Advanced Practitioner
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APSHO AP Academy

Healthcare Disparities in Lung Cancer

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Disclosures

- Kristen O'Hagan has no relevant financial relationships to disclose
- Lisania Milli has no relevant financial relationships to disclose

Learning Objectives

- Articulate the impact of lung cancer health disparity in various populations
- Identify the disparities in lung cancer in screening, diagnosis, and treatment
- Describe the advanced practitioner role in lung cancer screening and the impact on racial and ethnic survival disparities

Outline

- Overall incidence
- Outcomes by race
- Disparities
- Current and future direction
- Role of the AP

Lung Cancer Facts and Incidence

- Leading cancer killer in men and women in the United States – accounts for 1 in 5 cancer deaths
- Third most common cancer diagnosis in the United States in 2023, behind breast and prostate cancer
- Represents approximately 13% of all cancer diagnoses in the United States
- Overall incidence and mortality has been decreasing
- Survival rates are higher in women (differences in subtype, genetic mutations)

Siegel RL, et al. *CA Cancer J Clin.* 2023;73:17-48; Dwyer LL, et al. *J Racial Ethn Health Disparities*. Published online May 19, 2023.

Outcomes by Race

- Incidence highest in black men
- Mortality highest among both Black men and American Indian and Alaska Native individuals
- Black individuals are diagnosed at younger age and with more advanced stage disease
- Asian American and Pacific Islander and Hispanic individuals' incidence is lower than other groups – historically due to lower smoking prevalence

American Cancer Society website. Cancer Facts & Figures 2023. Special Section: Lung Cancer.

Variables Linked to Disparities

- Risk factors
- Screening
- Genetic testing and mutation rates
- Treatment
- Clinical trials

Dwyer LL, et al. *J Racial Ethn Health Disparities.* Published online May 19, 2023.

Lung Cancer Risk Factors

- Smoking
- Environment
  - Radon
  - Asbestos
  - Other chemicals (uranium, arsenic, beryllium, etc)
  - Air pollution
- Socioeconomic status
- Personal/family history

Smoking

- More men smoke than women
- American Indian and Alaskan Natives have the highest smoking rates
- Asian Americans and non-Hispanic Americans have lowest smoking rates
- Socioeconomic and educational status are linked to smoking prevalence
  - In 2021, with regards to cigarette smoking, 3% of people with a graduate degree report smoking vs 31% of people with a GED

Siahpush M, et al. *J Public Health (Oxf).* 2010;32:210-218; American Cancer Society website. Cancer Facts & Figures 2023. Special Section: Lung Cancer.

E-Cigarettes/Vaping

- Battery operated devices that heat a liquid containing nicotine, among other substances, producing an aerosol that the user inhales
- Do e-cigarettes cause cancer?
  - Limited data due to the newness of e-cigarettes, estimating a lag time in data similar to cigarette smoking (20 years)
  - In vitro data demonstrates cytotoxic activity of the chemicals inhaled: nicotine and the by products (hydrocarbons, heavy metals, aldehydes)

American Cancer Society website. Cancer Facts & Figures 2023. Special Section: Lung Cancer.

Smoking Cessation Disparities

- Black individuals are less likely to:
  - Receive smoking cessation from a provider than White individuals
  - Use prescription medications to assist quitting, compared to White individuals

Bailey SR, et al. *Am J Public Health*. 2018;108:1082-1090.

Socioeconomic Status (SES)

- People with lower SES:
  - Are at greater risk of lung cancer
  - Are more likely to be diagnosed with advanced disease
  - Lack access to high-quality care
- SES disparity reflects differences in smoking preferences

Gupta A, et al. *Cancer.* 2022;128:3099-3108; American Cancer Society website. Cancer Facts & Figures 2023. Special Section: Lung Cancer.

Environment

- Radon exposure – second leading cause of lung cancer in the United States
- Asbestos
- Air pollution increased in urban and industrial areas

Lung Cancer Screening: Background

- The National Lung Screening Trial (NLST) in the United States and the NELSON trial in Europe both demonstrated benefits and reduction of lung cancer deaths with low-dose CT scan
- However, neither trial had significant racial or socioeconomic diversity among its participants

Sosa E, et al. *CA Cancer J Clin*. 2021;71:299-314.

