American Cancer Society®

NATIONAL LUNG CANCER ROUNDTABLE

**March 22, 2024**
**11:00am–12:00pm ET**

# Lung Cancer Screening for All Who are Eligible: An Implementation Science Approach

# Panelists

**Raymond Osarogiagbon, MBBS, FACP**
**Moderator**

**David Chambers, DPhil**

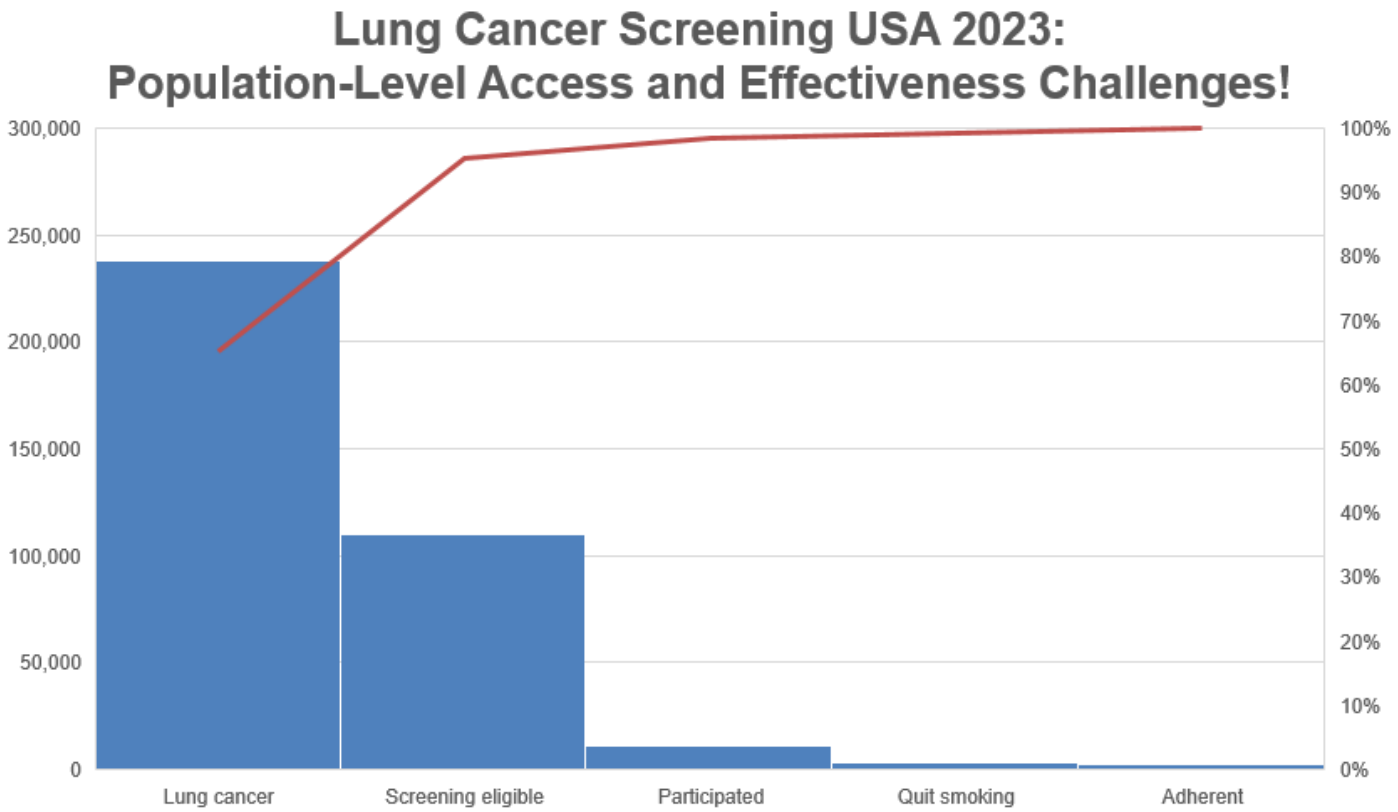
**Jamie Studts, PhD**

**Elyse Park, PhD, MPH**

**Mayuko Ito Fukunaga, MD, FCCP**

**Erin Hirsch, PhD**

# Lung Cancer Screening Saves Lives! *But…*

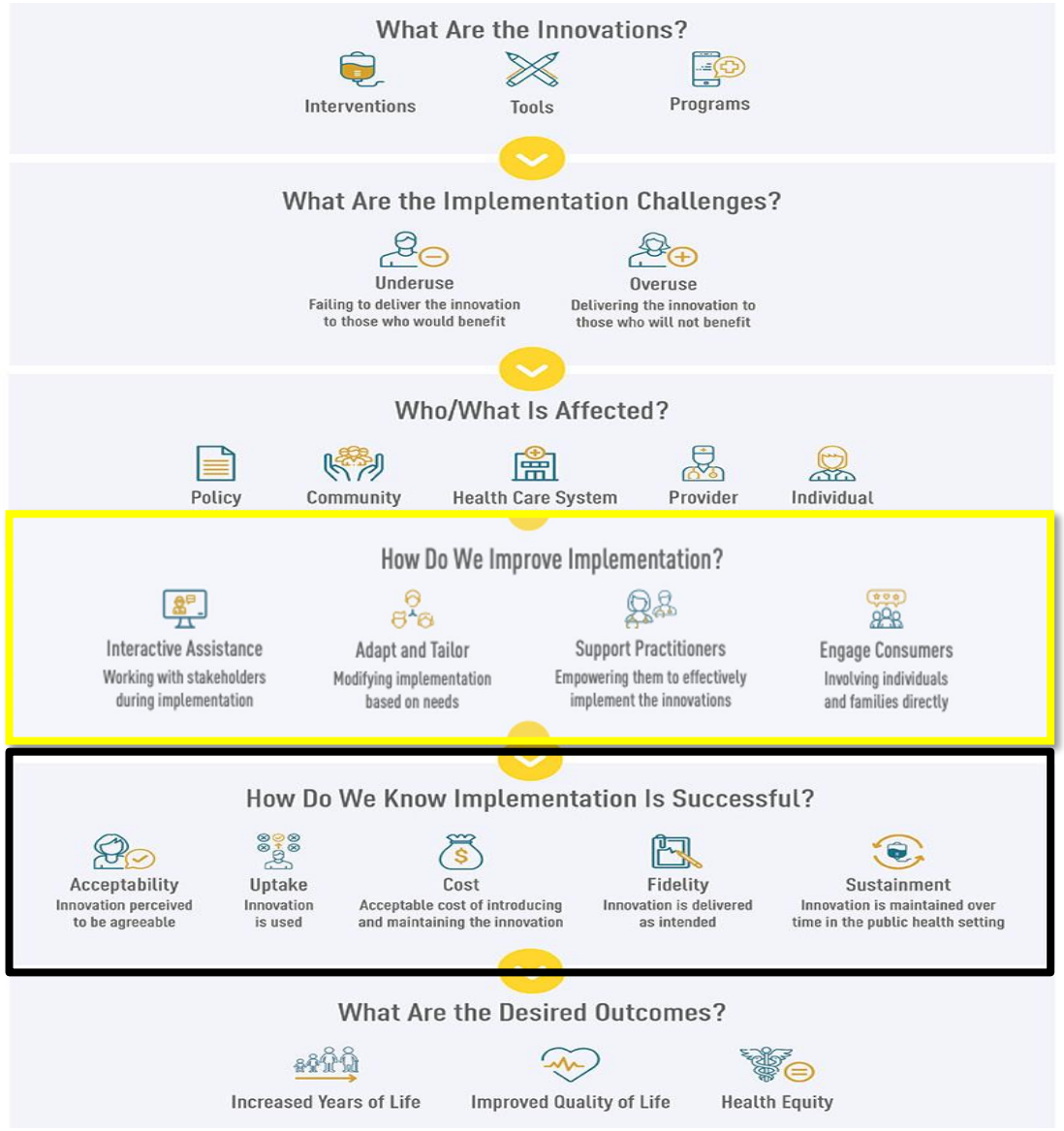



Osarogiagbon, Yang, Sequist. ASCO Educational Book 2023

# A Very Brief Primer on Implementation Science and its Application to Lung Cancer Screening

**David Chambers, DPhil**
Deputy Director for Implementation Science,
Division of Cancer Control & Population
Sciences (DCCPS), NCI

# The Nuts and Bolts of Implementation Science




NCI Annual Plan 2021

# Lung Cancer Screening

- Is only so good as how and whether. . .
  - It is adopted?
  - Providers are trained to deliver it?
  - Trained providers choose to deliver it?
  - Eligible people receive?

