diffused'. Money did not follow the patient and the incentives to increase workload were few. In some units we visited, there was little sense of intense workload pressure. In fact we were told of under use of costly new equipment in diagnostics and radiotherapy.

In part this appears to reflect the ongoing issues of reformulating viable funding and control systems for hospitals at a regional level, which has led to crisis situations in some cases, from which the local cancer services are not exempt. This seems to be particularly the case in Poland, where lack of ownership and expertise has driven hospitals into bankruptcy. Many have extensive and complex patterns of debt within the private sector.

Discussions with oncologists working in regional centres in the Czech Republic portrayed an awareness that growing pressure to downsize general hospital bed numbers and services in some regions was now leading to competition between centres to build, or sustain, patient numbers, regardless of their capability to provide quality care.

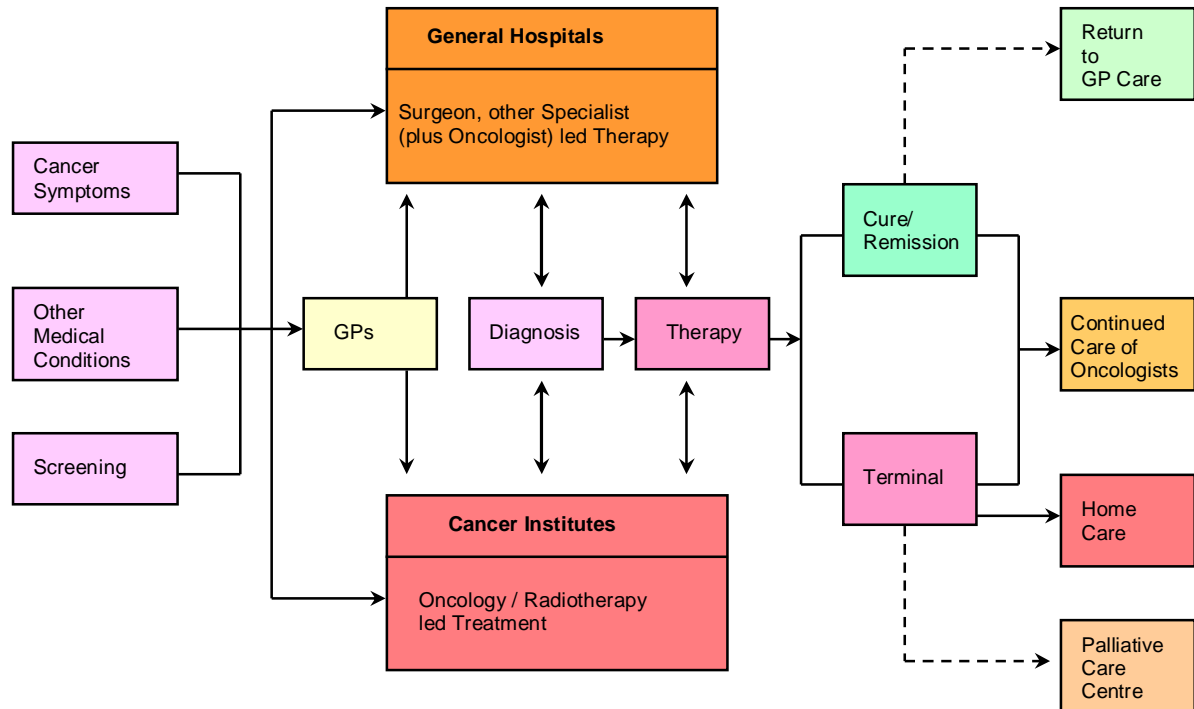
Within this context of a much more broadly based attempt to move away from a low grade hospital driven service to a more patient led, primary care one, there appeared to be some danger that the need to give high priority to second and third tier cancer centres for growing patient numbers, would be lost. In all three countries, respondents suggested that the key to overcoming this challenge was a more clearly defined national cancer plan, which would provide a coherent view, from a transformation to a new orderly system of second tier regional oncology centres.

In the context of Figure 2, as already noted, the distinguishing features of accession country systems is the lack of a strong primary care role for GPs in diagnosis, referral and post therapy ongoing care and monitoring of patients. Services or commitment to national strategies for palliative or terminal care is limited. Whilst this is true in many EU countries, the need to overcome a growing blockage of expensive clinical oncology facilities, by terminal patients in need of palliative care, is still an important issue that requires a higher priority.

One positive development has been increased participation in clinical trials, which has increased access to new therapies. The ability of doctors in all these countries to take part in such trials, which are run to rigorous standards, is a telling indication of the high clinical standards, which has been such an important feature of the past 'system'.

Figure 2 A General Scheme for Cancer Patient Care Pathways

CANCER PATIENT FLOW PROCESS



6. PATIENT PATHWAYS AND PROVIDER NETWORKS

6.1 Diagnosis

Figure 2 illustrates the usual options for patient entry into specialist hospital and laboratory diagnostic systems. Obviously these patterns are complex and vary considerably from one type of cancer to another. The lack of a strong role for GPs, as seen by the general public, who appear likely to delay seeking an early consultation despite symptoms and then present as late stage cases directly to hospital specialists, appears commonplace.

This structural weakness in the system is likely to prove a serious impediment to driving widespread national, early diagnosis, plans. Under the present regime, investment in public awareness on possible symptoms, self-examination techniques, etc. is likely to lead to a flood of new 'potential' cancer patients directly into the hospital ambulatory system, which could be overwhelmed. This could lead to an inability to distinguish quickly between those who have cancer and those who do not and, for those with cancer, to diagnose accurately the status of the disease and recommend appropriate therapeutic protocols.

In common with many EU countries, there is evidence that, for many cancers, lack of adequate numbers of trained radiographers and widely distributed modern equipment is also an issue, which needs greater attention in longer term planning and investment, if it is not to prove a serious constraint on improving early diagnosis and treatment rates.

6.2 Treatment

6.2.1 Surgery

The drivers of change in surgery are both change in technology and in medical devices. Surgeons drive for professional excellence, patient and public expectations and progress in dealing with pain, haemorrhage and sepsis which limited surgery in the past. Surgery is now more problem free so that many older operations which are still carried out have much better outcomes. In many areas, such as breast cancer, surgery is already much less radical, with much less use of mastectomy. There will be an increase in minimally invasive procedures and more use of new devices and in intra-operative diagnosis. Further ahead there may well be more use of computer assisted surgery. Change in surgery will have impacts on hospital length of stay. More patients will be treated on a day or short stay basis. The international pattern will be for larger centres treating more patients with more requirements to travel. There will be patient demands for much more information on treatment options and their risks.

Surgery is becoming more specialized with more requirements for minimum number of operations per year. There will be more access to audit data on surgical success rates but the role of surgery will remain large in this area. The equipment costs for the new surgery are likely to rise, with more use of robotics and of implants. Surgeons will also be much more involved in multi-disciplinary teams.

Within the NMS, surgery has always been widely used and will still be the initial treatment of choice for most types of cancer. We were told that there are few financial constraints on surgery, as low salaries, availability of hospital beds and lost costs of hospital treatment make it accessible. There are three main groups involved in treating cancer patients: general surgeons, urologists and gynaecologists. From some perspectives, the low cost of surgery may have led to its over-use in the past. However, there is little information available on the range of options presented, outcomes and quality of care. There is a long way to go to ensure that surgeons in the NMS can take advantage of the many new opportunities for specialisation in new techniques, which are now emerging in this field.

6.2.2 Radiotherapy

Over the past twenty years, indications for radiotherapy have doubled and there are likely to be further increases in the next ten. Demand has increased for active treatment, which can now be targeted much more accurately. Demand also increased for use of radiotherapy in palliative care.

In the 1999 following an expert consultation process, the WHO published a global strategy for radiotherapy¹⁸. From a technology perspective this concluded that linear accelerator technology was superior to cobalt technology for curative purposes, and should be the focal point for future investment where possible. However it was also acknowledged that cobalt was adequate for around seventy percent of radical treatment plans.

It was recommended at that time that all countries with a per capita GNP > US\$5000 should aim to have one machine per 200,000 population. Most New Member States fall within this economic category. Whilst we did obtain specific quantitative data of this type, whilst in each country there are some state of the art facilities, the overall impression was that outside of these many regions were struggling to maintain old equipment and also with inadequate numbers of machines to cope with rapidly growing patient numbers.

For the future, greater use of biology in targeting will allow more accurate patient selection. Radiotherapy was originally physics driven but biology will play a key role in allowing more rational selection of patients for particular therapies. It should be possible to apply relatively simple tests to tumour samples, which will allow prediction of outcomes with different therapies.

