Minimizing Risk from Lung Cancer Screening

Presented by:

Douglas E. Wood, MD
Fred Hutchinson Cancer Research Center/
Seattle Cancer Care Alliance

July 22, 2016

Moderated by Shannon K. Ryan
NCCN, Conferences and Meetings Department

Lung Cancer is the Leading Cause of Cancer Death in Every Ethnic Group

Lung Cancer is the Second Leading Cause of all Deaths in the United States

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Cancer Screening – Early Detection

Why is the Survival Rate for Lung Cancer Still So Low?

Because so Few Cases are Diagnosed at Early Stage When Cancer is Most Curable

Cancer screening coverage
Breast Prostate Colon

Lung cancer disparities
Elderly Low socioeconomic group Racial “Self-inflicted” disease

Which is the following is true regarding insurance coverage for lung cancer screening?

A. There is no coverage for lung cancer screening
B. Medicare covers screening for high-risk patients
C. Private insurers cover screening for high risk patients
D. Both Medicare and private insurers cover screening for high-risk patients
E. Medicare and private insurers cover all patients for screening

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Which is the following is true regarding insurance coverage for lung cancer screening?

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D. Both Medicare and private insurers cover screening for high-risk patients
E. Medicare and private insurers cover all patients for screening

At the present time, the NCCN panel does not recommend the routine use of screening CT as standard clinical practice (category 3). Available data are conflicting and thus, conclusive data from ongoing clinical trials are necessary to define the benefits and risks....
LUNG CANCER SCREENING

Background

Previous studies have established lower stage distribution, and improved resectability and survival \textbf{BUT not lower mortality}

No randomized trial has had an appropriate control
Randomized control trial very difficult to perform
Previous trials have had increased incidence in screened groups - ? Overdiagnosis, length, or lead time bias

National Lung Screening Trial

Primary aim: to determine whether lung cancer screening using low-dose helical CT reduces lung cancer-specific mortality relative to screening with chest radiographs in a high-risk cohort.
National Lung Screening Trial (NCI)

- **Study design:** Randomized controlled trial
- **Interventions:** 3 screenings performed over 2 years:
- **1st Outcome:** Lung cancer mortality assessed after 5 years of follow-up
- **Major eligibility criteria:**
  - Age 55 to 74 years
  - A cigarette smoking history of at least 30 pack-years
  - Current cigarette smokers and former smokers who quit within 15 years of randomization
- **Enrollment:** 53,454 participants at 33 sites
  - 90% statistical power to detect a 20% reduction in lung cancer mortality
  - Secondary endpoint of all cause mortality

NLST Timeline

- **Time:**
  - T₀: 9/02
  - T₁: 9/03
  - T₂: 9/04
  - T₃: 9/05
  - T₄: 9/06
  - T₅: 9/07
  - T₆: 9/08
  - T₇: 9/09
  - T₈: 9/10
  - T₉: 10/20/10
National Lung Screening Trial Results
Lung Cancer Specific Mortality

<table>
<thead>
<tr>
<th>Trial Arm</th>
<th>Person Years (py)</th>
<th>Lung Cancer Deaths</th>
<th>Lung Cancer Mortality per 100,000 py</th>
<th>Reduction in Lung Cancer Mortality (%)</th>
<th>95% CI</th>
<th>p Value</th>
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</thead>
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<tr>
<td>LDCT</td>
<td>144,103</td>
<td>356</td>
<td>247</td>
<td>20.0</td>
<td>6.8 to 26.7</td>
<td>0.004</td>
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<tr>
<td>CXR</td>
<td>143,368</td>
<td>443</td>
<td>309</td>
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All Cause Mortality

<table>
<thead>
<tr>
<th>Trial Arm</th>
<th>Person Years (py)</th>
<th>Deaths</th>
<th>All-cause Mortality per 100,000 py</th>
<th>Reduction in All-cause Mortality (%)</th>
<th>95% CI</th>
<th>p Value</th>
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</thead>
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<td>LDCT</td>
<td>167,389</td>
<td>1877</td>
<td>1121</td>
<td>6.7</td>
<td>1.2 to 13.6</td>
<td>0.02</td>
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<tr>
<td>CXR</td>
<td>166,382</td>
<td>2000</td>
<td>1202</td>
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</tbody>
</table>

Conclusion

Screening with low dose chest CT conclusively reduces mortality from lung cancer in high risk patients.
**Figure.** Frequency of a positive result and cases of lung cancer diagnosed within 12 mo of baseline enrollment.

