

The webinar ***Pursuing Health Equity in Lung Cancer Screening: The What and the What Next*** aired on October 20, 2021. The webinar described disparities in the lung cancer burden in the United States, the status of lung cancer screening implementation, and the barriers to lung cancer screening for racial and ethnic minorities. The webinar also described some potential solutions.

This document summarizes key takeaways and resources from the webinar at the following link: <https://youtu.be/DQI9vLAu-kE>.

The *American Cancer Society* **Comprehensive Cancer Control (ACS CCC)** team hosted the webinar. The ACS CCC team seeks to build the capacity of grant recipients in the *Centers for Disease Control and Prevention* **National Comprehensive Cancer Control Program** to implement policy, systems, and environmental change approaches and evidence-based promising practices in cancer prevention, screening, diagnostic follow-up, and survivorship.

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Pursuing Health Equity in Lung Cancer Screening: The What and What Next

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The goals of the webinar were to:

- Describe the disparities in the lung cancer burden and outcomes in the United States
- Describe lung cancer screening implementation in the United States
- Characterize barriers to lung cancer screening and their impact on racial and ethnic minorities
- Propose some potential solutions to the issues

Disparities in the Lung Cancer Burden and Outcomes

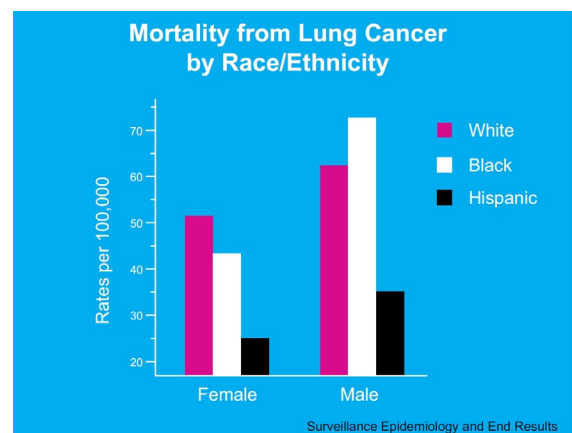
Mortality Trends. Minorities in the US suffer a greater burden of lung cancer than non-minority groups; this is especially true for Black males.

For example, the percentage gap in lung cancer mortality rate for Black versus White males from 1975-2016 began at about 20% higher for Blacks in 1975, peaked at worst about 45%-50% higher in 1990, and improved again to about 16% higher in 2016.

The corresponding percentage gap in mortality rates for women has been approximately zero for 1975-2005, with a slightly lower percentage gap (-1%) for Black women in 2016 (ACS Surveillance Research, 2019).

Lung cancer mortality rates per 100,000 for Hispanic males also decreased significantly from 44 in 1990 to 25 in 2016, and rates for Hispanic women have decreased a small amount from 16 in 1990 to 13 in 2016 (ACS Surveillance Research, 2019).

Despite the improvements in mortality rates, lung cancer was still the #1 cancer killer for both Black males and females and was the #1 cancer killer for Hispanic males and #2 cancer killer (after breast cancer) according to the 2019 ACS Surveillance Research data.



Incidence and Behaviors. About 85% of lung cancer deaths in the United States are related to smoking. The higher rates of smoking behaviors in Black males result in higher incidence rates and higher mortality rates.

Fortunately, the US trends in the prevalence of cigarette smoking among adults and high school students have decreased steadily during the period 1965-2016.

Equitable LDCT Screening Implementation Is Critical for Addressing Disparities in Lung Cancer Outcomes