There is likely to be more use of combined therapies. Combined therapies with radio and chemotherapy are already producing results in prostate cancer treatment. Radiotherapy alone can lead to a five year survival rate of fifty-five percent but the addition of an adjuvant androgen-blockade therapy with a luetinizing hormone release hormone (LHRH) agonist at the same time as radiotherapy, will raise the survival rate to eighty percent. There will also be more use of imaging in conjunction with radiotherapy.

After four decades in which little changed in radiotherapy, the last decade has seen massive change in technology and in the range of therapeutic uses. It is hard now to remember that, just a decade ago, many were predicting that radiotherapy would become a forgotten medium

of treatment but the new development will present many challenges to staff skills and treatment planning.

There has certainly been increased availability of equipment, assisted by the development of contracts for leasing. In the Czech Republic, the situation is seen as one in which there are too many small units, with radiotherapy available at thirty or more centres: there are three centres in Prague alone. In Poland and Hungary, there would seem to be greater shortages, with complaints about lengthening waiting times but, in both countries, there has been substantial investment in the flagship centres in the capital cities. In Hungary there is a 'big problem of radiotherapy'. There are only six or seven centres and it can happen that equipment can break down in one centre, leaving a large gap. In Poland, there can be a waiting time of several months for radiotherapy treatment.

Little information is available on the productivity of much new equipment. We were told that operating hours could be quite limited and there was little evidence of the intense work-pace and lengthening queues found in the UK.

Clearly, NMS face a challenge in ensuring that new equipment now more widely available is effectively utilized. Changes in cancer patterns – with more emphasis on breast and prostate cancer – are likely to increase the requirements for radiotherapy, particularly using new technologies such as IMRT. In all three NMS, there is a need for some clearer guidelines to local centres on the level of productivity and use to be aimed for. Longer term, there are likely to be the same shortages of radiographers and physicists which affect most of Europe. In effect the main drive is for equipment procurement by individual units, with a risk that services will be fragmented and uneven. Local initiative remains vitally important but it needs to be set within a clearer and more explicit plan of ensuring there is real value for money and improved access to radiotherapy, so that services can modernize for a new phase of radiotherapy, which will include:-

- Increased conformal radiotherapy for greater precision
- Personal scheduling for biological selectivity
- Greater sophistication in imaging and delivery systems

There has certainly been increased availability of equipment assisted by the development of contracts for leasing. In the Czech Republic the situation is seen as one in which there are too many small units with radiotherapy available at thirty or more centres and three centres in Prague alone. In Poland and Hungary there would seem to be greater shortages with complaints about lengthening waiting times: but in both countries there has been substantial investment in the flagship centres in the capital cities.

6.2.3 Chemotherapy

In Hungary and the Czech Republic spending on chemotherapy has risen substantially. In both countries new drugs are covered by special procedures involving approval from

insurance funds. These procedures limit the use of new drugs to certain special centres and there has been some access to use: however little information is available on cost effectiveness or equity in access.

In the title of this report we adopt the phrase ‘closing the gap’ as a broad paradigm within which to assess the state of cancer services in NMS. In the field of chemotherapy, we can further characterise this as a two part challenge.

The first is to close the gap by extending access more widely within these countries to the technology that is currently available in terms of the best modern medicines.

The second is more subtle, in that it is predicated on a view that, although we do not know, even five to ten years ahead, what the face of chemotherapy may look like with any certainty, there is good reason to hope that there will be advances, based upon complex combinations of new science and technology, which will offer benefits to patients. If the lag that currently exists in the diffusion of today’s chemotherapy technologies is not to be repeated when the next wave of innovation comes along, consideration is necessary now to ensure that the NMS have the necessary capabilities to ‘catch the wave’ of these new therapies promptly as they emerge piecemeal fashion over the next ten to twenty years. Much of this is concerned with strategic planning for infrastructures and specialist human resources in the complimentary roles of state of the art screening and diagnostic techniques and team based therapeutic regimes.

McVie, Schipper and Sikora¹⁹ in drawing attention to the marked variation in effectiveness of chemotherapy interventions depending upon the site or type of cancer, suggested that three categories of cancers could be identified:-

- Cancers where we can achieve a high percentage of complete responses and a high cure rate
- Cancers where there is a high complete response rate, but the cure rate is low
- Cancers where both cure rates and response rate are low and hence chemotherapy adds little value

Based upon the current state of knowledge and experience, Figure 3 allocates some of the more common cancers to these categories. In the light of the cancer incidence trends discussed above it is self evident that, over the past decade, chemotherapy has made only a modest contribution in treating some of the largest classes of cancer, for which the statistical evidence indicates an upward trend in the incidence level.

Figure 3 Benefits of Chemotherapy for Advanced Cancer

RESPONSE RATE	HIGH	Breast Ovary Sarcoma Myeloma Small Cell Lung Carcinoma Acute Myelogenous Leukemia	Acute Lymphoblastic Leukemia Hodgkins Disease Testes Childhood Burketts Lymphoma
	LOW	Non Small Cell Lung Carcinoma Colon Stomach Prostate Pancreas Glioma	-
		LOW	HIGH
		CURE RATE	

Established Therapies

It is also true to say that the cornerstone of chemotherapy continues to be a relatively small number of types of traditional cytotoxic drugs. Although our understanding of the way in which these act at a cellular and molecular level has improved dramatically, which has led to some newer and more effective medicines, the core products have been known for many years. These consist of the following primary classes:-

- **Alkylating agents which bind to DNA** - cyclophosphamide, platinum compounds, chlorambucil,
- **Antimetabolites** - methotrexate, 5 fluorouracil gemcitabine
- **Topoisomerase inhibitors** irinotecan, doxorubicin,
- **Anti-tumour antibiotics** - Actinomycin D, mitoxantrone, bleomycin
- **Microtubule Inhibitors** - Vinca alkaloids, paclitaxel, docetaxel

The other major chemotherapy category consists of hormonal treatments such as the LHRH analogues, anti-androgens, anti-oestrogens and the more recently available aromatase inhibitors.

Access to Established Chemotherapy Treatments in NMS

A WHO consultation on essential cancer drugs in 1999 recommended a list of 17 well established medicines plus two anti-emetics as the basic standard all countries should aim for.²⁰ The use of these drugs appears to be well established in the NMS countries, for the most.

Whilst we have not conducted a comprehensive statistical analysis of the levels of usage of these agents, interviews conducted with oncologists and health insurance fund administrators confirmed, a generally accepted view that many of the more commonly used anti cancer medicines which by law would have been unable to have product patents in these countries pre- roughly 1992-4, such as vinca alkaloids, methotrexate, 5-fluorouracil, are widely available, often from local generic manufacturers at prices, which are low by EU standards.

Even some of the more recently available incremental advances from the use of taxanes and platinum compounds and the aromatase inhibitors are becoming prematurely subject to competition from locally manufactured generic copies, because of the lag in the new product patent laws coming into effect. Thus, even products developed in the late 1980's which, after ten years in development, enter the market in the late 1990's and might normally expect a market life to 2010-2015, now face this type of competition. The only embargo on these alternatives under the EU accession treaty is that they cannot be exported to established EU

markets. However there does not appear to be any limitation on trade between the nine NMS themselves.

Taken in conjunction with strong government control of the prices at which products are reimbursed by the social insurance funds, which, to varying degrees, involves levelling down prices of patented brands to generic levels (reference pricing), this all adds up to a fairly good deal in terms of the cost of these products.

Also in most NMS, anti-cancer medicines usually have the benefit of being exempt from any form of patient co-payment requirements. There are dedicated, or ring fenced budgets for anti-cancer drugs and well developed systems for special case access on a 'named patient' basis, if supported by an oncologist from a leading institute.

If there is a 'bottle neck' in patient access to anti-cancer medicines, based upon the interviews we conducted, it may be rooted in the exclusive responsibility vested in oncologists and other hospital based specialist clinicians to prescribe and hospital dispensaries to dispense all anti-cancer medicines. The dramatic increase in incidence of major cancer such as breast and prostate, over recent years (see Table 5), has clearly placed considerable strain upon clinical services to keep up with burgeoning case loads. This is often exacerbated by the lack of systems and routines and trained ancillary staff, such as specialist cancer nurses, who could share the load in administering drugs and monitoring patients.

There are clearly sound reasons why it is essential that some of the more lethal cytotoxins are subject to close control and supervision both in preparation and administration. However, in contrast one of the widely perceived benefits observed in other countries in the use of hormonal treatments is that once treatment has been initiated by the oncologist or other specialist, patients can be returned to the care of local GP's, who then play a role in providing subsequent prescriptions and patient monitoring, rather than this requiring attendance at ambulatory clinics and adding further to the growing burden on hospital specialist.

