ONLINE EXCLUSIVE

# Barriers to Lung Cancer Screening With Low-Dose Computed Tomography

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**PROBLEM IDENTIFICATION:** Despite lung cancer screening guidelines and insurance coverage changes, rates of lung cancer screening with low-dose computed tomography remain suboptimal among the eligible population in the United States.

**LITERATURE SEARCH:** Electronic literature databases, including PubMed, CINAHL®, PsycINFO, and Google Scholar, were searched.

**DATA EVALUATION:** After applying filter information and inclusion and exclusion criteria, 10 articles were reviewed. Methodological rigor was evaluated.

**SYNTHESIS:** Based on the social–ecological approach, barriers to lung cancer screening at the individual level, including sociodemographic characteristics, financial cost, lack of knowledge, inaccurate beliefs about lung cancer screening, distrust of the medical system, stigma around smoking and lung cancer, negative attitudes about outcomes of lung cancer screening, and inconvenience of receiving lung cancer screening, were identified. Barriers at the health-system level included lack of information from primary care providers.

**IMPLICATIONS FOR PRACTICE:** Overcoming barriers to lung cancer screening at individual and health-system levels is essential to increase lung cancer screening uptake rates.

**KEYWORDS** lung cancer screening; barriers; low-dose computed tomography; lung cancer
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Lung cancer is the leading cause of cancer-related deaths in the United States (World Health Organization, 2018). Although the lung cancer mortality rate has dramatically decreased during the past two decades—primarily because of the decrease of cigarette smoking—the incidence rate of lung cancer still ranks second in both genders (American Cancer Society [ACS], 2019).

Patients with lung cancer have one of the lowest five-year survival rates (McCarthy, 2014). When diagnosed at an early stage, patients with lung cancer have a 52% survival rate at five years, but the five-year survival rate drops to 15% when diagnosed at a late stage (McCarthy, 2014). To diagnose lung cancer at an early stage and increase the five-year survival rate, obtaining lung cancer screening at an early stage is essential (Parker et al., 2015).

In 1970, ACS recommended chest x-ray with or without sputum cytology to find lung cancer early (Wender et al., 2013). However, in 1980, ACS retracted this guideline, because evidence was lacking to support chest x-ray's efficiency to decrease the lung cancer–related mortality rate (Wender et al., 2013). In 2002, the National Lung Screening Trial (NLST) research team began to conduct an eight-year randomized clinical trial to test the efficiency of chest x-ray and low-dose computed tomography (LDCT) in decreasing the lung cancer mortality rate (Aberle et al., 2013). This clinical trial was conducted among 53,454 participants who were at high risk for lung cancer (being aged 55–74 years, having a smoking history of at least 30 pack-years during the lifetime, being a current smoker or having quit smoking in the past 15 years) (Aberle et al., 2013). Participants were required to receive three annual lung cancer screenings with chest x-ray or LDCT. Results showed that LDCT can significantly decrease the lung cancer mortality rate by 20%, compared to chest x-ray (Tota, Ramanakumar, & Franco, 2014; Wender et al., 2013).