If we assume 50% threshold for each step. . .

(even w/perfect access/adherence/dosage/maintenance)

Impact: .5*.5*.5*.5=6% benefit

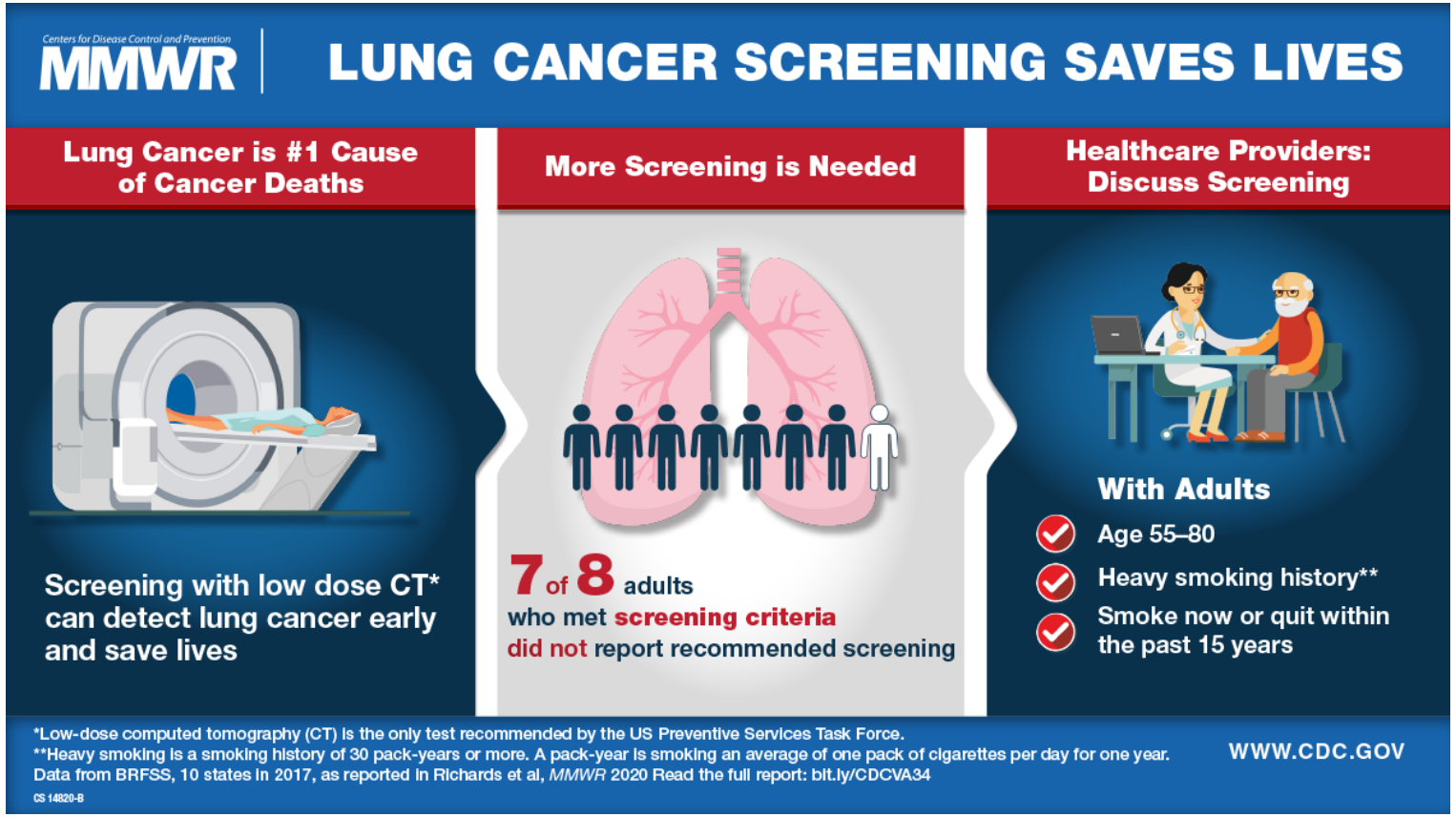
Adapted from Glasgow, RE-AIM

# The Importance of What…

What is the intervention that needs to be implemented?

A. Lung Cancer Screen
B. Information Dissemination/Interpretation
C. Monitoring and Follow-up
D. Preventive Care
E. Treatment
F. All of the above?

# Framing LCS within Implementation Science




(2020) Screening for Lung Cancer — 10 States, 2017 | MMWR (cdc.gov)

Sample IS Challenges:

- Is LCS Screening a priority (and for whom)?
- How to reach all patients who could benefit
- Fit with practice workflow
- Implementing the model across varied practices
- Interpretation of results
- Follow-up care
- Workforce capacity/training needs

# Key Opportunities to Expand Implementation Science for Lung Cancer Screening

- Fidelity vs. Adaptation -- WHAT do we implement for WHOM?
- Sustainability vs. Evolution – Should our ITVs stay the same over time?
- Local vs. At Scale – How do we reach as many as possible?
- De-Implementation – What practices shouldn't be used in the way they are currently?

# NIH-Wide Funding Opportunities: Dissemination and Implementation Research in Health

| R01, Dissemination and Implementation Research in Health (PAR-22-105, Clinical Trial Optional) | R03, Dissemination and Implementation Research in Health (PAR-22-106, Clinical Trial Not Allowed) | R21, Dissemination and Implementation Research in Health (PAR-22-109, Clinical Trial Optional) |
|---|---|---|
| **NCI**, NCCIH, NHGRI, NHLBI, NIA, NIAAA, NIDA, NIAID, NIAMS, NICHD, NIDDK, NIDCD, NIDCR, NIEHS, NIMH, NIMHD, NINDS, NEI, NINR, ODP, OBSSR, ORWH | **NCI**, NHGRI, NIA, NIAAA, NICHD, NIDA, NIDCR, NIEHS, NIMH, NINDS, Fogarty, ODP, OBSSR, ORWH | **NCI**, NCCIH, NHGRI, NIA, NIAAA, NIAID, NIAMS, NICHD, NIDA, NIDCD, NIEHS, NIMH, NINDS, NINR, Fogarty, ODP, OBSSR, ORWH |

View All Implementation Science Funding Opportunities

Dr. Wenjuan Wang
Scientific Review Officer

## Successful Grant Applications

View excerpts from successfully funded research grant applications to help prepare applications for NCI funding.

