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PRE-EMPTING RACIAL INEQUITIES IN LUNG CANCER SCREENING

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Lung cancer is the leading cause of cancer death in the U.S., and Black patients experience higher lung cancer incidence and mortality than White patients.[1] Lung cancer screening facilitates diagnoses at earlier, more treatable stages. In 2011, low-dose computed tomography (LDCT) showed a relative reduction in lung cancer-specific mortality by 20% in the National Lung Screening Trial (NLST), a multisite randomized controlled trial comparing LDCT and chest radiography for lung cancer screening (N=53,454).[2] NLST results indicated that LDCT reduces lung cancer mortality in all racial groups, but a stronger effect was observed among Black patients.[3] Therefore, LDCT has potential to mitigate racial disparities in lung cancer mortality. However, this potential can only be achieved with equitable LDCT utilization.

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Based on NLST findings and advocacy from professional bodies, the U.S. Preventive Services Task Force (USPSTF) recommends LDCT for individuals between the ages of 55 and 80 with at least a 30 pack-year history of smoking, and who are current smokers or have quit smoking within the past 15 years.[4] In 2015, the Centers for Medicare and Medicaid Services (CMS) announced that it would include LDCT as a covered benefit for asymptomatic high-risk Medicare beneficiaries between the ages of 55 and 77 years.[5] Stipulations included requiring that patients participate in LDCT counseling consisting of shared decision making to discuss screening benefits and risks, follow-up diagnostic processes, and false positive rates. CMS also requires smoking cessation counseling for eligible beneficiaries who currently smoke.[5] Former smokers must receive information about maintaining smoking abstinence. Furthermore, CMS requires that all LDCT-screened patients be enrolled in a Lung Cancer Screening Registry (LCSR), which is led by the American College of Radiology (ACR).[5,6] Currently, more than 1,800 facilities throughout the U.S. participate in the LCSR.[7] Participating facilities receive quarterly LCSR quality reports about their performance compared to peer facilities (e.g., the percentage of LDCT exams performed that were appropriate according to USPSTF guidelines).[6]

Given longstanding cancer screening disparities,[8] it is important to monitor and address potential racial and ethnic disparities in LDCT utilization. However, several systematic factors limit researchers' ability to do so. These factors are discussed below along with recommendations for pre-empting racial inequities in LDCT (detailed in Table 1).

RECOMMENDATIONS

Include race/ethnicity as a required LCSR variable. Currently, information about patient race/ethnicity is optional in the LCSR.[5,6] Without race/ethnicity information for all LDCT-screened patients, it is difficult to track racial disparities in LDCT utilization. Including race/ethnicity in the LCSR can help organizations monitor LDCT disparities, especially if future LCSR quality reports use this data to show participating facilities the racial/ethnic breakdown of patients screened in their organization. In the absence of race/ethnicity data in the LCSR, researchers can investigate opportunities to monitor LDCT disparities using other population-level datasets, such as the National Health Interview Survey and/or the Behavioral Risk Factor Surveillance System—though lung cancer screening data may not be required or regularly collected in such population-level datasets.

Uniformly collect patient pack-year smoking history. Often, data on patient pack-year smoking history are not routinely collected in electronic health records (EHRs), which prevents clinicians and researchers from reliably assessing LDCT utilization disparities among eligible patients.[9,10] Accordingly, information on patient pack-year smoking history should be routinely assessed during clinic visits and documented in the EHR. Future efforts are needed to help healthcare organizations implement standardized and efficient processes for collecting pack-year smoking histories.

