Cancer control in Europe today: challenges and policy options

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Summary: In spite of the advances in cancer control, cancer remains a huge problem in Europe, in terms of both morbidity and mortality. This article summarises the challenges posed by cancer in Europe today and the measures available to tackle them. It is based on ‘Responding to the Challenge of Cancer in Europe’, a collaboration between internationally recognised public health institutes in the European Union, under the umbrella Fighting Against Cancer Today (FACT).

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Introduction
Cancer has been known and researched since antiquity, but substantial progress in cancer control has only been made in the last few decades. Greater understanding of the causes of cancer has had a major impact on both primary and secondary prevention of cancer, as well as on treatment and rehabilitation. In terms of reducing human exposure to cancer risk factors, one of the most important discoveries of the twentieth century was the role of tobacco smoking as a cause of cancers of the lung and various other organs.1 The outcome of anti-smoking measures is now becoming visible. Lung cancer incidence and death rates among men are decreasing steadily where they have been effectively implemented, such as in western and northern European countries.2

A more recent achievement in primary prevention is the identification of the Human Papilloma Virus (HPV) as the cause of cervical cancer, and the development of vaccines against carcinogenic types of HPV; some vaccines were licensed in 2006 in the European Union.

Secondary prevention, and specifically early diagnosis of breast and cervical cancers through organised mass-screening programmes, has led to a reduction in cancer mortality and an overall improvement of the quality of life of cancer patients. A more recent opportunity for cancer control is faecal occult blood testing, which has been shown to reduce mortality from colorectal cancer.3

Although pharmacological treatment is responsible for a small proportion of cures in patients with cancer overall, its contribution in tackling some types of cancer (testicular and breast cancer, leukaemia and Hodgkin’s disease) has led to an impressive increase in survival from these cancers and a significant reduction in the number of deaths.4 All these developments, along with major innovations in imaging, surgery, and radiotherapy, have radically changed the perception and management of cancer. Some cancers can now be cured, while others are increasingly seen as a ‘chronic’ condition rather than a fatal disease, which means that a patient is more likely to die with a cancer, rather than of it. Advances in genetics and in genetic epidemiology and the Human Genome Project (http://www.genome.gov) now offer new perspectives for diagnosis, treatment, and soon maybe prevention, of many diseases, including cancer.

Life expectancy has increased dramatically. A century ago, life expectancy in Europe was less than forty-five years and the main causes of death were infectious diseases and diseases related to poor nutrition. The control of infant mortality in western countries produced the first significant gains in life expectancy; then, the introduction of penicillin, sulfa drugs and streptomycin yielded another significant reduction, this time in adult mortality. From the 1960s onwards, an increasing array of drugs has made it possible to control a growing number of chronic conditions, such as hypertension and asthma. The result has been a downward trend in morbidity and disability.5

However, these impressive gains have coincided with, and indirectly contributed to, an increase in the burden of disease attributable to cancer. In the WHO European Region, only 5% of cancer deaths occur in people less than forty-five years of age. The majority of deaths from cancer occur after this age, three-quarters of which are in people aged sixty years and older.6 The inevitable consequence of ageing and population growth in Europe has been a very large increase in the burden of cancer.
For these reasons, in spite of the advances in cancer control, cancer remains a huge problem in Europe, in terms of both morbidity and mortality. This article summarises the challenges posed by cancer in Europe today and the measures designed to tackle them. It is based on ‘Responding to the Challenge of Cancer in Europe’, a collaboration between internationally recognised public health institutes in the European Union, under the umbrella Fighting Against Cancer Today (FACT). FACT is co-funded by the Government of Slovenia and the European Commission’s Health and Consumer Protection Directorate. Participating institutions include the National Institute of Public Health of Slovenia as the co-ordinators, the London School of Hygiene and Tropical Medicine, the Institute of Oncology in Ljubljana and the European Observatory on Health Systems and Policies.