Sample Grant Applications

Science of Implementation in Health and Healthcare – **SIHH**

# THANK YOU!

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# Pursuing Equitable Implementation of Lung Cancer Screening

**Jamie L. Studts, PhD**
Professor, Division of Medical Oncology
Scientific Director, Behavioral Oncology
University of Colorado School of Medicine

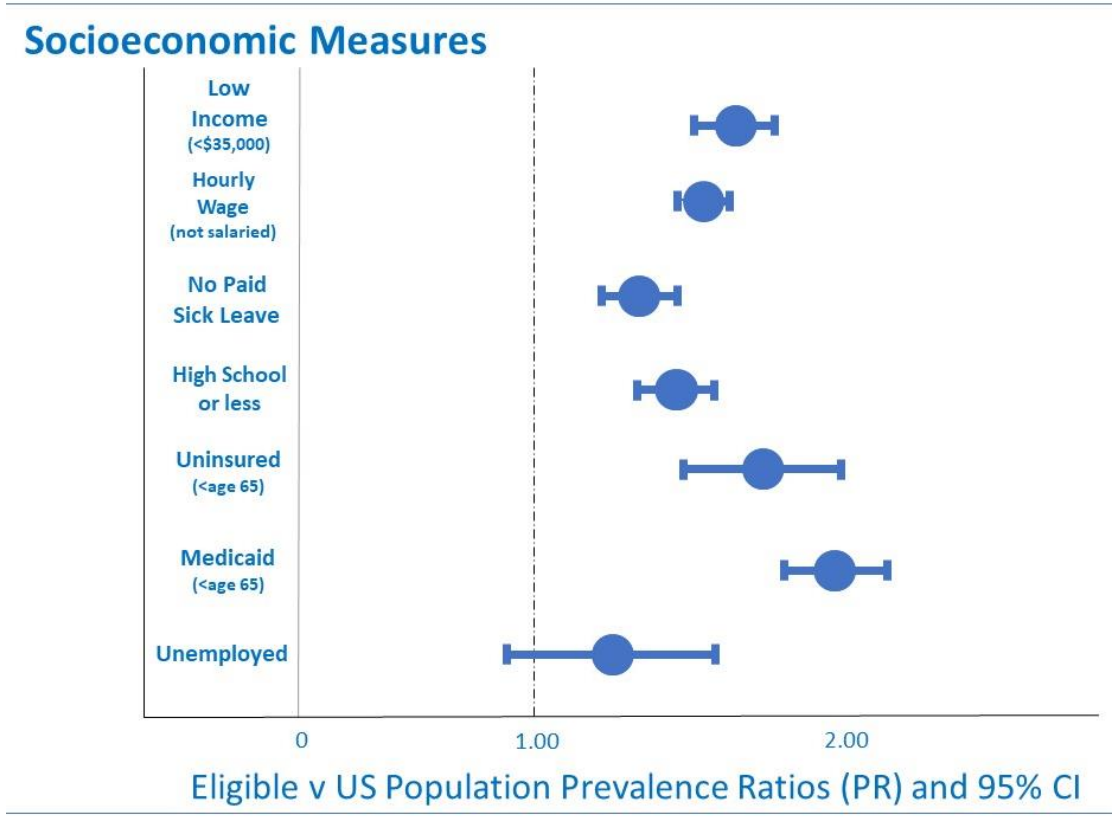
# Lung Cancer Screening: Two Fundamental Beliefs

American Cancer Society | NATIONAL LUNG CANCER ROUNDTABLE

***"Lung cancer screening is currently the greatest missed opportunity to reduce cancer mortality throughout the US—not just lung cancer mortality, but overall cancer mortality."***

***"Lung cancer screening is the most clinically and scientifically interesting and important implementation science opportunity in cancer."***

# Screening Candidates




Silvestri and Colleagues

## Rivera et al. (2020) for ATS

1) Strategies to Reduce Disparities in LCS
2) Strategies to Ensure Equity in LCS
3) Strategies to Improve Tobacco Treatment
4) Strategies to Address Healthcare System Provider, and Patient Barriers
5) Using Mass, Small, and Social Media to Reach Vulnerable Populations
6) Strategies to Reduce Geographic Barriers
7) Proposed Policies to Improve LCS Access
8) Engaging Advocacy Groups & Organizations

Rivera, M. P., Katki, H. A., Tanner, N. T., Triplette, M., Sakoda, L. C., Wiener, R. S., Cardarelli, R., Carter-Harris, L., Crothers, K., Fathi, J. T., Ford, M. E., Smith, R., Winn, R. A., Wisnivesky, J. P., Henderson, L. M., & Aldrich, M. C. (2020). Addressing Disparities in Lung Cancer Screening Eligibility and Healthcare Access. An Official American Thoracic Society Statement. *American Journal of Respiratory and Critical Care Medicine*, *202*(7), e95–e112. https://doi.org/10.1164/rccm.202008-3053ST

# Equitable Implementation of Lung Cancer Screening

1) Assume stark and distressing disparities are emerging even without extensive documentation
2) Consider targeted outreach and engagement opportunities to collaborate with specific communities
3) Explore community as well as clinician-focused efforts (e.g., community-based organizations, practice/professional groups)
4) Mitigate likely exacerbation of known disparities in lung cancer outcomes
5) Diverse communities, diverse methods, diverse levels of intervention

Bilenduke, E., Anderson, S., Brenner, A., Currier, J., Eberth, J. M., King, J., Land, S. R., Risendal, B. C., Shannon, J., Siegel, L. N., Wangen, M., Waters, A. R., Zahnd, W. E., & Studts, J. L. (2023). Equitable implementation of lung cancer screening: avoiding its potential to mirror existing inequities among people who use tobacco. *Cancer Causes & Control:* Advance online publication. https://doi.org/10.1007/s10552-023-01790-z

# Health Equity in Implementation Science

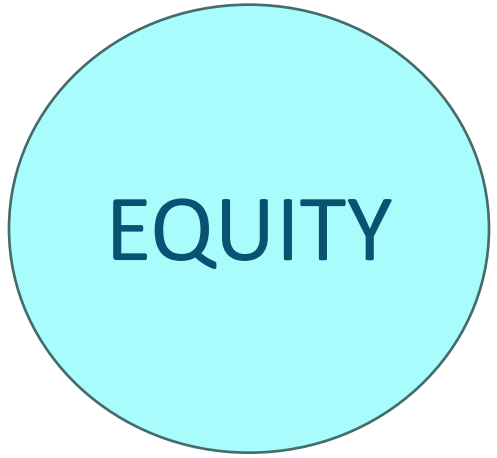
"Every project in implementation science should include an equity focus." (Brownson et al., 2021)

## A strong focus on equity within implementation sciences requires:

1) A deliberate emphasis on the needs, culture, and history of the relevant populations and communities
2) A critical analysis and deeper understanding of systems and policies (including healthcare delivery and clinician attitudes

## Equity-centered research and practices rely on:

1) Meaningful ***engagement*** and partnership with multiple entities,
2) Builds on existing ***resources and strengths***,
3) Develops ***shared goals***, and
4) Integrates ***knowledge and action*** that lead to a ***fairer distribution of power and intervention benefits***.




Brownson, R. C., Kumanyika, S. K., Kreuter, M. W., & Haire-Joshu, D. (2021). Implementation science should give higher priority to health equity. *Implementation Science, 16*(1), 28. https://doi.org/10.1186/s13012-021-01097-0
Shelton, R. C., & Brownson, R. C. (2023). Enhancing Impact: A Call to Action for Equitable Implementation Science. *Prevention Science*, 10.1007/s11121-023-01589-z. https://doi.org/10.1007/s11121-023-01589-z

# Conclusion


Equitable and Optimal Lung Cancer Screening


Aggressively pursuing equitable implementation of high-quality lung cancer screening is the ***path*** to optimal uptake, adherence, and reducing the lung cancer burden.

