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Increasing Lung Cancer Screening Rates: A Review of Interventions

Lung cancer remains the leading cause of cancer death in the U.S., accounting for more than one in five cancer deaths. Lung cancer screening with low-dose computed tomography (LDCT), which can detect the disease at stages when more treatment options are available, is a vital part of any strategy to defeat lung cancer. But too many adults in the U.S. who meet the screening eligibility criteria still go unscreened. They face obstacles ranging from systemic barriers to more individual factors affecting patient and provider awareness and understanding. This literature review of public health interventions focused on proven-effective actionable steps that lung cancer programs can pursue to help increase lung cancer screening (LCS) rates among eligible adults. These studies were compiled using Google Scholar with search terms including 'reducing barriers to LDCT for lung cancer,' 'public health interventions to increase lung cancer screening rates,' 'interventions to increase lung cancer screening uptake,' and 'state level + public health approaches + increase lung cancer screening rates.' Studies were limited to those from 2021 and later.

Summary of Findings: What Steps Can Lung Cancer Programs Take?

Elevating Use of Patient Navigators

Patient navigators continue to be an effective way to help remove barriers to lung cancer screening and improve outcomes across the cancer care continuum, especially when they are integrated throughout the entire screening and follow-up process. For example, navigators can not only assist with translation, transportation, navigating insurance, appointment reminders and cessation services, but they can also serve as a liaison for providers, helping to assess screening eligibility, initiating shared decision-making discussions, and arranging follow-up care. Expanding and supporting patient navigation programs at a state, health system, or facility level will help ensure that navigation services are available and working to increase screening.

Focusing on Provider Education

Provider awareness of lung cancer screening guidelines varies. Some providers are unsure of the benefit for a particular patient population, are unclear on where to refer patients for screening or lack clarity on how to document patient eligibility in the electronic health record system. These gaps point to a need for enhanced provider education related to lung cancer screening, as well as greater collaboration between specialists and primary care providers. The Lung Association has also developed a Lung Cancer Screening Billing Guide which prepares healthcare professionals to navigate lung cancer screening coverage and to work with payers on billing issues.

Emphasizing Community-Level Interventions

Interventions to increase lung cancer screening rates are often more successful when they happen at the community level. Approaches may include training community health workers (CHWs) to lead educational events at local and neighborhood sites (churches, recreation centers, etc.), working with community health centers to help identify eligible patients, or engaging local residents to educate and empower their peers. Multi-step, multi-dimensional interventions are helpful to address patient barriers ranging from limited awareness of eligibility criteria to concerns about cost. Additional interventions could include the deployment of mobile screening vans or other innovations to address transportation challenges, or coordinating lung cancer screening with mammography or other cancer screenings. Further examples of community-led efforts are outlined in our issue brief on State and Tribal Approaches to Improve Lung Cancer Screening Rates.

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#	Citation	Summary	Main Takeaway
		Barriers/Interventions – *Systemic*	
1	Lowenstein M, Karliner L, Livaudais-Toman J, et al., "Barriers and Facilitators to Lung Cancer Screening: A Physician Survey." *American Journal of Health Promotion*. Vol. 36, Issue 7, 2022, pgs. 1208-1212. https://doi:10.1177/08901171221088849	Some 368 randomly selected California primary care doctors (2017) rated the perceived barriers to lung cancer screening (LCS). In descending order, the doctors identified: patient cost; other patient-level barriers; physician-level barriers; and physician system and evidence barriers. The patient-level barriers were not associated with any differences in the likelihood of doctors discussing or referring patients for low-dose computed tomography (LDCT) – but system and evidence barriers were associated with decreased referrals. *[Article discusses patient and provider-level barriers, as well as systemic barriers.]*	Efforts to increase physician implementation of USPSTF screening recommendations will need to (i) communicate the strength of the evidence in favor of LCS and (ii) develop systems to support patient identification, referral, tracking, and follow-up.
2	Nam, J, Krishnan, G, Shofer, S, et al., "Interventions to improve lung cancer screening among racially and ethnically minoritized groups: A scoping review," *Lung Cancer*, Vol. 176, 2023, pgs. 46-55. doi: https://doi.org/10.1016/j.lungcan.2022.12.016.	Examined interventions to address the known disparities in LCS rates among racially and ethnically minoritized groups in the U.S., and looked for future potential areas of intervention, design, and research that could improve LCS rates in such groups.	There is a relative dearth of interventions targeting these disparities and more research is needed. Potentially promising interventions include: clinic-level interventions such as streamlining the LCS process (determining eligibility/discussing risks and benefits/ ordering the scan/scheduling/ receiving the scan/discussing the results and any next steps); community-level interventions such as targeted outreach and education; and interventions to improve adherence and follow-up.

