

The burden of cancer in Europe and the availability of cancer drugs

In 2009, Professors Nils Wilking and Bengt Jönsson published the *Comparator Report on Patient access to Cancer Drugs in Europe*, their newest analysis of the burden of cancer in Europe. This report examines the issues surrounding the availability of oncology medications in Europe and the differences in use of these medications between countries. Over the past several years, Professors Wilking and Jönsson have observed a correlation between the uptake of cancer drugs and cancer survival rates within a country and have investigated if there is a causal relationship between the two. While medication use may have an impact on survival rates, the authors acknowledge there are many other factors involved, such as overall healthcare investment, diagnostic capability, access to screening programmes, prevention and supportive care. Because the available data on cancer incidence, mortality and survival in Europe is currently limited, it has been difficult to make a definitive link between specific healthcare interventions and outcome. The authors strongly advocate improving the collection and availability of cancer statistics in Europe to allow further investigation of these links so the results can play a role in the regulatory decisions to introduce new therapies [1].

This report follows on from their earlier works in 2005 and 2007 – *A pan-European comparison regarding patient access to cancer drugs* and *A global comparison regarding patient access to cancer drugs* – which sought to illustrate the stark discrepancies in uptake of new cancer treatments between different countries [2, 3]. In the 2005 report, Professors Wilking and Jönsson noted that the slow uptake of new cancer drugs in national European markets potentially leads to the premature deaths of cancer patients. This suggestion was controver-

sial given the potential political and healthcare policy ramifications and initiated a healthy debate. Critics did not dispute the basic premise that market uptake of cancer drugs varied between countries or that different countries have markedly different cancer survival rates, but refuted the statistical methods employed that suggested a direct statistical correlation. In their rebuttal, Professors Wilking and Jönsson argued that it was not a problem with the statistical methods utilised, but the lack of sufficient data to make a definitive cause and effect relationship. They went on to support their hypothesis with further data analysis and studies that were included in the extended and updated report published in 2007. Using research methods borrowed from economics, the results have been complimentary to traditional clinical and epidemiology studies and have added to the discussion on resource allocation [4].

Although trying to compare incongruous economic and health data between different countries remained their main difficulty, Professors Wilking and Jönsson in

2007 went on to further analyse potential trends through additional data sets. This time around, they concluded that the incidence of cancer continued to increase. Although mortality was falling, it remained high and the small share of healthcare expenditure allocated to cancer did not correlate with the burden of disease [2].

Professors Wilking's and Jönsson's 2009 report reviews the current state of affairs to determine if ongoing European healthcare policy has affected these trends. Over the past several years, they have noted significant changes in resource allocation for cancer based on incomplete incidence and mortality data. In their latest report, they attempt to summarise the current available data on cancer incidence, mortality and overall costs throughout Europe and consolidate these estimates making them consistent for cross-country comparison.

Incidence, mortality and survival

The most comprehensive and current data on cancer incidence and mortality in Europe comes from an analysis published

Table 1: Number of new cancer cases and deaths in selected cancers 2002–2006

EU25+CH+IS+NO		Globocan 2002	Ferlay 2006	Change
All cancers but skin melanoma	No of cases	2,138,700	2,351,100	9.93%
	No of deaths	1,188,100	1,192,500	0.37%
Breast	No of cases	277,300	328,600	18.51%
	No of deaths	89,900	87,200	-2.97%
Colorectal	No of cases	283,600	307,000	8.27%
	No of deaths	142,400	142,700	0.20%
Lung Female	No of cases	60,500	73,500	21.46%
	No of deaths	54,300	65,800	21.11%
Lung Male	No of cases	199,900	198,100	-0.86%
	No of deaths	182,100	175,200	-3.80%
Prostate	No of cases	201,700	311,100	54.25%
	No of deaths	69,300	70,300	1.48%
Stomach	No of cases	92,200	81,600	-11.46%
	No of deaths	70,200	58,400	-16.76%
Uterus	No of cases	85,900	84,900	-1.17%
	No of deaths	26,700	24,200	-9.49%

EU25: 25 European countries; CH: Switzerland; IS: Iceland; NO: Norway

in the Annals of Oncology in 2007 and the GLOBOCAN 2002 study, both by Ferlay and his colleagues [5, 6]. Utilising a strong statistical approach derived from econometrics, Professors Wilking and Jönsson interpolated and combined this data to compare the current burden of cancer between the 25 countries of the European Union along with Bulgaria, Iceland, Norway, Romania and Switzerland. The 2006 reports shows over 2.4 million new cancer cases were diagnosed throughout Europe, amounting to an estimated 10% increase from four years before. Encouragingly, the number of overall cancer deaths remained almost the same, suggesting that cancer mortality rates may be improving (see Table 1). Professors Wilking and Jönsson propose that both screening programmes and new treatments may account for these trends but point out there continue to be substantial disparities between the mortality rates of different types of cancers.