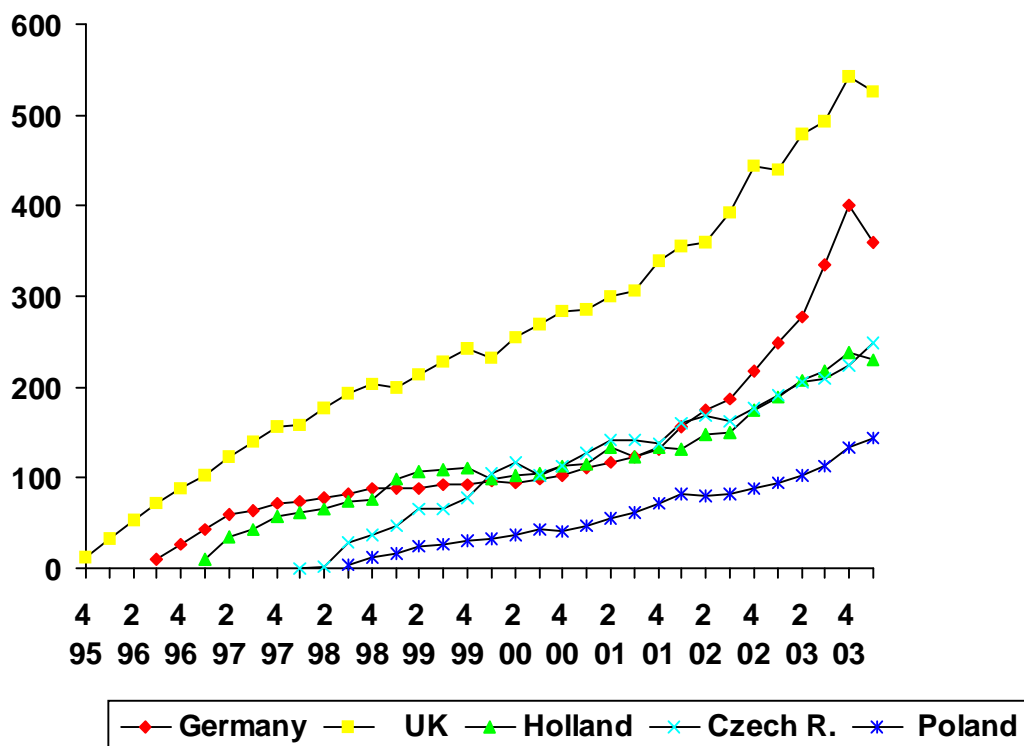
As we will discuss later, this is not a simple matter, as certainly in Poland and to a degree in the Czech Republic, the role of GP's and more importantly their education and training is clearly not as developed as in the EU generally, and therefore quite reasonably specialist lack confidence in the scope to which this type of delegation may be advisable.

Diffusion of More Recently Introduced Therapies

Although a comprehensive review of the uptake of cancer medicines in NMS is beyond the scope of this study, to compliment the results of our interview programme we have, courtesy of IMS, prepared an analysis of sales (IMS standard units) for Poland and the Czech Republic in comparison with Germany, the UK and Holland for four important medicines launched during the 1990's. These are paclitaxel with herceptin for HER 2+ metastatic breast cancer, anastrozole, an aromatase inhibitor for breast cancer, imatinib an intracellular signal blocker for leukaemia and bicalutamide, an anti androgen for prostate cancer.

Figure 4 compares the trend in quarterly sales from launch up until Q4, 2004 for the aromatase inhibitor.

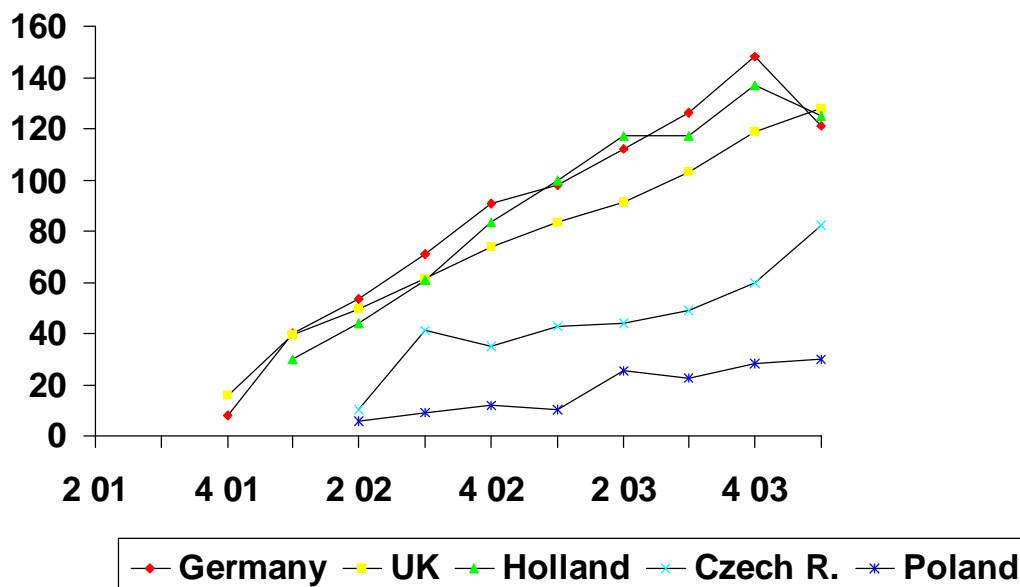
Figure 4 Anastrozole Diffusion in Selected EU Countries



Source: IMS

Figure 5 shows a similar comparison for uptake of imatinib which is widely recognised as offering significantly improved outcomes for patients with some forms of leukaemia.

Figure 5 Imatinib Diffusion in Selected EU Countries



Source: IMS

We would emphasise that these data, whilst broadly indicative of uptake and diffusion rates, have significant limitations for anti cancer drugs. Particularly in the early stages, the audits may not pick up usage under special institute budgets, or in transitional phase from clinical trials to normal usage in hospitals, particularly where the scope to audit hospital sales is limited. It may well be therefore that these data in some cases significantly underestimate usage in some cases.

However, even after making allowance for such uncertainties, the pattern of data does suggest that for Poland and the Czech Republic, that the introduction of these products was later and that the scale of usage was significantly lower than for established EU countries.

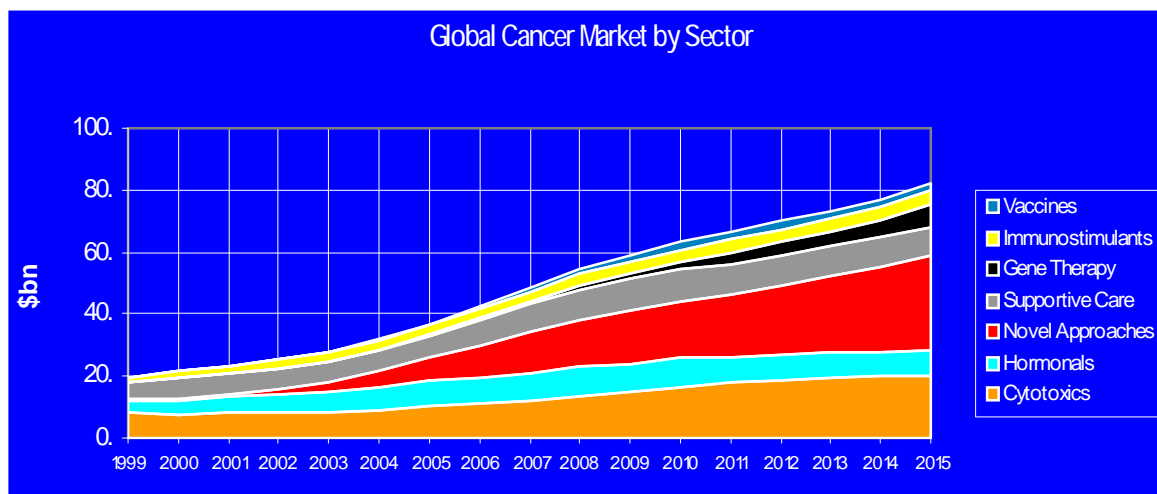
Our tentative interpretation of this difference, based upon our interviews would be that this does not generally reflect lack of awareness, or indeed involvement in clinical trial programmes, and adoption of these medicines by leading national cancer institutes, but in lower rates of diffusion and more widespread usage across the countries as a whole.

