



**THE ECONOMICS OF  
CANCER PREVENTION  
& CONTROL**  
DATA DIGEST

**2014**



With the adoption of the UN Political Declaration on Non-communicable Diseases (NCDs) in 2011, the world's political leaders acknowledged the enormity of the NCD burden and the threats NCDs pose to human, economic and social development. Even so, the staggering risk that cancer and other NCDs pose to economic growth and development is still only just starting to receive broad attention.

As discussions around the post-2015 framework accelerate, now is the time to move from global commitments to national action around cancer. The onus is on the cancer community to demonstrate that solutions to prevent and manage cancer exist, are accessible in all resource settings, and deliver a return on investment allowing governments to justify placing cancer control at the heart of their national health plans.

UICC has drawn on its network of experts to bring together a snapshot of the current global evidence base on the economic costs and the return on investment (ROI) in taking on proven strategies for cancer prevention, early detection and health systems strengthening. Our aim is to raise awareness of the importance of framing the debate around the cost of inaction and the case for investment to save lives as a driver for positive change – and to build momentum for further work in this area.

### **Investing in cancer control saves lives and makes financial sense.**

Making an economic case for investment in cancer prevention and control is becoming more important year on year. UICC members and partners are committed to producing robust information to help governments around the world justify their investment in addressing a disease that is rapidly impacting low- and middle- income countries - those least able to control cancer effectively.



## THE GLOBAL CANCER BURDEN

- Non-communicable diseases (NCDs) including cancer are the world's no.1 killer [1].
- In 2012, there were an estimated 14.1 million new cancer cases, and 8.2 million cancer deaths [2].
- Approximately 1 in 3 people will develop cancer in their lifetime [3].
- Cancers of the lung, prostate, colorectum, stomach and liver are the biggest cancer killers among men worldwide, whilst women are most affected by breast, lung, colorectal, cervical, and uterine cancers [2].
- Approximately 44% of cancer cases and 53% of cancer deaths occur in low- and middle- income countries (LMICs) [2]. Due to a lack of access to treatment facilities in LMICs, cancer is considered a death sentence by many.
- If recent trends continue, the burden of cancer is projected to rise to 23.6 million new cases each year by 2030 [2].

## THE HIGH LEVEL ECONOMIC CASE FOR ACTION

- The estimated total annual economic cost of cancer globally was approximately USD 1.16 trillion in 2010—taking into account the costs of prevention and treatment plus the annual economic value of disability-adjusted life years (DALYs) lost to cancer.
- Broader estimates of the costs of cancer, using a Value of Statistical Life approach that takes account of the longer-term costs to patients and their families, bring the annual global cost of cancer to USD 2.5 trillion.
- It is estimated that by implementing resource appropriate strategies for prevention, early detection and treatment, between 2.4 and 3.7 million lives could be saved each year, 80% of them in LMICs.
- In economic terms, the value of the healthy years of productive life that could be saved totals between USD 331 and USD 451 billion, yielding an estimated return on investments in prevention and treatment ranging from USD 10 billion to USD 230 billion.
- Investing just USD 11.4 billion in a set of core prevention strategies in LMICs can yield a saving of up to 100 USD billion in cancer treatment costs [4].

## THE CASE FOR INVESTMENT IN PREVENTION

### Tobacco control

- At least one billion people use tobacco worldwide [5].
- Tobacco use is responsible for 20% of all cancer deaths [6], approximately 1.5 million in 2010 [7].
- While the annual economic costs of tobacco-attributable cancers exceed USD 200 billion, for the average LMIC the amount necessary to deliver the four “best buy” tobacco control measures is approximately USD 0.11 per capita [8].
- Increasing excise taxes on tobacco products is widely accepted as one of the most effective and affordable tobacco control interventions [9]. WHO estimates that by increasing tobacco taxes by 50%, all countries would reduce the number of smokers by 49 million within the next 3 years and ultimately save 11 million lives. Estimates show that raising tobacco taxes costs as little as USD 0.005 per person per year [10].
- Additionally, it has been shown that raising tobacco taxes does not lead to a fall in government revenues – evidence suggests that if countries increased tobacco tax by 50% per pack, governments around the world would earn an extra USD 101 billion in revenue [10].





