

EDITORIAL

Current US Cancer Statistics: Alarming Trends in Young Adults?

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The burden of cancer in the United States is substantial, with 1 762 450 new cancer cases and 606 880 cancer deaths projected in 2019 (1). The rising cancer incidence reflects the demographic bulge of baby boomers who are reaching the age of highest cancer risk (2). The precision of these estimates has increased as coverage of the country by population-based cancer registries is nearly complete (1). However, summary statistics may mask important trends based on sex, age, and race and ethnicity. Fortunately, a collaboration of the American Cancer Society, Centers for Disease Control and Prevention, National Cancer Institute, and the North American Association of Central Cancer Registries provides annual updates to the nation on the status of cancer, with the current review of data from 1999 to 2016 in this issue of the *Journal* (3).

These annual reports provide a high-level summary of national trends and patterns, permitting assessment of the impact of how advances in prevention, screening, early detection, and treatment are affecting cancer outcomes at the population level. Two examples from this report are notable. The steady, large decline in lung cancer incidence and mortality both in men and women across all age groups reflects the effectiveness of long-term public health and regulatory tobacco control programs and policies. Mortality from melanoma of the skin declined by about 5% in men and women during 2012–2016, with marked acceleration between 2014 and 2016, likely attributable to major therapeutic advances in immunotherapy treatments for this once uniformly fatal disease (4). To see this magnitude of change in mortality rates suggests rapid uptake of these very effective treatments. However, with the advent of many new therapies and populations eligible for treatment, there are many challenges related to the delivery of quality cancer care (5).

Overall, there is good news regarding the continuing reduction in the incidence of specific cancers for men (3). But this favorable trend masks increases in the incidence of several

cancers, including melanoma of skin, kidney and renal pelvis, liver, myeloma, and thyroid. In contrast, the overall incidence rates among women were stable, including stabilization of a prior increase in thyroid cancer incidence; however, increases in incidence for women were noted for breast, uterine corpus, melanoma of skin, kidney, leukemia, pancreas, liver, oral cavity and pharynx, and liver. Obesity is strongly associated with several of these cancers in men as well as women (6,7), and the declining incidence of tobacco-related cancers may be offset in the future by the emerging rise in obesity-related cancers. Cancer mortality continues to decline in men and women alike; however, death rates (per 100 000 individuals) among men are 1.4 times the rate among women (193.1 vs 137.7). For men and women, there are steep declines in mortality from lung cancer as well as colorectal cancer. Recent trends in some site-specific death rates are continuations of long-term trends.

This annual report also provides a focused discussion on a topic of increasing concern: the pattern of cancer incidence and mortality in men and women age 20–49 years (3). Cancers in young adults are distinct and heterogeneous, including sites that are common to adolescents (eg, sarcomas, lymphomas), cancers with a hereditary genetic predisposition (eg, leukemia, sarcoma, brain tumors, breast and colon cancer), those unique to this age group (eg, testis cancer), and others that are common adult malignancies (eg, breast, lung, and colorectal cancer) (8). Although this age group has a lower overall cancer risk, and represents a small segment of the cancer incidence burden, identifying emerging incidence trends is particularly important for cancer prevention and control, as well as cancer-care delivery.

The most striking finding in the young adult population is the greater incidence of invasive cancers in women compared with men, largely driven by the increasing incidence of female breast cancer (3). Invasive cancers with the highest incidence rates among younger men are colon and rectum, testis, and melanoma

of the skin, and among women are breast, thyroid, and melanoma of skin. Cancers of the female genital organs (uterine corpus and cervix) also contribute to the increased cancer burden in younger women compared with men (3). During 2011 to 2015, the incidence of all invasive cancers combined decreased modestly among women, reflecting important declines in lung and bronchus cancer (more than 5% in men and women); however, the incidence rates for colorectal cancer increased 3.4% in men and 3.8% in women overall, and increased by more than 10% in men and women in the 20- to 29-year age group. Variations in race and ethnicity are most pronounced for testis cancer and prostate cancer.

With respect to mortality rates across all cancer sites, younger women experience greater mortality than younger men, although death rates decreased between 2012 and 2016 by 2.3% per year for men and 1.7% per year among women. The top cause of cancer mortality both for younger men and women is colorectal cancer. Mortality rates continue to decline for younger women with breast cancer, reflecting advances in treatment with targeted therapies. For people age 20–49 years, black men and women experience the highest death rates of any racial and ethnic group for all sites. Non-Hispanic women had the highest death rates for lung and bronchus cancer; white and non-Hispanic women had the highest rates for brain and other nervous system cancer; and American Indian and Alaska Native women had the highest death rates for corpus and uterus cancer.

Several important observations arise from these cancer statistics in young adults. First, although the most common incident cancers overlap with leading cancer sites in older adults (breast and colorectal cancer), cancers that are specific to this age cohort also exist (eg, testis, thyroid, melanoma of skin). For most of these cancer sites, long-term survival is expected, and the consequences of a cancer diagnosis at a young age are unique: specifically, disruptions in education, work, relationships, the ability to have a family, and greater financial toxicity (9). The need for health insurance to manage the financial burden of acute cancer care as well as long-term follow-up is a major concern for this segment of the population (10). They also face a lifelong risk for cancer recurrence and secondary cancers (11). Further, risks for chronic health problems (eg, cardiovascular disease, osteoporosis) and what we now understand as accelerated aging (12) also make their long-term health-care needs greater than those unaffected by cancer and its treatments. Planning for these long-term and late effects as part of survivorship care will be important.

Second, the increased rate of obesity-associated cancers in this younger population identifies an important prevention opportunity. As featured in a more detailed publication (13), the incidence for 6 of 12 obesity-related cancers (multiple myeloma, colorectal, uterine corpus, gallbladder, kidney, and pancreatic cancer) has increased substantially, with steeper increases in successively younger generations. Potential risks factors include poor diet quality (eg, low intake of fruits and vegetables, increased consumption of processed foods and alcohol), overweight, obesity, and early-onset type 2 diabetes. Obesity-related inflammation may be a unifying mechanism, but it needs further study in this younger population. The alarming increase in young-onset colorectal cancer (14) has led some organizations to lower the recommended age for initiation of colorectal cancer screening (15).

Finally, we need to increase clinical awareness of the growing racial and ethnic diversity of the younger at-risk cancer population. Smith et al. (16) noted that between 2010 and 2030 there will be nearly a doubling of the incidence of cancers among

minority populations from 0.33 million to 0.66 million, whereas the incidence in the white non-Hispanic population will increase by only 33% from 1.3 million to 1.7 million. In this special report on younger cancer patients, we are seeing the leading edge of this more ethnically diverse population (3), with particular disease sites that are more common among some groups, such as liver and biliary cancer in Hispanics and Asians. Only time will tell if these cancer incidence trends in young adults are unique to their specific cohort or will be a permanent feature in future generations of young adults. Nevertheless, the oncology workforce needs to pay attention to these important trends in cancer incidence, and the differing patterns of disease in younger and older cancer patients.

Notes

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There are no directly relevant disclosures related to the content of this manuscript. Dr Ganz has received honoraria from Oxford University Press for her role as editor-in-chief of the *Journal of the National Cancer Institute* and from Wolters Kluwer for her role as editor for the *Survivorship Section of UpToDate*.

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