New Therapies

By 2025, cancer treatment will be shaped by a new generation of drugs. What this new generation will look like is not apparent today and will depend on the relative success of agents currently in development. Over the next three to five years, we will understand more fully what benefits these compounds such as the kinase inhibitors are likely to provide. It is estimated that in 2004 there are about 500 oncology drugs being tested in clinical trials. Of these, around 300 were against specific molecular targets. But this number is set to rise dramatically. 2,000 compounds will be available to enter clinical trials by 2006 and 5,000 by 2010. Many of these drug candidates will be directed at the same molecular targets and industry is racing to screen those most likely to make it through in the development process. Tremendous pressures are coming from the loss of patent protection from the majority of high cost chemotherapy drugs by 2008. Unless new premium priced innovative drugs are available, cancer drug provision will come from global generic manufacturers currently gearing up for this change.

The challenge of funding future innovation is well illustrated by the projection in Figure 6 of the likely global trend in expenditure on chemotherapy, which could well increase three fold by 2010.

Figure 6 Cancer Market Set to Triple by 2010



- 2010 sales \$64bn, CAGR 12% driven by
 - new technology - targeted therapies
 - earlier intervention
 - patient numbers (ageing population - other diseases controlled)

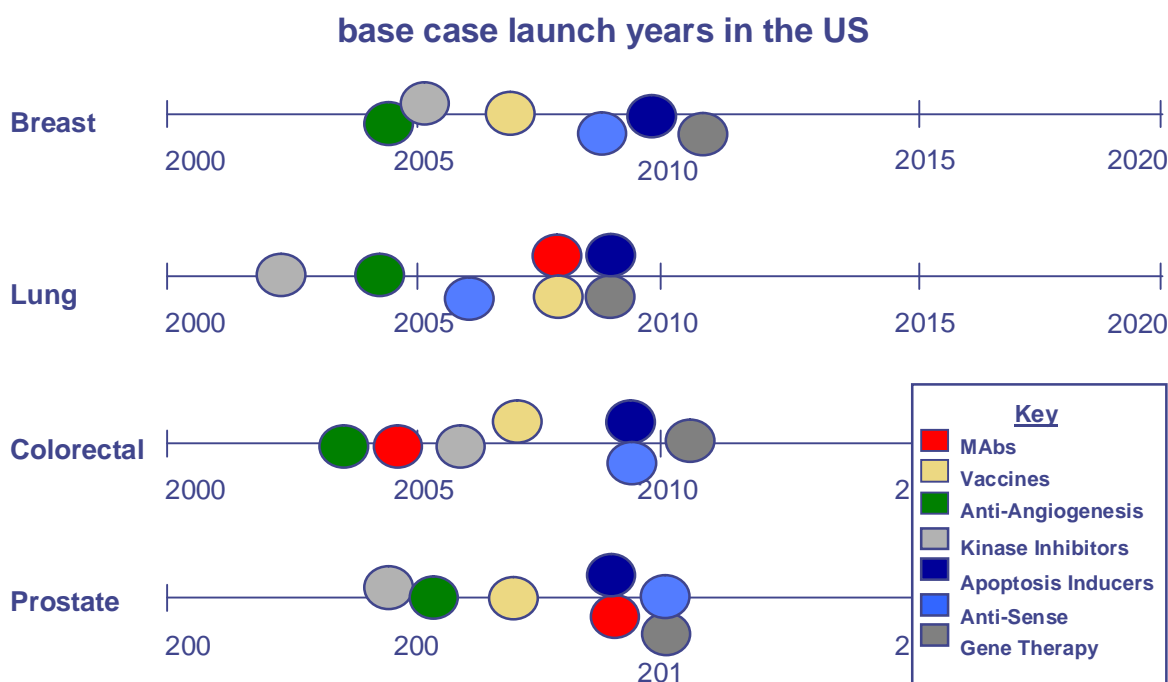
So what will these drug candidates look like? In 2004, small molecules are the main focus of research - most of which were designed to target specific gene products that control the biological processes associated with cancer such as signal transduction, angiogenesis, cell cycle control, apoptosis, inflammation, invasion and differentiation. Treatment strategies involving monoclonal antibodies, cancer vaccines and gene therapy are also being explored. Although we do not know exactly what these targeted agents will look like there is growing confidence that they will work. More uncertain is their overall efficacy at prolonging survival. Many could just be expensive palliatives. In the future, advances will be driven more by biological understanding of the disease process.

Already we are seeing the emergence of drugs targeted at a molecular level - Herceptin, directed at the HER2 protein, Glivec, which targets the Bcr-Abl tyrosine kinase, and Iressa and Tarceva, directed at EGFR tyrosine kinase. These therapies will be used across a range of cancers. What will be important in 2025 is whether a person's cancer has particular biological or genetic characteristics. Traditional categories will continue to be broken down and genetic profiling will enable treatment to be targeted at the right patients. Patients will understand that treatment options are dependent on their genetic profile. The risks and benefits of treatment will be much more predictable than today.

Therapies will emerge through our knowledge of the human genome and the use of sophisticated bioinformatics. Targeted imaging agents will be used to deliver therapy at screening or diagnosis. Monitoring cancer patients will also change as technology allows the disease process to be tracked much more closely. Treatment strategies will reflect this and drug resistance will become much more predictable. Biomarkers will allow those treating people with cancer to measure if a drug is working on its target. If it is not, an alternative treatment strategy will be sought. Tumour regression will become less important as clinicians look for molecular patterns of disease and its response.

Figure 7 offers a schematic projection of the future time frame over which innovative new categories of therapy may be approved for use in leading countries.

Figure 7 Predicted NDA dates for Molecular Therapies



By 2010, there will be more of a focus on therapies designed to prevent cancer. A tangible risk indicator and risk reducing therapy, along the lines of cholesterol and statins, would allow people to monitor their risk and intervene. Delivering treatment early in the disease process will also be possible because subtle changes in cellular activity will be detectable. This will lead to less aggressive treatment. The role of industry in the development of new therapies will continue to change. Smaller more specialised companies linked to universities, will increasingly deliver drug candidates to big pharma to market.

In 2025, people will be used to living with risk and will have much more knowledge about their propensity for disease. Programmes will enable people to determine their own predisposition to cancer. This in turn will encourage health-changing behaviour and will lead people to seek out information about the treatment options available to them. Patients will also be more involved in decision making as medicine becomes more personalised. Indeed, doctors may find themselves directed by well-informed patients. This, and an environment in which patients are able to demonstrate choice, will help drive innovation towards those who will benefit. However, inequity based on education, wealth and access will continue.

At the present time there are large numbers of products for the major cancers based upon a range of different therapeutic strategies - monoclonal antibodies, anti-angiogenesis, kinase inhibitors, apoptosis inducers, gene therapy and vaccines. On the one hand past experience suggests that many of these may well fail to deliver on the other the sheer scale and range of innovative activity would suggest surely some will succeed.

It is beyond the scope of this paper to elaborate further on the technological aspects of these advances. However what is important is to try to foresee, however tentatively, how these changes may affect future clinical practice, and resource patterns both in terms of funding, human resources and infrastructure.

A common perception, which may, or may not become reality is that future optimal patient management will be based upon two important new ideas. Firstly, that there will be a multiplicity of treatments, which are clearly linked to the genetic profile of the patient, the specific characteristics of the tumour and its stage of evolution. This will herald the coming of 'personalised therapy' for the individual patient, or at least many more narrowly defined patient segments.

To take full advantage of these new opportunities will require a major upgrading and investment in diagnostic techniques - both in terms of laboratory analysis and clinical imaging, and in the widespread adoption of more efficient management processes, which link diagnosis to the therapeutic team responsible for planning, implementing and following up on individual patient treatment regimes.

The prospect of this potential for technological change, raises even more difficult questions with regard to the economics of funding cancer in the future, which we introduced at the outset. More new technologies for cancer diagnosis and associated new drug treatment strongly suggests that, inevitably cancer will require a bigger share of total healthcare expenditure. Also, within cancer funding, shifts in planning priorities and allocation of funds will be needed to efficiently optimise their introduction for the benefit of patients. Even though new compounds may offer only a small healthcare gain, they are avidly taken up because of the huge unmet medical need in this therapeutic area.

As shown below in Table 11 the estimated 2004 sales of recently released molecularly targeted therapies are staggering and will drive up cancer budgets in all EU countries.

Table 11 Global Sales Estimates for Important New Therapies

Drug	FDA approval	Global estimated sales 2004 (US\$ million)
Rituxan	1997	1,700
Herceptin	1999	480
Glivec	2001	1500
Iressa	2003	400
Erbitux	2004	150
Avastin	2004	733

Source: Goldman Sachs Global Investment Report, July 2004 ²¹

‘Catching the Wave’ of the New Chemotherapy Models

Firstly it was clear from our visits to leading cancer institutes in the Czech Republic, Hungary and Poland, that in all three countries at the highest level there was an appreciation of these challenges and a degree of investment in new diagnostic techniques, such as genetic profiling associated with products, such as Herceptin.

