## The Challenge

<table>
<thead>
<tr>
<th>U.S. Census Region</th>
<th>No. of Accredited Centers</th>
<th>Estimated Eligible Smokers</th>
<th>LDCT Screens</th>
<th>Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>404</td>
<td>1,152,141</td>
<td>40,105</td>
<td>3.5</td>
</tr>
<tr>
<td>Midwest</td>
<td>497</td>
<td>2,020,045</td>
<td>38,931</td>
<td>1.9</td>
</tr>
<tr>
<td>South</td>
<td>663</td>
<td>3,072,095</td>
<td>47,966</td>
<td>1.6</td>
</tr>
<tr>
<td>West</td>
<td>232</td>
<td>1,368,694</td>
<td>14,080</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>1796</td>
<td>7,612,975</td>
<td>141,260</td>
<td>1.9</td>
</tr>
</tbody>
</table>
What’s the Solution?

1. Engaged referral base
“In one study, 82% of patients reported that they would undergo LDCT lung screening if recommended by their physician. Another study found that approximately 85% of LCS-adherent patients reported ‘trust in their provider’ as a reason for undergoing screening.”

What’s the Solution?

1. Engaged referral base

Radiology training and audit
Assistance with patient identification
Category 4 referral to pulmonary
S positive definition
Smoking cessation rates 2-3 times the national average
Primary care report cards
What’s the Solution?

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2. Reinforce the sense of urgency

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What’s the Solution?

1. Engaged referral base

2. Reinforce the sense of urgency

3. Provide HCPs with **correct** information and support

4. Maintain adherence

- Radiology training and audit
- Assistance with patient identification
- Category 4 referral to pulmonary S positive definition
- Smoking cessation rates 2-3 times the national average
- Primary care report cards
NLST, NELSON, MILD Study Designs

NLST

MILD annual

MILD biannual

NELSON

Greater Mortality benefit
## Greater Benefit During Annual Screening

<table>
<thead>
<tr>
<th></th>
<th>Baseline Screening (T0)</th>
<th>Annual Screening (T1+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>1.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Stage I</td>
<td>66.4%</td>
<td>79.7%</td>
</tr>
<tr>
<td>Stage II</td>
<td>10.3%</td>
<td>6.8%</td>
</tr>
<tr>
<td><strong>Early Stage</strong></td>
<td><strong>78.5%</strong></td>
<td><strong>88.1%</strong></td>
</tr>
<tr>
<td>Stage III</td>
<td>10.3%</td>
<td>10.2%</td>
</tr>
<tr>
<td>Stage IV</td>
<td>11.2%</td>
<td>1.7%</td>
</tr>
<tr>
<td><strong>Late Stage</strong></td>
<td><strong>21.5%</strong></td>
<td><strong>11.9%</strong></td>
</tr>
</tbody>
</table>
• 8M people in the US eligible for CTLS by USPSTF criteria
• If all those people got screened properly, **47,904** lives would be saved

This would save more lives than curing breast cancer
False Positive Rate

Overall FPR: 23.5%

Overall FPR: 7.8%

Overall FPR: 7.6%
Why Is This Important?

- American Journal of Respiratory and Critical Care Medicine
- American Journal of the Medical Sciences
- Annals of Oncology
- Annals of Thoracic Surgery
- Archives of Medical Science
- Archives of Pathology & Laboratory Medicine
- BMC Pulmonary Medicine
- Cancer
- Cancer Cytopathology
- Cancer Epidemiology, Biomarkers & Prevention
- Cancer Prevention Research
- Cancer Research
- Cancers
- Chest
- Clinical Cancer Research
- Clinical Lung Cancer
- Computers in Biology and Medicine
- Current Problems in Diagnostic Radiology
- Current Thoracic Surgery
- Epidemiologia e Prevenzione
- European Journal of Radiology
- European Journal of Radiology Open
- European Radiology
- European Respiratory Journal
- Expert Review of Molecular Diagnostics
- F1000 Prime Reports
- Family Practice
- Frontiers in Oncology
- Genetic Testing and Molecular Biomarkers
- Hamdan Medical Journal
- Hospital Practice
- Indian Journal of Medical Research
- Inhalation Toxicology
- International Journal of Cancer
- JAMA Internal Medicine
- Journal of Cancer Education
- Journal of Carcinogenesis
- Journal of Clinical Pathology
- Journal of Proteomics
- Journal of Surgical Oncology
- Journal of the National Cancer Institute
- Journal of the National Comprehensive Cancer Network
- Journal of Thoracic and Cardiovascular Surgery
- Journal of Thoracic Disease
- Journal of Thoracic Imaging
- Journal of Thoracic Oncology
- Lung
- Lung Cancer
- Medical Physics
- Medicine
- Minerva Chirurgica
- Oncology
- Oncotarget
- Open Biology
- Physics in Medicine and Biology
- PLoS ONE
- Postgraduate Medicine
- Preventing Chronic Disease; Public Health Research, Practice, and Policy
- Radiologic Technology
- Scientific Reports
- Seminars in Roentgenology
- Sensors
- South African Respiratory Journal
- Targeted Oncology
- Technology in Cancer Research and Treatment
- Theranostics
- Thoracic Surgery Clinics
- Thorax
- Transactions on Radiation and Plasma Medical Sciences
- Translational Cancer Research
- Translational Lung Cancer Research
- World Journal of Radiology
What to Tell Patients About False Positives?

• For every 100 CTLS exams, 90 will be negative and 10 will be positive
• Of those 10 scans that are positive, 8-9 will be negative for lung cancer, primarily with follow up imaging alone
• The false positive rate in CTLS is quite similar to that of mammography
Overdiagnosis

- Additional 6 years of follow up
- Mortality benefit continued to be demonstrated
- Overdiagnosis rate went from 18% to 3%
There is substantial and convincing scientific evidence for health risks following high-dose exposures. However, below 50-100 mSv (which includes occupational and environmental exposures), risks of health effects are either too small to be observed or are nonexistent.
Take Home Points

Screening uptake is improving, but still a long way to go
Education and awareness critical to increasing uptake
  True benefit
  Real risks
Greatest benefit in annual screening rounds

Call to action: correct misinformation, educate HCPs
and patients (and family and friends and strangers), get
your site to screen 25% of your eligible population in
the next two years
The NLCRT and its activities are supported by an educational grant from AstraZeneca