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Effects of a lung cancer screening decision aid on overdiagnosis knowledge and screening intent in primary care patients

Preventing Overdiagnosis 2016

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Background- Benefit from screening in NLST

- National Lung Screening Trial (NLST) found annual low dose CT scanning reduced lung cancer mortality compared with chest radiography by ~0.3% (absolute)



Harms: False positives in NLST

- About 365 per 1000 screened individuals had at least one false positive screen
- Most of these were resolved with further imaging, but 7-8% led to an invasive procedure



Overdiagnosis in NLST

- Analysis of excess cancers detected in NLST
- 18.5% (95% CI 5.4%,30.6%) chance that a given screen-detected lung cancer was a case of overdiagnosis
- #Overdiagnosed/Lung cancer death averted = 1.38



USPSTF now recommends

- annual CT screening for NLST-eligible individuals
 - 55-80 yrs; ≥ 30 pack years; smoke currently or quit within 15 years
- shared decision making including “thorough discussion” of benefits, limitations, and “known and uncertain harms”





Supporting appropriate implementation of lung cancer screening – 3 projects

1. Deliberative democracy (community jury) methods to guide decisions about screening “intensity”
- ➔ 2. Decision aid development and testing
3. Implementation pilot



Policy help from CMS

- Centers for Medicare & Medicaid Services (CMS)
 - Largest single public healthcare insurer in the US
 - Mainly covers persons age 65 and older
 - Requires a “shared decision making visit” for lung cancer screening

“...including the **use of one or more decision aids**, to include benefits and harms of screening, follow-up diagnostic testing, **over-diagnosis**, false positive rate, and total radiation exposure.”



Many implementation problems

- To name one (relevant to POD)
 - Communicating about harms is difficult, especially overdiagnosis



Purpose of decision aid pilot study

- 1. Develop and test a CMS- compliant lung cancer screening decision aid video
- 2. Estimate effects of the decision aid on
 - Overdiagnosis knowledge
 - General screening attitudes (enthusiasm)
 - Screening intent



Methods

- **Design:** single group (pre-post) pilot study (n=50)
- **Participants:** USPSTF guideline-eligible
 - 55-80 years, 30+ pack years, current smoker or former smoker who has quit within 15 years
 - Active patients in one US academic primary care practice
- **Study flow:**
 - Pre-decision aid survey
 - 6-minute video decision aid on lung cancer screening
 - Post-decision aid survey
 - 3 month chart review for screening behavior (in progress)



Outcomes

Outcome (pre-post)	Description
Acceptability	Perceived usefulness, balance etc.
Overdiagnosis knowledge	7-item scale of conceptual knowledge, adapted from Hersch, et al., 2015*
Cancer screening enthusiasm	30 point scale adapted from DeFrank, et al., 2015
Intent to initiate screening	Single 5-point Likert item, dichotomized for analysis

*Hersch, et al. Lancet 2015; 385: 1642–52



Example overdiagnosis knowledge items

- ALL lung cancers will eventually cause illness and death if they are not found and treated. (False)
- Screening tests lead some people to get cancer treatments that they do not need. (True)



Example screening attitudes items

- Getting screened is the right thing to do.
- I would feel like I'd done something wrong if I skipped a regular screening.

Response options: 5 point Likert

(Strongly agree <-> Strongly disagree)