One would anticipate with some confidence that, in these leading tier centres, the necessary funding and development of new skills and multifunctional team approaches will take place as more new products of this type become available.

As illustrated in Figure 4, the situation in second and third tier hospital oncology centres, already embroiled in complex and uncertain re-organisational schemes requiring concentration and a general upgrading of existing chemotherapy services, responding quickly to the potential of new wave treatments such as Glivec, will be a formidable challenge.

A key element in surmounting this challenge is likely to be a national plan, which places even greater emphasis on networking between leading and secondary centres.

It was also clear that based upon the good progress made over the past decade in overcoming a residue

6.2.4 Protocols and Patient Pathways

There is some movement towards the development of protocols in the Czech Republic: however, international validation and comparison seems quite limited (see Figure 8).

Figure 8 The Future Challenge for Providers of Chemotherapy

PROVIDER	LEADING TIER INSTITUTES	CZECH & HUNGARY - Well placed POLAND - Some weakness	MOST INSTITUTES AWARE AND ESTABLISHING NEW CAPABILITIES
	2 ND /3 RD TIER HOSPITAL ONCOLOGY CENTRES	CONSTRAINED AND VARIABLE ACCESS	MAJOR FUNDING AND STRUCTURAL CHALLENGES
		ESTABLISHED	NEW WAVE 'DIAGNOSIS- CHEMOTHERAPY'
		CHEMOTHERAPY TREATMENT TECHNOLOGIES	

In many of our interviews there was complaint about the fragmentation of services. There are division between specialties with urologists, and gynaecologists involved in treating cancers as well as oncologists. There is also fragmentation between oncology centres with little co-ordination of role or workload.

Among the specific comments were:

“Poor follow up after initial treatment.”(Patient Group Czech Republic).

“There is a big problem of fragmentation between centres—a weakness in follow up and adjuvant therapy.” (Leading Specialist Prague).

“We often meet very advanced cancer.” (Specialist in regional centre in older industrial area Czech Republic).

“In last 10 years there has been good progress –patients are being recognized earlier: but diagnosis is frequently left too late.” (Specialist Silesia).

“Life expectancy here is worse than North Africa” (Specialist Hungary).

“Only 25 percent of breast cancer patients get the most modern follow up treatment.” (Specialist Hungary).

“The system faces very divergent pressures from producers....Money does not follow the patient especially in oncology. It is divided among many hospitals” (Health Fund Manager Czech Republic)

“Of 200 hospitals in the Czech Republic some 80 treat cancer.” (Health Fund Manager Czech Republic).

“The situation of a patient in the last stages of cancer is quite terrible. There is no system of home care and we only have 2 hospices and 120 terminal care beds rather than the 200 needed.” (Health Fund Manager Czech Republic).

On a more positive note:-

“We act as a virtual centre or South Moravia. We are the only comprehensive cancer centre in the Czech Republic.” (Specialist Brno).

“In 1997 there was a new law on patients rights. This changed a culture of belief that it was better to lie. The new move requires co-operation between physician and patient.” (Patient Association Hungary).

“The Soros Foundation has been active in funding palliative care and a specialist nursing service.” (Specialist Hungary).

6.2.5 Palliative Care

Until the 1990s palliative care, as an organized specialty with dedicated staff teams, was limited to a very few countries (mainly the UK, the US and Australia). Now there are signs of wider interest. WHO data show that worldwide consumption of morphine rose from 5000 kg in 1990 to 21,000 kg in 2000¹(p.301). There is greater interest both in hospices and in home care teams. For Hungary, there has been important new finding from the Soros Foundation.

With improved survival, the role of palliative care becomes more important and also cost effective in saving on emergency admissions and treatment in acute hospitals.

“The aim can be a highly positive one - that of securing quality of life and freedom from pain in the last phase”²². Palliative care can also give support to carers through respite care and help with disability. The NMS now have an opportunity to learn from the experience of others for new local initiatives in palliative care.

In the short to medium term, the growing incidence of cancer case and only modest improvements in outcomes for some major categories such as lung cancer, clearly suggests that the prevalence of terminally ill patients is also likely to rise.

A common social pattern was noted by many of the interviewees, both administrative and professional, on the care for this type of patient. Traditional locally resident extended families are in decline even in rural areas. As a result, the traditional approach to terminal care at home, under the supervision of a GP, is also in decline. Modern nuclear families, particularly those with children, are increasingly reluctant to take on this role. Thus, the proportion of patients in need of palliative care, dying in hospital, is correspondingly increasing. In terms of hospital bed availability, currently this is not an issue as there is substantial surplus capacity but, if current reform plans to streamline and pursue 'cost efficient' strategies to reduce hospital bed capacity and hospital stay periods come to fruition, in parallel a new more pro-active strategy for palliative care for cancer patients will be needed.

At the present time, initiatives aimed at creating specialist facilities with dedicated staff, trained in techniques such as psychological support and pain relief, could best be described as embryonic in all countries. It should be noted, in fairness that, across the EU as a whole, there is a considerable variation in this regard, ranging from highly developed systems, similar to the US, to very few limited care facilities, run by charitable and religious organisations.

It appears self-evident that, within healthcare reform plans, reviewing, or further developing a holistic national cancer plan, attention needs to be given to provision of palliative care facilities and staff. This is likely to require shifting the balance away from patients remaining in hospital, to care at home with a much stronger specialist support system, or in dedicated 'hospice' like facilities.

7. STRENGTHS AND WEAKNESSES

We would sum up key findings as follows:-

1. The current disease burden in cancer for the NMS is not widely recognized. Cancer is responsible for 30-40 percent of lives lost prematurely under 65 and as mortality from CHD can be expected to reduce with smoking prevention and change in diet, cancer is going to become relatively more important as a cause of premature mortality.
2. With current trends in old (lung and colorectal) and new (breast and prostate) cancers the disease burden is set to increase. There will be a high contribution from early mortality but there will be an increased contribution from disability and longer-term morbidity.
3. Evidence is available on outcomes from the EURO CARE 3 survey. The data cover patients diagnosed in 1990-4 who survived for five years. Much of the treatment would have taken place before recent increases in spending on health. In all the results is remarkable tribute to the abilities of clinicians in the NMS in achieving such survival levels with very limited resources. In effect the survival rates were roughly the same as those being achieved in the EU in the late 1970s - but with much more limited resources.
4. The level of expenditure is low but spending has risen driven by equipment purchase and therapy expansion. Services are fragmented and there is little sense of coherent strategy or investment. On current outlook there is a very real chance that expenditure will increase but with little gain in improved outcomes and real value. The main strength in the past has been in the availability of dedicated clinicians who were working for very low salaries. However, this strength will decline with increased migration in the EU and the movement of younger doctors into other occupations. The NMS cannot expect that approaches, which have served them well in the past, will automatically carry on in the future.
5. The NMS need a feasible, fundable way forward for dealing with this very serious health problem.

8. FUTURE PRIORITIES FOR CLOSING THE GAP

8.1 Overview

What are the key directions for investment in better services? Could cancer treatment in NMS overtake the older EU members by greater freedom to adopt new technology and new approaches? What pattern of services would be most effective in moving towards this aim? The NMS will be seeking to develop new models of care, which will both deal with the inherited problems and ensure that services can meet these new challenges.

The EURO CARE survey shows that there could be a significant potential for moving forward and achieving higher level of service delivery and access.

Such investment plans must cover programmes for better communication with patients and carer support. The NMS can be early adopters of new technology and new cost effective therapies, so as to ensure that they minimize long-term costs and develop the most effective response for patients.

There is a wide range of perception regarding the future, with extremes of optimism and pessimism.

One perspective from Poland:-

Poland will dynamize EU - will bring a fresh perspective pushing EU into a new era.

Bottom up contacts of peoples will drive change in EU rather than top down action by organizations. The aim is to make Europe a better place to live in for all its citizens.

Attitude to expansion is positive. "It's unbelievable but it has happened."

Can this wind of change bring about improvements in health services?

In contrast, the pessimists point to on-going challenges of political fragmentation, instability and competition, as intractable problems, which constitute major barriers to formulating cohesive, long term national strategies.