![Chart showing frequency of positive results and cases of lung cancer](chart-url)

Lung Cancer Screening

No suspected infection/inflammation

- Solid or part-solid nodule
  - See Evaluation of Screening Findings (LCS-3)
- GGOs/GGNs/NSNs
  - See Evaluation of Screening Findings (LCS-4)
- Multiple GGOs/GGNs/NSNs
  - See Evaluation of Screening Findings (LCS-5)

RISKS/BENEFITS OF LUNG CANCER SCREENING

RISKS
- Futility detection of small aggressive tumors or indolent disease
- Quality of life
  - Anxiety of test findings
  - Physical complications from diagnostic workup
  - False-positive results
  - False-negative results
  - Unnecessary testing and procedures
  - Radiation exposure
  - Cost
  - Incidental lesions

BENEFITS
- Decreased lung cancer mortality
- Quality of life
  - Reduction in disease-related morbidity
  - Reduction in treatment-related morbidity
  - Improvement in healthy lifestyles
  - Reduction in anxiety/psychosocial burden
  - Discovery of other significant occult health risks (eg, thyroid nodule, severe but silent coronary artery disease, early renal cancer in upper pole of kidney, aortic aneurysm, breast cancer)
Draft Recommendation Statement

The U.S. Preventive Services Task Force (USPSTF) recommends annual screening for lung cancer with low-dose computed tomography (LDCT) in persons at high risk for lung cancer based on age and smoking history.

This is a Grade B recommendation.

March 12, 2014

Tamara S. Syrek Jensen, J.D.
Acting Director, Coverage and Analysis Group
Centers for Medicare & Medicaid Services
Mail Stop C1-09-06
7500 Security Boulevard
Baltimore, MD 21244

By Online Submission

Re: National Coverage Analysis for Lung Cancer Screening with Low Dose Computed Tomography (CAG-00439N)
**THE WALL STREET JOURNAL.**

**OPINION**

Medicare’s Puzzling Refusal to Cover Lung-Cancer Screening

We know screening can save thousands of lives every year. But it’s not provided to the group most likely to benefit.

By DOUGLAS E. WOOD AND ELLA A. KAZEROONI

June 17, 2014 7:11 p.m. ET

If you could save thousands of lives, would you do it?

That’s the question Medicare officials are now considering—whether to approve lung-cancer screening for Medicare beneficiaries, which we estimate could save 14,000 lives each year in that group alone. Most patients are discovered with lung cancer at a stage already too late for a cure, and cancer screening for early detection has been recommended for other common cancers for decades. The procedure has turned thousands of people into survivors rather than victims.

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**Congress Urges Medicare to Cover Lung Cancer Screening**

Réanne Nelson

June 05, 2014

Politicians have gotten involved and are campaigning to have lung cancer screening covered by Medicare, which insures people 65 years of age and older. Members of the US House and Senate are asking the Centers for Medicare & Medicaid Services (CMS) to approve coverage of lung cancer screening with low-dose CT.

The Senate letter has 45 signatories, and points out that the US Preventive Services Task Force has evaluated low-dose CT and given it a positive recommendation. “This means that patients with private insurance are gaining access but Medicare beneficiaries are still waiting,” they write.

Low-dose CT is already covered by the Department of Veterans Affairs, the Department of Energy, and a number of large private insurers, such as WellPoint, Blue Cross Blue Shield affiliates, and Anthem affiliates.

In the letter from the House, the 134 signatories point out that “Americans pay into Medicare throughout their working lives and deserve to have access to potentially life-saving evidence-based screening.”

Many major medical societies have come out in favor of lung cancer screening, including the American Association for Thoracic Surgery, the American Cancer Society, the American College of Radiology, the American Society of Clinical Oncology, the Lung Cancer Alliance, and the Society for Thoracic Surgeons.

Dear Ms. Syrek Jensen:

In follow up to the stakeholder letter dated March 12th, 2014 and the June 19th, 2014 meeting with the Centers for Medicare and Medicaid Services Coverage and Analysis Group (CMS CAG), the undersigned organizations and groups continue to strongly support broad national coverage for annual screening for lung cancer with low-dose computed tomography.

