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## Global cancer prevention: An important pathway to global health and development

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### SUMMARY

Cancer is a leading global cause of death and disability, responsible for approximately 7.6 million deaths each year. Around one-third of cancers are attributable to a small number of preventable risk factors – including smoking and the harmful consumption of alcohol – for which effective interventions exist at the population level. Despite this, progress in global cancer control has been slow and patchy, largely due to the weak and fragmented nature of both the global and national responses. This has been exacerbated by the economic crisis and the tendency for other challenges involving food, energy security and climate change to overshadow cancer on the global policy agenda. This paper reviews the global burden of cancer, and summarizes knowledge about effective interventions. Responding to the global challenge of cancer requires a comprehensive and integrated approach that includes legislation and regulation. A re-invigorated approach to global cancer prevention, within the broader context of non-communicable disease prevention, is an important pathway to global health and development.

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### Introduction

Chronic non-communicable diseases (NCDs), mainly cardiovascular diseases, cancer, diabetes and chronic respiratory diseases, are the leading causes of death, responsible for around 63% of global deaths.<sup>1</sup> Four out of every five of these deaths occur in low- and middle-income countries.<sup>2</sup> In comparison with the much smaller number of deaths from the main infectious diseases – human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), tuberculosis and malaria – NCDs have been neglected in most low- and middle-income countries by development agencies and donors.<sup>3,4</sup> This is not because there are no simple, cost-effective interventions available that are applicable to the majority of cancers and could substantially reduce the cancer

burden. Rather, the weak and uncoordinated response is due to a failure in the political processes for setting disease prevention and control priorities at national and global levels.<sup>5</sup> Fortunately, the global response to NCDs is gathering pace. As this article went to press, Heads of State were meeting in New York to confront the burden of these diseases and to debate global priorities for an effective, collective response.<sup>6</sup> However, for this response to make a substantial impact on the burden of cancer, it will be necessary to use the full range of public health responses, including stronger legislation and regulation for the main causes of cancer. It is important for governments and civil society organizations working in cancer and NCD prevention to become more aware of the opportunities for law in improving treatment and preventing the spread of risk factors through the population. This

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symposium of papers – entitled ‘Can law improve prevention and treatment of cancer?’ – is a helpful step in that process.

This paper aims to set the scene for this symposium by reviewing the data for global cancer estimates, assessing the global and economic burden of cancer, summarizing knowledge about the main causes of cancer and available interventions, and identifying the ways in which a strengthened focus on cancer prevention (within the context of preventing the major NCDs) will promote global health. Other papers in this symposium engage directly with the legal issues that must be confronted by strategies for improved prevention and treatment. The goal of this paper, however, is to review the global burden of cancer and priority areas for action by governments in a way that will be useful for lawyers, government officials and policy makers who do not routinely work in the fields of cancer or NCDs.

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## Global cancer data

There have been two main sources for estimates of the global burden of cancer: the World Health Organization (WHO) Global Burden of Disease study<sup>7</sup> and the International Agency for Research on Cancer (IARC).<sup>8</sup> Unfortunately, these estimates are not congruent. The Institute for Health Metrics and Evaluation in Seattle, funded by the Bill and Melinda Gates Foundation, provides an additional source of estimates.<sup>9</sup>

The WHO Global Burden of Disease study provides the most comprehensive estimate of global mortality and disability data. This study uses a wide range of data sources including death registration data, disease registry data, health facility data, and data from surveys and studies.<sup>10</sup> Potential problems with this type of data include incomplete ascertainment, non-representativeness, instrument bias, misclassification and distortion. Adjusted health statistics correct for known biases in order to enhance the likelihood of generating valid, reliable and comparable health statistics. However, there is still a need to extrapolate data for populations with no information, and to make extensive use of cause of death and epidemiological models to arrive at estimates for those countries without useable data (approximately 20% of all countries, mostly in Africa).

IARC estimates are based on cancer registries which provide the data for cancer surveillance. In 2006, there were 449 cancer registries in the world producing cancer incidence data covering approximately 22% of the world’s population.<sup>11</sup> Although only about half of these registries (in number and coverage) produce data of sufficiently high quality for inclusion in the periodic volume of standard comparative statistics (‘Cancer Incidence in Five Continents’), the remaining registries, especially in low- and middle-income countries, nevertheless provide valuable data for the purpose of making estimates.<sup>8</sup> In many low- and middle-income countries, cancer registration faces significant challenges, including the low priority given to cancer control, lack of trained personnel, lack of expertise in data processing, lack of personal identifiers, unstable populations, lack of census data, and lack of access to data due to concerns about confidentiality.

Alternatives to population-based registries such as hospital registers, pathology registers and hospital episode statistics are second-best solutions. Hospital-based cancer registries are common but suffer from the inability to estimate the denominator in any analysis, and this leads to many biases. For example, in low-resource settings, many people with high mortality cancers, such as liver and pancreatic cancer, do not go to hospital and therefore are not counted.

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## The global and economic burden of cancer

According to WHO, cancer is responsible for approximately 7.6 million (13%) of the 59 million deaths that occur each year.<sup>1</sup> This exceeds the combined deaths from the three major infectious diseases: HIV/AIDS, tuberculosis and malaria. There is still much to be done to ensure better coverage of vital statistics at the global level and more consistent and accurate estimates of specific causes of death, including cancer.

IARC estimates provide a breakdown of the leading sites of cancer deaths. These include cancer of the lung (approximately 1.4 million deaths each year), stomach (740,000), liver (700,000), colorectal (610,000), breast (460,000), cervix (275,000) and prostate (260,000); a large number of other types of cancers total about 3.2 million deaths.<sup>12</sup> Almost two-thirds of these deaths occur in low- and middle-income countries.<sup>13</sup> Deaths from cancer worldwide are projected to reach 11.8 million per year by 2030; other sharply rising causes of death include cardiovascular disease (23.4 million deaths by 2030) and road traffic accidents (2.1 million deaths).<sup>14</sup> WHO estimates that if current cancer rates remain unchanged, new cases of cancer will increase from 12.7 million cases (2008) to 21.4 million cases (2030).<sup>1</sup> The leading sites of new cases of cancer for men are: lung; prostate; colorectum; stomach; liver; and oesophagus. Those for women are: breast; cervix; colorectum; lung; and stomach.<sup>12</sup>

The rising burden of cancer is largely due to the growth and ageing of populations, and the spread of cancer risk factors in low- and middle-income countries.<sup>15</sup> Cancer risks are spread worldwide by economic growth, by the globalization of trade and urbanization.<sup>16–18</sup> Growth and trade facilitate the uptake of unhealthy behaviours, while urbanization and associated poor living conditions expose many people to unhealthy environments and limit the options for healthy behaviours.

The economic consequences of cancer arise at both the macro- and micro-economic levels. At the macro-economic level, cancers impede growth because of their impact on workforce availability and productivity, and through the health system costs they generate.<sup>19–21</sup> At the micro-economic level, cancers can lead to the impoverishment of families due to the loss of employment or income, whether from illness or the need to look after sick relatives. In countries where social welfare safety nets are absent and where healthcare costs are substantially borne by individuals and their families, cancer and other NCDs can result in catastrophic spending and the erosion or destruction of household savings.<sup>20</sup> Catastrophic spending is not necessarily linked to a single expensive episode of care. It may also be attributable to the ‘steady drip of medical bills’ for those seeking treatment for chronic NCDs.<sup>22</sup>

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