

Overview: Integrating Smoking Cessation with Lung Cancer Screening

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EXCEPTIONAL CARE. WITHOUT EXCEPTION.

Background: Smoking Cessation and LDCT Screening

- Opportunity:
 - Providing smoking cessation treatment with LDCT screening offers an opportunity to combine two interventions known to reduce smoking-related morbidity and mortality.
- Requirement:
 - The Centers for Medicare and Medicaid Services (CMS) requires that smoking cessation interventions be offered in order to receive Medicare reimbursement of LDCT screening.
- Gap in Knowledge:
 - Neither the most effective interventions, nor the best approach for implementing those interventions with demonstrated efficacy in this setting, are known.

ATTUD & SRNT Clinical Recommendations

- Smokers who present for lung cancer screening:
 - Should be encouraged to quit smoking at each visit regardless of screening results.
 - Should be assisted with access to evidence based behavioral and pharmacologic treatments
 - **Regardless of scan results**
 - **Motivation to quit should not be a necessary precondition for treatment**
 - Follow-up contacts to support the patient's smoking-cessation efforts should be arranged.
 - For smokers unwilling to quit, behavioral strategies should be used at each visit to motivate them to change their smoking habits.

ATTUD/SRNT Research Recommendations

- More research is needed on the following:
 - Optimal intensity, timing relative to screening, and delivery mode
 - Potential adverse effects of screening on smoking-cessation motivation
 - Barriers to implementing smoking-cessation interventions within LDCT clinics
 - Education and training needs of LDCT staff to support smoking cessation.

ATS Research Policy Statement

- The ATS convened a committee with expertise in tobacco dependence treatment and/or LDCT screening.
- In an in-person meeting, members summarized the evidence, identified research gaps, and prioritized research questions in each of 3 domains.
 - (1) Target population to study
 - (2) Adaptation, development, and testing of smoking cessation interventions within the LDCT setting
 - (3) Implementation of interventions with efficacy.
- A larger stakeholder panel then ranked research questions in an on-line survey.
- Final prioritization was generated hierarchically based on the average rank assigned.

Kathuria H, et al. *Stakeholder Research Priorities for Smoking Cessation Interventions within Lung Cancer Screening Programs. An Official American Thoracic Society Research Statement.* Am J Respir Crit Care Med 2017;**196**: p.1202-12.

Committee members	
Kathleen Fennig	Patient Representative
Robert A. Smith	American Cancer Society
Stephanie Land	National Cancer Institute
Greta Massetti	Center for Disease Control
Frank Detterbeck	Yale University
Michael Gould	Kaiser Permanente
Joelle Fathi	Swedish Cancer Institute, Seattle
Denise Jolicoeur	University Mass Medical School
Hasmeena Kathuria	Boston University
Peter Mazzone	Cleveland Clinic
Gerard A. Silvestri	Medical University of South Carolina
Chris Slatore	VA Portland Health Care System
Anil Vachani	University of Pennsylvania
Renda Wiener	Bedford VA / Boston University
Steve Zeliadt	VA Puget Sound Health Care System

Voting Members	
Chunxue Bai	Zhongshan Hospital Fudan University
Belinda Borrelli	Boston University
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Georgia L Narsavage	University of South Carolina
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Michelle Eakin	Johns Hopkins University
Harold Farber	Texas Children's Hospital
Patricia Folan	Northwell Health
Frank Leone	University of Pennsylvania
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Smita Pakhale	Ottawa Hospital Research Institute
Caroline Chiles	Wake Forest

Voting Members	
Angela Criswell	Lung Cancer Alliance
Richard Hoffman	University of Iowa
Ella Kazerooni	University of Michigan
Jane Kim	Department of Veterans Affairs
Kelly Latimer	Naval Hospital Sigonella, Italy
Michael LeFevre	University of Missouri School of Medicine
Ide Mills	Patient Advocate
Elyse Park	Mass General Hospital
Joshua Roth	Fred Hutchinson
Jamie L. Studts	University of Kentucky College of Medicine
Helene Vitella	Bristol-Myers Squibb Company
Kristie Foley	Wake Forest School of Medicine
David Midthun	Mayo Clinic
Kathryn Taylor	Georgetown University
Benjamin Toll	Medical University of South Carolina

