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Editorial

EDITORIAL

Cancer Surveillance Opportunities to Meet Prevention and Control Challenges

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News from the latest Annual Report to the Nation of the Status of Cancer by Islami et al. (1) is largely positive. Cancer mortality overall continues to decrease; for most cancers, incidence is also decreasing. Substantial gains in survival for late-stage melanoma patients, attributable to state-of-the-art immunotherapies, herald major progress in our fight against cancer. Nonetheless, the report also contains some inauspicious news. Increasing incidence trends persist for childhood cancers, which, although not accompanied by increasing mortality, are worrisome nonetheless given the multiple health problems faced by childhood cancer survivors. Colorectal cancer mortality continues to increase among adolescents and young adults, mirroring obesity trends that show no signs of abating. Among adults, the increasing mortality trends for endometrial, oral, and brain cancers; a complex picture for liver cancer; and the heavy burden of lung cancer, despite decreasing trends, remain concerning.

Cancer surveillance programs, giving rise to the data in this annual report jointly issued by the Centers for Disease Control and Prevention, the North American Association of Central Cancer Registries, the American Cancer Society, and the National Cancer Institute, are unique in their truly universal, population-based coverage. The fact that all cancers are recorded in a given population de facto precludes selection issues that may bias even the most well-designed cohort studies. Ever evolving, existing cancer surveillance programs face numerous challenges, including the collection of consistent data to facilitate trend analyses while remaining flexible to adapt in response to identified needs. Yet they are uniquely positioned to lead in furthering our understanding of some of the more troublesome trends emerging on the cancer landscape.

The Surveillance, Epidemiology, and End Results program, which covers a fairly representative 37% of the US population, has spearheaded efforts to obtain additional informative data with direct clinical interest, including diagnostic and treatment variables garnered from linkages with claims data, electronic health records, pathology reports, and aggregators of pharmacy data (2-5). To achieve completeness for these data elements at a level that would suffice for consideration as truly population based, 85% or higher, will naturally take some time.

Meanwhile, additional linkages with data from currently available national surveys, claims, registries, etc, should be explored; meaningfully integrating these with our cancer surveillance data could clarify and/or improve the accuracy of our trend depictions. To fill crucial knowledge gaps that would improve diagnosis and treatment for cancers with complex increasing trends, including liver and endometrial cancers, consideration of additional factors is imperative .

Liver cancer, a highly fatal malignancy, has been increasing since the 1980s (6). The current report highlights complex incidence trends: stabilization among males and a slowing of the increase among females. By race-ethnicity, liver cancer trends are quite distinct: a steadily decreasing trend among Asians, a more recent decrease among Black men, and ambiguous trends among Black women, Whites, and Hispanics. This complexity results from grouping together all case s of hepatocellular carcinoma (HCC) (responsible for approximately 80% of all liver cancers) regardless of etiology. Major causes of HCC include chronic infection with viral hepatitis B (HBV) and/or C (HCV), alcohol-related disorders, and nonalcoholic fatty liver disease (NAFLD) (6). Our recent study (7) linked registry data with individual-level discharge data to enable the calculation of incidence rates by distinct HCC cause for the first time, adding clarity to this muddled picture. Patterns differed considerably by sex, age, and race-ethnicity. Liver cancer affects men more than women; however, the nature of this pattern varies by cause: alcohol-related HCC is 5-6 times more common among men; HCV-HCC occurs nearly 4 times more; NAFLD-HCC and HBV-HCC occur twice as frequently among men (7). Age is also related to etiology: the median age for NAFLD-HCC is considerably older than for HCV-HCC, partially attributable to the known HCV high-risk birth cohort of 1945-1965 (8,9). Race-ethnicity also factors in: HBV-HCC incidence is highest among Asians, HCV-HCC among Blacks, alcohol-related HCC among Hispanic males, and NAFLD-HCC among Hispanics (7). As expected, because relative improvements in liver cancer incidence have been largely

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attributed to the treatment and control of HCV and HBV infections (6), the gains observed in the current report are most pronounced among Black males and Asians of both sexes. However, this decrease in hepatitis-related HCC is likely masking increasing trends in other causes, including NAFLD-HCC (6) and possibly alcohol-related HCC, considering the recent mortality increases from alcoholic cirrhosis (10). These etiology-specific HCC trends suggest Hispanics as a particularly vulnerable group, reinforcing the need for specific targeted cancer prevention strategies that address obesity and excessive alcohol use.

The publication of hysterectomy-corrected rates for uterine, cervical, and ovarian cancers on a national level, which is largely feasible (11-13), is long overdue. Continued publication of uncorrected rates, known to be affected by substantial differences in hysterectomy proportions by race-ethnicity, renders inaccurate indicators and underestimates the substantial Black–White mortality disparity for endometrial and cervical cancers. Additionally, attributing increases in endometrial cancer primarily to obesity trends requires further scrutiny because the nonendometrioid types (serous carcinomas and carcinosarcomas), which have worse prognoses (14,15), seem less related to obesity (16). Separate analyses for endometrioid and nonendometrioid types, as suggested by the report, would be informative.

Similarly, for oral cancer, which has intriguing trends (increases among Whites but decreases among Blacks), growth in the prevalence of HPV infection alone may not fully explain the observed patterns. Rather, the intricate interplay between HPV infection, alcohol use, and the unknown role of the more recent electronic nicotine delivery systems, combined with decreasing smoking prevalence, should be clarified.

Lastly, although continued decreases in lung cancer mortality earn deserved publicity, the burden remains considerable: lung cancer continues to account for the largest proportion of deaths from cancer. Although most cases are attributable to long-term smoking, lung cancer among never-smokers (LCNS) is also very prevalent. If considered by itself, LCNS would be the seventh-most common cancer (17). Moreover, it disproportionately affects racial-ethnic minority groups and women. Fortunately, LCNS tumors tend to have higher prevalence of the *EGFR* mutations and *ALK* rearrangements that respond favorably to targeted therapies, credited for the recent favorable trends in advanced non-small cell lung carcinomas (18). Examining LCNS separately on a population basis is warranted to avoid overlooking this subset of lung cancers, especially given the magnitude of the smoking-related burden, and to better understand its unique epidemiologic characteristics.

Cancer surveillance is a fundamental tool in our battle to reduce the burden of cancer. The annual reports allow us not only to track progress and measure successes but also to identify problem areas. Being responsive to these identified areas of interest would enable surveillance programs to further meet the needs of all those interested in cancer prevention and control, including clinicians, public health program developers, researchers, and policy makers.

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