September 12, 2014

Tamara S. Syrek Jensen, J.D.
Acting Director, Coverage and Analysis Group
Centers for Medicare & Medicaid Services
Mail Stop C1-09-06
7500 Security Boulevard
Baltimore, MD 21244

Re: National Coverage Analysis for Lung Cancer Screening with Low Dose Computed Tomography (CAG #4395)

The undersigned organizations and groups continue to support broad national coverage for annual screening for lung cancer with low-dose computed tomography.
Lung Cancer Screening Status

LDCT now established with a significant mortality benefit for lung cancer screening in high risk groups
USPSTF recommendation requires coverage as a benefit under the ACA
Medicare now providing coverage for beneficiaries
Probably biggest impact on lung cancer management and outcomes in our generation
Concerns about Lung Cancer Screening

Benefit overestimated
Harm underestimated
Close balance of benefits and harms
Hippocrates – “Do no harm”
But in preventive services, harm presents in two forms:
   Unintended consequences of evaluation/treatment
   Denying preventive services from those who may benefit

Issues Debated in Lung Cancer Screening

- Does it work?
- Which patients should be screened?
  - What level of evidence?
- Minimizing harms
- Balancing unintended harms with benefit
- Lowering barriers to access
LIVE WEBINARS

Audience Response Question

Look for the polling box on right side of your screen, near Q&A box to vote.

It may take a few moments to collect the polling results.

All major guidelines groups agree that this patient cohort is high-risk and appropriate for lung cancer screening:

A. Age > 50 and > 20 pk/yr smoking history
B. Age > 50 and > 20 pk/yr smoking history with one additional risk factor
C. Age 55-74 and > 30 pk/yr smoking history
D. Age > 60, independent of smoking history
E. Patients with COPD or pulmonary fibrosis
All major guidelines groups agree that this patient cohort is high-risk and appropriate for lung cancer screening:

A. Age > 50 and > 20 pk/yr smoking history
B. Age > 50 and > 20 pk/yr smoking history with one additional risk factor
C. Age 55-74 and > 30 pk/yr smoking history
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<table>
<thead>
<tr>
<th>Lung Cancer Guidelines</th>
<th>NLST</th>
<th>USPSTF</th>
<th>CMS</th>
<th>Canadian Task Force on Preventive Health Care CTFPHC</th>
<th>Cancer Care Ontario</th>
<th>NCCN</th>
<th>ALA</th>
<th>ACCP</th>
<th>AAFP</th>
<th>AATS</th>
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<td>Age</td>
<td>55-74</td>
<td>55-80</td>
<td>55-77</td>
<td>55-74</td>
<td>&gt;55</td>
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<td>55-74</td>
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<td>55-79</td>
<td>55-80</td>
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<td>&gt;30</td>
<td>&gt;30</td>
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<td>&lt;15</td>
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<td>&lt;15</td>
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<td>&lt;15</td>
<td>NO</td>
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<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
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<td>Extended criteria</td>
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<td>NO</td>
<td>&gt;50 &gt;20 pk-yr Add risk factor</td>
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<td>NO</td>
<td>&gt;50 &gt;20 pk-yr Add risk factor</td>
<td></td>
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</tbody>
</table>
### Which Patients Should be Screened?

**What the NLST did do:**
Demonstrate a mortality reduction in patients with substantial risk factors for lung cancer

**What the NLST did not do:**
Define risk factors for lung cancer

NLST was a clinical trial, eligibility criteria were never meant to define the extent of “high risk” or be the basis of public policy

Only considered age and smoking history

No consideration of occupational/environmental exposure, cancer history, family history, other diseases

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**RISK ASSESSMENT**
- Smoking history
- Radon exposure
- Occupational exposure
- Cancer history
- Family history of lung cancer in first-degree relatives
- Disease history (COPD or pulmonary fibrosis)
- Smoking exposure (second-hand smoke)
- Absence of symptoms or signs of lung cancer (if symptoms, see appropriate NCCN Guidelines)

**RISK STATUS**
- **High risk:**
  - Age 55-74 y and
  - \( \geq 30 \) pack-year history of smoking and
  - Smoking cessation \(<15 \) y (category I)
  - Age \( \geq 60 \) y and
  - \( \geq 20 \) pack-year history of smoking and
  - One additional risk factor (other than second-hand smoke)

- **Moderate risk:**
  - Age \( \geq 60 \) y and
  - \( \geq 20 \) pack-year history of smoking or second-hand smoke exposure
  - No additional risk factors

- **Low risk:**
  - Age \(<50 \) y and/or
  - \( \leq 20 \) pack-year history of smoking

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Which Patients Should be Screened?

