EDITORIAL AND COMMENT

Equity in Lung Cancer Care and Outcomes

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Lung cancer is still a devastating disease. It is the second most common cancer in the US and a leading cause of cancer deaths among men and women. Non-Small Cell Lung Cancer (NSCLC) accounts for about 85–90 % of all lung cancers and more than 50 % of advanced stage lung cancers. The 5-year survival rate of advanced stage NSCLC remains about 15 %.¹

These highly depressing statistics about lung cancer often come face-to-face with similarly disturbing statistics about health care and racial/ethnic minority patients. Numerous studies have reported racial/ethnic variations in health care access, treatment, and outcomes. The reasons for these disparities are complex and involve patient-level, provider-level, and system-level factors. Potential etiologic mechanisms for racial/ethnic disparities in health care may include differential access to care, patient preferences, physician bias, and culturally-shaped patient-provider communication styles and patterns, to mention a few.

In the case of lung cancer, studies have reported that the incidence of lung cancer is greater among minority patients, most specifically African American (AA) patients, compared to the US general population.² In addition to stage of cancer, gender, and smoking status, race has been specifically reported to be an independent predictor of survival in lung cancer.^{3–5} Furthermore, there are some data that suggest that AA patients may have inferior outcomes, even in early stage lung cancer.⁶

Whether the previously-reported increased incidence of lung cancer and the shorter survival rate among minorities is a function of differences in access to comprehensive and preventive care or a function of variations in the biology of “race” is a matter of ongoing scientific debate and research. For instance, some studies have suggested that racial variations in the incidence of Epidermal Growth Factor Receptor (*EGFR*) mutations in lung cancer are important to NSCLC molecular carcinogenesis. Some studies even suggested that this old perception may have reduced the likelihood of ordering *EGFR* mutation testing for minority patients with cancer.

Fortunately, more recent and more rigorous studies have debunked that original perception.²

But biology aside, the notion that race or ethnicity may impede access to health care and consequently lead to worse patient outcomes in serious conditions such as lung cancer remains an important issue in research on racial/ethnic variations in health care. Differences in access to health care confound our ability to understand the independent effects of race/ethnicity on health care treatment and on patient outcomes. An increasingly common and useful strategy to minimize the statistical confounding of access to care in health equity research is to conduct studies in health care settings where access to care is less of an issue.

It is with that in mind that Brzezniak et al. report in this issue of JGIM the findings of a retrospective cohort study of patients with NSCLC who received care within Military Treatment Facilities (MTFs). The cohort consisted of 4751 military service members and their dependents. They were 18 years of age or older and were diagnosed with a first primary NSCLC sometime between January of 2003 and March of 2013. Military service members constituted 63 % of the cohort. About 31 % of the cohort was the spouses of these military service members. Most of the cohort were current users or had a history of tobacco use. Although predominantly white (72 %), the cohort was somewhat demographically diverse: 11 % AA, 9.9 % Asian/Pacific Islander, and 2.4 % Hispanic.

The MTFs are highly suitable settings for studying racial/ethnic variations in treatment outcomes, not only because they have a relatively diverse patient population, but also because they represent the closest we have in the US to full equality of access to health care for those patients who are already in the system. At MTFs, there are no barriers to physician visits, laboratory testing, radiology, medications, referral to specialists, or screening for common conditions. Moreover, patients of these facilities, who are military service members and their dependents, often undergo annual health assessments that are required for active duty service. Therefore, there is a greater opportunity to diagnosis deadly diseases such as lung cancer at an early stage.

In this cohort of patients with NSCLC who received their care at the MTFs, the investigators reported no differences in mortality risk between AA and Hispanic patients compared to white patients. In fact, compared to white patients, the investigators found that Asian/Pacific Islanders demonstrated a significant 20 % lower risk of death (HR=0.80; 95%CI=

0.66–0.96). They also found AA patients in their cohort to be younger at age of diagnosis and to have higher treatment rates compared to white patients. More patients in this cohort were diagnosed at an advanced stage of cancer (47 %). The mean age of the cohort was 65 years and included mostly men (66 %). The authors concluded that equality of access to health care afforded by the MTFs may mitigate racial variations in diagnosis of lung cancer and disease outcomes.⁷

Although this is a reasonable conclusion based on this retrospective database analysis, the authors also recognized a key limitation of their study, namely whether active military service members from racial/ethnic minorities are representative of the US population of racial/ethnic minorities in general. It is particularly important to note, given the data suggesting that among lung cancer patients nationally, only about 4 % are veterans who have served in the US Armed Forces.² It is also not clear whether race was self-identified in this particular analysis. Self-identification of race is considered the gold standard in health equity research. Self-identification of race in part addresses the potential problems with the use of racial categories in research and the ongoing scientific debate about the definition of race. It increasingly accepted that race as it relates to health equity is a social construct and one of several social determinants of health care access, treatment, and outcomes. Patient self-identification of race is also important because it potentially reflects cultural and psychosocial factors that shape patients' preferences regarding treatment choices and adherence. For example, Margolis et al. reported that minority patients, most specifically AA patients, hold unique beliefs about lung cancer that may interfere with treatment seeking or adherence.⁸

These limitations aside, the message of this well-articulated retrospective cohort study is an important one: that equalizing access to care may help in the national effort to improve quality of care for all patients irrespective of race/ethnicity, and to achieve equality of outcomes whenever feasible. With

the implementation of the Patient Protection and Affordable Care Act, also known as Obamacare, many more Americans, including racial/ethnic minorities, are anticipated to gain greater access to health care and to treatments for serious conditions such as lung cancer.

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