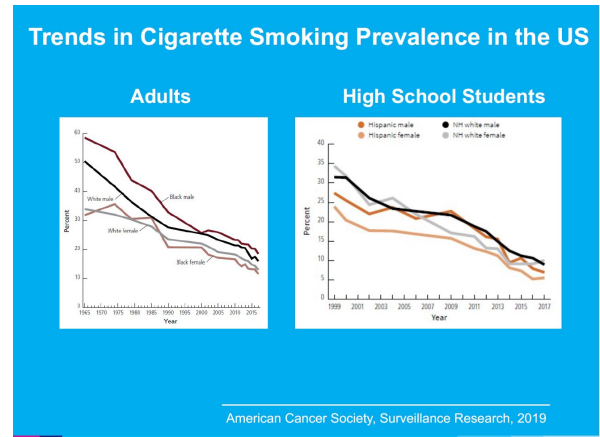
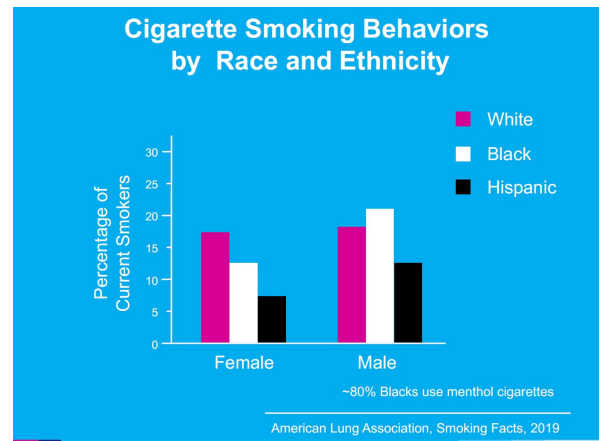
Several trials beginning in the 2000s showed that low-dose computed tomography (LDCT) screening significantly decreased lung cancer mortality, so it is a primary intervention for reducing mortality.

Lung Cancer Screening in the 1990s

In the 1980s, several randomized trials investigated the potential of chest x-rays to detect lung cancer but found no significant early-detection mortality benefits from chest x-rays or sputum cytology in asymptomatic people who smoked compared to observation. Thus, the United States Preventive Services Task Force ([USPSTF](#)) guidelines at the time were that “Routine screening of asymptomatic persons for lung cancer with chest radiograph or sputum cytology is not recommended. All patients should be counseled against smoking.”

Low Dose Computed Tomography (LDCT) Screening

The ELCAP Project. The 1993-1999 Early Lung Cancer Action Project (ELCAP) was designed to evaluate baseline and annual repeat screening by low radiation dose computed tomography (low-dose CT) in 1000 asymptomatic persons at high risk for lung cancer. The study results showed that non-calcified nodules were detected three times more (23% vs. 7%) with LDCT versus chest x-ray,



malignancies four times more (2.7% vs. 0.7%), and Stage 1 malignancies six times more (2.3% vs. 0.5%) (Henschke, 2000).

The ELCAP project was a landmark turning point in lung cancer detection because it showed the potential value of LDCT screening for the detection of early-stage cancers. Approximately 85% (23 of 27) of cancer instances were successfully diagnosed at Stage 1, and all cancers were detected before reaching Stage 4.

In contrast, only 13% (13 of 100) of cancer instances were detected at Stage 1 by usual care methods at the time, and 47% of cancers were not detected until they had developed into Stage 4 cancers.

Ten years later, data from both the large-scale National Lung Screening Trial (NLST) in the United States (50K+ smokers) and the Dutch-Belgian NELSON trial (Nederlands-Leuvens Longkanker Screenings Onderzoek) in Europe (16K smokers) confirmed the efficacy of LDCT screening for detecting early-stage lung cancers and reducing mortality by about 25%.

After the NLST and NELSON trials, the USPSTF made recommendations for LDCT screening in 2013. However, since that time, national uptake among eligible individuals has been slow and low (3% in 2013, 4% in 2015, 17% in 2018) and varies considerably among states (8% in Maine, 17% national average, 24% in Texas). Disparities also exist among racial/ethnic groups (Blacks 37.6%, Whites 46%; Steiling, 2020; and Blacks 32.3%, Whites 67.7% in a community sample; Carter-Harris, 2018).

Moreover, the data also show disparities in the adherence rates for annual screenings in the *process* of lung cancer monitoring by LDCT screening. For example, one study showed that the odds ratio of Whites versus non-Whites adhering to annual screening was 2.0. This ratio shows that non-Whites are less likely to adhere to annual screenings and are therefore less likely to receive the full reduced mortality benefit of the LDCT screening process (Lopez-Olivo, 2020).

Lung Cancer Screening with LDCT: ELCAP Results from Baseline Round

Stage	Screen-detected	Usual Care
	Total (%)	%
IA	22 (82)	13
IB	1 (4)	9
IIA	1 (4)	5
IIB	0 (0)	5
IIIA	2 (8)	12
IIIB	1 (4)	6
IV	0 (0)	47
Total	27 (100)	100

Henschke et al. Early Lung Cancer Action Program: Overall findings from baseline screening. Lancet, 1999.

