Precision Medicine Testing and Disparities in Health Care for Individuals With Non-Small Cell Lung Cancer: A Narrative Review

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PROBLEM IDENTIFICATION: Precision medicine initiatives provide opportunities for optimal targeted therapy in individuals with non-small cell lung cancer. However, there are barriers to these initiatives that reflect social determinants of health.

LITERATURE SEARCH: MEDLINE®, CINAHL®, PsycINFO®, Embase®, and Google Scholar™ databases were searched for articles published in English in the United States from 2016 to 2020.

DATA EVALUATION: Data that were collected included individual demographic information, specific diagnosis, status of targeted genomic testing, and receipt of targeted therapy. All studies were retrospective and involved database review of insurance claims or medical records.

SYNTHESIS: Individuals with non-small cell lung cancer received less genetic testing and targeted therapy if they were of a lower socioeconomic status, had public health insurance or no health insurance, were Black, or lived in rural communities.

IMPLICATIONS FOR NURSING: Social determinants of health affect health equity, including in precision medicine initiatives for individuals with lung cancer. Gaining an understanding of this impact is the first step in mitigating inequities.

KEYWORDS precision medicine; lung cancer; genomic testing; health disparities
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Individuals who have a diagnosis of lung cancer with actionable genetic subtypes are poised to greatly benefit from advances in precision medicine. Lung cancer is consistently the cause of more than 100,000 deaths per year in the United States and is the number one cause of death among all cancer types (Krist et al., 2021). In 2003, the human genome was sequenced after a massive global effort (Connors & Schorn, 2018), and researchers began to understand the mechanisms that cause cancer to grow (Krzyszczyk et al., 2018). Ultimately, this led to the development of precision medicine and pharmacogenetics techniques, allowing healthcare providers to treat some cancers in a very specific way, including some cases of lung cancer. Advances in this realm have led to the development of drugs that can specifically target the action of the mutated proteins to inhibit tumor growth. Pharmaceutical companies have pushed the availability of these targeted therapies into the market (Knutsen, 2016).

Eighty-five percent of lung cancer cases are characterized histologically as non-small cell lung cancer (NSCLC). In 57% of cases, lung cancer is diagnosed after it has metastasized, and the five-year survival rate for these individuals is less than 6% (Goebel et al., 2019). In the past decade, individuals with NSCLC have been shown to carry an identifiable genetic variant in their tumor cells in more than 53% of cases. Providers use genetic findings to determine eligibility for individuals with lung cancer for targeted therapy, which has been shown to prolong survival and is often considered a first-line treatment (Rajurkar et al., 2020). Targeted therapies are not only associated with longer survival, but also fewer side effects than traditional forms of cancer treatment, such as chemotherapy and radiation therapy (Ginsburg &