

Lung Cancer Screening in the Post-NLST Era: Primary Care Nurse Practitioners' Perceptions and Screening Practices



K. K. McDonnell¹ • A. C. Dievendorf¹ • L. Blew¹
D. Warden¹ • E. Sercy²⁻⁴ • J. M. Eberth²⁻⁴

¹College of Nursing
²Department of Epidemiology and Biostatistics
³Statewide Cancer Control Program
⁴Arnold School of Public Health
University of South Carolina, Columbia, SC, USA

Background

- ❖ More people die from lung cancer than other cancers.¹
- ❖ The National Lung Screening Trial (NLST) found that low-dose CT screening (LDCT) reduces lung cancer mortality rates.²
- ❖ In the United States, the Centers for Medicare and Medicaid Services (CMS) will reimburse for annual LDCT screening in specific high-risk individuals. Counseling and a shared-decision making discussion (SDM) between the provider and the patient is required.³
- ❖ Nurse Practitioners (NPs) are key providers responsible for preventative screening services.

Purpose

To examine Primary Care NPs' knowledge, attitudes, and practices regarding LDCT screening in the post-NLST era among a national, random sample of NPs.

Method

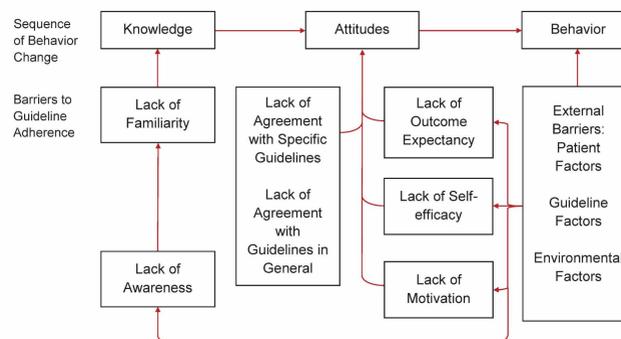
- ❖ Mixed-method design; results of the qualitative component will be reported elsewhere.
- ❖ A conceptual framework representing a temporal sequence for behavior change and potential barriers to guideline adherence was used.⁴
- ❖ A variety of survey questions were adapted, developed and tested by an interdisciplinary team with a sample of South Carolina primary care providers.⁵
- ❖ A random sample size of 5,000 licensed NPs who self-identified as working in a (U.S.) primary care setting received a paper survey once with two response options: paper or electronic.
- ❖ No incentive was offered to respond to the survey. A \$50 incentive was promised to those selected to participate in a post-survey interview.

Acknowledgement

This work was supported by a University of South Carolina College of Nursing Research Preparatory Grant (PIs: Dievendorf, McDonnell) and an American Cancer Society Institutional Research Grant (PI: Eberth).

Conceptual Framework

of barriers to screening guideline adherence in practice⁴



Results

Participant Profile

Nurse Practitioners: N = 380 (8% response rate)
83% agreed to be interviewed
331 (89%) Women
357 (96%) Board certified
322 (87%) Hold a master's degree
136 (37%) Rural practice area
101 (27%) Private practice setting
63 (17%) Hospital setting

NPs' Knowledge of Recommended Screening Strategies (N = 376)

| Vignettes | No screening n (%) | Chest x-ray n (%) | Low-dose CT n (%) |
|-------------------------------------------------------------------------------------------------------|-----------------------|----------------------|----------------------|
| 50-year-old non-smoker with 30 years of household secondhand smoke exposure | 142 (38%) | 191 (51%) | 42 (11%) |
| 50-year-old current smoker with 20-pack-year smoking history and family history of lung cancer | 34 (9%) | 128 (34%) | 214 (57%) |
| 60-year-old current smoker with 30-pack-year smoking history | 12 (3%) | 108 (29%) | 256 (68%) |
| 70-year-old former smoker with 30-pack-year smoking history and quit smoking 20 years ago | 97 (26%) | 170 (45%) | 109 (29%) |

Grey boxes represent correct responses. Responders were told to assume these patients had no symptoms of lung cancer or exposure to occupational carcinogens, and had never been screened for lung cancer.