Key principle of NCCN Group 2 is the consideration of additional risk factors
USPSTF and CMS only considered age and smoking history
(presumably on the assumption that only the NLST provides data about lung cancer risk)
Mortality benefit of patients with a certain level of lung cancer risk
What if we identified patients with a similar level of risk?
Could they be extrapolated to have a similar level of mortality benefit?
Do we know any risk factors for lung cancer other than age and smoking history?

Which Patients Should be Screened?

NCCN position
Group 1 high risk patients - NLST inclusion (Category 1 recommendation)
Group 2 high risk patients approximate the risk of patients included in the NLST – Category 2A “uniform consensus” from panel
Issues Debated in Lung Cancer Screening

- Does it work?
- Which patients should be screened?
  - What level of evidence?
- Minimizing harms
- Balancing unintended harms with benefit
- Lowering barriers to access

Which Patients Should be Screened?

NCCN Group 2

Evidence from randomized trial is a critical foundation

Reality that additional randomized trial data limited
  - Occupational exposure
  - Past cancer or family history

Is it possible to extrapolate non-randomized data regarding additional risk factors to known outcomes?

Is this more pragmatic and equitable in providing access to preventive health services?
Risk Factors for Lung Cancer
NCCN Group 2

NCCN Group 1
NLCST/USPSTF/CMS
Age
Smoking

NCCN Group 2
Age
Smoking
Occupational/environmental
Asbestos, radon, silica, etc.
Cancer history
Family history
Disease history
COPD and pulmonary fibrosis

Previous Lung Diseases and Lung Cancer Risk:
A Pooled Analysis From the International Lung Cancer Consortium

Emphysema odds ratio 2.3

Published online 2012 Sep 17. doi: 10.1093/aje/kws151
### Lung Cancer Risk Assessment

<table>
<thead>
<tr>
<th></th>
<th>NLST</th>
<th>USPSTF</th>
<th>CMS</th>
<th>Brock</th>
<th>AATS</th>
<th>Bach</th>
<th>CLEAR</th>
<th>MyLungRisk</th>
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<td><strong>Age</strong></td>
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<td><strong>Gender</strong></td>
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<td><strong>Exposure</strong></td>
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<td>+</td>
<td>+</td>
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<td>+</td>
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<td><strong>COPD</strong></td>
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### Risk Calculator Assessment

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<th>Bach</th>
<th>Hoggart</th>
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<td><strong>NCCN 1 low</strong></td>
<td>0.6%</td>
<td>0.6%</td>
<td>1.8%</td>
<td>0.9%</td>
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<tr>
<td><strong>NCCN 1 med</strong></td>
<td>4.2%</td>
<td>2.3%</td>
<td>4.4%</td>
<td>2.0%</td>
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<td><strong>NCCN 1 high</strong></td>
<td>18.9%</td>
<td>4.6%</td>
<td>5.7%</td>
<td>6.0%</td>
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<td><strong>NCCN 2 low</strong></td>
<td>1.1%</td>
<td>0.2%</td>
<td>1.5%</td>
<td>1.3%</td>
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<td><strong>NCCN 2 med</strong></td>
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<td>3.1%</td>
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<td><strong>NCCN 2 high</strong></td>
<td>12.8%</td>
<td>1.7%</td>
<td>1.0%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

58 yo male 30 pk-yr, stopped 13 years ago, no other risk factors
65 yo male 40 pk-yr, stopped 5 years ago, family history
74 yo female 55 pk-yr, current smoker, previous cancer
50 yo female 25 pk-yr, stopped 15 years ago, previous cancer
65 yo male 25 pk-yr, current smoker, asbestos, pulmonary fibrosis
78 yo male 35 pk-yr, stopped smoking 1 year ago, previous cancer, COPD
Experience With a CT Screening Program for Individuals at High Risk for Developing Lung Cancer