**Cancer: current challenges and cancer control**

**The burden of cancer**

Worldwide, about ten million people are diagnosed with cancer each year. A sharp increase of 50% in the incidence of cancer has been predicted by 2020, mainly due to ageing populations in both developing and developed countries, but also as a result of current trends in smoking prevalence and the growing adoption of unhealthy lifestyles. One-third of the global burden of cancer is recorded in Europe: in 2006, there were 3.2 million new cases of cancer and about 1.7 million cancer deaths. In the 25 EU Member States (EU25 – pre-2007), one out of four deaths was attributed to cancer. Most cases and most cancer deaths are due to four common cancers, those of breast, prostate, lung and large bowel.

The number of new cases and cancer deaths in Europe has increased and is likely to rise further. The accompanying improvement in survival has led to an even greater increase in prevalence. Projections of future cancer incidence indicate that even if the risk of getting cancer at each age does not change, the number of new cancer patients diagnosed each year in the pre-2007 EU25 Member States will rise by 20% in the eighteen years between 2002 and 2020, simply due to population growth and ageing. Incidence rates would have to fall by more than 1% every year over that period in order to counterbalance the upward pressure of these demographic changes on the numbers of new patients that health systems will have to manage. Cancer patients will be older than today, and many will have several co-existing illnesses, so the health needs of cancer patients will become even more complex. This upward demographic pressure on the cancer burden is one of the biggest challenges in cancer control.

**Implementation of effective strategies for cancer control is essential to counteract these trends. These measures must include primary, secondary and tertiary prevention. In particular, measures are needed to tackle tobacco smoking, the most preventable cause of cancer; to promote mass (population-based) screening programmes for cancers of the cervix, breast and large bowel (colon and rectum), and to extend the adoption and accessibility of effective treatments to all patients within an ‘integrated care’ system. Lastly, adequate provision for greater numbers of cancers among older people is essential.**

**Inequalities in cancer in Europe**

Europe has some of the richest countries in the world, but also some of the poorest. In 2002, 168 million people were living below the poverty line, about 46% of the European population. These socio-economic differences are reflected in significant health gaps not only between and within the countries of the European region, including the European Union. They are seen in both the burden of cancer and the range of survival. Differences in the burden of cancer result mainly from international differences in exposure to cancer risk factors (for example, prevalence of smoking, unhealthy diet, obesity) and socioeconomic characteristics; however, they are also an indicator of the overall delivery of services for the prevention and treatment of cancer, including organised screening programmes, the existence and accessibility of health care facilities and technological infrastructure, and the availability of human, financial and material resources for health and economic development. A survey by the European Society of Clinical Oncology, designed to assess the status of medical oncology in Europe (MOSES, Medical Oncology Status in Europe Survey, www.esmo.org/resources/surveys/mosesII_survey/?get_resource=241), has found significant discrepancies in the provision of cancer care throughout Europe, including access to surgery, radiotherapy and cancer drugs. Progress in cancer control can be seen in most countries, but in some, cancer control is still in its infancy. Efforts to tackle cancer in northern and western European countries during recent decades have resulted in decreasing mortality and increasing survival from those cancers that are amenable to either primary or secondary prevention (for example, lung cancer, breast and cervical cancers). By contrast, in some countries that have joined the EU since 2004, the lack of financial and human resources, along with uncoordinated efforts in the organisation of cancer control, has been associated with an increase in mortality and a poor prognosis for cancers that could have been prevented, or detected in an early phase. Furthermore, at the population level, a lack of cancer awareness in central and eastern European countries has been described, especially in regard to prevention as a means of cancer control.

A dramatic contrast in mortality from cervical cancer has been described between EU Member States in western Europe and those in central and eastern Europe. Death from cervical cancer is now relatively uncommon in western European countries, but in Latvia, Bulgaria, Lithuania and Romania there is a continuing increase in cervical cancer mortality. In Romania, mortality from cervical cancer has reached levels that have never been seen before in Europe. In the late 1990s, there was a greater than tenfold difference between the highest cervical cancer death rate, in Romania, with no organised mass-screening programme, and the lowest death rates in Finland and Sweden, where population coverage of cervical cancer screening is almost 100%. The treatment environment for cancer patients is also extremely difficult in Romania, as the concept of integrated care is non-existent. Another dire example is that of Estonia, where population-based medical registries and epidemiological research are still seriously hampered by data protection legislation that omits any of the exemptions provided under the EU Directive for the processing of personal data for historical, statistical or scientific purposes. This has completely disabled surveillance of trends in cancer incidence and survival.