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3	Miller DP, Snavely AC, Dharod A, et al. A Direct-to-Patient Digital Health Program for Lung Cancer Screening: A Randomized Clinical Trial. *JAMA*. Published online October 20, 2025. doi:10.1001/jama.2025.17281	Describes a randomized clinical trial which tested the use of an automated digital health program about LCS (mPATH-Lung) that is delivered independent of a clinical visit to individuals identified via electronic medical record (EMR) as having a history of smoking. The program asks questions to confirm screening eligibility, reviews the potential benefits and harms of lung cancer screening, and allows patients to request lung cancer screening via the program. Intervention with the mPATH-Lung was associated with higher odds of someone completing lung cancer screening when compared with a control group.	Compared with enhanced usual care, a direct-to-patient digital health intervention that includes a decision aid plus the ability to request a screening clinic appointment increased LCS rates across racial, rural/urban, and socioeconomic groups.
4	Sayani A, Ali MA, Dey P, et al., "Interventions Designed to Increase the Uptake of Lung Cancer Screening: An Equity-Oriented Scoping Review," *Journal of Thoracic Oncology Clinical and Research Reports*, Vol. 4, No. 3, 2023, pp. 1-43. doi: 10.1016/j.jtocrr.2023.100469.	Participation in LCS is lower in populations with the highest burden of lung cancer risk and the lowest levels of health care utilization, due to structural inequities [meta-survey; article considered non-US (10/36) as well as US (26/36) studies]. Authors analyzed whether intervention(s) improved approachability, acceptability, availability, affordability, and/or appropriateness of LCS services.	Interventions that were most effective in improving access to LCS: targeted populations at highest risk of developing lung cancer, as well as those experiencing the greatest barriers to LCS; raised community-level awareness; tailored materials for sociocultural acceptability; did not rely on prior patient engagement with the health care system; proactively considered costs related to participation; and utilized informed decision-making. Proactive outreach is needed to avoid widening existing health inequities.
	Barriers/Interventions – *Providers*		
5	Coughlin JM, Zang Y, Terranella S, et al., "Understanding barriers to lung cancer screening in primary care," *Journal of Thoracic Disease*, Vol. 12, No. 5, 2020, pgs. 536-2544. doi:10.21037/jtd.2020.03.66	Provider knowledge of LCS guidelines varies, perhaps contributing to underutilization of LDCT scan for LCS. Improved provider education at safety net hospitals and improving EMR-based best practice alerts may improve the rate of LCS.	Providers should be educated about designated Screening Centers of Excellence; enhance provider and patient awareness of LDCT; incorporate alerts for eligible high-risk patients into the EMR.

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6	Sedani AE, Davis OC, Clifton SC, et al., "Facilitators and Barriers to Implementation of Lung Cancer Screening: A Framework-Driven Systematic Review." *Journal of the National Cancer Institute*, Vol. 114, Issue 11, 2022, pgs. 1449-1467. doi: https://doi.org/10.1093/jnci/djac154.	Authors performed a meta-review of 37 studies examining the multilevel factors (barriers and facilitators) that may influence the implementation of LDCT for LCS in the US. The most common constructs at the system level were external policy and incentives and executing the implementation process. Provider-level barriers include knowledge deficits with respect to LCS eligibility criteria, risks, benefits, and potential costs. Interventions should aim to increase provider knowledge but also to improve the quality of shared decision-making, and potentially integrate decision aids into the EMR. Patient-level facilitators and barriers to screening include: patient knowledge, needs, resources; communications issues (language barriers, general health literacy); time constraints; complexity of patients' comorbidities; accessibility (location, distance, hours of operation); social determinants of health; patients who do not have a relationship with a primary care provider.	There is a need to address knowledge and beliefs about LCS among both patients *and* providers – this was the most referenced "construct" across patient, provider and system levels – and a need for better understanding of the unique accessibility needs of high-risk patients. *[As noted, article also discusses patient-level interventions as well as provider-level.]*
7	Olazagasti, C, Seetharamu, N, Kohn, N, and Steiger, D., "Implementing physician education to increase lung cancer screening uptake," *Lung Cancer Management*, Vol. 11 No. 2, 2022. doi: https://doi.org/10.2217/lmt-2022-0008	A study was conducted to assess physician LDCT referral patterns, looking at both pre-intervention and post-intervention with the intervention being a LCS educational series.	Educational lectures to primary care physicians and Internal Medicine residents significantly increased compliance with lung cancer screening and decreased screening rates of patients that did not fulfill criteria.

