2014 Chicago Multidisciplinary Symposium in Thoracic Oncology

“Staging, Screening and Costs for Lung Cancer”
News Briefing

Moderator: Laurie E. Gaspar, MD, MBA, FASTRO

Thursday, October 30, 2014
7:00 a.m. CT
Lung adenocarcinoma staging based on 2011 IASLC/ATS/ERS classification: A pooled analysis of adenocarcinoma in-situ (AIS) and minimally invasive adenocarcinoma (MIA)

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Department of Pathology
Winship Cancer Institute of Emory University
Atlanta, GA
BACKGROUND

- Lung adenocarcinoma accounts for almost 60% of all non-small cell lung cancers.

- According to the 2011 IASLC/ATS/ERS classification, adenocarcinomas that are \( \leq 3 \) cm in size are reclassified as AIS (no invasion) and MIA (\( \leq 0.5 \) cm invasion) with \( pTis \) (adenocarcinoma) and \( pT1(mia) \) sub-categories being proposed.

- We conducted a systematic analysis of available data from the literature to evaluate the outcomes between AIS and MIA.

- A comprehensive search of published studies was conducted from electronic databases (MEDLINE, EMBASE, Cochrane) using relevant search criteria.
RESULTS

- Eighteen studies published between 2011-2014 were eligible for this analysis.

- A total of 863 patients were included (AIS-451; MIA-344; one study reported data with AIS+MIA grouped together-68).

- Median age of the patients was 67.5 years (females-61%, smokers-43%).
RESULTS

- The 5-year DFS rate for the whole population was 97.7%.
- The 5-year OS rate for the entire group was 97.3%.
- There was no difference between the 5-year DFS rate between AIS and MIA groups (97% vs. 96.7%; p=0.34).
- The 5-year OS rate for AIS population was equivalent to that of MIA population (97.5% vs. 96%; p=0.58).
CONCLUSION

- Patients with AIS and MIA experience 5-year survival rate of nearly 100%.

- There are no differences in survival rates when lung adenocarcinoma patients are staged according to the proposed 2011 IASLC/ATS/ERS pTis(adenocarcinoma) and pT1(mia) categories.

- Our findings raise questions regarding the necessity to classify tumors into AIS and MIA.
Low-dose CT Lung Cancer Screening Practices and Attitudes Among Primary Care Providers at an Academic Medical Center

J. Lewis, W. J. Petty, J.A. Tooze, D. P. Miller, C. Chiles, A. A. Miller, K. E. Weaver

Wake Forest Baptist Health, Winston-Salem, North Carolina
Results: Guideline knowledge is limited

<table>
<thead>
<tr>
<th>Guideline Component</th>
<th>% Responses consistent with any guidelines*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening is recommended for current and former smokers</td>
<td>67</td>
</tr>
<tr>
<td>Screening is not recommended for second-hand smokers</td>
<td>43</td>
</tr>
<tr>
<td>Eligible age to initiate screening is 50 or 55 years</td>
<td>35</td>
</tr>
<tr>
<td>Eligible age to stop screening is 75 or 80 years</td>
<td>29</td>
</tr>
<tr>
<td>Minimum smoking history is 20 or 30 pack years</td>
<td>36</td>
</tr>
<tr>
<td>1-year screening interval is recommended</td>
<td>25</td>
</tr>
<tr>
<td>% respondents who identified ≥ 3 components</td>
<td>47</td>
</tr>
<tr>
<td>% respondents who identified 0 components</td>
<td>24</td>
</tr>
</tbody>
</table>

*ACS, NCCN, ASCO, ACCP, AATS, ALA
Results: Familiarity with guidelines is associated with greater use of LDCT

- CXR: p = 0.047
- Sputum Cytology: p = 0.0002
- LDCT

Percentage of Respondents

<3 guideline components

≥3 guideline components
Results: Perceived effectiveness of LDCT in reducing mortality is comparatively low

Actual number needed to screen to prevent one cancer death with LDCT is less than mammography or flexible sigmoidoscopy

Results: Many perceived barriers to LDCT screening exist

Percentage of Respondents

- Patient financial cost
- False positives may cause harm
- Patient awareness
- Incidental findings
- Insurance coverage
- Patient fear
- Provider concern for radiation
- Provider time
- Insufficient evidence
- Geographical availability

Barriers:
- Minor Barrier
- Major Barrier
Conclusions

• More providers order CXR rather than LDCT for lung cancer screening
• Most providers do not know current guidelines for lung cancer screening
• <50% of providers perceive LDCT as effective in reducing cancer-specific mortality
• Major perceived barriers are related to cost, harm and patient awareness of screening
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Costs of the Diagnostic Workup for Lung Cancer: A Medicare Claims Analysis