Fund additional research to ensure that LDCT eligibility criteria equitably identify high-risk patients. Evidence suggests that Black patients (especially men) have higher lung cancer rates than White patients despite their lower mean pack-year tobacco exposure.[11,12] As

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LDCT eligibility criteria apply broadly to patients of all races/ethnicities and rely heavily on pack-year smoking history, these criteria may exclude Black patients who have smoked for fewer than 30 pack-years but remain at considerable lung cancer risk. Furthermore, interest is growing in lung cancer risk prediction models that may better identify at-risk patients than current LDCT eligibility criteria.[13,14] These models often use variables not currently included in LDCT eligibility criteria (e.g., race/ethnicity, body mass index, and personal history of cancer) to predict lung cancer risk. Future research is needed to confirm whether existing LDCT eligibility criteria equitably identify high-risk patients and to inform decisions about whether these criteria should be revised (e.g., to rely on risk prediction models or on revised smoking history requirements). Such research should also inform CMS and ACR decisions about whether additional variables that help predict lung cancer risk should be collected in the LCSR. This research can also inform healthcare organizations' decisions about whether to encourage use of a specific risk prediction model. Importantly, organizations should uniformly collect all data required to calculate risk using any models chosen.

Incorporate Best Practice Advisory alerts into EHRs to prompt providers to assess patient eligibility. Best Practice Advisories can be used in EHRs to remind physicians to discuss screening with eligible patients for various cancer types.[15] A similar reminder could help providers target LDCT-eligible patients. Even when pack-year smoking history is not available in EHRs, reminders can help prompt providers to discuss smoking history and screening eligibility with age-appropriate patients.

Enhance outreach to referring providers. Prior evidence suggests that some primary care providers are unaware of lung cancer screening guidelines, which may preclude providers from recommending LDCT to eligible patients.[16,17] Organizations should consider providing lung cancer screening education to primary care providers, pulmonologists, cardiologists, and other specialists who frequently treat patients who may be LDCT-eligible. Furthermore, some physicians may not recommend LDCT due to concerns about potential harms (e.g., from the procedure's high false positive rate).[16,17] Indeed, these are important concerns that organizations should consider when conducting physician outreach (e.g., organizations may sponsor trainings about clearly communicating with patients about the benefits, risks, and costs of LDCT during the shared decision making process). Targeting providers who serve sizable Black populations may be particularly impactful in increasing equitable LDCT referrals. Healthcare organizations should also track referral patterns and take action if some providers are less likely to refer eligible patients.

Expand provider and patient capacity for LDCT shared decision making. CMS LDCT coverage rules require that patients engage in shared decision making before receiving screening.[5] However, if existing shared decision making practices disproportionately benefit some groups (e.g., those with higher health literacy who can better understand screening benefits and harms), then disparities in LDCT utilization may result. Effective and equitable shared decision making processes may also help mitigate disparities in decisional regret that could arise among patients who experience harm from LDCT and feel they did not make an informed screening decision. Yet, systematic barriers such as time pressures and resource constraints may affect providers' ability and willingness to engage in shared decision

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making.[18] A number of decision aids and tools exist to support LDCT shared decision making and should be made available to providers.[19] These tools can help providers engage in shared decision making when they are faced with time and resource constraints. However, healthcare providers and organizations must ensure that these tools are culturally and linguistically appropriate for diverse patient populations. As part of this effort, future funding is needed to support the development and validation of new tools and decision aids that meet diverse patient needs. These tools must communicate the growing research about LDCT benefits, harms, and costs in plain language to help patients make an informed screening decision. Organizations can also explore opportunities to train providers to effectively engage in shared decision making with diverse populations as needed.

Ensure appropriate and equitable patient follow-up. It is also important to monitor whether eligible patients receive LDCT screening and appropriate follow-up care after receiving a screening referral. Following up with these patients may identify important screening barriers. For example, patients and their providers may face uncertainty about whether LDCT and any necessary follow-up care are covered under the patient's insurance plan.[16,17,20] Future work is needed to develop tools that help patients and their providers understand health insurance policies regarding LDCT coverage. Additionally, the cost of LDCT screening and follow-up care may be a barrier for some patients. Healthcare organizations concerned about the overall cost associated with implementing LDCT, especially for uninsured patients, could explore opportunities to solicit grants or partner with other organizations/foundations to help cover screening costs. Providing financial assistance can help mitigate financial barriers faced by uninsured patients who become LDCT-eligible at age 55, but may not have insurance to cover screening until they become Medicare-eligible at age 65. Healthcare organizations must also ensure that appropriate post-screening follow-up occurs, especially when abnormal results are found. Providing financial assistance to patients with abnormal LDCT results is especially critical for patients who cannot afford out-of-pocket costs associated with post-screening follow-up care.