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8	DiCarlo M, Myers P, Daskalakis C, Shimada A, Hegarty S, Zeigler-Johnson C, Juon H-S, Barta J, Myers RE. "Outreach to primary care patients in lung cancer screening: A randomized controlled trial," *Preventive Medicine*, Vol. 159, 2022. https://doi.org/10.1016/j.ypmed.2022.107069.	Randomized clinical trial explored the effects of patient outreach and shared decision-making about LCS among patients (50-80 years old, at high risk for lung cancer) in four primary care practices. LCS rates were significantly higher among patients who received some form of outreach contact over usual care.	Implementing patient outreach for patients who are identified as potentially eligible for LCS can increase screening rates in primary care.
9	Le T, Miller S, Berry E, Zamarripa S, Rodriguez A, Barkley B, Kandathil A, Brewington C, Argenbright KE, Gerber DE. "Implementation and Uptake of Rural Lung Cancer Screening," *Journal of the American College of Radiology,* Vol. 19, No. 3, 2022, pgs. 480-487, https://doi.org/10.1016/j.jacr.2021.12.003	Limited radiology facilities and increased geographical distance, combined with lower income and education along with reduced patient engagement and inadequate health insurance, present heightened barriers to screening initiation and adherence among rural populations. Authors developed and implemented a community-based LCS program, including telephone-based navigation and tobacco cessation support, serving 18 rural and medically underserved North Texas counties. They took a 3-pronged approach: leveraging community partners to raise awareness of LCS; offering telephone-based patient navigation; and supplementing reimbursement for clinical services for low-income and un- or under-insured patients with funding from the Cancer Prevention and Research Institute of Texas.	Implementation, uptake, and completion of LDCT-based LCS is feasible in rural settings, particularly when supported by community outreach, health promotion, and algorithm-based navigation. Provider education (emphasizing eligibility criteria for LCS and the importance of shared decision-making) can support effective collaboration.

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10	Walker, MR, Burton, KA, Collazo-Irizarry, DE, et al., "Challenges and Opportunities for Rural Multidisciplinary Lung Cancer Care," *Journal of the American College of Radiology*, Vol. Issue 12, 2025, pgs. 1609-1617. doi: https://doi.org/10.1016/j.jacr.2025.08.020.	An examination of challenges and opportunities throughout the continuum of multidisciplinary lung cancer care in rural communities with a focus on innovative and scalable delivery models relevant to radiologists and radiation oncologists. Interventions highlighted to promote lung cancer care in rural communities include mobile thoracic screening units, which improve geographic access, enable early detection and are found to be cost effective; leveraging quality improvement to promote LCS (e.g., the American College of Radiology's Learning Network's Lung Cancer Screening Improvement Collaborative can help identify context-specific barriers and develop context-specific interventions to improve screening percentages, strengthen adherence to screening guidelines and promote equity in access); community-based interventions (i.e., partnering with local organizations, churches or primary care providers). Two specific examples are cited, the Terminate Lung Cancer (TLC) study in Kentucky and the Tribally Engaged Approaches to Lung Cancer Screening (TEALS) in rural Oklahoma.	Interventions highlighted to promote lung cancer care in rural communities include mobile thoracic screening units, leveraging quality improvement to promote LCS, and community-based interventions.

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		Barriers/Interventions - ***Patient***	
11	Matsumoto MM, Erkmen CP, Dako F. "Understanding Patient Barriers to Utilization of Low-dose CT Lung Cancer Screening in a High-risk Population," Supplement to *Applied Radiology*, 2024, pgs. 11-15. doi: undefined (link).	Authors surveyed patients in the waiting room of a radiology department in a large urban academic institution. Respondents were aware of links between smoking and lung cancer risks but lacked fundamental knowledge about LCS and the fact that lung cancer is treatable. Most respondents noted a willingness to see a provider to learn more information. *[Article discusses provider and systemic level interventions, as well as patient level barriers.]*	Patients and providers need to be educated about the efficacy of early detection and treatment of lung cancer, as well as about the details of LCS. Nonadherence to appointments can also be attributed to weak doctor-patient relationships and to socioeconomic factors. Interventions to improve screening rates include mobile imaging campaigns, provision of transportation benefits, expansion of telehealth consultations, and collaboration with community leaders.
12	Yue, T, Wong, L, Jani, C, et al., "Combined Breast and Lung Cancer Screening Among Dual-Eligible Women: A Descriptive Study," *Journal of Surgical Research*, Vol. 307, 2025, pgs. 204-211. doi: https://doi.org/10.1016/j.jss.2024.05.024.	A prospective study which evaluated women undergoing screening for mammography for lung cancer screening eligibility and offered enrollment in a pilot dual-cancer screening program. Patients in the study were surveyed in order to understand knowledge, perceptions, and attitudes about lung cancer before and after undergoing dual screening. Surveys found that when it comes to LCS most individuals were concerned about test accuracy, radiation, and scan logistics with the most commonly cited concern being cost. The surveys also found a discrepancy between the number of study participants who felt they were at risk for lung cancer and the number who knew that LCS is recommended for those at high risk due to smoking.	Pairing breast and lung cancer screening is a feasible, acceptable intervention that increases patient and provider education about LCS as well as increases screening uptake and reduces lung cancer mortality.