Identifying, engaging, and sustaining ***relationships*** with community-based organizations that support minoritized communities must play an important role in equitable implementation.

Consideration of ***intersectionality*** can bring richness and authenticity to community-engaged outreach efforts.

Being ***trustworthy*** and working ***with*** community partners and clinicians will play a vital role in fulfilling the potential of lung cancer screening.

# Implementation Science Approach to Implementing Tobacco Treatment in the Context of Lung Cancer Screening: The Screen ASSIST trial

# Aiding Screening Support In Stopping Tobacco

**Principal Investigators:**
**Elyse R. Park, PhD, MPH**
Jennifer Haas, MD
Nancy Rigotti, MD

# Specific Aims

**Aim 1:**
To develop a centralized smoking cessation treatment at 11 screening sites.

**Aim 2:**
To test the effectiveness of the intervention for smoking cessation using a factorial design to assess 3 intervention components (n=642):

1. Duration of counseling (4 sessions vs. 8 sessions)
2. Duration of NRT (2 weeks vs. 8 weeks)
3. Referral of a community resource (referral vs. no referral)

**Aim 3:**
To evaluate the reach, adoption, implementation, and maintenance of the intervention.

# Who is Eligible for the Study?

| Inclusion criteria | Exclusion criteria |
|---|---|
| Patients scheduled for a LCS test | Having a diagnostic test or follow-up of an abnormal LCS test |
| Speak English or Spanish | Unable to give informed consent due to a medical condition, psychiatric or cognitive impairment |
| Current smoker = ≥ 1 puff in past 30 days | No access to a telephone |

Patients do not have to be ready to quit smoking or willing to use nicotine patch.

# Virtual Counseling: Phone or Video

| Condition | Coaching Duration | NRT Duration | Community Resource |
|---|---|---|---|
| 1 | Shorter | Shorter | Present |
| 2 | Shorter | Longer | Present |
| 3 | Longer | Shorter | Present |
| 4 | Longer | Longer | Present |
| 5 | Shorter | Shorter | Absent |
| 6 | Shorter | Longer | Absent |
| 7 | Longer | Shorter | Absent |
| 8 | Longer | Longer | Absent |

findhelp implemented our SDOH screening tool into an online platform.

# Integration Model: Chronic Care Model

Gives health systems a structure for organizing care of chronic diseases to improve outcomes.

- ❑ Integrates into the LCS care delivery system (EHR ordering system and patient records) with primary care and radiology
- ❑ Uses information systems to provide timely information
- ❑ Includes decision support (videos of primary care and radiology clinicians and tobacco coach)
- ❑ Provides links to community services

# Embedding the IT/Epic systems



- ✓ Live feed of LCS schedule in EPIC radiology ordering system
- ✓ Study Access database linked with the hospital server database
- ✓ Study iPads at LCS screening sites linked to Epic scheduling and study Access database
- ✓ Videos embedded in REDCap tailored to study status and screening test results

# Implementation Model: RE-AIM

Evaluates implementation in the LCS setting.

- ❑ Reach (% of eligible patients & enrollee characteristics)
- ❑ Effectiveness (smoking outcomes)
- ❑ Adoption (by site)
- ❑ Implementation (fidelity, cost)
- ❑ Maintenance

# REACH: Study videos


- **MESSAGE DEVELOPMENT FRAMES**
- Benefits of quitting at LCS
- Losses from not participating

**RECRUITMENT TIMEPOINTS**

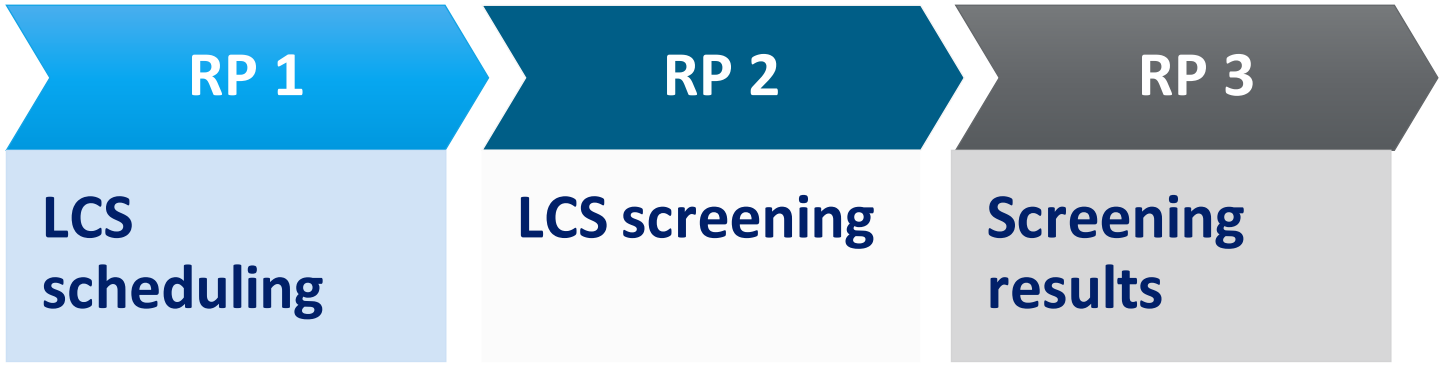
RP1: PCP & TTS: The importance of completing LCS & benefits of cessation

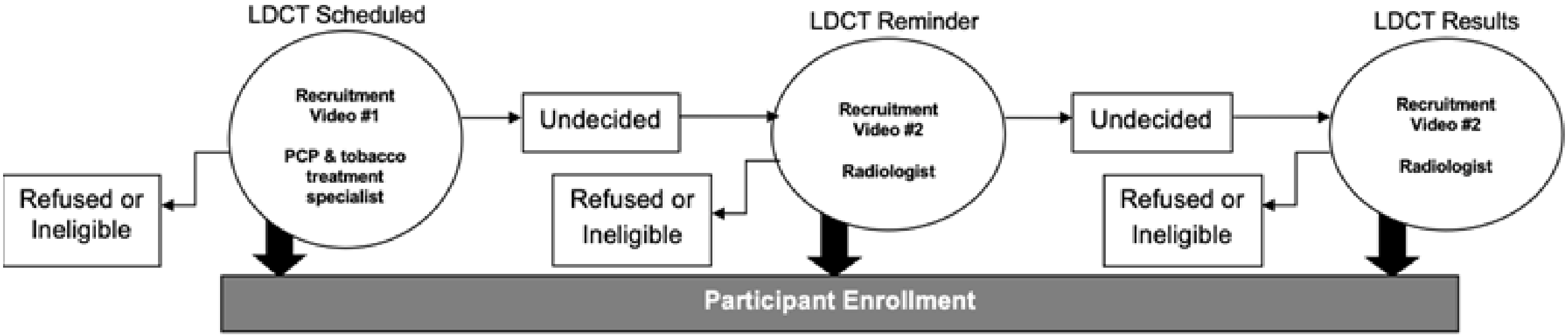
RP2: Radiologist: Importance of study

RP3: Radiologist: tailored to LCS result & brief cessation advice

- **OBSTACLES TO VIDEO USE**
- Email encryption
- Texting consent
- Ipads discontinued

# Recruitment



# Implementation Data Sources

Patient Surveys
(Baseline, 3 & 6 mo)

Enrollment data

Counseling Tracking Data

Patient exit interviews

EHR screening data

Cost data

# Enrollment Results

| Characteristics | % or Mean (SD) |
|---|---|
| **Women (%)** | 55.8 |
| **Age, Mean M (SD)** | 63.9 (6.5) |
| **HS degree or less (%)** | 32.2 |
| **Race/Ethnicity (%)** | |
| White | 82.2 |
| Black | 10.0 |
| Hispanic | 7.3 |
| **Cig < 30 minutes (%)** | 75.4 |
| **Medical Conditions (%)** | |
| 0-1 | 60.1 |
| 2-3 | 40.9 |
| **Lives with a smoker (%)** | 27.4 |
| **CPD M (SD)** | 16.2 (8.2) |
| **Pack-years M (SD)*** | 36.2 (19.4) |

About half of patients screened were current smokers.