8.2 The New Agenda

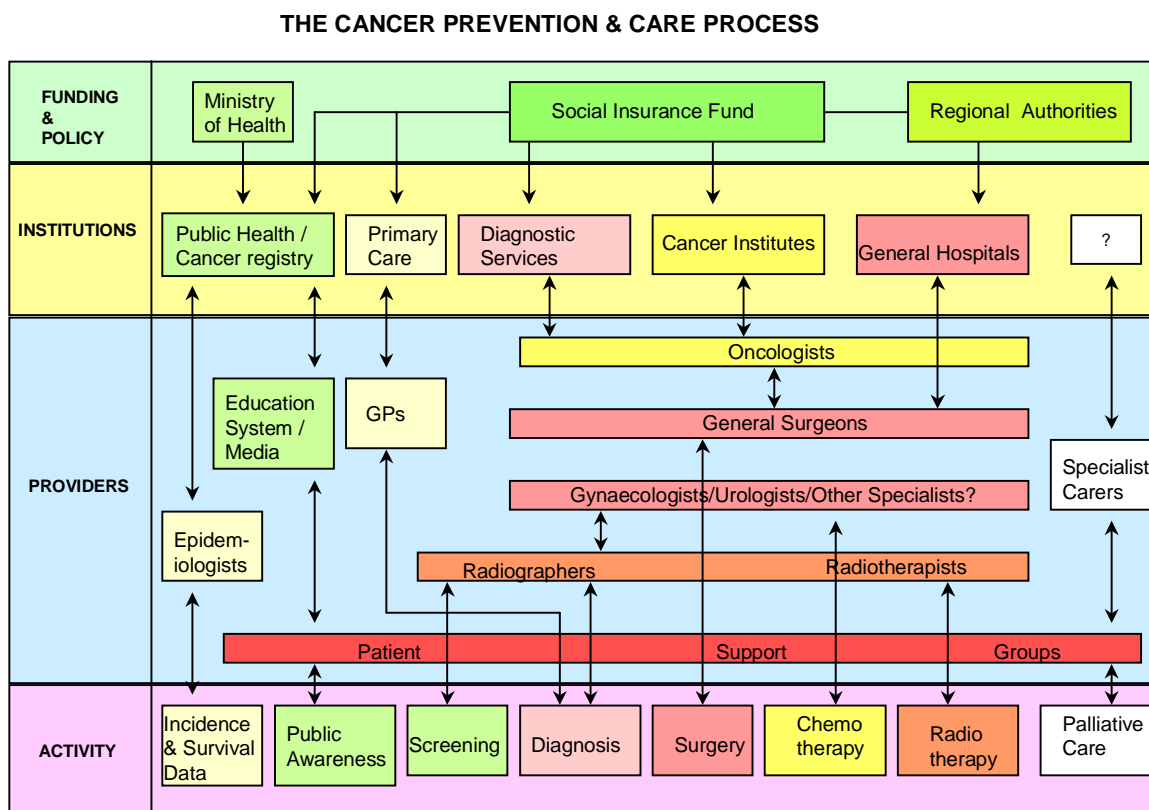
This has to start from an appreciation of feasible options, based upon an emerging model of international best practice.

- National cancer strategies
- New integrated cancer programmes
- Screening
- Early detection and treatment
- Follow up and secondary prevention
- Palliative care

Accepting likely constraints of funding/structure etc how can there be movement towards the model so as to achieve improved outcomes/reduce disease burdens/progress even with likely fiscal strains.

Figure 9 shows schematically the complex range of components and their relationships, which make up a modern national cancer plan. The need to develop and refine, such holistic models as a basis for consensus building and investment planning is now gaining recognition with key contributions from the NCI in the US Scandinavia and more recently the UK. This type of model replaces older ones, in which cancer treatment is seen as matter of an individual clinician waiting for patients to bring in symptoms. It involves a cancer strategy, which seeks to maximize prevention, early detection effective treatment and follow on care involving management of risk and /or palliative care. This new approach rests on an evidence base, which has been greatly strengthened and enlarged over the last ten years.

Figure 9 Cancer Prevention and Care Process



Prevention

Here there is firm evidence on the immediate results in smoking prevention in reducing lung cancer from the UK and the US. Within the NMS Poland adopted strong policies to reduce smoking in the early 1990s. By 2000 the incidence of lung cancer had fallen, while it had shown no change in Hungary and the Czech Republic.

Changes in Diet

Changes in diet towards more fruit and vegetables will also have helped to reduce cancer incidence. Any increase in obesity will strengthen a risk factor.

Early Detection.

The vital role of screening programmes is already recognized for cervical and breast cancer. Survival is related strongly to stage of diagnosis for most cancers and gains in survival have been driven by earlier detection. Countries or insurance funds with the strongest gains in survival have been most active in introducing and extending screening programmes.

Use of Protocols/Care Pathways

With the development of chemo and radiotherapy, there are now an increasing number of options and combinations for treatment. At the same time, the diagnostic process is becoming more complex. To meet clinical governance standards cancer centres are using protocols and care pathways. This is driving new investment in information technology.

Drug Therapies

Full use of the enlarging range of drug therapies and targeting of therapies for best results for patients.

Improved Communication with Patients.

Increasingly patients are seeking to be involved in decision-making and want to have the options discussed with them.

Use of Multi-disciplinary Teams

The practice of regular team meetings to discuss patients involving surgeons, radiotherapists and oncologists is now being used much more widely adding to the pressures for improving the information base.

Specialist Nurses

Specialist nurses are increasingly being seen as key team members in managing treatment programs and communicating with patients.

The Development of Follow-up and Palliative Care

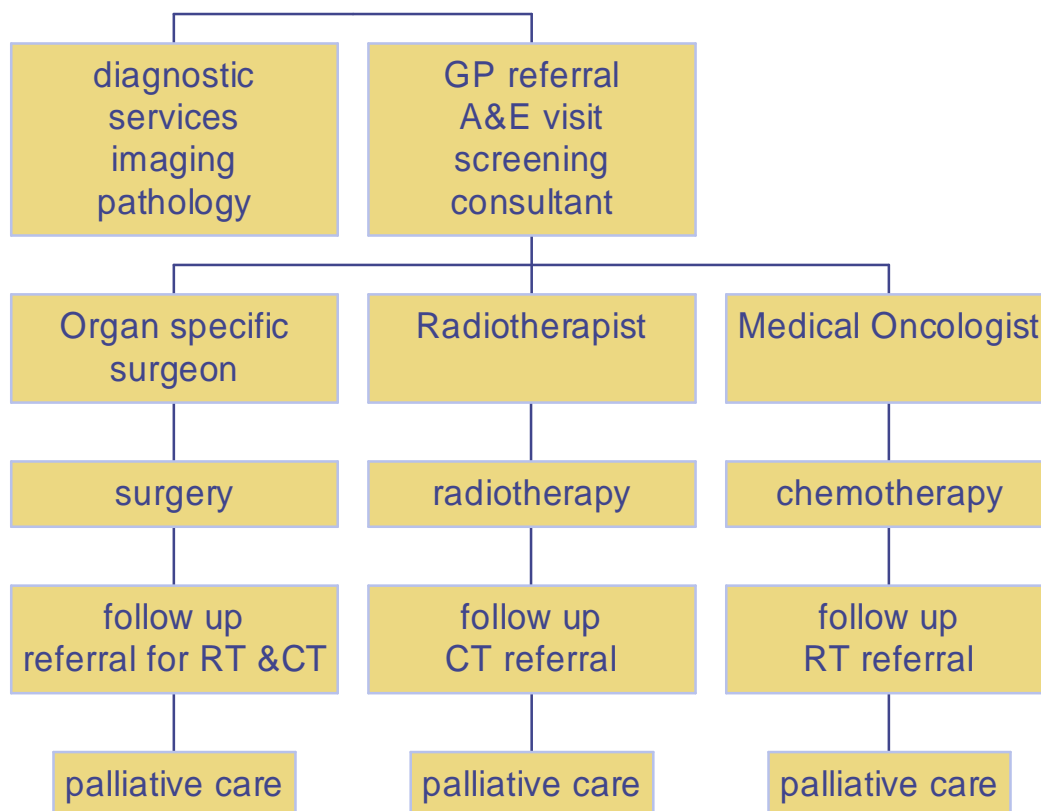
This is now being seen as an important and worthwhile part of care. Survey evidence shows that many later stage cancer patients suffer both from pain and from other symptoms there are already the skills and the drug therapies to ensue privacy, dignity and control in the last phase of life. Progress in cancer care now depends on using this new evidence base effectively to invest in the systems, which will improve outcomes. How can the NMS create the conditions in which a new generation of cancer professionals can “catch up”?

New Infrastructures, Roles and Responsibilities

A major challenge facing those leading reform lies in creating new infrastructures and ultimately new roles and responsibilities within the context of Figure 7. In particular much attention is now focussing upon the need to create and administratively support new working relationships between surgeons, radiotherapists and oncologists. In many cases, whilst these are evolving pragmatically in response to new patient demands and new treatment options, there is a danger that changes in both organisational behaviours and structures lags far behind what would be optimal in the light of technological progress. Figure 10 below highlights the

parallel activities of these specialisms, which offers much scope for further development of more refined systems of networking and communication.