Population Domain:

Populations defined by race, ethnicity, and socioeconomic status

- Within the NLST, current smokers, less educated, and blacks had higher lung cancer death rates
- Socioeconomically disadvantaged groups and certain racial and ethnic minorities are less likely to be offered, to use, and complete tobacco dependence treatment

Populations defined by motivation to quit

- Historically, providers and quitlines provide treatment to those who have a clear intent to quit
- Recent trials suggest benefit of providing cessation treatment to all smokers regardless of motivation

Populations defined by the results of LDCT screening

- Undergoing LDCT screening is not sufficient to achieve smoking abstinence.
- Some evidence that positive LDCT screening results are associated with increases in quit rates
- Patients with a normal screening LDCT may feel little urgency to quit

Stakeholder Prioritization of questions: Population to Study (n=37)

Mean	% ranking 1 or 2
3.43	37.8%
3.49	32.4%
3.68	32.4%
4.11	32.4%
4.14	21.6%
4.43	24.3%
4.73	18.9%

Rank	Question
1	How do LDCT screening results affect motivation to quit, and what is the resultant impact on effectiveness of cessation?
2	How do patients' beliefs, attitudes, and perceived or real barriers to quitting impact the effectiveness of cessation interventions in the screening context?
3	How does motivation to quit impact the effectiveness of cessation interventions in lung cancer screening? What approaches are most effective among smokers with low motivation to quit?

Range 3.43-4.73; possible range 1, most important, to 7, least important

How do LDCT screening results affect motivation to quit, and what is the resultant impact on effectiveness of cessation?

Summary of Evidence:

- Observational studies:
 - Abnormal CT results are associated with a higher smoking cessation rate
 - Limited data do not support that a negative scan reduces interest in cessation
- Qualitative data:
 - Patients with a low risk screening LDCT scan may overestimate the benefits of screening, with potential adverse effects on cessation behavior

Future Studies:

- Most effective method to incorporate smoking cessation content with low-risk findings
 - Many physicians have minimal contact with patients when delivering negative results.
- Measure whether normal findings have the unintended consequence of decreasing smoking cessation treatment efficacy.
 - Some of the Scale RCTs address how to incorporate screening results in smoking intervention

Intervention and Implementation Domain:

- There are little data on the effectiveness and implementation of smoking cessation interventions in the LDCT screening setting.
- Scarce data to support one approach to smoking cessation over another.
- Absent from studies are any comparisons of various pharmacologic agents for smoking cessation in the context of LDCT screening.

Patient-initiated interventions

Study	Sample	Smoking	Comparison	Intervention	Measure	Summary of Findings
Clark et al, 2004 RCT	171	≥20 pack years*	Written self-help materials (NCI)	Internet-based resources – patients provided 10 links to different smoking cessation websites	Self report, Exhaled CO	No difference in 12 month quit rates or change in readiness to quit. Increased number of quit attempts with intervention (p=0.011)
van der Aalst et al, 2012 RCT	1284	38 pack-years (media)	Brochure with cessation info for different stages or readiness to quit.	Computer tailored smoking cessation that provided advice based on input of individual behaviors.	Self-report	No significant difference in point prevalence, quit attempts, or prolonged smoking abstinence at 24 months follow-up.