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13	Satoh, S., Shah, M., Sungelo, M. et al. "Efficacy of Interventions Intended to Increase Lung Cancer Screening Rates: A Systematic Review and Meta-analysis." *Journal of General Internal Medicine,* Vol. 40, 202, 2025, pgs. 1288–1296. doi: https://doi.org/10.1007/s11606-024-09097-8	This systemic review highlights two aspects of LCS interventions: 1) Low participation in LCS is well-known but few studies have evaluated interventions that improve participation and 2) Multistep interventions may be more effective than single-step interventions in increasing LCS participation. The meta-analysis included the following interventions: patient navigation, outreach calls, decision aids, and informational material addressing psychological barriers. Only two of the six, both of which were comprehensive multistep approaches employing patient navigators or outreach groups to facilitate LCS, were found to significantly improve LCS rates. The article does note limitations of the study and concludes that more prospective studies investigating multi-step interventions in diverse populations are needed. *[Article discusses provider- and systemic-level interventions, as well as patient-level barriers.]*	Multistep interventions may be more effective than single-step interventions. This may be because multistep interventions address patient-, provider-, and system-level barriers (e.g., a patient navigator who addresses individual patient barriers to screening and serves as a liaison for providers).
14	Leopold, KT, Carter-Bawa, L, "Barriers to Lung Cancer Screening Access from the Perspective of the Patient and Current Interventions," Thoracic Surgery Clinics, Vol. 33, Issue 4, 2023, pgs. 343 – 351. doi: https://doi.org/10.1016/j.thorsurg.2023.04.003	Patient barriers include cognitive factors (lack of awareness, limited information and/or misinformation, and low perceived risk), factors related to access (logistical issues, lack of provider recommendation, cost, and other financial/social factors), and psychological factors (fear, fatalism, lung cancer worry, and stigma).	There's a long list of interventions that have been shown to positively impact screening rates, e.g.: leaflets; film, tv, and social media campaigns; enlistment of community health workers and clinicians in educational efforts; targeted telephone outreach; deployment of mobile CT scanners; etc. Further research is needed into the development of additional evidence-based interventions; adapting those interventions to different populations; and encouraging health systems to integrate the interventions into the standard care process.

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15	Craddock Lee, SJ, Lee, J, Zhu, H, et al. "Assessing Barriers and Facilitators to Lung Cancer Screening: Initial Findings from a Patient Navigation Intervention," *Population Health Management*, Vol. 26, Issue 3, 2023. doi: https://doi.org/10.1089/pop.2023.0053.	Navigators documented 617 reported barriers, with most common categories including: personal (48%), followed by provider (28%) and practical (17%). The types of barriers reported by patients varied according to the screening process step. For instance, provider barriers were cited more often than personal barriers at the intake stage, but less often at the follow-up stage. *[Article discusses provider and systemic level barriers, as well as patient level barriers.]*	Patients report numerous and diverse barriers throughout the LCS process, though the barriers decreased over the course of the screening process. Early barriers centered around gaps in communication with providers. Later, patients became more concerned with their own ability to adhere to screening steps. Navigation might address these and other concerns by offering an opportunity to revisit and clarify earlier conversations, as well as provide a setting to empower and problem solve.
16	Wong, LY, Choudhary, S, Kapula, N, et al. "Barriers to Completing Low Dose Computed Tomography Scan for Lung Cancer Screening," *Clinical Lung Cancer*, Vol. 25, Issue 5, 2024, pgs. 424-430. doi: https://doi.org/10.1016/j.cllc.2024.04.014.	Survey of patients who did and did not complete LDCT (*despite having had a documented shared decision-making visit*) showed varying and inconsistent reasons for non-completion, including: lack of personal experience with lung cancer; belief that they personally were not at high risk for developing lung cancer; lack of social support; and belief that LCS is a one-time process rather than an annual screening. Need innovative solutions to increase participation buy-in from LCS-eligible patients.	There is a significant knowledge gap and variation in depth of understanding between patients and providers about LCS. Sharing results of a shared-decision making visit with primary care providers may help increase LCS rates especially for patients without strong support systems. Templated topics for providers to cover during the shared decision-making visit would help to ensure uniformity of the LCS process. Specialists should also collaborate with primary care providers who are often the first and only point of contact for patients who are eligible for LCS. Collaborative efforts are also needed to address region-specific barriers to improving LCS uptake.