Figure 10 The Cancer Care Pathway



Improving the Patients Experience – Keeping up with the Future

Two separate developments will determine the patient’s experience of future cancer care. Increasing expectations of patients as consumers will lead health and social care services to become much more responsive to the individual, in the way that other service industries had started to become in the latter years of the 20th century even in Eastern Europe. Coupled with this, targeted approaches to diagnosis and treatment will individualise care. People will have higher personal expectations, be less deferential to professionals and more willing to seek alternative care providers if dissatisfied. As a result, patients will be more involved in their care. They will take more responsibility for decisions rather than accepting a paternalistic “doctor knows best” approach. This will partly be fuelled by the internet and competitive provider systems. In twenty years the overwhelming majority of people in their 70s and 80s

will be familiar with using the internet to access information through the massive computing power that they will carry personally.

With patients having access to so much health information, they will need someone to interpret the huge volumes available, helping them assess the risks and benefits as well as determining what is relevant to them. These patient brokers will be compassionate but independent advocates who will act as patients' champions, guiding them through the system. They will be helped by intelligent algorithms to ensure patients understand screening and the implications of early diagnosis. They will spell out what genetic susceptibility means and guide patients through the treatment options. Patients and health professionals will have confidence in computer-aided decision making because they will have evidence that the programmes work.

Cancer care will be a two-way street, however. Cancer patients will also coach doctors and other patients. With so many people expected to be living with cancer by 2020, they will have a great deal of knowledge and experience that professionals will need to tap into. Health professionals will be educated to accept that the person with cancer is an expert both about themselves and their illness. There will be continued interest in complementary medicines covering a wide range of talking, touching and pharmacological therapies operating outside the norms of conventional medical science. Improved regulation of practitioners in this area will enhance the quality of care provided and lead to better organisation of services.

How the service will be designed around patients' needs and expectations will be determined by the improved treatments available and their individualisation. Care in the early stages will be provided near to where patients live. Even the most sophisticated diagnostic machinery or robotic surgeon will be mobile so much of this intervention will be carried out by technicians and nurses, with the most highly-trained professionals in audio-visual contact from a distant base. When cancer centres developed mid 20th century, the diseases were relatively rare, and survival was low. Although distressing for patients when they were referred to a centre, their existence concentrated expertise. Cancer will be much more common, and as accepted as other chronic conditions, that even when inpatient care is required, patients will be able to choose many places in the world, where they will receive care at a "cancer hotel". But for many patients even that option will not be necessary. Most new drugs will be given orally, so patients will be treated in their communities. However, this approach to cancer and other concomitant chronic conditions, will place a huge burden on social services and families. Systems will be put in place to manage the on-going control of these diseases and conditions – psychologically as well as physically.

Seventy per cent of the cancer budget is currently spent on care associated with the last six months of people's lives. Although many recognised that such treatment has more to do with the management of fear, rather than the management of cancer, in the past medical professionals had relatively few treatment options available and there has been limited awareness of which patients would benefit. There is also an institutional reluctance to destroy patients' hopes that led to confusion between the limits of conventional medicines and a reluctance to face the inevitable, by patients, their families and doctors. There is a widespread

perception that if patients continue to be offered active anti-cancer treatment, there is the possibility that their health might be restored.

With better treatments, consumers of services (both patients and their carers) will be able to focus on quality of life. Much of the fear associated with cancer will be mitigated. Demand for treatments with few side effects, or lower toxicity will be high, even if there are only quite modest survival gains. Yet, patients will only be treated who can benefit from the most expensive treatments and other approaches will be developed.

8.3 Creating Incentives for Investment and Care Quality.

The three NMS's need programmes to move cancer care into healthcare 21st century. Among key elements in the new model will be:-

- New kinds of partnership between patients and health professionals
- A stronger evidence base on care and treatment options, which will be accessible through web sites to local professionals
- A shift from emphasis on items of hardware towards software systems
- New informatics for measuring quality and clinical governance
- Greater emphasis on networking and teamwork
- A commitment to learning and adaptation through national and international links
- A shift away from inpatient care toward ambulatory care
- Targeting of patients at high risk for genetic reasons
- Targeting of disease prevention and treatment in socially deprived areas
- A strategic role for health funds with use of managed care systems

The NMS's have had a great strength in the past in the extraordinary commitment of doctors and other health professionals to give good care even with limited resources. The aim of the programme would be to ensure that such qualities could continue to thrive in a changing health environment. This should be regarded as essential for international competitiveness and accreditation.

The programme would cover initiatives in the following six areas and for each we define the first steps, which could produce real results in two to three years.

- Prevention:- The essential here is to strengthen programmes for tobacco control. The WHO programme sets the framework here but any general reductions in

smoking will take time both to take place and to impact on health status. Given the urgency of the problem there may well be a case for special measures to reach high risk groups - such as men over thirty who have been smokers for ten years or more, women during pregnancy, patients with diabetes or CHD who are already being treated.

- Screening and early detection:- A good start has been made here in the two key areas of mammography and screening for cancer of the cervix. It is essential to move forward to ensure population coverage on a three-year basis. Screening for colorectal cancer could begin through pilot schemes in high-risk areas.
- Diagnostics and Assessment:- Clearer standards need to be set for speed of treatment and information increased on options. The key challenge will be to improve staging so that more patients will be treated quickly at earlier stages.
- Treatment and care:- There will be a move towards more complex choices with differing sequences and options for surgery/chemotherapy/radiotherapy. Therapy will be longer and more intense with greater urgency about monitoring the patient experience and fatigue.
- Follow up and continuing treatment:- It will be vital to improve medical records to ensure that patients at risk are recalled. This will be particularly important with longer-term prophylaxis for breast cancer.
- Palliative care:- There has been some progress towards improving the service in Hungary through the initiative by the Soros Foundation but much more needs to be done.

We would strongly recommend a one-off investment programme to assist with the transition.

- International /charitable sponsorship for National Fight Cancer Funds (\$50 m each for Hungary and the Czech Republic and \$100m for Poland).
- A strategy group with representatives from national Ministries, Health Funds, oncologists and patient groups. This would set directions and the full time Fight Cancer Fund Manager would report to this.

8.4 Funding of key investments

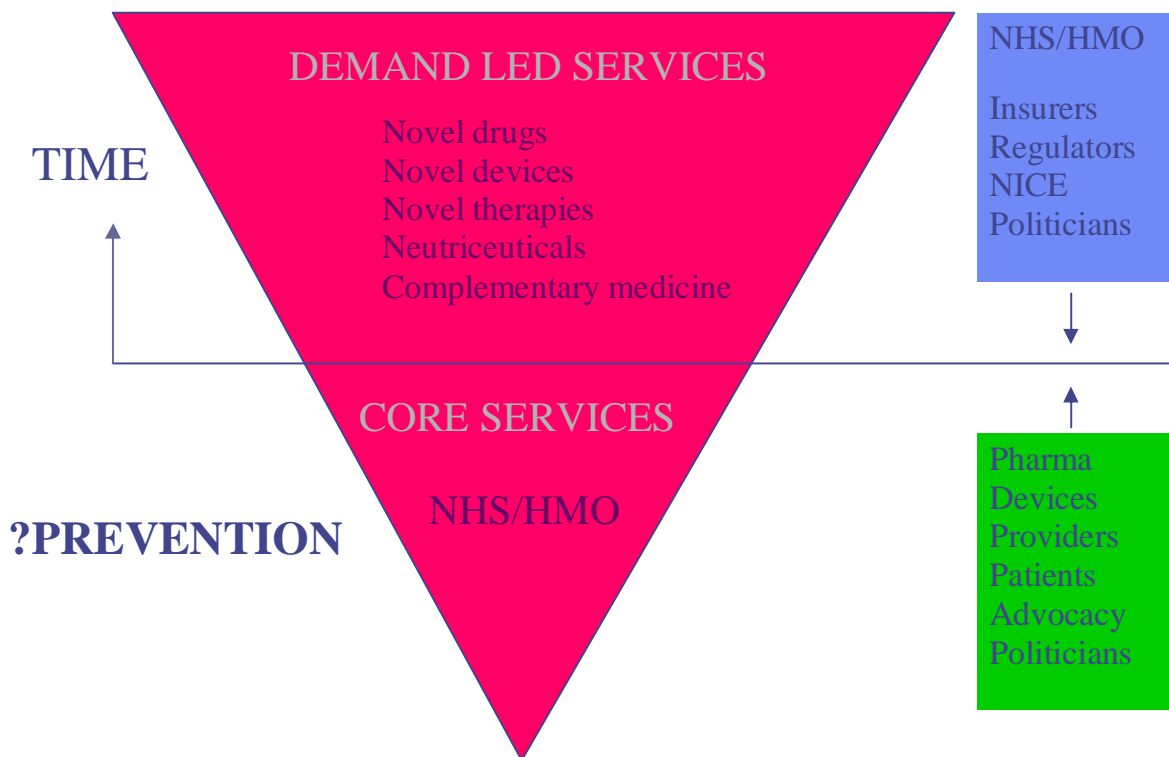
Throughout this text we have frequently drawn attention to the formidable nature of the challenge involved in making good choices for long term investment of limited funds. Whilst we do not wish to engage here in a debate regarding the well known arguments on the respective economic and social merits of private versus public funding mechanisms, it would be naïve not to recognise the reality, which is already apparent in all NMS countries, that in addition to the established state or national social insurance fund financing systems, there is

ample anecdotal evidence of a flourishing private sector approach based largely upon out of pocket payments by those, who can afford it.