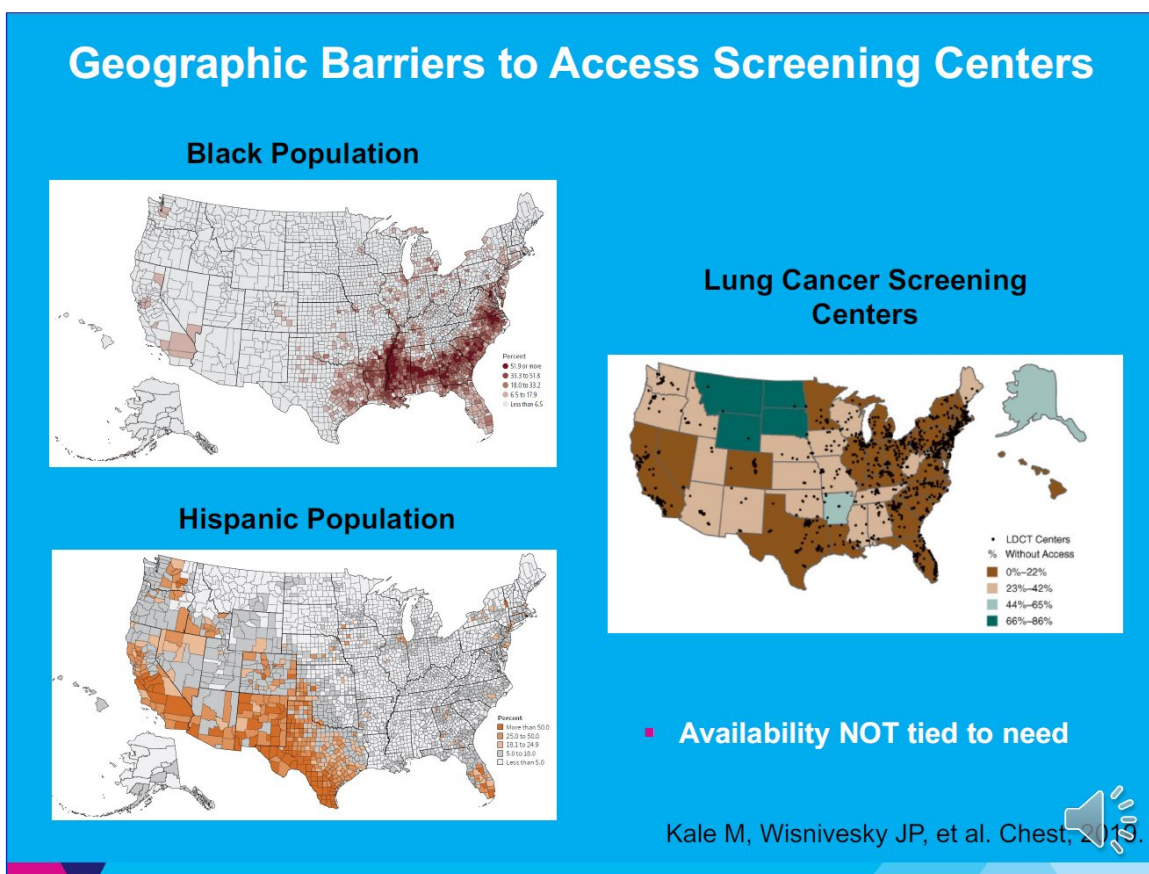
Determinants of Lung Cancer Screening Uptake: Impact on Disparities

Disparities in the uptake of LDCT lung cancer screening services are caused by many factors. This section describes some system, provider, and patient-level factors.

System-Level Factors

Geographic Access to Screening. In the Lung Cancer Screening Centers map on the right, the dark green color shows areas where 66%-86% of people have limited access to a lung cancer screening center. In light green areas (Arkansas), 45-65% of people have limited access. In light brown areas, 23%-42% of people have limited access to an LDCT screening center.

In addition, some light brown areas (reduced access to LDCT centers) overlap with racial/ethnic populations that could benefit from access. For example, there are large Hispanic populations in Arizona/New Mexico and large Black populations in Mississippi/Alabama, which are both light brown areas on the screening center access map.