Table 2. Prevalence Exam Results

<table>
<thead>
<tr>
<th>Result</th>
<th>Total Screened (n = 1,760)</th>
<th>NCCN Group 2 (n = 464)</th>
<th>NCCN Group 1 (n = 1,296)</th>
<th>P (Group 2 vs Group 1)</th>
<th>NLST (TO)</th>
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</thead>
<tbody>
<tr>
<td>Total positive</td>
<td>461</td>
<td>18</td>
<td>365</td>
<td>28.2%</td>
<td>27.3%</td>
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<tr>
<td>Probably benign</td>
<td>412</td>
<td>23.6%</td>
<td>309</td>
<td>23.8%</td>
<td>NR</td>
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<tr>
<td>Suspected</td>
<td>69</td>
<td>3.9%</td>
<td>56</td>
<td>4.3%</td>
<td>NR</td>
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<tr>
<td>Possible infection</td>
<td>114</td>
<td>6.5%</td>
<td>86</td>
<td>6.6%</td>
<td>0.8</td>
</tr>
<tr>
<td>Significant incidental findings</td>
<td>108</td>
<td>6.1%</td>
<td>80</td>
<td>6.2%</td>
<td>0.1</td>
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</table>

Table 4. Malignancy rate and average follow-up

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall</th>
<th>Group 2</th>
<th>Group 1</th>
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</thead>
<tbody>
<tr>
<td>Overall malignancy rate</td>
<td>25/1,328 (1.7%)</td>
<td>6/531 (1.1%)</td>
<td>19/997 (1.9%)</td>
</tr>
<tr>
<td>Average follow-up (mo)</td>
<td>12.5</td>
<td>12.1</td>
<td>12.7</td>
</tr>
<tr>
<td>Annualized malignancy rate</td>
<td>1.6%</td>
<td>1.8%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Time to diagnosis (mo)</td>
<td>4.1</td>
<td>5.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Average follow-up from diagnosis (mo)</td>
<td>7.8</td>
<td>5.3</td>
<td>8.6</td>
</tr>
</tbody>
</table>
NCCN guidelines identify which additional patient cohort beyond the NLST that is considered high-risk and appropriate for lung cancer screening:

A. Age ≥ 50 and ≥ 20 pk/yr smoking history
B. Age ≥ 50 and ≥ 20 pk/yr smoking history with one additional risk factor
C. Age 55-74 and ≥ 30 pk/yr smoking history
D. Age ≥ 60, independent of smoking history
E. Patients with COPD or pulmonary fibrosis
Issues Debated in Lung Cancer Screening

• Does it work?
• Which patients should be screened?
  – What level of evidence?
• Minimizing harms
• Balancing unintended harms with benefit
• Lowering barriers to access

Minimizing Harms of Lung Cancer Screening

Limit Access
  Further narrow, or prevent widening of, eligibility criteria
  Expose fewer people to risks
  Use policy to override shared decision-making
  Disenfranchise and potentially harm others at high risk

Improve management
  Refine management algorithms to minimize false positives
  Require expertise in evaluation/treatment to optimize outcomes
  Empower shared decision-making
  Provide access to similar risk patients
  Add cost to payers
  Risk of evaluation/treatment added to new patients with less proof of benefit
LungRADS 2014

<table>
<thead>
<tr>
<th>Category</th>
<th>Management</th>
<th>Probability of malignancy</th>
<th>Estimated Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete</td>
<td>Additional lung cancer screening (x-rays and/or computerized tomography)</td>
<td>n/a</td>
<td>1%</td>
</tr>
<tr>
<td>False-positive rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Baseline 26.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>After baseline</td>
<td>After baseline 21.8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Performance of Lung-RADS in the National Lung Screening Trial
A Retrospective Assessment

Paul F. Pinsky, PhD; David S. Gierada, MD; William Black, MD; Reginald Munden, MD; Hrudsya Nath, MD; Denise Aberle, MD; and Elias Kazzamori, MD

False-positive rate

<table>
<thead>
<tr>
<th></th>
<th>NLST</th>
<th>LungRADS</th>
<th>Improvement w/LungRADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>26.6%</td>
<td>12.8%</td>
<td>52%</td>
</tr>
<tr>
<td>After baseline</td>
<td>21.8%</td>
<td>5.3%</td>
<td>76%</td>
</tr>
</tbody>
</table>

Issues Debated in Lung Cancer Screening

• Does it work?
• Which patients should be screened?
  – What level of evidence?
• Minimizing harms
• Balancing unintended harms with benefit
• Lowering barriers to access
Counseling High Risk Patients About CT Screening

What are the risks:

Radiation risk:\(^1\)
- LDCT 0.61 to 1.5 millisieverts (mSv)*
- Routine CT - 5 to 8 mSv
- Naturally occurring radiation exposure at sea level is 3mSv/year
- Mammography 0.4 mSv
- Head CT 2 mSv

Anxiety risk due to:
- Uncertainty of a positive screening test
- Discovery of an significant incidental finding

Complication risk\(^2\):
- From diagnostic procedure for a positive screening test: 1.4%

Financial risk:
- Cost of an uncovered screening CT scan ($300)

*1 in 100,000 to 1 in 10,000 additional risk of fatal cancer from 1 screening CT scan.