Health inequalities between ‘old’ (pre-2004) and the twelve ‘new’ EU Member States merit particular attention from both the health authorities of the countries concerned and the EU as a whole. Cancer control must be a priority for the
European Commission, both now and in future action plans. There is a particular need to support the most severely affected Member States, and scope for this is offered by the Commission’s Structural Funds. Exchange of best practices in cancer control across the EU, backed up by substantial funding in countries where the health care system is in ‘transition’ and cancer control measures are under development, could also substantially reduce these inequalities in cancer outcomes.

Within countries, adequate political and financial support is needed to enable the creation and operation of population-based screening programmes and cancer registries. This should include an appropriate legislative framework and stable long-term funding. National education programmes should be implemented to change attitudes towards cancer and cancer prevention, building upon initiatives such as the European Code Against Cancer.

Key risk factors for cancer and prevention policies

Some lifestyle factors, such as tobacco smoking, alcohol consumption, unhealthy diets and lack of physical exercise, or excessive exposure to sun, play an important role in the causation of cancer. The biggest challenge in primary prevention remains tobacco smoking, linked to between 80–90% of lung cancers and between 40–60% of cancers of the oesophagus, larynx and oral cavity. Despite the significant impact of anti-smoking interventions implemented in some countries since the early 1980s, lung cancer is still the leading cause of cancer death in Europe. Importantly, although lung cancer rates in males have stabilised or have been decreasing in northern and western European countries, lung cancer mortality among women is still rising in many European countries, in particular in southern and eastern European countries.

While some European countries have made impressive progress in tobacco control, others still have much to do. It is remarkable that many countries still allow smoking in public places.

Another challenge in cancer prevention is the excessive consumption of alcohol, twice as high in Europe as the world average. Alcohol is a cause of several cancers, such as those of the upper digestive and respiratory tract, and primary liver cancer. When alcohol consumption is combined with tobacco smoking, cancer risk increases exponentially. Although the role of diet in cancer causation is still relatively under-explored, it has been estimated that about one-third of all cancer mortality may be related to unhealthy diets, while a diet low in fresh fruit and vegetables seems to increase the risk of cancer in those exposed to other carcinogens. There is also evidence supporting the role of obesity as a cause of some cancers. Preventing skin cancer remains equally important, because the incidence of melanoma of the skin in Europe has doubled since the 1960s.

Viruses such as HPV and the hepatitis B and C viruses cause more than 20% of cancers in developing countries but only about 8% of all malignancies in developed countries. This gap is also apparent in Europe, where cervical cancer is a major problem in central and eastern European countries.

A broad policy framework is needed for cancer control in Europe. Policy will need to harness some essential tools for the prevention of tobacco smoking and alcohol consumption, such as the WHO Framework Convention on Tobacco Control and the Framework for Alcohol Policy in the WHO European Region. Effective strategies to reduce tobacco and alcohol consumption include pricing policies, policies to reduce the harm caused by exposure to environmental tobacco smoke and harmful drinking of alcohol, policies to reduce demand and limit access (in particular the locations and times when alcohol can be purchased), and by the avoidance of internal market policies that promote consumption. Unfortunately, both the tobacco and alcohol industries have been successful in preventing effective action in many countries, often promoting campaigns to undermine the evidence about effective health policies.

Another tool is the European Code Against Cancer, an integrated instrument for cancer prevention. It focuses on promoting the adoption by individuals of healthy lifestyles, including participation in screening programmes. It provides an important basis for health promotion by health care professionals and non-governmental organisations.