Provider-initiated interventions

Study	Sample	Comparison	Intervention	Measure	Summary of Findings
Ferketich et al, 2012 (United States) RCT	18	Smoking cessation counseling (medical oncologist) after LDCT performed followed by 12-week tobacco dependence protocol.	Smoking cessation counseling (medical oncologist) before LDCT performed followed by 12-week tobacco dependence protocol.	Exhaled carbon monoxide	No difference in 7-day point prevalence at 4 and 6 months
Marshall et al, 2016 (Australia) RCT	55	Nontailored printed smoking cessation materials and telephone helpline referral.	One in-person tailored session (thoracic physician) with take-home audio + printed materials, and telephone helpline referral.	Self-report, exhaled carbon monoxide	No significant difference in quit rates at 12 months for patients receiving counseling intervention compared to the control group.
Park et al, 2015 (United States) Case-control	3336*	Continued smokers who received provider-delivered cessation counseling using the 5As	Patients who quit smoking after receiving provider-delivered (primary care provider) cessation counseling using the 5As.	Self-report	Assist and arrange were associated with a significant increase in the odds of quitting at 12 months
Bade et al, 2016 (Germany) Observational	1206	Non-attendance to smoking cessation counseling that was offered at time of LDCT screening.	Attendance to Smoking cessation counseling offered at time of LDCT screening; performed by trained psychologist	Self-report	Higher rates of smoking cessation (1 and 2 years f/u) in patients who attended smoking cessation counseling
Luh et al, 2016 (Taiwan) Quasi-experimental	489	Smoking cessation leaflet given to patients at time of screening. A second comparison group did not receive cessation advice.	Clinician-provided (MD and nurse) counseling tailored to willingness to stop smoking and degree of smoking addiction.	Self-report	Significant advancement in patients' readiness to quit smoking in those receiving clinician-provided counseling.
Taylor et al, 2017 RCT (pilot)	92	List of evidence-based cessation resources.	Up to 6 brief telephone counseling with a trained tobacco cessation counselor	Biochemically verified	Higher biochemically verified quit rates at 3 months

Stakeholder Prioritization of questions: Intervention to Study (n=36)

Mean	% ranking 1 or 2
2.86	52.8%
3.25	41.7%
3.89	33.3%
4.11	27.8%
4.22	11.1%
4.64	19.4%
5.03	13.9%

Rank	Question
1	What is the effectiveness of established, evidence-based interventions for smoking cessation in lung cancer screening settings?
2	What are the most effective strategies for counseling patients to quit smoking in the LDCT screening setting?
3	What is the most effective platform to promote use of evidence-based cessation interventions in lung cancer screening settings?
4	How effective are novel / innovative cessation interventions in lung cancer screening settings?

Range 2.86-5.03; possible range 1, most important, to 7, least important

Stakeholder Prioritization of questions: Implementation (n=35)

Mean	% ranking 1 or 2
3.06	45.7%
3.17	45.7%
3.26	34.3%
3.91	25.7%
4.17	22.9%
4.94	14.3%
5.49	11.4%

Rank	Question
1	What are the system barriers to integrating smoking cessation in lung cancer screening settings, and what are the effective strategies to overcome these barriers?
2	What are effective strategies for implementing, disseminating, and scaling up cessation interventions in the real world? How does feasibility, reach, cost, & ease of delivery impact dissemination with quality?
3	Which platforms to promote smoking cessation can be most easily integrated and have the lowest barriers to adoption in this setting?

Range 3.06-5.49; possible range 1, most important, to 7, least important

Future Directions:

- Several smoking cessation intervention studies are underway
 - Eight clinical trials, seven funded by the National Cancer Institute and one by the VHA form the Smoking Cessation within the Context of Lung Cancer Screening (SCALE) collaboration.
- Clear challenge to increasing smoking cessation within the LDCT screening setting is ensuring that evidence-based interventions are fully implemented
 - Identifying barriers and ensuring that such barriers do not prevent implementation of effective interventions is critical to maximizing the health outcomes of LDCT screening.

Thank-you

- **ATS, Thoracic Oncology Assembly**
- Kathleen Fennig Patient Representative
- Robert A. Smith American Cancer Society
- Stephanie Land National Cancer Institute
- Greta Massetti Center for Disease Control
- Frank Detterbeck Yale University
- Michael Gould Kaiser Permanente
- Joelle Fathi Swedish Cancer Institute, Seattle
- Denise Jolicoeur University Mass Medical School
- Peter Mazzone Cleveland Clinic
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- Chris Slatore VA Portland Health Care System
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- Steve Zeliadt VA Puget Sound Health Care System