## Diet- and obesity-related cancers

- More than 10% of the world's adult population is obese. In 2012, more than 40 million children under the age of 5 were overweight or obese [11].
- Diet and physical-activity related factors account for up to 25% of cancer cases in high-income countries, and up to 20% in LMICs, though this figure is likely to increase as global dietary patterns converge [12].
- Model-based estimates of the productive life years lost due to cancers associated with obesity, low fibre consumption, and excessive consumption of red/processed meats, suggest 339,000 per year globally\* [13].
- OECD analyses have shown that implementing a prevention package to improve diets, increase physical activity and tackle obesity in Europe would, after 10 years, lead to gains of over 3 million years of life free of cancer; after a further 10 years, gains in cancer-free life years would rise to 11.8 million [14].

## Wellness in the workplace

- The global labour force reached 3.28 billion in 2012 [15] and is estimated to rise to 3.5 billion by 2030 [16].
- Poor employee health affects business productivity and profitability [17,18].
- The drop in labour force participation attributable to cancer is estimated at 10% [19], with some studies suggesting this figure may be as high as 26%-53% over a 6-year period [20]. Approximately 36% of employees do not return to work following cancer treatment [19].
- Effective workplace health promotion (WHP) programmes can: reduce medical costs by USD 3.27 for every USD 1 spent on WHP [21]; decrease the costs of absenteeism by USD 2.73 for every USD 1 spent on WHP [21], increase productivity at work [22], increase employee satisfaction by 14% [23], and lower voluntary employee turnover rates [24,25].

\*depending on a range of assumptions



## Vaccination

- Chronic infections are estimated to be the cause of around 16% of all cancers globally. In Sub-Saharan Africa, one in three cancer cases are attributable to infectious agents, compared to one in 35 cases in the United States and Australia [26].
- Several of the most common cancers in LMICs such as liver and cervical cancers are associated with infections with hepatitis B virus (HBV) and the human papillomavirus (HPV), respectively. 70% of cervical cancer cases can be prevented with the HPV vaccine. HBV vaccines have dramatically reduced carrier rates and studies demonstrate the long term impact in protecting against liver cancer [27].
- Vaccines are essential to cancer prevention in low-resource settings where screening and treatment services are often not available. In less developed regions, the average coverage of cervical cancer screening services is only 19% [28].
- A record low price for HPV vaccines of USD 4.50 per dose has been secured for low-income countries eligible for support from Gavi, the Vaccine Alliance. It is estimated that between 2016-2020 HPV vaccination in supported countries could avert some 600,000 future deaths [29].
- The HBV vaccine, initially USD 3-6 per dose, today costs less than USD 0.20 per dose [28]. HBV is considered a 'best buy' because it is inexpensive and highly cost-effective [30]. All 73 countries eligible for Gavi support have introduced HBV as part of a one-in-5 shot.
- In 2010, cervical cancer, which kills over 260,000 women every year, was estimated to cost the global economy around USD 2.7 billion. By 2030, this figure is projected to rise to USD 4.7 billion [17].