# Treatment Utilization

**Counseling sessions**

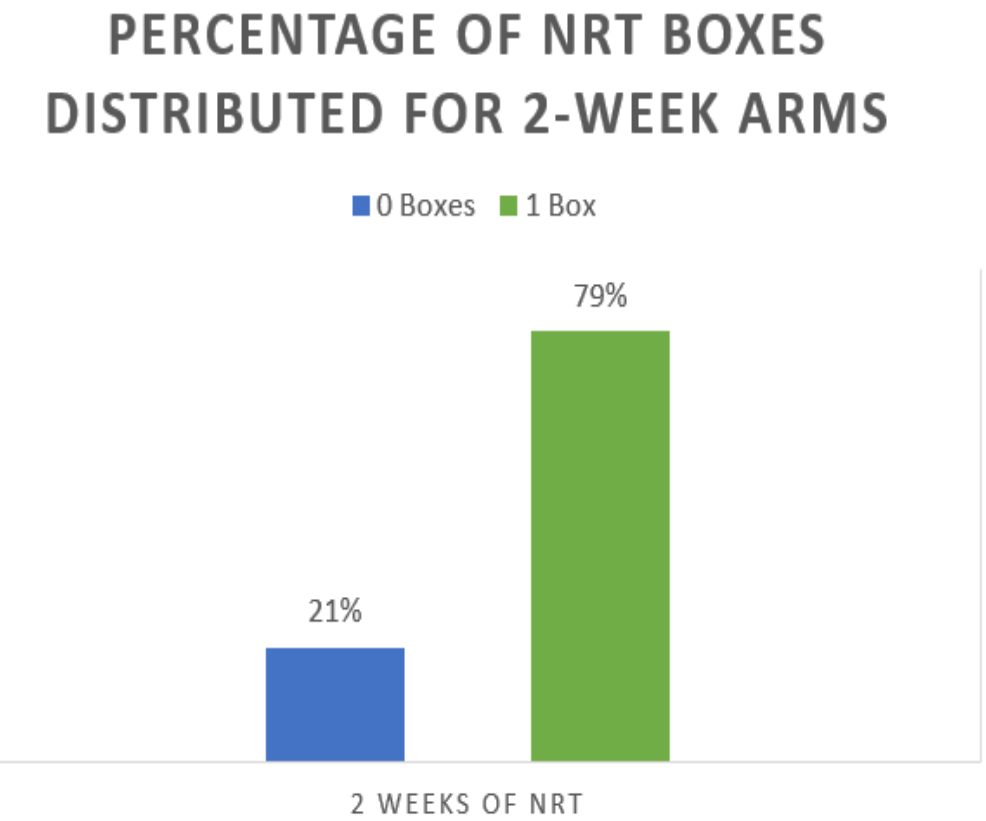
4 sessions: Mean = 3.2

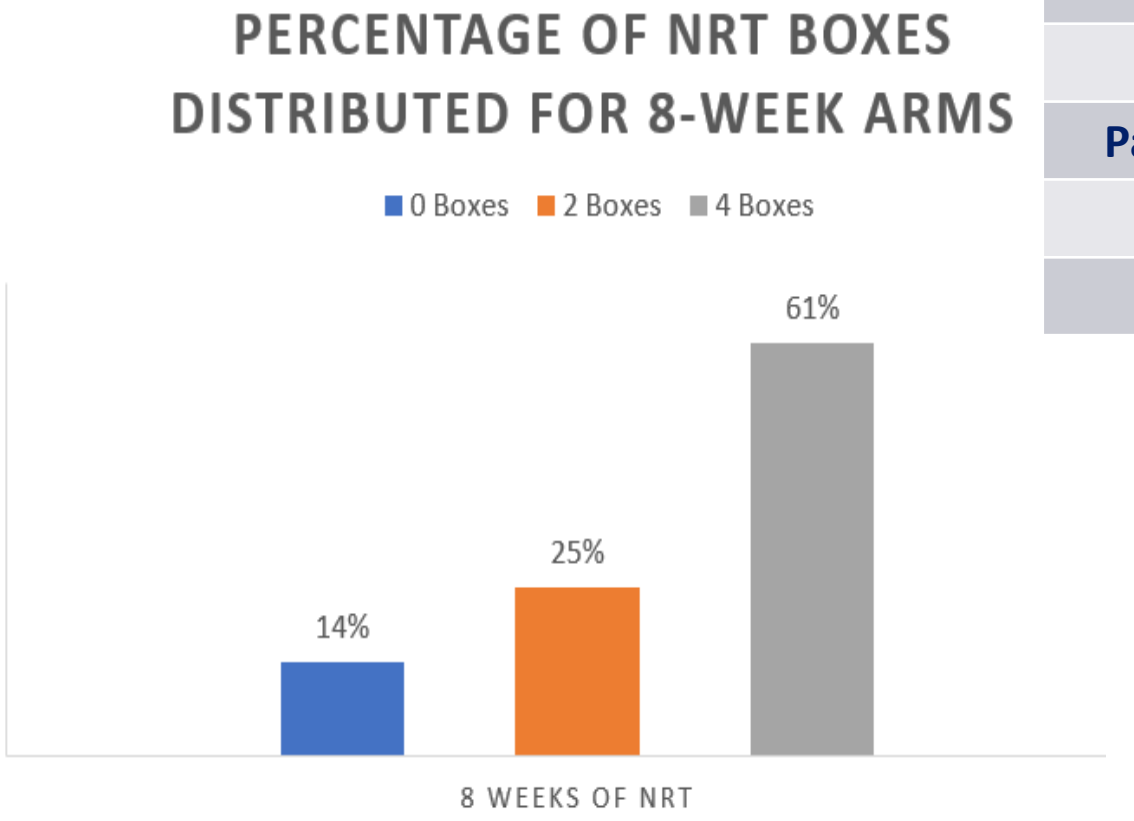
8 sessions: Mean = 5.6

**Findhelp**

- 24% of participants screened with a SNA
- 92% of those screened had a social need

| Top Socials Needs Identified |
|---|
| Food |
| Social Activities |
| Housing |
| Loneliness |
| Paying for Utilities |
| Transportation |
| Legal |



# THANK YOU AND ACKNOWLEDGEMENTS


## Study Team

Jordan Neil, PhD
Efrén J. Flores, MD
Vanessa Merker, PhD
Amy J. Wint, MSc
Caylin Marotta, MPH
Valeria Nunez, BA
Sydney McGovern, MSc
Doug Levy, Ph.D.
Yuchiao Chang, Ph.D.

## Funding

NCI: R01CA218123

# Implementation Science Approach to Shared Decision Making in Lung Cancer Screening

**Mayuko Ito Fukunaga, MD, MSc**
Assistant Professor of Medicine
Division of Pulmonary, Allergy, and Critical Care Medicine
University of Massachusetts Chan Medical School

# Shared decision making in lung cancer screening (SDM in LCS) is recommended, however, rarely happens during clinic visits.