Decision Aid

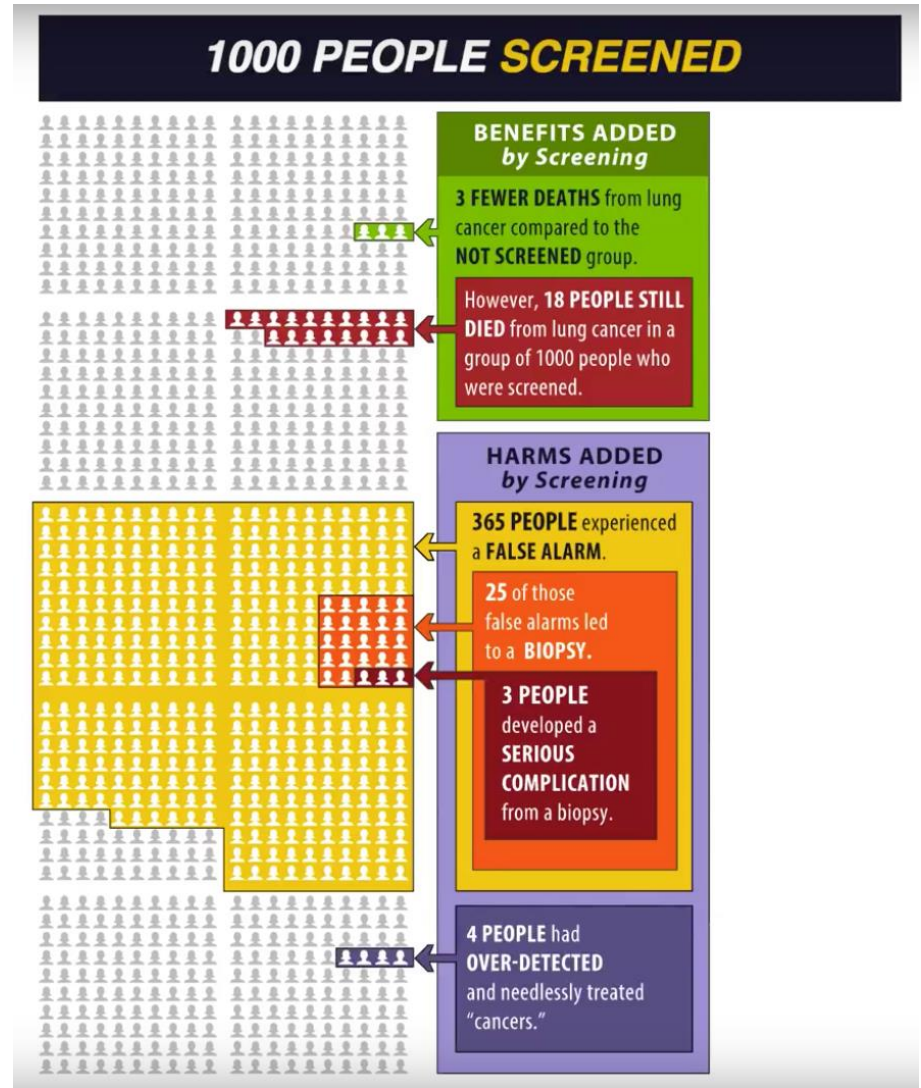
CHOICE

Should I start having yearly screening for lung cancer?

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How important are these benefits and harms to you?

YOUR DECISION



Pictogram adapted from US Veterans Health Administration, National Center for Health Promotion and Disease Prevention



Results – Participant Characteristics (n=50)

Factor	Average or %
Age	63
Sex (% Female)	48%
Race/Ethnicity	
White	58%
Black	30%
Other	12%
Education	
≤ 12 years	50%
Smoking status (% current) smoker	46%
Pack years smoked	52



Conceptual knowledge of overdiagnosis

n=50	Pre	Post	Difference (95% CI)
Overdiagnosis knowledge* (on 7 point scale)	1.8	4.1	2.32 (1.47, 2.17)



Decision Aid Acceptability

Acceptability Item (n=50)	n (%)
I found the decision aid:	
Slanted toward getting screened for lung cancer	16 (32%)
Balanced	29 (58%)
Slanted toward NOT getting screened for lung cancer	5 (10%)
Would you have found this decision aid useful in making a decision about getting screened for lung cancer?	
Yes	48 (96%)
No	2 (4%)
Do you think we included enough information to help someone decide whether to be screened?	
Yes	44 (88%)
No	6 (12%)



Cancer Screening Enthusiasm

n=50	Pre	Post	Difference (95% CI)
Cancer Screening Enthusiasm— 30 point scale	19.5	17.6	1.9 (.81, 2.9)



Results – Screening Intent

- Proportion with intent to start annual screening did not change
(pre-video: 54%, post-video: 50%)



Limitations

- One-group (pre-post) study, no control
- Small, single site study



Conclusions

- A video decision aid for lung cancer screening
 - Improved knowledge of overdiagnosis from screening
 - Modestly reduced enthusiasm about cancer screening
 - Did not substantially change intent to begin screening



Lessons and observations

- Decision aids can increase knowledge of overdiagnosis and modestly affect attitudes
- However, patient decision aids alone are unlikely to have a large impact on screening behavior
- Other interventions that affect screening intensity including policy, system, and provider-directed interventions are needed
 - CMS guidelines are an example
- A narrow population of patients appears to derive net benefit from screening; systematically identifying them in practice is difficult
- Appropriate implementation of lung cancer screening across the continuum of care is resource intensive



Acknowledgements

- North Carolina Translational and Clinical Sciences Institute
- UNC Lineberger Comprehensive Cancer Center
 - University Cancer Research Fund
 - Communication for Health Applications and Intervention (CHAI) Core
- Shana Ratner, MD – Director, UNC General Internal Medicine Clinic
- Linda Kinsinger, MD MPH – Director (Ret.), National Center for Health Promotion and Disease Prevention, Veterans Health Administration
- Adrian Compean García – student research assistant