The increased cases of breast, colorectal and prostate cancer, are likely secondary to improved screening programmes and to some extent an ageing population. However, lifestyle and diet changes may account for some of the other findings such as a decrease in stomach cancer. The dramatic increase in female lung cancer may correlate with the spread of tobacco consumption in that population along with increased awareness in women's health.

When cancer incidence and mortality is examined geographically, striking differences can be identified between different regions and individual nations (see Figures 1 and 2).

The authors point out that Hungary's incidence rate almost doubles that of Bulgaria, and the difference between male and female incidence is much smaller

among the Nordic countries than other regions of Europe. Interpretation of these results remain difficult due to diverse reporting systems and questions of accuracy, however differences in healthcare expenditure, screening programmes, and cancer awareness surely contribute to the variation. While some countries appear to have higher rates of cancer, this may correlate with better screening and earlier detection, leading to improved survival if effective treatments are available [7-10]. In terms of mortality, the Central and Eastern European countries fare much worse than their Western European counterparts. This is likely related to national GDP, medical infrastructure and expenditure and healthcare policy.

When the authors compared the US SEER-13 with the EURO CARE-4 data, Europe showed significantly lower survival rates for most cancers compared to the US. However, when broken down further, it becomes clear that the variability between Western Europe and Eastern Europe skewed the results. The differences in survival rates between these different regions of Europe were much bigger than between Western Europe and the US. However, over the past 10 years the differences between European countries have narrowed and survival rates have increased across Europe [11, 12].

Economic burden and health-care expenditure

Compared to other diseases, cancer accounts for 16% of all disability adjusted life-years (DALYs), a common economic measure of mortality and disability. One DALY represents one lost year of 'healthy' life and provides a measurement of the burden of disease by taking into account economic factors such as the cost of treatment and lost wages when people cannot work. Compared to all other diseases in Europe, cancer was the third most prominent in terms of DALY overall disease burden. However, the funds dedicated to cancer treatment do not correlate well with the extent of the disease.

Figure 1: Age-standardised incidence rates 2006

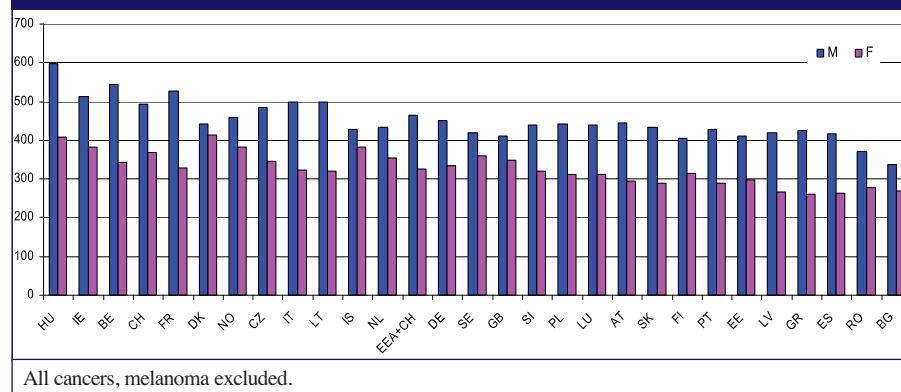


Figure 2: Age-standardised mortality rates 2006

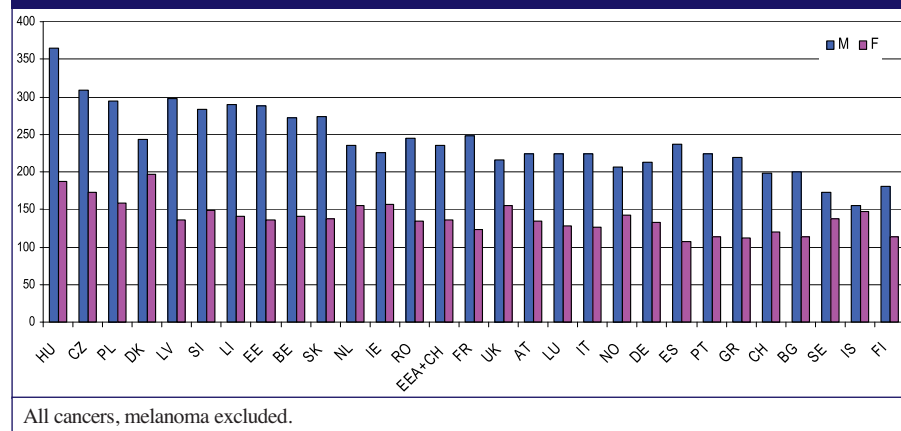


Table 2: Expenditures on health and estimated direct costs of cancer 2007 per capita in Purchasing Power Standards (PPS)