Most Common Barriers to Ordering LDCT Screening

| Barrier | n (%) |
|--------------------------------------------------|-----------|
| Prior authorization required by health insurance | 128 (34%) |
| No experience ordering a LDCT | 92 (24%) |
| Lack of health insurance coverage | 41 (34%) |

Results (continued)

NPs' Likelihood to Engage in SDM Based on Time Commitment

| Time | Likely n (%) | Unlikely n (%) |
|---------|-----------------|-------------------|
| < 3 min | 331 (92%) | 27 (8%) |
| 3-5 min | 305 (86%) | 48 (14%) |
| 5-8 min | 202 (58%) | 144 (42%) |
| > 8 min | 128 (37%) | 217 (63%) |

Discussion & Implications

- ❖ Lower-than-expected participation may have been influenced by a lack of familiarity with, and awareness of, the topic and promised incentive.⁶
- ❖ The uptake of new evidence regarding lung cancer screening guidelines is not optimal, as evidenced by NPs' low knowledge level of recommended screening strategies. Unfortunately, a chest x-ray is still considered an option by many NPs. This is a consistent finding among physician colleagues in other studies.⁷⁻⁹
- ❖ Since the CMS decision memo and the implementation of the (U.S.) Affordable Care Act, LDCT screening is a covered benefit for many patients. However, the top three barriers relate to insurance coverage and the NPs' inexperience with the LDCT ordering process. Educational and possibly marketing mechanisms are needed to facilitate this practice change.
- ❖ **Time** was an important factor related to engaging a patient in a SDM discussion. As the time increased from < 3 minutes to > 8 minutes, the commitment to SDM decreased substantially. This important finding supports the need for the development of evidence-based SDM programs to facilitate brief SDM interactions.
- ❖ Barriers to guideline adherence will inform the development of educational programming and decision aids to support the "shared decision-making interactions" of primary care providers with high-risk patients.

References

- Siegel, R. L., Miller, K. D., & Jemal, A. (2016). Cancer statistics, 2016. *CA: A Cancer Journal for Clinicians*, 66(1), 7-30. doi:10.3322/caac.21332
- The National Lung Screening Trial Research Team. (2013). Results of initial low-dose computed tomographic screening for lung cancer. *New England Journal of Medicine*, 368(21), 1980-1991. doi:10.1056/NEJMoa1209120
- Moyer, V. A. (2014). Screening for lung cancer: U.S. Preventive Services Task Force recommendation statement. *Annals of Internal Medicine*, 160(5), 330-338. doi:10.7326/m13-2771
- Cabana, M. D., Rand, C. S., Powe, N. R., Wu, A. W., Wilson, M. H., Abboud, P. C., & Rubin, H. R. (1999). Why don't physicians follow clinical practice guidelines?: A framework for improvement. *JAMA*, 282(15), 1458-1465. doi:10.1001/jama.282.15.1458
- Ersek, J. L., Eberth, J. M., McDonnell, K. K., Strayer, S. M., Sercy, E., Cartmell, K. B., & Friedman, D. B. (2016). Knowledge of, attitudes toward, and use of low-dose computed tomography for lung cancer screening among family physicians. *Cancer*, 122(15), 2324-2331. doi:10.1002/cncr.29944
- Hoffman, R. M., Sussman, A. L., Getrich, C. M., Rhyne, R. L., Crowell, R. E., Taylor, K. L., ... Mishra, S. I. (2015). Attitudes and beliefs of primary care providers in New Mexico about lung cancer screening using low-dose computed tomography. *Preventing Chronic Disease*, 12, E108. doi:10.5888/pcd12.150112
- Lewis, J. A., Petty, W. J., Toozé, J. A., Miller, D. P., Chiles, C., Miller, A. A., ... Weaver, K. E. (2015). Low-dose CT lung cancer screening practices and attitudes among primary care providers at an academic medical center. *Cancer Epidemiology, Biomarkers, and Prevention*, 24(4), 664-670. doi:10.1158/1055-9965.EPI-14-1241
- Klabunde C. N., Marcus, P. M., Silvestri, G. A., Han, P. K., Richards, T. B., Yuan, G., ... Vernon, S. W. (2010). U.S. primary care physicians' lung cancer screening beliefs and recommendations. *American Journal of Preventive Medicine*, 39(5), 411-420. doi:10.1016/j.amepre.2010.07.004