\(^1\) http://www.radiologyinfo.org
\(^2\) NEJM 2011;365(2):158

CMS requires Shared Decision Making counseling for LCS

The Centers for Medicare & Medicaid Services (CMS) has determined that the evidence is sufficient to add a lung cancer screening counseling and shared decision making visit, and for appropriate beneficiaries, annual screening for lung cancer with low dose computed tomography (LDCT), as an additional preventive service benefit under the Medicare program if all of the following criteria are met:

Decision Memo for Screening for Lung Cancer with Low Dose Computed Tomography (LDCT) (CAG-00439N)  February 5, 2015
Lung Cancer Screening Saves Lives

Should you be screened for lung cancer?

Get Started

http://lungcancerscreeningsaveslives.org/
### Shared Decision Making Aid

#### Lung Cancer Screening

**SHOULD I DO IT?**

---

**Given your age and smoking history, you are eligible for screening according to the US Preventive Services Task Force criteria.**

---

http://www.shouldiscreen.com/
Shared Decision Making Aid

The chance of you developing lung cancer in the next 6 years is 7.8%. Talk to your doctor about the option to screen or not to screen as s/he will understand your situation best.

Issues Debated in Lung Cancer Screening

• Does it work?
• Which patients should be screened?
  – What level of evidence?
• Minimizing harms
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Screening Efficiency
Number Needed to Screen

<table>
<thead>
<tr>
<th>Screening Method</th>
<th>Number Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening mammography(^1,2)</td>
<td>780 - 2000</td>
</tr>
<tr>
<td>Screening colonoscopy(^2)</td>
<td>1250</td>
</tr>
<tr>
<td>Screening LDCT (in NLST)</td>
<td>320</td>
</tr>
</tbody>
</table>


Applying the National Lung Screening Trial eligibility criteria to the US population: what percent of the population and of incident lung cancers would be covered?

Paul F Pinsky and Christine D Berg

SEER (Surveillance, Epidemiology and End Results) United States Census National Health Interview Survey Two statistical models of lung cancer risk

Proportion of those diagnosed with lung cancer that would be covered by the NLST-based eligibility criteria.

27%

*J Med Screen* 2012;19:154–156
Annual Number of Lung Cancer Deaths Potentially Avertable by Screening in the United States

Jiamin Ma, PhD, MHS; Elizabeth M. Ward, PhD; Robert Smith, PhD; and Ahmedin Jamali, DVM, PhD

8.6 million Americans eligible for screening
Annual number of lung cancer deaths averted – 12,250

Experience With a CT Screening Program for Individuals at High Risk for Developing Lung Cancer

NCCN Group 2 adds 2 million eligible for screening
Additional estimate of averted lung cancer deaths ≈ 3000

Cancer 2013;119:1381-5

World Health Organization

Health systems

Equity

Equity is the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically. Health inequalities therefore involve more than inequality with respect to health determinants, access to the resources needed to improve and maintain health or health outcomes. They also entail a failure to avoid or overcome inequalities that infringe on fairness and human rights norms.
Cancer Disparities

An overarching objective of the American Cancer Society's 2015 challenge goals is to eliminate disparities in the cancer burden among different segments of the US population, defined in terms of socioeconomic status (income, education, insurance status, etc.), race/ethnicity, geographic location, sex, and sexual orientation.

Lung cancer patient disparities:
- Older – 68% Medicare population
- Higher mortality amongst African-Americans
- Lower socioeconomic groups mortality 4-5 times greater
- Rural access to screening and treatment

Flores et al
Balancing curability and unnecessary surgery in the context of computed tomography screening for lung cancer

Lung Cancer Survival
Current Lung Cancer Survival


Lung Cancer Survival I-ELCAP