Provider-Level Factors

The following provider-level factors influence the uptake of LDCT screening services.

Knowledge and Performance Measures

- In one study, only 54% of primary care providers were familiar with the USPSTF recommendations for lung cancer screening (46% were not), and about 90% of providers worried about follow-up procedures (Rajupet, Wisnivesky, Lin, et al., 2017).
- The Consensus Medicare Primary Care Core Measures do not include LDCT screening, so providers do not receive feedback about their performance regarding life-saving screening.

PCP Familiarity with USPSTF Cancer Screening Recommendations

Type of Cancer	Not Familiar/A little Familiar (%)	Familiar/Very Familiar (%)
Breast cancer	1	99
Cervical cancer	7	93
Colon cancer	1	99
Lung cancer	46	54

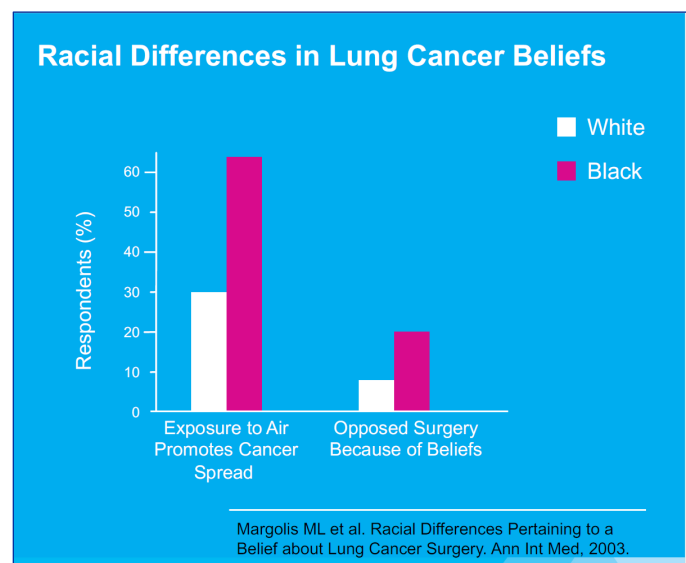
Rajupet S, Wisnivesky JP, Lin JJ, et al. Attitudes about lung cancer screening. Clin Lung Ca 2017.

Shared Decision-Making

- The current Centers for Medicare & Medicaid (CMS) guidelines require a shared decision-making session with a decision aid for lung cancer screening but not for other types of screening. This unique requirement can be a barrier; Blacks and Hispanics were 24%-26% less likely to complete the shared decision-making session.
- The shared decision-making aid is complex and not appropriate for individuals who have limited health literacy; thus, the aid itself is another barrier for minorities.

Patient-Level Factors

A variety of cultural factors and lung cancer beliefs contribute to disparities in lung cancer diagnoses and treatments. Mistrust, surgical beliefs, and fatalism are prominent factors.



The following table on *Racial and Ethnic Differences in Attitudes Regarding Lung Cancer Screening* shows 16 attitudes and beliefs that vary significantly among Black, White, and Hispanic populations. The beliefs are important because they create barriers to health equity around lung cancer.

Racial and Ethnic Differences in Attitudes Regarding Lung Cancer Screening

Beliefs/Attitudes (%)	Race/Ethnicity			P-value	Beliefs/ Attitudes	Race/Ethnicity			P-value
	W	B	H			W	B	H	
LC is puzzling to me	21	39	50	0.04	Just accept LC	27	24	44	0.15
Cigarettes cause LC	94	92	77	0.05	Better not know about LC	7	10	12	0.76
Microwave ovens cause LC	16	46	52	0.01	Worry about LC	55	46	50	0.31
If get LC, will die	74	50	53	0.10	CT radiation causes LC	18	47	55	0.01
LC will cause family difficulties	91	82	61	0.01	Afraid CT will find LC	36	18	44	0.04
LC spreads quickly, CT can't help	32	66	66	0.03	Less worry if negative CT	70	50	62	0.22
Good will help with LC	33	87	82	<0.01	CTs are painful	3	16	18	0.14
If get LC it was meant to be	16	35	47	0.03	CT scares me	13	32	47	0.01

Jonnalagadda S, Wisnivesky J, et al. Lung Cancer , 2012



Treatment of Lung Cancer

Lung cancer screening must be tied to effective treatment because early detection can only improve survival if early cancers are effectively treated. However, the data show significant disparities in the treatment of minority populations.

