HHS Public Access

Author manuscript

Cancer. Author manuscript; available in PMC 2017 December 28.

Published in final edited form as:

Cancer. 2015 April 01; 121(7): 1150–1152. doi:10.1002/cncr.29180.

US Lung Cancer Trends by Histologic Type

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Racial and ethnic disparities in lung cancer incidence remain a significant health concern.[1,2] In the United States, when compared with non-Hispanic white (NHW) individuals, non-Hispanic black (NHB) individuals experience higher incidence rates of lung cancer, whereas Hispanic individuals experience lower incidence rates of the disease.[3,4] Contemporary examination of lung cancer incidence trends, specifically by histology, can inform the extent to which progress in national declines in incidence is observed across all segments of the population. The article by Lewis et al,[5] which presented 33 years of data from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program, described the incidence trends of lung cancer histologies by sex and race/ethnicity. The authors reported a steady decline in the rates of squamous cell, small cell, and adenocarcinoma subtypes until 2005. After 2005, rates of adenocarcinoma for males increased. This interesting finding most likely reflects temporal changes in more accurate specification of lung cancer histologic subtypes.[6,7] Although Lewis et al[5] reported variation in trends by histology, sex, and race/ethnicity, we believe that the dramatically differing trends by race/ethnicity warrant further highlight and discussion.

In our own analysis of SEER data, which included the period 1992 through 2011, we similarly found that incidence declines were most pronounced for small cell in comparison with non-small cell subtypes for NHW and NHB males, reflecting progress in tobacco control in these populations. However, the differences across racial/ethnic groups in the incidence trends of non-small cell lung cancer, specifically adenocarcinoma and squamous cell carcinoma, is worth highlighting. Similar to the findings reported by Lewis et al,[5] in our analysis, NHW males experienced an increased incidence from 2005 through 2011 of the squamous cell subtype (annual percent change [APC], 1.9; 95% confidence interval [95% CI], 1.0–2.7), whereas there was a steady decline in this subtype across all years of the study for NHB and Hispanic males. The incidence for adenocarcinoma increased among NHW and NHB males from 2005 through 2011. However, Hispanics males experienced a

CONFLICT OF INTEREST DISCLOSURES
Dr. Gomez was supported by a grant from Genentech for work performed outside of the current study.

significant decline in all lung cancer histologic subtypes including adenocarcinoma. Among females, we concur that lung cancer incidence rates have been relatively stable, with evidence of more recent declines since 2005 noted among NHB and NHW females. As with males, the incidence in small cell lung cancer declines was largest for NHB females (1992–2011: APC, −1.3; 95% CI, −2 to −0.5) and NHW females (1992–2004: APC, −5; 95% CI, −6 to −3.8; and 1996–1999: APC, −1.7; 95% CI, −2.3 to 1.1). In our join-point analysis, Hispanic females experienced a brief increase of 7.9% per year in the incidence rate of the small cell subtype from 2004 through 2009, which then declined by 17.4% per year (95% CI, −30 to −2.6) until 2011. Among females, the differences in trends by race/ethnicity were most pronounced for adenocarcinoma, with a steady and highest rate of increase noted among Hispanic (APC, 5.8; 95% CI, 1.9–9.9) and NHB (APC, 3.2; 95% CI, 2.3–4.1) females from 2006 through 2011, whereas rates among NHW females remained stable or increased (1992–2005: APC, 0.3; 95% CI, −0.2 to −0.7; and 2005–2011: APC, 2.4; 95% CI, 1.1–3.7).

The challenge remains to understand how much of these variations in incidence trends are simply due to improvements in coding from “not otherwise specified” to specific histologies and how much reflects actual disparities that may be mediated by other factors such as socioeconomic status or access to high-quality cancer care pathologists. Given the larger trend differences in adenocarcinoma compared with the category of “not otherwise specified” in recent years among all ethnicities (2005–2011: APC range, −10 to −24.7), it is reasonable to surmise that these trends indeed reflect meaningful racial/ethnic differences. However, it is also worth considering whether the differences in incidence trends of adenocarcinoma noted among Hispanic females versus Hispanic males reflect differences in smoking patterns as suggested by Lewis et al[5] or other social determinants of health such as access to quality pathology review. Regardless, the racial/ethnic differences in histologic-specific incidence rates of lung cancer noted among males and females warrant further investigation.

We are encouraged to observe the overall decline in histologic-specific incidence rates of lung cancer. However, when examined through a lens of racial/ethnic disparities, these findings reveal the need for a broader discussion of the underlying factors that may be driving the unequal burden of lung cancer across populations. As suggested by Lewis et al,[5] smoking trends and cessation rates may be possible explanations for these variations in incidence trends by histology and race/ethnicity.[5,8] However, genetic, environmental, and socioeconomic factors may also play an important role in these changing trends. Further studies should investigate how these factors may influence the trends reported by Lewis et al.[5]

Acknowledgments

We would like to acknowledge Meg McKinley, Kathleen Gali, and Heather Wakelee for contributions to the current study.

FUNDING SUPPORT

Supported by the Stanford Cancer Institute. The collection of cancer incidence data used in this study was supported by the California Department of Health Care Services as part of the statewide cancer reporting program

mandated by California Health and Safety Code Section 103885; the National Cancer Institute's Surveillance, Epidemiology, and End Results program under contract HHSN261201000140C awarded to the Cancer Prevention Institute of California, contract HHSN261201000035C awarded to the University of Southern California, and contract HHSN261201000034C awarded to the Public Health Institute; and the Centers for Disease Control and Prevention's National Program of Cancer Registries, under agreement 1U58 DP000807-01 awarded to the Public Health Institute. The ideas and opinions expressed herein are those of the authors, and endorsement by the State of California, the California Department of Health Care Services, the National Cancer Institute, or the Centers for Disease Control and Prevention or their contractors and subcontractors is not intended nor should be inferred.

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