Comprehensive report says tobacco control must be highest priority in cancer control

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The highest priority in a national cancer control plan must be expansion of tobacco control—the intervention with the largest potential health benefits—according to a new American Cancer Society report, the second in a series of articles that together inform priorities for a comprehensive cancer control plan. The report, appearing in *CA: A Cancer Journal for Clinicians*, says that although some cancer prevention interventions, such as increasing HPV vaccination rates, can be implemented fairly quickly, others, including promoting access to healthier living environments and addressing the social determinants of health, will require concerted and sustained efforts.

The second article in the series focuses on existing evidence about established, modifiable risk factors for cancer, the cancer burden in the United States due to each risk factor, and established primary prevention recommendations and interventions to reduce exposure to each risk factor. The report was led by Susan M. Gapstur, Ph.D., MPH, American Cancer Society Senior Vice President of Behavioral and Epidemiology Research.

The report focuses on several important modifiable risk factors:

Tobacco: More than half of the 26% decline in cancer mortality rates in the U.S. since 1991 is due to reductions in tobacco smoking. Despite this progress, tobacco smoking (active and second-hand smoke) remains the most common cause of cancers diagnosed (19.4%, n=304,880) and cancer death (29.6%, n=173,670). Moreover, the annual direct health care costs of tobacco in the U.S. are estimated to be $170 billion, and tobacco use results in $156 billion in lost productivity. There is considerable evidence that tobacco control can prevent more cancer deaths than any other primary prevention strategy.

The demographic profile of today's smoker has changed over the last half century.

Today, tobacco use is more prevalent among persons with lower educational attainment; lower income; within vulnerable populations, such as individuals with mental illness or addiction to other substances; within the Lesbian, Gay, Bisexual, Transgender (LGBT) community; and within certain racial or ethnic groups. Enhanced efforts to reach groups that are more likely to smoke are needed to further reduce the prevalence of tobacco use.

Obesity and overweight: In the U.S., approximately, 7.8% of cancer cases in 2014 were attributed to excess body fatness, second only to cigarette smoking. Its contribution was higher among women (10.9% of cases) than among men (4.8% of cases). Among women, 60.3% of uterine cancer and, among men and women combined, more than 30% of gallbladder, liver, and kidney/renal cancers as well as esophageal adenocarcinoma were attributed to excess body fatness. Despite clear evidence that excess body fatness contributes substantially to cancer risk, the full impact of the obesity epidemic on the cancer burden, including the long-term effect of obesity that begins in childhood, is yet to be completely understood.

Alcohol: Alcohol is the third most-important major modifiable contributor to cancer, associated with 6.4% of cancers in women and 4.8% of cancers in men in 2014. However, for some cancers, the attributable fraction exceeds 10%; among men and women combined, an estimated 40.9% of oral cavity/pharynx cancers, 23.2% of larynx cancers, 21.6% of liver cancers, 21% of esophageal cancers, and 12.8% of colorectal cancers were attributed to alcohol consumption. Notably, among women, alcohol intake accounted for 16.4% of all cases, or 39,060 breast cancers in 2014.

Diet: The combination of low calcium, fiber, and fruit and vegetable intake and high red and processed meat intake is estimated to cause 4.2% of cancers among men and women combined. However, there was considerable variation across specific dietary factors and types of cancer. For example, 5.4% of colorectal cancers are associated with high red meat consumption causes, 8.2% with high processed meat consumption, and 10.3% and 4.9% for low dietary fiber and calcium consumption, respectively. Low fruit and vegetable consumption was attributed to 17.6% and 17.4% of oral cavity/pharynx and larynx cancers, respectively. A lack of clear evidence about the role of early life dietary exposures as well as many other dietary hypotheses means the percentage of cancers attributable to diet may continue to rise beyond current estimates once more is known.

Physical inactivity It is estimated that 2.9% of all cancer cases in the U.S. in 2014 were attributable to low physical activity, with the contribution greater among women (4.4%) than among men (1.5%). The cancer with the highest percentage related to low physical activity was uterine cancer (26.7%), followed by colorectal cancer (6.3% among men and women combined). As additional cancer types are determined to be causally associated with low amounts of physical activity, the total number of cancer cases attributed to low physical activity will continue to rise.

In the U.S., an estimated 13.9% of cancers among men and 22.4% among women in 2014 were attributable to the combination of excess body weight, poor diet, physical inactivity, and alcohol consumption. Reversing the obesity epidemic and increasing the prevalence of healthy eating and active living hold considerable potential for reducing cancer incidence and mortality rates. Achieving this potential, write the authors, will require a comprehensive approach, including evidence-based, primary prevention interventions that target communities and individuals.

Sugar-sweetened beverage consumption has been consistently associated with weight gain, overweight, and obesity. Consistent with the effectiveness of raising tobacco taxes on reducing the use of tobacco products, the broad implementation of excise taxes on these products has the potential to reduce consumption of sugar sweetened beverages.

In the U.S., an estimated 4% of human cancers are attributed to infectious agents. For several types of cancer, infectious agents are the dominant known risk factors. The report details six of the eleven pathogens classified as being human carcinogens: H. pylori (the only bacterium), human papillomavirus (HPV), hepatitis B, hepatitis C, Epstein-Barr, and human immunodeficiency virus (HIV).

Recent estimates indicate that approximately 95% of all cutaneous melanoma cases in the U.S. may be attributable to UV radiation exposure from the sun and indoor tanning. More than 9000 men and women die each year from melanoma in the U.S. alone.

The proportion of ionizing radiation the general public is exposed to that comes from medical sources has increased significantly. In the 1980s, exposure from things like diagnostic and therapeutic procedures accounted for 15% of total radiation exposure. By 2006, that proportion had risen to 48%. The large increase has been attributed to significant increases in the number of CT procedures.

Radon exposure caused 13% (21,000) of all lung cancer deaths in the U.S. in 1995, making radon the second leading cause of lung cancer behind smoking. According to a risk assessment by the National Research Council, approximately 3% to 4% of all lung cancer deaths in the U.S. could be

prevented by mitigating all homes with radon levels at or above the EPA action level.

"A comprehensive cancer control plan designed to support the implementation of evidence-based interventions, including cancer prevention interventions like those we described has enormous potential to substantially reduce the number of individuals diagnosed with and dying from cancer," said Dr. Gapstur. "It is the responsibility of government and industry as well as the public health, medical, and scientific communities to work together to invest in and implement a comprehensive cancer control plan at the national level and support and expand ongoing initiatives at the state and local levels. If we fail to do so, we will slow progress in our national efforts to reduce the burden of cancer."

More information: A Blueprint for the Primary Prevention of Cancer: Targeting Established, Modifiable Risk Factors; *CA: Cancer J Clin*. 2018; DOI: 10.3322/caac.21496

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