- Lower rates of surgery among Blacks explain survival disparities, and Hispanics have a lower survival rate from Stage I lung cancers.

- There has been little progress in reducing disparities in the treatment of early-stage NSCLC among minority populations; the national odds-ratio data for 1992-1999 is almost identical to data for 2000-2009, 20 years later. Blacks are less likely than Whites to receive treatment, less likely to receive surgery (which is more effective), and more likely to receive only radiation or chemotherapy (both of which are less effective).
- The rates of surgical resection in patients with Stage 1 NSCLC in the NLST trial were 93% for White males and females but only 65% for Black men and 90% for Black women.
- The rates of surgical resection in clinical practice in White versus Black patients with early-stage lung cancer also show disparities. For example, Blacks were 30% less likely than Whites to receive surgery even after meeting with a thoracic surgeon (odds ratio: 0.70, 95% CI: 0.55-0.90).

Strategies to Reduce Lung Cancer Screening Disparities

The following overall strategies can help to reduce lung cancer screening treatment disparities.

Increase Eligibility. The new 2021 USPSTF Lung Cancer Screening Recommendations have increased the eligibility of minorities by 97.1% (and by 78.3% for Whites).

Increase Access to Services. Patient navigators can help patients with lung cancer screening and navigating community health center services. Navigators can help with shared decision-making, scheduling appointments, and overcoming LDCT barriers. In addition, mobile LDCT screening units can help to increase uptake among underserved populations.

Increase System Support for Treatment of Early-Stage Lung Cancer. System-based interventions can include real-time warning systems that can provide patient navigators and clinical teams with vital information that can help them to better support lung cancer patients.

Overall Strategies

- Address existing multilevel barriers to lung cancer screening (LCS) using a multipronged approach.
- Propose quality metrics to evaluate equity in LCS dissemination and implementation.

Strategies to ensure equity by screening individuals with equal risk

- Generate evidence on the benefits and risks of LCS in diverse populations.
- Consider an approach to LCS eligibility assessment that includes both USPSTF guidelines and risk and/or gain-based assessment for high-risk, high-benefit individuals.

Strategies to improve tobacco treatment

- Provide access to tobacco treatment programs and develop programs that address differences in cultural beliefs, language, and literacy.

Strategies to address healthcare system-level barriers

- Integrate patient navigators within lung cancer screening programs to increase uptake and adherence among vulnerable populations.

Strategies to address provider-level barriers

- Commit resources to provider-level support and education to increase awareness and uptake of lung cancer screening.
- Offer provider-level training on communication techniques to build and improve patient trust.

Strategies to address patient-level barriers

- Develop shared decision-making tools that are culturally sensitive and understandable by those with lower literacy and numeracy and those with severe mental illness.
- Launch culturally adapted lung cancer screening marketing and outreach campaigns to reach vulnerable populations.

Strategies to reduce geographic barriers

- Determine the feasibility of mobile lung cancer screening units to reach populations with geographic barriers.
- Consider telehealth as a pragmatic approach to provide access to lung cancer screening services for rural populations.

Propose policies to improve lung cancer screening access

- Mandate expansion of Medicaid coverage for lung cancer screening.
- Propose federal mandates like the 1990 Breast and Cervical Cancer Mortality Prevention Act and the Mammography Quality Standards Act to ensure that all high-risk adults have access to high-quality lung cancer screening for the detection of lung cancer in its earlier, most treatable stages.

Engage advocacy groups and organizations

- Advocacy groups and organizations should leverage their resources to promote strategic planning, research funding, and advocacy to ensure equitable access to high-quality lung cancer screening in all populations.

Conclusions

The webinar ended with the following conclusions:

- Minorities face worse lung cancer outcomes.
- LDCT screening is effective at reducing lung cancer mortality, and equitable adoption may decrease racial and ethnic disparities in care.
- Minorities face numerous barriers to screening at the system, provider, and patient levels.
- Multisystem strategies are needed to improve screening adoption among minorities.

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