Whilst funding of cancer services is unquestionably a high priority for public systems, the scale of growth in demand, fuelled both by patient numbers and new technology options, could well see a further expansion of private funding, with all the well known attendant stresses associated with inequity of access.

Figure 11 based upon a broader experience of this dynamic, clearly indicates that difficult, and in future in NMS's far more publicly transparent decisions will have to be made as to what core services can be provide by public systems, and which albeit reluctantly access will be limited or delayed.

Figure 11 The Cancer Demand Pyramid



8.5 The need for national cancer plans

As illustrated in Figure 12, the national social insurance funds face a massive challenge in formulating long term strategies for allocating limited funds to a range of services. Many face uncertain futures, in terms of income streams, which are heavily dependent upon national economic performance. There are many other competing priorities besides cancer and, above

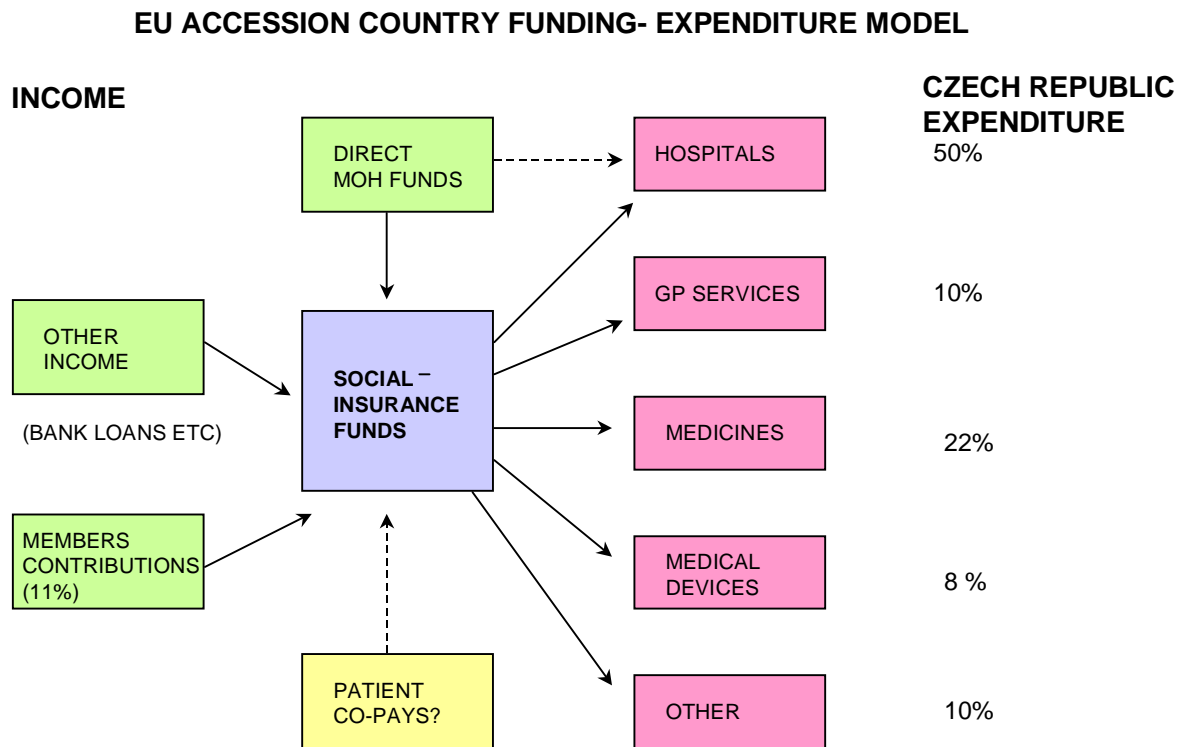
all, the need to push through funding and organisational reforms on a grand scale. Somehow within this context, the concept of a national cancer investment plan, supported by the relevant professional bodies, needs to be established with a clearer set of investment and funding priorities, which are compatible with the wider reform programme.

We would suggest that the following components should be high priorities in this plan:-

- Stronger management capability in key local centres especially in areas of systems design and utilization
- Expansion of screening programmes and management to ensure population coverage
- Funding survey research on the patient experience
- Design new informatics or quality measurement and for networking among professionals
- Training of doctors and health professionals in new skills
- Design of protocols and care pathways building on some of the excellent work, which is being done in Brno, Warsaw and Budapest
- Investing in new management and upgrading of diagnostic /treatment systems so as to ensure most effective use
- Developing international links and increasing research/clinical trial participation
- Organizing workshops and conferences to increase cooperation between NMS in improving cancer services

The Fight Cancer Funds would increase confidence in change and the momentum towards service improvement. They would be essential to ensuring that the health professions in the NMS can play their full role. In the interwar period cancer services were beginning to develop strongly, for example through the Marie Curie Institute in Warsaw and the Masaryk Institute in Brno. EU membership gives an opportunity for a move towards international collaboration and even leadership in reducing the social and human costs of cancer.

Figure 12 Funding Mechanisms and Investment Priorities



9. KEY CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 1 The NMS face challenges in reducing the disease burden from cancer . It is already much higher than in the old EU and is set to rise further without effective action.
- 2 Levels of expenditure on cancer services mainly for treatment are currently low at 3 to 5 per cent of total health expenditures.
- 3 Survival outcomes achieved in the 1990s were about two thirds of those in Western Europe. This was a remarkable achievement given the low level of resources available for treating patients diagnosed in 1990-94.
- 4 Without modernization the core strength-- of commitment from dedicated clinicians --is likely to be eroded as some younger professionals migrate. There will be problems in meeting new and challenging standards for clinical governance.
- 5 There is a new model of cancer care, which leads towards balanced and co-ordinated investment in prevention, screening, and treatment and follow up care. The model also supplies many opportunities or international partnership, where greater participation in clinical trials has already been a good start.
- 6 Use of this model is essential to achieving reductions in cancer incidence and mortality. We are impressed by the potential for services in the NMS to catch up—but the opportunities must be taken soon.

Recommendations

- 1 Create National Cancer Strategies, which will focus investment and service development. These can set out coherent programmes for prevention, screening, and treatment and follow up care. Key targets and timelines will back these up and resource plans for staff, equipment and drug budgets. The plans will be based on partnership between Governments, Insurance Funds, health professionals and patient groups.
- 2 Develop and attract funding sources for the Fight Cancer Funds which will give a start to the Strategies. The new model of cancer care requires a one-time investment in care programmes, staffing and ICT. It is hardly realistic to expect that the investment required can be found from existing health funds during a time of great pressure on public sector budgets. Possible contributors to the Funds would be the EU, The World bank, philanthropists such as the Soros Foundation and corporate donors.
- 3 Develop national training/Staffing Programmes to secure the range of new skills required for the Plan opening up skill development both for newer recruits and for experienced

staff working in the service.

- 4 Develop a key leader programme for staff in their thirties including short-term international placements and opportunities for leadership training.
- 5 Create a national initiative in quality assurance, which would collaborate with major centres in developing networks and protocols. This is crucial for using the full potential and commitment of staff in the services.
- 6 Develop roles and opportunities for specialist nurses who can make a crucial contribution to screening, treatment and follow up care.
- 7 Develop further national initiative in palliative and terminal care. Many patients are suffering from a great deal both of pain and of distress from other symptoms. The aims of privacy, dignity and control in the last phases of life are vital and achievable

The EU Accession is already having unexpected and positive effects in economic terms. It could also be the opportunity for new social initiatives. We present here a programme of investment, which could allow catching up in process quality and outcomes. There can be new partnership to reduce disease burdens and to add substantial life expectancy for the citizens of the new member states.

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