**Patient characteristics**

- **LCS awareness**
- **Health literacy**
- Lung cancer fear and stigma
- **Lower access to patient portals**

**Patient perspective**

- **Need for LCS information**
- **Support for SDM**
- **Competing priorities & limited visit time**

**Implementation & Sustainability Infrastructure**

- **Limited resources for LCS**
- Missing/inaccurate smoking history

**SDM for LCS**

**PCP characteristics**

- Detailed LCS knowledge
- Skills in SDM

**PCP perspective**

- Need for LCS information
- Difficulty in identifying patients eligible for LCS
- Access to tools for SDM for LCS
- **Competing priorities & limited visit time**

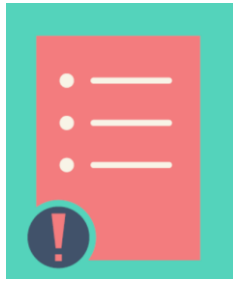
**External Environment**

- Medicare mandates & reimbursement
- Guideline recommendations
- Lack of quality metrics

# Pilot feasibility study of a pre-visit text message intervention to promote SDM for LCS

**Pre-Visit** → **Visit** → **Post-Visit**

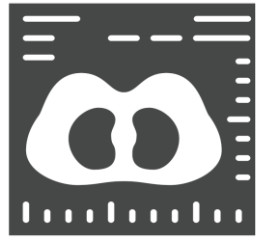
Decision Aid



Text Messages

Baseline Survey


**LCS Discussion? SDM?**



Follow-up Survey

EHR Review

| **Preliminary Results: Process & Effectiveness Outcomes** | **Comparison N=19 N=16 for survey (n/N, %)** | | **Intervention N=29 N=28 for survey (n/N, %)** | |
|---|---|---|---|---|
| Decision aid: Read all + most | 10/16 | 63% | 16/28 | 57% |
| Text messages: Read all + most | NA | NA | 21/27 | 78% |
| LCS talk | 15/16 | 94% | 23/28 | 82% |
| Patient initiated LCS talk | 9/15 | 60% | 16/23 | 70% |
| Patient knowledge score change(range 0-9) | | 0.9 | | 2.1 |
| SDM process score (range 0-4, mean, SD) | 2.8 | 1.4 | 2.2 | 1.4 |
| LDCT completion within 6 months from the PCP visit | 5/19 | 26% | 10/29 | 35% |

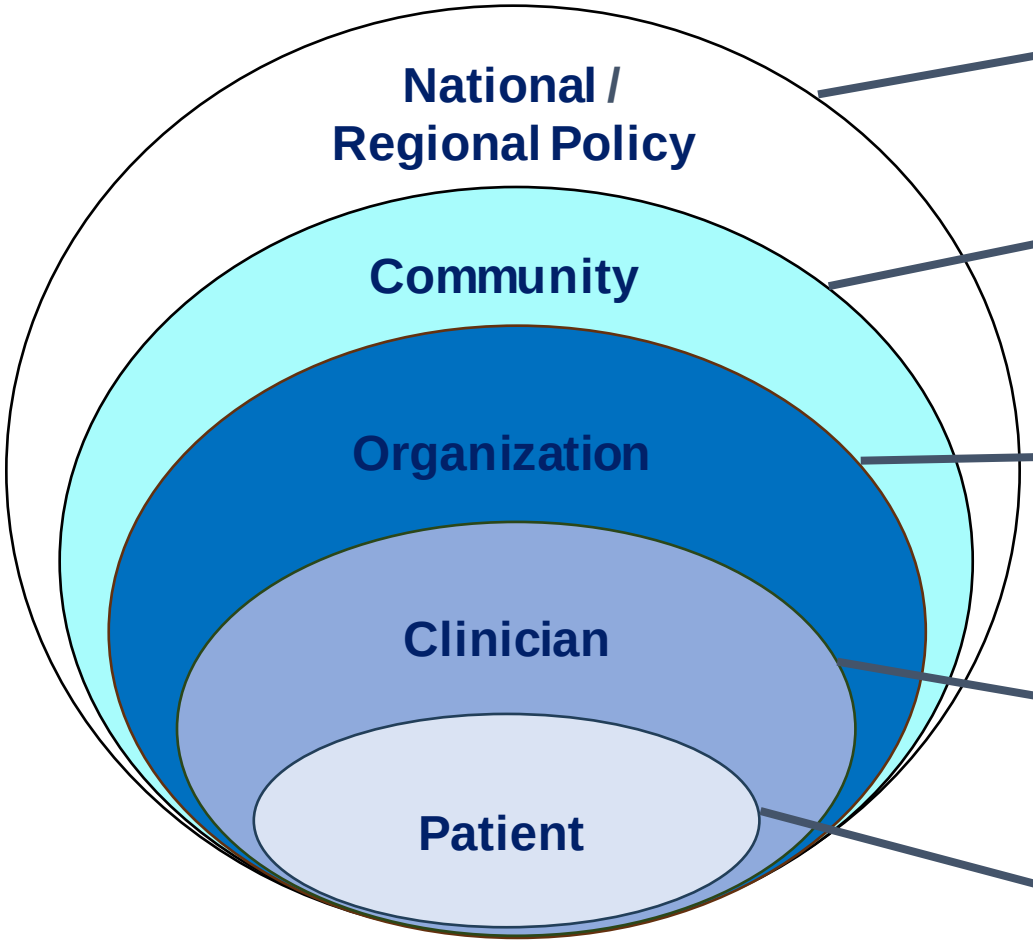
More than 90% of the participants agreed that text messages are a good way to help patients talk about LCS with their providers.

# Conclusions & Discussion informed by the RE-AIM outcomes

| RE-AIM Outcomes | Findings from our pilot study |
|---|---|
| **Reach** | • More patient participants read text messages. |
| **Effectiveness** | • Patient knowledge improved more in the intervention arm.<br>• LDCT completion was 9% higher in the intervention arm.<br>• **Quality of SDM remains low.** |
| **Adoption** | • Patients supported the LCS text message intervention.<br>• An automated text message intervention is efficient, low-cost, most likely feasible and scalable in real clinical settings. |
| **Implementation** Fidelity, feasibility, cost, and adaptations | |
| **Maintenance** Sustainability | |

Next Step
- Return to PRISM.
- Develop and add a provider-level intervention.

# Efforts to support SDM in LCS mapped by the Socioecological Model




Socioecological model

- CMS mandate & reimbursement
- Guidelines

- Community health worker
- Tobacco cessation program

- Centralized vs. decentralized programs
- LCS navigator
- Telehealth & group visit

- EHR designs (i.e., reminder, access to decision aides, & smart text)
- SDM training

- Decision aids

Wiener RS, et al. Stakeholder Research Priorities to Promote Implementation of Shared Decision-Making for Lung Cancer Screening: An ATS and VA HSR&D Statement. Am J Respir Crit Care Med. 2022 Mar 15;205(6):619-630.