	Health expenditure share of GDP	Health expenditure in M€ PPS	Health expenditures per capita in € PPS	Cancer share of health expenditures	Direct costs of cancer per capita in € PPS
Austria	10.2	26,780	3,227	6.4%*	207
Belgium	9.6	29,863	2,821	6.4%*	181
Bulgaria	7.7	5,608	730	4%	29
Czech Republic	7.1	14,820	1,441	5%	72
Denmark	9.4	15,635	2,872	6.4%*	185
Estonia	5	1,200	894	3–5%	36
Finland	7.5	11,488	2,177	4.4%	95
France	11.2	196,469	3,099	6.6%	205
Germany	10.7	247,058	3,001	7.2%	216
Greece	10.1	27,392	2,452	6.4%*	158
Hungary	7.8	12,348	1,227	5%	61
Iceland	9.4	936	3,042	6.4%*	195
Ireland	8.2	12,922	2,996	6.4%*	193
Italy	8.9	132,778	2,245	6.4%*	144
Latvia	6.4	2,094	918	3–5%	37
Lithuania	5.9	2,980	880	3–5%	35
Luxembourg	7.7	2,535	5,324	6.4%*	342
Netherlands	9.2	49,553	3,029	5.6%	170
Norway	9.1	19,563	4,179	6.4%*	269
Poland	6.2	31,537	827	5%	41
Portugal	10.2	20,073	1,894	6.4%*	122
Romania	5.5	11,936	553	3–5%	22
Slovakia	7.1	6,516	1,208	3–5%	48
Slovenia	8.5	3,776	1,878	3–5%	75
Spain	8.2	97,582	2,194	6.4%*	141
Sweden	9.2	26,333	2,890	7.2%	207
Switzerland	11.4	29,727	3,959	6.4%*	254
United Kingdom	8.2	143,223	2,356	5.6%	132
Europe		1,182,725	2,336	6.3%	148

PPS eliminates price level differences between countries

*The cancer share of the health expenditure for countries with no data available is estimated at the cancer share of the total health expenditures in Czech Republic, Finland, France, Germany, Hungary, The Netherlands, Poland, Sweden and UK.

Sources: Health Expenditures: Eurostat (2007); Per capita health expenditures on health share WHO (2005)

Looked at individually, many countries of Central and Eastern Europe had a significantly lower per capita expenditure (see Table 2). The direct costs of cancer in Czech Republic is estimated to be Euros 72 per capita, in Hungary Euros 61 per capita and in Poland only Euros 41 per capita. This equates to about 5% of healthcare costs, whereas the remaining Central and Eastern European countries are estimated to only spend 3–5% of their total health expenditures on cancer care [14].

In many countries across Western Europe, there appears to be a positive trend in cancer spending with an increased focus on prevention, screening and treatment. Finland, France, Germany, The Netherlands and Sweden have all seen a significant increase in cancer spending. The most impressive was Germany which increased its outlay on cancer treatments from Euros 170 per capita in 2002 to an estimated Euros 216 in 2007 or 7.2% of healthcare expenditure [15]. However, in some Western European countries, such as UK, reliable estimates of cancer spending are not readily available making assessment of trends difficult [16].

Although funding for cancer research is increasing, the total costs for cancer are continuing to rise as well and may outpace the increased investment. This is due to a variety of reasons, including prolonged survival and subsequent longer periods of treatment which increase overall costs. Over the past few years, the investment in cancer research has been remarkable with innovative drugs coming to the market, albeit at a high price. These new cancer drugs are taking up an increasing share of the costs, but continue to represent the minority accounting for only 13% of the total cancer costs in the European Union in 2004. But despite their effectiveness, and perhaps because of their cost, there continues to be unequal access and market uptake of these drugs between European countries. Each country has different resources available depending

The investment in medical infrastructure and the amount of dedicated expenditure for cancer treatments vary widely throughout Europe. Access to treatment is unequal across the different countries mainly due to the availability of resources such as funding, equipment, accessibility of drugs and the organisation of the healthcare system. In 2004,

Professors Wilking and Jönsson estimated the average European expenditure on cancer care was Euros 125 per capita or 6.4% of the total healthcare costs. The authors point out that in relation to the societal burden of cancer and large indirect costs, the resources allocated to prevention, screening and treatment of cancer are disproportionately small [13].

on the size of their economy and development of their national healthcare systems, requiring them to make difficult decisions in terms of allocation of healthcare expenditure.

In conclusion, Professors Wilking and Jönsson summarise their findings with several key points:

- European cancer incidence is increasing and mortality decreasing indicating the impact of screening programmes and improvements in treatments.
- Survival for most cancers is improving significantly but there is great dispersion within Europe and across diagnoses.
- Spending on cancer is increasing in Europe, but is still not in parity with the relative burden of cancer compared to other diseases.
- There is a trend towards more ambulatory treatments, and a reduction in number of hospital-days for cancer, despite more patients treated.
- The average duration per case of inability to work due to cancer is decreasing for most diagnoses.

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