Lokhandwala T¹, Dann R², Johnson M², D’Souza AO¹
¹Xcenda LLC, Palm Harbor, FL; ²GE HealthCare, Chalfont St Giles, United Kingdom
| **Objective** | Obtain utilization rates and estimate costs of diagnostic tests of patients with and without a lung cancer diagnosis who had an abnormal chest CT scan. |
| **Data Source (Study Period)** | 5% Medicare Claims Database (January 1, 2009 through December 31, 2011) |
| **Study Population** | Patients aged 65-74 years with an abnormal chest CT scan between July 1, 2009 through December 31, 2010<br>Excluded:<br>  - Patients diagnosed with cancer, pneumonia, atelectasis, or tuberculosis in the 6 months prior to the abnormal chest CT scan<br>  - No continuous enrollment in Medicare parts A and B through study period |
| **Analytical Approach** | Index date: date of first abnormal chest CT scan<br>Outcomes (computed in 12-month post-index)<br>  - Lung cancer incidence – reported as n (%)<br>  - Utilization of diagnostic tests (Chest CT, PET, X-rays, Biopsy) – reported as n (%) of patients<br>  - Costs of diagnostic tests (Chest CT, PET, X-rays, Biopsy) – reported in USD 2013 and includes total payments by Medicare, the beneficiary, and other third-party payers |

‡An abnormal finding that occurred within 7 days of the CT scan identified using the following ICD-9 CM codes: 793.1 (nonspecific (abnormal) findings on radiological and other examination of lung field); 786.6 (swelling, mass or lump in chest); 518.89 (other diseases of lung not elsewhere classified); 519.8 (other diseases of respiratory system, not elsewhere classified); 519.9 (unspecified disease of the respiratory system)
Results

- Total sample = 8,979
- Demographics: Mean (SD) age in years = 69.3 (2.9), 43.6% males, and 86.5% Caucasian.
- Lung cancer diagnosis rate over 12 months = 13.9%
- Median time to lung cancer diagnosis = 11 days

<table>
<thead>
<tr>
<th>Use of Diagnostic Tests</th>
<th>Diagnostic Costs per Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
</tr>
<tr>
<td>Type of test</td>
<td>N= 8,979</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Chest CT scans</td>
<td>32.9%</td>
</tr>
<tr>
<td>Chest PET scans</td>
<td>0.5%</td>
</tr>
<tr>
<td>Chest X-rays</td>
<td>54.4%</td>
</tr>
<tr>
<td>Biopsy overall</td>
<td>19.4%</td>
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</tbody>
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*Patients with biopsy* and *Patients without biopsy* are calculated separately.
### Average Cost Per Diagnostic Test

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest CT scans</td>
<td>$184</td>
</tr>
<tr>
<td>Chest PET scans</td>
<td>$624</td>
</tr>
<tr>
<td>Chest X-rays</td>
<td>$19</td>
</tr>
<tr>
<td>Biopsies</td>
<td>$14,634</td>
</tr>
</tbody>
</table>

- Biopsy costs include all costs incurred during the visit for the biopsy and not just the cost on the claim with a CPT code for biopsy. This approach enabled the capture of other services and adverse events that are associated with a biopsy.

- The costs for X-Ray/PET/CT scan included costs on claims with a CPT code for the specific service under consideration.
Biopsy Adverse Events and Negative Biopsies

• Patients with biopsy = 1,744
• Patients with biopsy-related adverse events‡ = 336 (19.3%)
• An adverse event increased the cost of a biopsy ~ 4 fold.

<table>
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<tr>
<th>With Adverse Event</th>
<th>Without adverse event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>$37,745</td>
<td>(60,129)</td>
</tr>
</tbody>
</table>

• The total lung cancer diagnostic cost was $38.3M in the defined patient population, of which 43.1% was accounted for by negative biopsies.

‡ Biopsy-related adverse events included were hemorrhage, pneumothorax, and respiratory failure requiring mechanical ventilation
Key Message

• Biopsy costs are a significant proportion of overall cost of diagnosing lung cancer today.

• We need to develop more precise risk stratification tools to better identify patients who require referrals for lung biopsy.

• This has the potential to reduce costs and improve patient outcomes.
Questions?

Contact ASTRO’s Press Office
In Chicago, October 30-31, 2014:
312-595-3150
Via email: press@astro.org

The online press kit:
www.astro.org/ThoracicPress