# Thank You

## Clinical partners

- UMass Memorial Health Lung Cancer Screening Program
- UMass Memorial Health Primary Care
- UMass Memorial Health Clinical Informatics Team

## Funding


- NHLBI K12 implementation research program (1K12HK138049-01)
- NCI K08 career development award (1K08CA283304-01)


## Mentors & Advisors

- Renda Wiener, MD, MPH
- Thomas Houston, MD, MPH
- Kathleen Mazor, EdD
- Rajani Sadasivam, PhD
- Paul Han, MD, MPH
- Lori Pbert, PhD
- Alexander Bankier, MD, PhD
- Eric Alper, MD
- Gordon Manning, MD
- M. Diane McKee, MD

# Facilitating Adherence to Annual Lung Cancer Screening:

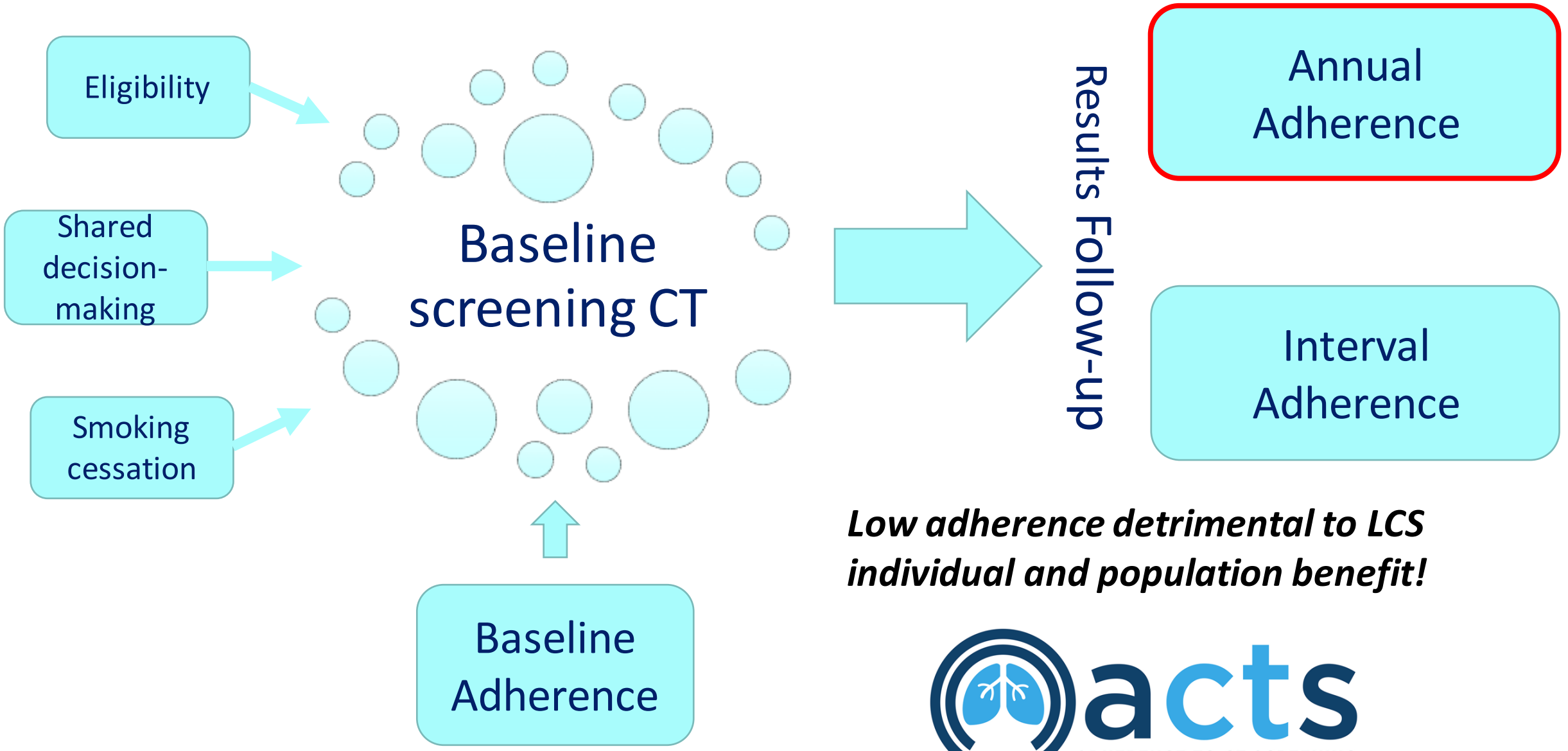
# An Implementation Science Approach

**Erin Hirsch, MSPH, MSCS**
K00 Post-Doctoral Research Fellow
Cancer Prevention Precision Control Institute
Center for Discovery & Innovation at
Hackensack Meridian Health

