

# INTRODUCTION

## Cancer burden in Mexico: urgent challenges to be met

Primary prevention of cancer was initiated with the introduction of Hepatitis B vaccine in the 80's.<sup>1</sup> However, in primary prevention of cancer at the worldwide level has been relatively recent. Intervention-action initiatives began at the global level in 2003 with the WHO Framework Convention on Tobacco Control, which was the first treaty negotiated under WHO guidance and as of today includes 168 countries.<sup>2</sup> This negotiation, although innovative, was somewhat overdue, considering that the causal association between exposure to tobacco and elevated cancer incidence was established over 65 years ago.<sup>3</sup> Vaccines against hepatitis<sup>4</sup> and more recently human papilloma virus<sup>5</sup> are other noteworthy developments in primary cancer prevention. As for secondary prevention, it has focused on early detection of cancer, especially among women, first with screening based on the Pap test<sup>6</sup> and later other strategies for cervical cancer detection.<sup>7</sup> For breast cancer, early detection strategies such as mammograms and clinical breast examination have been used for many years. However, today their impact on mortality for this cancer has come into question.<sup>8</sup> In this context, in Mexico we face enormous challenges to provide an efficient organized social response to cancer prevention and control. This issue of *Salud Pública de México* on "Cancer burden in Mexico: urgent challenges to be met" is an effort to estimate in epidemiological terms the breadth and depth of the problem faced in Latin America and particularly in Mexico. The authors do this by describing the enormous population-level and clinical challenges which need to be faced in the short term.

This special issue is divided into three sections. The first is about disease burden and associated risk factors, with participation by researchers from the International Agency for Research on Cancer (IARC) who describe the scope of the problem in Latin America and The Population Health Metrics Research Consortium

establishing the burden of cancer in Mexico. Experts from the Mexican Institute for Social Security (IMSS) provide evidence on incidence in children and mortality in all this population. Other contributions include use of hospital services for cancer care and a description of the trends in malignant tumors of the central nervous system in the first 50 of existence of the National Institute of Neurology and Neurosurgery of Mexico. Also, a study on the effects of late diagnosis of breast cancer on survival rate and certain associated risk factors. A notable innovation included in this special issue is a contribution that establishes alternatives for cervical cancer detection. This effort evaluates the usefulness of a variety of biomarkers for triage of HPV positive women, incorporating a methodology that implies a new paradigm for cervical cancer prevention, through a combination of screening and vaccination.

The second section incorporates contributions about the state of the art in diagnosis, treatment and control of leukemia, lung and prostate cancers as well as current perspectives on palliative care. The final section describes the challenges of public policy for cancer prevention in Mexico, including the need to establish cancer registries as an essential tool within a National Cancer Plan.

This special issue provides the opportunity for reflection on the two principal main challenges for cancer control: the implementation of both a population-based cancer registry and a national cancer plan.

### **Organization of a population-based cancer registry in Mexico: a current and future challenge**

Cancer surveillance in Mexico is largely nonexistent, incidence data are derived from national mortality estimates using modelled survival rates. Mexico does

not have a population-based cancer registry in spite of the fact that there are 184 countries that have a cancer registry (including quality control mechanisms). These registries provide information of good quality to be included in GLOBOCAN. An initiative coordinated by the IARC that estimates cancer incidence, mortality and prevalence worldwide for all five continents.<sup>9</sup>

Thanks to GLOBOCAN, we know what the cancer disease burden is. It represents one of the principal causes of morbidity and mortality in the world. Since 2012 there have been 14 million new cases and 8.2 million cancer-related deaths.<sup>8</sup> Given the increased life expectancies, together with the high prevalence of risk factors for cancer, it is expected an increase of 70% in the next 20 years on the number of new patients with the diagnosis of a malignancy.<sup>10</sup>

Epidemiological studies nested within cancer registries also will contribute to identify additional causes or risk factors. Today we know that approximately 30% of cancer-related deaths are due to five modifiable risk factors, including behavioral elements and diet, such as: high body mass index, low consumption of fruit and vegetables, lack of physical activity, tobacco use and immoderate alcohol use.<sup>11</sup> Also, thanks to epidemiologic research, there is a large body of knowledge about cancers caused by viral infections, such as Hepatitis B and C virus or human papilloma virus infections, which are responsible for up to 20% of deaths due to cancer in low- and middle-income countries.<sup>12</sup> Regions with lower levels of human development, including Mexico, Central and South America, represent 70% of cancer deaths worldwide. Data such as these could be better quantified through cancer registries and these can also generate evidence for planning. Probabilistic models indicate that annual cancer cases will increase from 14 million in 2012 to 22 million in the next two decades.<sup>13</sup>

Cancer registries provide us with information about the population-based behavior of cancer in terms of incidence and mortality by age group, as well as quantification of the clinical stages of the disease and quality of treatment, through studies on survival rates. Cancer registries should be created to function as tools for precise quantification and include quality control mechanisms.<sup>14</sup> Likewise, in the Mexican context, epidemiological studies can be nested within a cancer registry, to allow causal identification of risk factors associated with malignant tumors and provide information on the

prevalence of exposure to these factors in diverse risk contexts. Finally, to redirect public policies for prevention and cancer treatment, a population-based cancer registry constitutes a surveillance system to evaluate the efficacy of proposed interventions and assign financial and human resources where they are most needed.

### **Mexico's national cancer plan**

The principal objectives of Mexico's national cancer plan would be to establish specific strategies and actions that contribute to reductions in cancer incidence, as well as related morbidity and mortality and also improved quality of life for people with cancer. This can be achieved in a holistic manner through the implementation of primary prevention, early detection and diagnosis, together with high quality treatment and palliative care interventions, all of which should be grounded in best practices within evidence-based medicine. A national cancer program requires the existence of a population-based cancer registry, which is a central element of any such plan or program. However, a key element to consider is the enormous challenge for countries like Mexico, since information provided by cancer registries must be provided over a minimum five-year period, in order to evaluate the usefulness of this information.

The implementation of a national cancer plan requires the concurrence of governmental agencies, academic institutions, public and private medical units and systems, regulatory agencies, medical societies, nongovernmental organizations and cancer survivors. All of these stakeholders should participate in a coalition within which members exchange information, opinions and knowledge from diverse perspectives. Together we can contribute to providing an optimal organized social response to face the scourge of cancer.

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