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Time to Move beyond Proving Disparities Exist and Begin Eliminating Them

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While lung cancer remains the leading cause of cancer-related deaths (1), the lung cancer death rate has steadily decreased along with reductions in smoking, improvement in lung cancer screening, and development of more effective treatments. However, many groups have failed to benefit from these advances.

In this issue of *AnnalsATS*, Blom and colleagues (pp. 186–194) examined the differences among 442,812 patients in receiving lung cancer treatment recommended in the National Comprehensive Cancer Network guidelines between 2,010 and 2,014 (2). They found that only 62% of all patients received guideline-concordant treatment and that 16% received less than recommended treatment. Older patients and non-Hispanic black patients were particularly less likely to

receive recommended treatment. Strengths of the study include its large and diverse sample size from a validated database; inclusion of a variety of different lung cancer types, severities, and treatments; and adjustment for patient co-morbidity.

The recognition that patients of differing demographic characteristics receive different lung cancer treatment is not new. In 1986, Samet and colleagues reviewed 22,899 cancer cases in the New Mexico Tumor Registry, 2,313 of whom had lung cancer (3). Across different types of local-stage cancers, the percentage of patients who received surgical treatment decreased as patient age increased. Among patients with lung cancer, 55% of patients ≤ 54 years of age received surgical treatment compared with 51% of those between the ages of 55 and 64, 32% of those between 65 and 74, 13% of those between the ages of 75 and 84, and none over the age of 84.

Similar findings have been previously noted for race. Greenwald and colleagues



reviewed 5,157 cases of lung cancer diagnosed between 1978 and 1982 using the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) database (4). The cases were selected from 3 SEER sites (Detroit, San Francisco, and Seattle). Only 51% of black patients underwent surgical treatment compared with 61% of white patients ($P < 0.001$). Black patients also had a lower 5-year survival (26% versus 34%, $P < 0.001$).

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Bach and colleagues examined 10,984 black and white patients with stage I and II resectable lung cancer across 10 SEER sites between 1985 and 1993 (5). Black patients were again found to undergo surgery less frequently than white patients (64% versus 77%, $P < 0.001$). Black patients also had lower five-year survival rates (26% versus 34%, $P < 0.001$). The most fascinating finding was that among black and white patients who underwent surgery there was no difference in survival ($P = 0.10$). Similarly, survival did not differ between black and white patients who did not undergo surgery ($P = 0.25$). These findings suggest that the racial differences in survival were due to differences in receipt of surgery and less likely due to other factors such as the biological behavior of the tumor.

Wisnivesky and colleagues found similar striking findings in a study of 16,036 white and Hispanic patients with stage I lung cancer (6). Hispanics underwent surgery 83% of the time compared with 86% for whites ($P = 0.03$). The lung cancer-specific survival rate was 54% for Hispanics compared with 62% for whites ($P = 0.008$). However, there was no difference in lung cancer survival between Hispanics and whites who underwent surgical resection ($P = 0.12$) and those who did not ($P = 0.52$).

Blom's study provides an update and a more comprehensive review of the current state of health disparities in lung cancer treatment. It also provides a cautionary tale—despite 3 decades of science demonstrating that older individuals and minorities receive

inferior treatment for lung cancer and are more likely to die, the problem continues to persist. While it is important to continue to document this appalling discrepancy, it is even more important to identify and address the root causes. *Why do these treatment differences exist and what can be done to ameliorate them?*

Fortunately, there has been some preliminary work in this area. Margolis and colleagues at the Philadelphia Veterans Affairs Medical Center were frequently told by their black patients with lung cancer that they were concerned that surgery would expose the tumor to air and stimulate spreading. They interviewed 626 patients in pulmonary and lung cancer clinics and found that black patients were more likely to agree with the statement than white patients (61% versus 29%) (7). Moreover, 19% of black patients stated that this belief was a reason to oppose surgery and 14% stated they would not accept their physicians' assertion that this belief was false. A historical review suggests that the origins of this belief began when imaging of tumors and tumor burden was less accurate and surgeries were less successful (8). A follow-up focus group study suggested that black patients were skeptical about the chance of curing the cancer while white patients were anxious to begin pursuing a cure (9). While this gives us glimpses into the racial differences in perception of lung cancer treatment, validation studies regarding these findings and intervention trials to counter these prevailing perceptions are lacking.

The Veterans Affairs System may also provide helpful insights into how health systems can improve lung cancer care for all patients. The care of 18,466 patients in the Veterans Affairs Cancer Registry diagnosed with stage I or II non-small cell lung cancer between 2001 and 2010 was reviewed (10). Although there were differences in receipt of surgery between black and white patients initially, these differences dissipated over time and no differences were found throughout the study period in receipt of radiation. Survival rates were similar between black and white patients. This suggests that the factors underlying differences in care are modifiable.

To improve the lives of all persons with lung cancer, we also need to be vigilant of underappreciated disparities in this area. With the focus on males in clinical trials and clinical practice women have been largely forgotten, and a shift in the demographics of patients with lung cancer has emerged. A recent study suggests that among persons born in the 1960s, lung cancer incidence rates are higher among young women than young men, particularly among Hispanics (11). Further exploratory work in this field is needed.

Resolving disparities is a continuous and evolutionary process. We must develop and test interventions to improve the lives of all patients while also ensuring that new disparities do not arise as a consequence of our interventions or of unequal utilization of emerging treatments. Hopefully it will not take another 3 decades for these disparities to be eradicated. ■

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