Cancer Center
NCI-DESIGNATED COMPREHENSIVE CANCER CENTER

Member of Hackensack Meridian *Health*

# Adherence is a vital piece of the screening algorithm



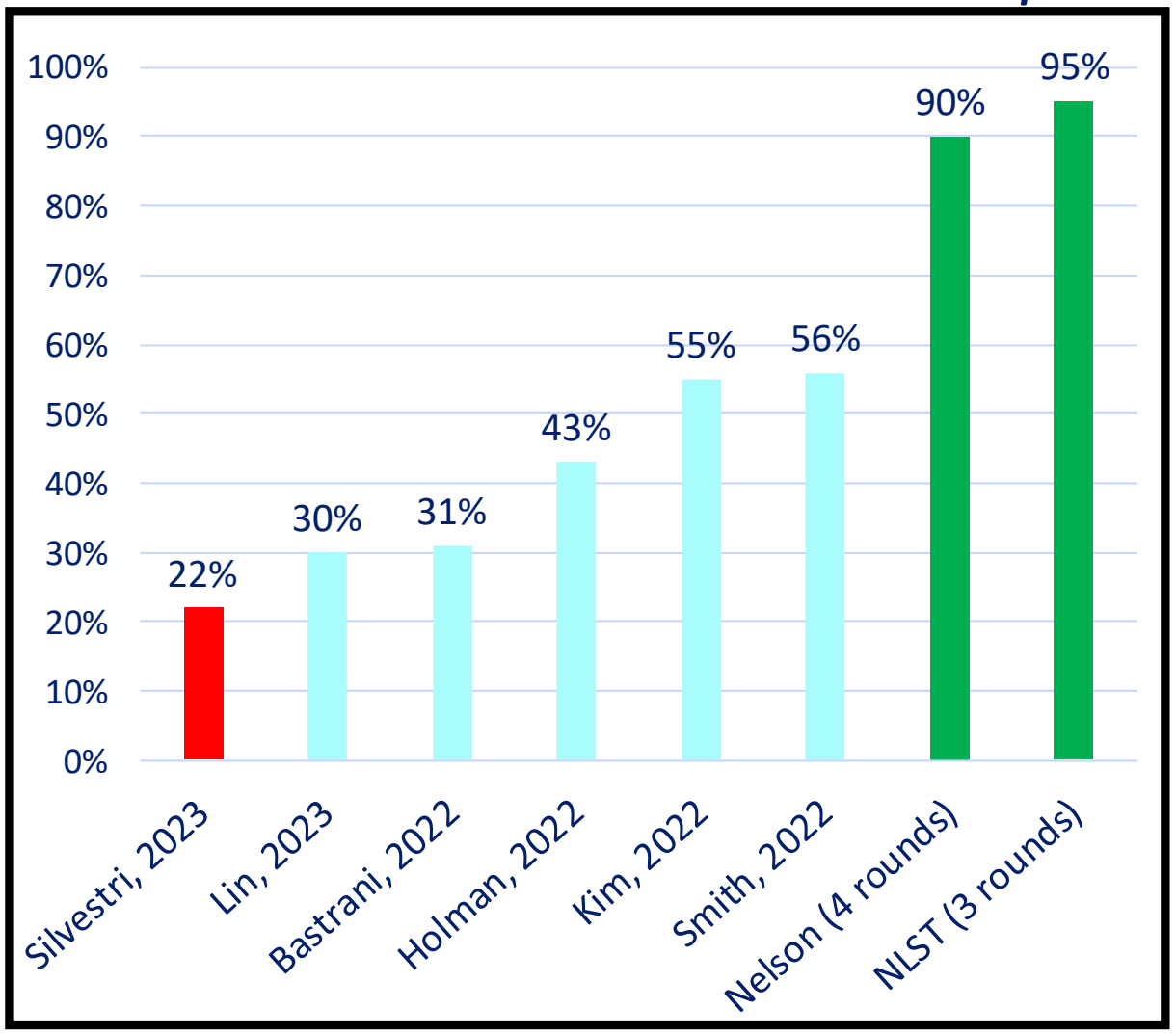

***Low adherence detrimental to LCS individual and population benefit!***

acts
ADHERENCE TO CT SCREENING

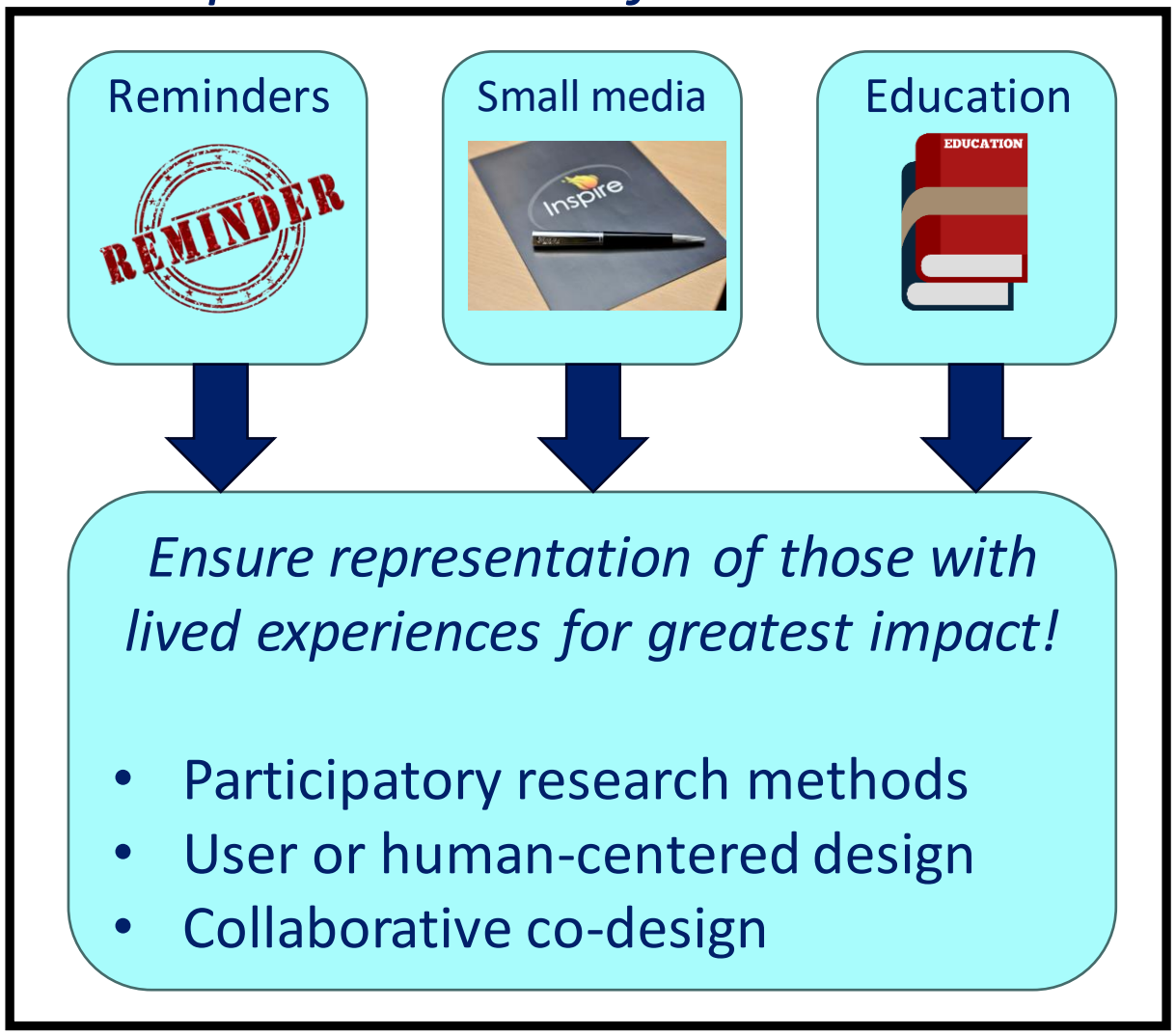
Studts, Byrne, & Basu Roy, Project ACTS

# Aligning potential evidence-based interventions

## *The Translation Adherence Gap*




## *Representation of LCS Individuals*




CDC Cancer Resources for Clinics and Communities, Evidence-Based Intervention; Harrison, et al. *J R Soc Med*, 2022; President's Cancer Panel, Closing Gaps in Cancer Screening; CDC Gateway to Health Communication

# Identifying relevant and engaging lung cancer screening imagery

## *The Importance*

Captures attention

Evokes emotions

~~STIGMA~~

Supports engagement

Communicate medical information


American Lung Association.

*vs.*

## *Methodology*

1) Photovoice activity

2) Semi-structured interviews

3) Inductive thematic analysis

Houts, et al. Patient Educ Couns, 2006; Hamann, et al. J Thorac Oncol, 2018.

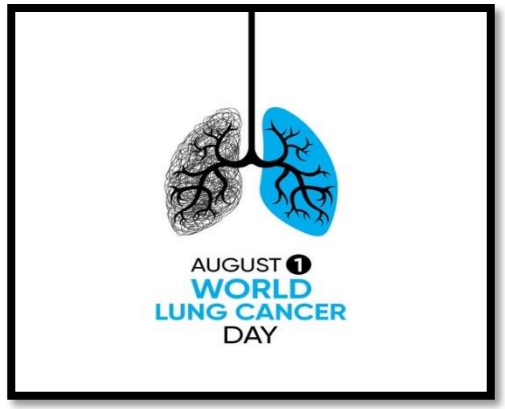
# Imagery content, influence, and engagement themes

**Theme 1**:
*Images should focus on good news and early detection.*

**Theme 2**:

*People in pictures should be relatable.*

**Theme 3**:
*Pictures with lungs can dually support lung health or invoke fear.*




**Theme 4**:

*Opportunity for education and awareness.*

**Theme 5**:
*Images should not be judgmental and induce stigma.*

# Thank You and Acknowledgements

## Co-investigators

- Jamie L. Studts
- Kaitlyn Hoover

## Funding and resources


- NCI F99/K00 Predoctoral to Postdoctoral Fellow Transition Award (K00 CA264409, PI: Erin Hirsch)
- University of Colorado Thoracic Oncology Research Initiative
- University of Colorado Cancer Center Population Health Shared Resource
- University of Colorado Cancer Center Support Grant (NCI/ NIH P30CA046934)
- University of Colorado Clinical and Translational Sciences Institute


# Questions

*Please use the **Q&A feature** of Zoom to submit your questions for our panelists.*

# Thank You

Join us **April 26th at 12PM ET** for the next webinar in our series

## Population vs Individual Risk Assessment for Lung Cancer Screening Eligibility

*Registration link can be found in the Zoom chat and on the NLCRT website*