

Avoidable Cancer Deaths Globally

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Introduction

In this issue of *CA: A Cancer Journal for Clinicians*, Jemal et al describe the global burden of cancer.¹ About 7.6 million people died from cancer in 2008 worldwide, and this number is projected to rise to 13.2 million deaths in 2030 simply due to the aging and growth of the population. Over 80% of the projected cancer deaths in 2008 are expected to be in low- and middle-income countries.

A large body of epidemiologic evidence suggests that most cancer deaths are avoidable, although the exact percentages worldwide or for specific parts of the world are not known. In their seminal article in 1981, Doll and Peto estimated that about 75% of US cancer deaths could be attributed to lifestyle and other environmental factors that are in principle avoidable.² In contrast, Danaei et al estimated that in 2005 about 35% of cancer deaths worldwide and 37% of the cancer deaths in high-income countries could be attributed to potentially modifiable risk factors.³ Using this estimate, about 2.6 million of the 7.6 million total cancer deaths that occurred in 2008 were potentially avoidable through prevention of major risk factors, including tobacco use, dietary factors, infections (specifically related unsafe sex [cervical cancer] and contaminated injections in health care settings [liver cancer]), and alcohol use. This translates to avoidance of about 7300 cancer deaths per day. Additional cancer control interventions that are not accounted for in this estimate are vaccinations against hepatitis B and human papillomavirus infections, human immunodeficiency virus (HIV) prevention and antiretroviral therapy for HIV-related cancers, and screening for breast and colorectal cancers.

Tobacco use increases the risk of lung cancer as well as at least 15 additional sites and is the single most preventable cause of cancer death, accounting

for 21% of the total cancer deaths (1.6 million deaths) worldwide. While tobacco consumption is decreasing in many economically developed countries, it is increasing in many economically developing countries. This century, about 80% of the 1.3 billion current smokers worldwide live in low- and middle-income countries, with over 300 million in China alone. Smokers in these countries are disproportionately younger, when the benefit of cessation in reducing deaths from lung cancer and other smoking-related diseases is the greatest. Smokers who quit before middle age avoid the majority of the excess risk because of the long delay between onset of smoking and death from smoking-related diseases, typically 30 to 50 years.⁴

Policies and programs known to increase cessation include raising the price of tobacco products, banning smoking in public places, restricting tobacco advertising and promotion, counter advertising, and providing treatment and counseling for tobacco dependence. In 2003, the World Health Organization (WHO) established the Framework Convention on Tobacco Control to combat the growing tobacco epidemic using these measures. Although an overwhelming majority of the WHO Member States (168) signed the treaty (available at: <http://www.fctc.org>), few have implemented the tobacco control policies or programs according to the framework.⁵ Given the early stage of the tobacco epidemic in many developing countries and the long delay between the peaks in tobacco consumption and lung cancer rates, developing countries have the unique opportunity to avoid millions of smoking-related cancer deaths by implementing and enforcing comprehensive tobacco control programs.

Unhealthy diet, physical inactivity, and obesity have been associated with an increased risk of several cancers, including breast, colorectal, stomach,

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liver, kidney, and uterine cancers.⁶ Some of these cancers are increasing in several economically transitioning countries due in part to the ongoing obesity epidemic.⁷ In response, the WHO has developed a global strategy to improve dietary patterns and physical activity through the development of national, regional, and/or community level policies and programs that are comprehensive and sustainable.⁸

While the importance of stomach and cervical cancers as the major causes of cancer death has diminished over the years in economically developed countries, largely because of improved hygiene and sanitation for stomach cancer and early detection through the Papanicolaou test for cervical cancer, these and other infection-related cancers (liver cancer, Kaposi sarcoma) continue to be the dominant form of cancers in most parts of the developing world. Stomach (738,000 deaths), liver (696,000), and cervix (275,000) cancers together account for 23% (1.7 million/7.6 million) of the total cancer deaths worldwide in 2008, with over 80% of these deaths occurring in the developing world. Further, about 50% of liver cancer and 70% of cervical cancer could be prevented through vaccinations, which provide the best opportunity for substantially reducing the future burden of liver and cervical cancers in economically developing countries.^{9,10} Affordable pricing and improved logistics would facilitate wide dissemination of the vaccines in these countries.

In addition to primary prevention of risk factors, hundreds of thousands of premature cancer deaths could be avoided by optimal use of screening services for female breast, cervix, and colorectal cancers. Improvements in screening and treatment are thought to be the primary contributors to the 30% decrease in both female breast and colorectal cancer death rates noted between 1990 and 2006 in the United States. However, optimal use of screening services for breast and colorectal cancers has not been achieved even in wealthy countries, including the United States. Although population-based screening may be cost-prohibitive and may not be supported by the existing health systems in most

low- and middle-income countries, increasing public awareness of the early signs and symptoms of cancers may increase detection of these diseases at earlier stages when there are more options for treatment and the chance of successful treatment is higher. Decreasing costs of technology may make beneficial screening tests more widely available.

In summary, over 2.6 million of the 7.6 million cancer deaths that occurred in 2008 were potentially avoidable (about 7300 cancer deaths per day) through the prevention of known risk factors. The worldwide application of existing cancer control knowledge according to the capacity and economic development of countries or regions could lead to the prevention of even more cancer deaths in the next 2 to 3 decades. In order to achieve this, however, national and international public health agencies, governments, donors, and the private sectors must play major roles in the development and implementation of national or regional cancer control programs worldwide. ■

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