Lung Cancer Screening

- Early detection, by low-dose CT screening, can decrease lung cancer mortality by 14% to 20% among high-risk populations
- Smoking is most important risk factor for lung cancer
- Screening guidelines from US Preventative Services Task Force (USPSTF) were revised in 2021
  - Age range expanded from 50-80 years and reduced from 30 to 20 pack years to capture more at-risk people
- USPSTF updated Lung Cancer Screening guidelines recommend annual screenings for adults age 50–80 who are:
  - Current smokers with a 20 pack-year smoking history OR
  - Former heavy smokers who have quit within the past 15 years

Aberle DR, et al. *N Eng J Med*. 2011;365:395-409; Sosa E, et al. *CA Cancer J Clin*. 2021;71:299-314.

Disparities in Screening

- The greatest disparity in lung cancer screening is **race**
- Black patients have a lower chance of receiving a screening with low-dose CT scan compared to White patients
- White patients had statistically higher rates of follow-up after positive screening tests compared with Black patients

Lake M, et al. *BMC Cancer.* 2020;20:561; Sesti J, et al. *Semin Thorac Cardiovasc Surg.* 2020;32:1058-1063; Morgan RL, et al. *J Natl Cancer Inst.* 2020;112:1204-1212; Haddad DN, et al. *Ann Am Thorac Soc.* 2020;17:399-405.

Screening: Disparities From Start to End

- **Eligibility**
  - Black smokers are less likely to meet eligibility requirements for screening than White smokers
  - Increased income associated with increased screening
- **Utilization**
  - Of lung cancer screening eligible patients, there were race-based differences in utilization
  - Eligible Black individuals are less likely to participate than White individuals
- **Post-Screening**
  - Smoking cessation is not predicted by race/ethnicity
  - Black patients are less likely to receive guideline-concordant care (GCC) after diagnosis

Young K. USPSTF Recommendations Expand Lung Cancer Screening. NEJM Journal Watch; Sosa E, et al. *CA Cancer J Clin*. 2021;71:299-314; Navuluri N, et al. *JAMA Netw Open*. 2023;6:e2318795.

Disparities in Lung Cancer Treatment

- Surgery
- Radiation
- Immunotherapy
- Chemotherapy

Disparities in Treatment: GCC

- Adherence to GCC is lower in older patients and in non-Hispanic Black patients, highest in Non-Hispanic Asians[1]
- Black men had 20% lower surgery rates; White women and Black Women underwent surgery at rates comparable to White men[2]
- Lower use of immunotherapy treatment in Black patients and those who have public insurance[3]

1. Blom EF, et al. *Ann Am Thorac Soc*. 2020;17:186-194; 2. Balekian AA, et al. *Chest.* 2019;155:44-52; 3. Verma V, et al. *J Immunother.* 2019;42:55-64.

GCC for Lung Cancer: Who's Not Getting It?

- Elderly patients
- Non-Hispanic Black patients less likely to receive GCC
- Hispanic patients less likely to receive GCC but are more likely than Black patients to have surgery

Blom EF, et al. *Ann Am Thorac Soc*. 2020;17:186-194.

Genomic Testing/Mutations

- Molecular genetic variants in non–small cell lung cancer determine eligibility for targeted therapies
- Targeted therapies are associated with improved survival and considered first-line treatment
- Testing for molecular genetic variants is not being done equally for all patients

Curtin M, et al. *Oncol Nurs Forum.* 2022;49:257-272.

Targeted Therapy in Lung Cancer

- NCCN (Category 1) guideline that molecular testing be done for Lung cancer
- Clinical use of targeted kinase drugs has yet to improve survival in populations who are candidates for these drugs
- Immunotherapy is a standard component of first-line treatment

Disparities in Genetic Testing/Mutations

- Hospitals in higher income areas are more likely to order genetic testing[1]
- Genomic testing is more likely to occur in men and White patients than in women and non-White patients[1,2]
- Black individuals receive lower rates of genetic testing[1,2]
- Disparities in molecular testing translate into poorer outcomes due to underutilization of targeted therapies that improve survival[3]
- Disparities in molecular testing also equate to disparities in clinical trial participation; those with molecular testing were more likely to participate in a clinical trial[1]

1. Bruno DS, et al. *J Clin Oncol.* 2021;39 (suppl 15; abstr 9005); 2. Yoon B, et al. *J Clin Oncol.* 2021;39 (suppl 28; abstr 113); 3. Harrison S, et al. *Curr Oncol Rep*. 2022;24:241-248.

