Addressing Disparities in Cancer Care and Incorporating Precision Medicine for Minority Populations

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WEBINAR 7:

Disparities in Lung Cancer

RESOURCE GUIDE

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Introduction to Disparities in Lung Cancer

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Lung cancer is the second most common cancer and the leading cause of cancer death among men and women in the US.[1] In 2022, an estimated 238,000 new cases will be diagnosed, resulting in nearly 130,000 deaths.[2] Although there has been a decline in lung cancer incidence and mortality across all races over the past 40 years, profound disparities related to race/ethnicity, gender, and socioeconomic status persist throughout the entire continuum of lung cancer care.[3-5] Stigmas associated with lung cancer often deepen the gaps.[6]

Screening with low-dose computed tomography (LDCT) has been shown to reduce lung cancer mortality by approximately 20% among current or former heavy smokers.[3,7] The increased risk of lung cancer, particularly among Black men despite fewer pack-years of smoking, has led to the suggestion that lung cancer screening recommendations need to be tailored for individuals in different racial and ethnic groups.[8]

Sources of Disparities

Several complex and interconnected factors contribute to inequities in the burden of lung cancer.

Incidence

- Black males are more likely to develop lung cancer compared with their White counterparts. The disparities in lung cancer incidence is greater for Black men living in southern states, including Arkansas, Mississippi, and Kentucky[3]
- Incidence of lung cancer continues to rise among never-smokers; this trend is due in part to poor housing conditions (eg, residential exposure to radon) and hormonal influences[9,10]

Screening

- Blacks and Hispanics are less likely to be screened compared with Whites (eg, 91% White patient population enrolled in the National Lung Screening Trial)[11]
- Although Black individuals have a higher risk of developing lung cancer with fewer pack-years of smoking compared with White individuals, they are less eligible for screening using the United States Preventive Services Task Force criteria[12]
- Common risk assessment tools to screen eligibility criteria fail to predict lung cancer in Black individuals[12]
- Despite deriving the most benefit, women are less likely to be included in clinical trials for lung cancer screening. Black individuals are also underrepresented in clinical trials[13]

Diagnosis

- Black males are more likely to be diagnosed with advanced metastatic stage IV disease compared with White males[3]

Sources of Disparities

Biomarker testing

Although used to identify targeted mutations and guide treatment decisions, there is a widespread underutilization of early molecular testing (eg, *EGFR, ALK, BRAF, KRAS*, etc)

- Higher biomarker testing rates correlate with higher income communities[14]
- Black patients are less likely to be referred for biomarker testing compared with White patients (14% vs 26%)[14]
- Testing rates are also lower among patients with Medicaid compared with those without (21% vs 28%), and among the poorest individuals compared with those with the highest income (20% vs 31%)[14]
- Blacks and Hispanics and Medicaid patients are less likely to receive *EGFR* testing[15] while individuals with above-average education and income are more likely to receive *EGFR* testing[16]
- Living in a metropolitan area increases the likelihood of receiving biomarker testing, including *EGFR*[16]
- Community hospitals located a far distance from a National Cancer Institute designated cancer center are less likely to offer *EGFR* testing[15]

Tumor Biology

- Hispanics have a higher rate of *EGFR*-mutated lung cancer compared with Whites.[17] However, minority populations are underrepresented in biobanks.[18] Lack of inclusion is an impediment to making progress into the understanding of differences in tumor biology among racial/ethnic groups and identification of predictive biomarkers to guide treatment decisions

Sources of Disparities

Treatment

- Black patients are less likely to receive gold standard surgery for early-stage lung cancer and more likely to get radiation therapy[19]
- Black patients have a worse 5-year overall survival compared with White patients which is in part due to the lower likelihood of receiving curative surgery (64% vs 77%, respectively)[20]
- Black patients are less likely to receive National Comprehensive Cancer Network guideline-concordant treatment[21]
- Although immunotherapy has substantially impacted the treatment paradigm for patients with lung cancer, Black patients are less likely to receive immunotherapeutic treatment[22,23]
  - Novel therapies such as immune checkpoint inhibitors are more likely to be administered to patients who are more educated.[23] Populations who lack insurance or have Medicaid receive immunotherapy less often[23]
  - Minority patients and those with low socioeconomic status often experience financial hardship and are more likely to refuse treatment for advanced lung cancer due to the high cost of immunotherapy[25]
- In the era of the COVID-19 pandemic, individuals residing in rural underserved areas are more likely to experience barriers to telemedicine, including limited access to internet and lack of access to or inexperience with technology compared with large metropolitan communities[24]

Mortality

- Lung cancer mortality rates are higher in Black men compared with White men (64% vs 54%, respectively) and the 5-year relative survival is lower in Black patients compared with White patients (61% vs 67%, respectively) regardless of gender[3,26]
- Lung cancer mortality rates vary greatly by geography: Black men living in southern states have a higher mortality rate compared with White men[3]
- Lung cancer mortality rates vary by education level: White men with 0-8 years of education have an approximately 9-fold higher risk for lung cancer mortality compared with those with 17 or more years of education.[27] Moreover, Black men are at increased risk of dying from lung cancer compared with White males regardless of their education level[27]

End of life care

- Significant racial/ethnic disparities exist at the end of life. Hispanic patients are less likely to be referred to palliative care or enrolled in hospice[28,29]

Effects of COVID-19

COVID-19 has profoundly disrupted the spectrum of lung cancer care by delaying screening, diagnosis, and treatment, and halting clinical trials. For example, LDCT screening suspension due to the pandemic at one institution in March 2020 was associated with a significant rise in malignancy rates when operations resumed.[30]

Addressing Disparities

A few recommendations to reduce lung cancer racial/ethnic disparities are listed below.

- Acknowledge the existence of persisting disparities throughout the lung cancer care continuum and develop educational resources/tools/materials for patients and providers to raise awareness of those disparities
- Explore initiatives to implement and disseminate lung cancer screening in underserved vulnerable populations
- Encourage participation in screening and provide tailored patient education reinforcing the importance of early detection of lung cancer
- Community engagement strategies and specialization/centralization of care will help improve access to high quality care
- Identify and address potential barriers to population use of a centralized screening program
- Redesign clinical trials to address underrepresentation of women and minority populations
- Implement recovery strategies to mitigate COVID-19 care disruptions to lung cancer screening
- Explore avenues to increase access to and ensure coverage of biomarker testing
- Develop strategies to increase participation of minorities in biobanks
- Building diverse culturally competent teams is essential to function effectively in the context of racial/ethnic differences and progress toward equitable unbiased high-quality care in lung cancer

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