Most countries in Europe have seen a rapid increase in the prevalence of obesity in recent years: tackling this epidemic should become a priority in the EU. The Global Strategy on Diet and Physical Activity provides a solid basis for action. Promoting physical activity would help in reducing average body weight, but it has also been linked to a reduction in the risk of cancers of the breast, body of the uterus and prostate, independently of weight control.

Interventions to tackle cervical cancer should be tailored to the particular situation of each country. For example, HPV vaccination would provide a new approach to preventing cervical cancer, particularly in countries with a high incidence of the disease and inadequate screening. To prevent infection with hepatitis B virus in Europe, systematic vaccination is needed as a part of national immunisation programmes. No vaccine is yet available to prevent infection with hepatitis C virus.

Costs of diagnostic and treatment services

Early diagnosis and optimal treatment of cancer is complex. It requires education, prevention, diagnosis, treatment and palliative care. One of the most important challenges in cancer control is to coordinate national plans and services to cover all aspects of the management of cancer.

During the last decade, the diagnosis and treatment of cancer have become increasingly expensive, as a result of rapid advances in technology and drug development. Pressure from the pharmaceutical industry has led to the prioritisation of drugs over other treatment modalities. The oncology drug market is expected to grow steadily as a result of the ageing population, the development of new treatments and advances in cancer genetics. Developments in molecular pathology, imaging, radiotherapy and surgery are at least as important in the management of cancer, and should also be strongly encouraged by the EU, along with long-term investment in the training of staff and the acquisition and/or renewal of equipment.

New and expensive drugs that offer no substantial advantage over existing treatments are being promoted. This places a further burden on national health services, insurers and cancer patients. For example, one cycle of temozolomide, used in treating some brain tumours, is 350 times more expensive than the reference drug procarbazine, although these two are largely equivalent in terms of efficacy and safety.

The increase in the cost of cancer care, and in the cost of drugs in particular, is likely to prevent equal access to optimal care to all patients in an economically limited system, with different countries choosing different...
thresholds to trigger the availability of drugs for defined groups of patients. A recent example from England concerns the proposal by the National Institute for Health and Clinical Excellence (NICE) for the ‘rationalisation’ of chemotherapeutic treatment for kidney cancer with four types of drugs, based on their lack of cost-effectiveness for treating patients with advanced or metastatic renal cell carcinoma.

Health care policy-makers and funders need to examine the cost-effectiveness of new technologies as closely as the efficacy of the drugs themselves. National governments have a responsibility to establish mechanisms to ensure that clinically proven interventions that maximise both the duration and quality of life are available to all their constituents. Robust health technology assessment is essential, followed by equity in the distribution of treatment resources.

**Cancer control: an integrated approach**

It has been estimated that a quarter of cancers could be prevented by applying existing knowledge, while a further third of cancers may be curable using current treatments and technologies. For fatal cancers, palliative care is an essential component of cancer care. It is aimed both at improving the quality of care for cancer patients and their families, and at helping them both to live well until they die, and to die well. An integrated strategy for cancer control must thus include all elements of prevention, as well as treatment, palliative care and research.

At a national level, a key requirement for successful cancer control is the development of a coordinated cancer plan. WHO published six guides as a framework for a comprehensive planned approach to cancer control. These can be used to identify priorities for action and research across the entire spectrum of cancer control. Implementation of these activities needs to be monitored constantly, alongside the overall efficacy of the health system, one indicator of which is cancer survival. Cancer information systems such as screening registries and cancer registries are essential tools; their operation requires adequate investment and legal protection.

At the EU level, measures to complement national policies in Member States are needed. For example, the 1995 EU data protection directive has impeded the effective operation of cancer registries. The Directive must be revised to enable and protect cancer registration. Reducing health inequalities across the EU should also be a priority: more support and investment are needed in the most affected Member States. Measures to control the effects of unhealthy lifestyles have an important potential to supplement health care provisions everywhere. These include strategies to tackle tobacco smoking and alcohol consumption, and those which promote healthy nutrition and physical activity, safe occupational and environmental guidelines, as well as the prevention of infections that cause cancer.

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