Genetic Mutational Differences

- *EGFR* mutation is the most common mutation in Black patients but occurs less than it does among White or Asian patients
- Black patients appear to have less targetable genetic mutations when tested, which means disproportional decreased eligibility for present targeted therapies
- Call for studies to evaluate biological and genetic differences between all populations

Bruno DS, et al. *J Clin Oncol.* 2021;39 (suppl 15; abstr 9005); Yoon B, et al. *J Clin Oncol.* 2021;39 (suppl 28; abstr 113); Palazzo LL, et al. *Cancer Epidemiol Biomarkers Prev.* 2019;28:926-934; Costa PA, et al. *JCO Oncol Pract.* 2021;17:e629-e636.

Disparities in Surgery

- Poor, rural, and underinsured patients with lung cancer experience significant treatment-based disparities
- Robotic lobectomy access disparities exist for patients with lung cancer based on neighborhood-level income, rural location, and insurance
- Patients with lung cancer who are uninsured and who have Medicaid have lower odds of receiving curative operations
- Black patients had higher rates of robotic lobectomies vs open and Hispanic patients had higher rates of robotic lobectomies vs open or video-assisted thoracoscopic surgery lobectomies, indicating there is no racial disparity in robotic lung cancer resection

Erhunmwunsee L, et al. *VATS, Video-assist Thorac Surg.* 2020;5.

Disparities in Clinical Trials for Lung Cancer

- Global problem – not just in lung cancer
- Black patients make up 5% of cancer clinical trial enrollment when compared to 13% of the population[1]
- There is conflicting data as to whether Black patients have inferior treatment response or more severe toxicity after platinum-based chemo, due to underrepresentation in studies[2]
- We're just beginning to understand that the frequency of mutations differs among racial groups

1. US Food and Drug Administration website. 2019 Drug Trials Snapshots Summary Report; 2. Harrison S, et al. *Curr Oncol Rep*. 2022;24:241-248.

Future

- Call to action for new and better strategies and plans that ensure equal representation of patients
- Engage all patients earlier in screening and smoking cessation; new guidelines for screening help to do this, as well as electronic medical record (EMR) that prompts screening
- Policy changes to ensure molecular testing should apply to all with appropriate diagnoses
- Ensure equal representation in research at all levels
- Research needs to be focused on the Black population to evaluate specific tumor characteristics, molecular genetic makeup, and response to therapy

Examples of Efforts to Decrease Disparities in Lung Cancer

- Multipronged approaches including real-time warning from EMR, nurse navigators, and feedback to team on completion rates for Black and White patients
- Rapid outpatient diagnostic programs

Example of Rapid Outpatient Diagnostic Program

- Academic health system in Ohio
- Captures patients from point of referral from primary care
- Expedites appointments based on a pulmonologist review of the referral within 24 hours
  - Review included referral for additional testing and expedited appointments
- RN coordinator empowered to connect with patients, guide, assure, and schedule
- Review of the data with interrupted time series analysis after 2 years, racial disparities in completed referrals were no longer evident, and timely evaluation by pulmonologist and full testing were accomplished for all patients

Kourouni I, et al. *Clin Lung Cancer.* 2023;24:339-346.

What Can APs do?

- Learn about disparities and acknowledge they exist
- Address our own biases – look inward first
- Advocate for lung cancer screening—in communities that need it—telehealth for shared decision making, and smoking cessation
- Work on building diversity into trials and building trust with our patients

Summary of Key Points

- Lung cancer is the leading cancer killer among both men and women
- Incidence is highest among Black men
- Disparities exist in screening, genetic/molecular testing, and in treatment
- Innovation, education, research, and collaboration are needed to overcome disparities

Thank you!

You may now proceed to the post-test questions

Pre-Post questions #1

What race, ethnicity, and sex have the highest lung cancer mortality?

A. Non-Hispanic White men
B. Non-Hispanic Asian men
C. Non-Hispanic Black men
D. Hispanic females

Pre/Post Test Question #2

Which of the following statements about molecular testing of lung cancer is **false**?

A. Asian American and Pacific Islander descent is associated with the highest molecular testing rates

B. Black individuals undergo genetic testing at higher rates than White individuals

C. Black individuals as a broad group are found to have the most actionable genetic mutations in non–small cell lung cancer

D. Individuals with private insurance and who live in an urban/metropolitan area are more likely to receive molecular testing

Pre/Post Test Question # 3

True or false? Advanced practitioners should only recommend lung cancer screening for eligible patients who inquire about low-dose CT scans.

True

False