Work with local communities to engage diverse populations. Healthcare organizations must also reach out to local communities and organizations that serve diverse populations to identify patients who may not have a usual source of care. Local organizations can offer advice on the best ways to engage diverse populations and potentially host educational events about LDCT screening. Partnering with community organizations may allow potentially eligible patients to discuss screening in settings in which they are comfortable and with people they trust.

CONCLUSION

This commentary highlights systematic issues that make it challenging to monitor racial disparities in LDCT utilization and identifies recommendations for pre-empting inequities in this field. Collaboration among policy makers, hospital administrators, providers, community stakeholders, patients, and other decision makers is necessary to promote equity in LDCT implementation.

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Table 1.

Recommendations to Help Promote Equitable LDCT Screening Utilization

Recommendation	Rationale
Require race/ethnicity collection in national LCSR	• Patient race/ethnicity is not required in the national LCSR,[5] making it challenging to track racial disparities in LDCT screening. • Race/ethnicity information can aid organizations in efforts to monitor potential LDCT disparities and take action as necessary.
Uniformly collect patient pack-year smoking history	• Patient pack-year smoking history data are not routinely collected in EHRs, which prevents reliable assessment of disparities in LDCT access and utilization.[9,10] • Information on patient pack-year smoking history should be routinely assessed during clinic visits and documented in the EHR.
Fund research to ensure that LDCT eligibility criteria equitably identify high-risk patients	• Evidence suggests that Black patients (especially men) have higher lung cancer rates than White patients despite their lower mean pack-year tobacco exposure.[11,12] • As LDCT eligibility criteria apply broadly to patients of all races/ethnicities and rely heavily on pack-year smoking history, these criteria may exclude Black patients who have smoked for fewer than 30 pack-years but remain at considerable lung cancer risk. • Future research is needed to confirm whether existing LDCT eligibility criteria equitably identify high-risk patients and to inform decisions about whether these criteria should be revised (e.g., to rely on risk prediction models or on revised smoking history requirements).
Incorporate Best Practice Advisory alerts into EHRs to prompt providers to assess eligibility	• Best Practice Advisory alerts can be used in EHRs to remind physicians to discuss screening options with eligible patients for various cancer types (e.g., colorectal).[15] • A similar reminder could help providers target LDCT-eligible patients.
Enhance outreach to referring providers	• Evidence suggests that some primary care providers may not be aware of lung cancer screening guidelines and thus may not recommend screening to eligible patients.[16,17] • Other physicians may not recommend LDCT due to concerns about potential harms (e.g., from the procedure’s high false positive rate).[16,17] • Organizations should track provider- and practice-level LDCT referral patterns and take action (e.g., educational outreach or training about communicating LDCT benefits and harms) if some practices are less likely to refer eligible patients.
Expand provider and patient capacity for LDCT shared decision making	• CMS requires that physicians engage in shared decision making with patients to help them make an informed screening decision.[5] • Existing lung cancer mortality disparities may worsen if shared decision making disproportionately benefits some groups (e.g., those with higher health literacy). • Organizations should use existing LDCT shared decision making tools but must also ensure that the tools are appropriate for diverse populations.[19] • Organizations can also explore opportunities to train providers to effectively engage in shared decision making with diverse populations as needed.
Ensure appropriate and equitable patient follow-up	• Organizations should monitor whether eligible patients receive screening and follow-up care, especially regarding abnormal results as studies for other cancer types report that minority patients may be less likely than Whites to receive appropriate follow-up after an abnormal screening.[8] • Healthcare organizations concerned about costs associated with implementing LDCT screening, especially for uninsured patients, could explore opportunities to solicit grants or partner with other organizations/foundations to help cover screening costs.
Work with local communities to engage diverse populations	• Local organizations can engage target populations in screening discussions through educational events and information dissemination. • Partnering with community organizations may allow potentially eligible patients to discuss screening in settings in which they are comfortable and with people they trust.

Abbreviations: CMS, Centers for Medicare and Medicaid Services; EHR, electronic health record; LDCT, low-dose computed tomography; LCSR, Lung Cancer Screening Registry