## THE CASE FOR INVESTMENT IN EARLY DETECTION

- In 2010 it was estimated that global investment in cervical cancer prevention would have saved up to 230 million in DALYs and almost USD 1 trillion in value of statistical life [4, 31].
- In 2010, the estimated cost of new breast cancer cases was USD 26.6 billion of which 45% were in medical costs and another 28% in income losses [17].
- Globally, late stage breast cancer management (stage III and IV) is three times more expensive compared to early stage breast cancer management (stage I and II) [32].
- The estimated death and disability associated-cost of colorectal cancer (excluding direct treatment costs) was USD 99 billion in 2008 [33].
- In a high-resource setting, population-based colorectal cancer screening is either cost-effective or cost-saving compared to no screening [34].
- Globally, there are around 300,000 new cases of oral cancer every year [2]. Studies in India (which accounts for one third of the world burden) show that oral cancer screening by visual inspection is cost-effective and that early detection can significantly reduce the associated high morbidity and mortality. Oral cancer visual inspection by trained health workers can be carried out for under USD 6 per person. The incremental cost per life-year saved was USD 835 for all individuals eligible for screening and USD 156 for high-risk individuals [35].



## THE CASE FOR INVESTMENT IN TREATMENT AND CARE

### Radiotherapy

- Radiotherapy is an essential tool in the cure and palliation of cancer, and is indicated in 40 – 50% of all new cancer patients. In LMICs the need for radiotherapy may in fact be higher due to more advanced stage of cancer at presentation [36].
- Radiotherapy is one of the more cost-effective interventions in cancer; one radiation machine can treat thousands of cancer patients over many years [37].
- Access to radiotherapy is severely limited in many countries and non-existent in others; 29 of 52 African nations have no radiotherapy facilities at all – and these 29 countries comprise an estimated 198 million people [37].
- The Global Task Force on Radiotherapy for Cancer Control is convening radiotherapy professionals, industry partners, cancer leaders, global health experts, economists, and enablers of healthcare change, to quantify the investment needed to provide equitable access to radiation therapy worldwide [38].

### Palliative Care

- Palliative care is an approach that improves the quality of life of patients and their families through the prevention and relief of suffering through the treatment of pain and other physical, psychosocial and spiritual problems, and when introduced early can lead to more appropriate and less expensive care [39].
- Ultimately palliative care is a human rights issue, but additionally it is important for governments to understand that there are economic benefits to supporting a holistic approach to providing palliative care at the end of life, when it can prevent unnecessary and costly health services, particularly hospitalisation.
- Studies have shown that hospital-based palliative care consultations [40,41] can reduce hospital costs by up to USD 7,500 for patients that die during their last admission [42,43]. Similarly, studies have shown that home-based palliative care can reduce the overall cost of care by up to USD 7,500 [44-46] per cancer patient.



## THE CASE FOR INVESTMENT IN CANCER PLANNING AND REGISTRATION

- National cancer control planning is a vital investment for all countries for delivering a comprehensive cost-effective cancer control programme that can reduce cancer incidence and mortality, improve the quality of life and wellbeing of cancer patients and their communities, as well as mitigate the impact of cancer on national economies.
- The availability of high quality cancer surveillance data, including cancer incidence, stage at diagnosis and mortality generated by population-based cancer registries is essential for developing targeted and effective national cancer control plans (NCCPs), and for evaluating the impact of national programmes for cancer prevention, screening, and treatment.
- Only 8% of the world's population is covered by cancer registries, predominantly from high and middle-income countries. In Asia, Central and South America less than 6% of the population is covered by a registry, and only 1% in Africa [47].
- The costs of establishing a robust cancer registry in most countries is low compared to the cost of the cancer burden in that country.
- In the United States, the annual burden of cancer is more than USD 216 billion [48], whilst less than USD 75 million (0.03%) [Unpublished data] is spent annually to fund the Centers for Disease Control and Prevention's (CDC) National Program of Cancer Registries (NPCR) [49].
- The CDC, in collaboration with the International Agency for Research on Cancer, is supporting research to pilot test and develop a standardized instrument – International Cancer Registry Costing tool (InCanRegCosting tool) to systematically assess the cost of cancer registration in LMICs.
- The Global Initiative for Cancer Registries, a multi-partner initiative led by the International Agency for Research in Cancer, estimates that with an investment of USD 15 million over 5 years, it can establish four regional capacity building hubs that will significantly improve cancer data collection globally [50].



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