A Coordinated Approach to Implementing Low-dose Computed Tomography Lung Cancer Screening in a Rural Community Hospital

DATE: March 18, 2021  PRESENTED BY: Jessica Currier, Ph.D.
Presentation Outline

• Issue Background
• Lung Cancer Screening at Bay Area Hospital
• Knight Cancer Network & BAH Collaboration
• Implementation Process: planning, education & restructuring
• Outcomes
• Recommendations
Background & Significance

• Lung cancer leading cause of cancer death in men and women.
  • Age-adjusted mortality rate in OR: 36.6 deaths per 100,000 people
  • Higher mortality rates in rural OR
• Lung cancer screening improves survival rates & saves lives through early detection
Lung Cancer Screening

• Annual low-dose computed tomography (LDCT) lung cancer screening resulted in a 20% reduction in mortality

• United States Preventive Services Task Force Grade B recommendation for screening eligibility:
  
  – Age 50 or greater
  
  – 20 pack years over a lifetime
Lung Cancer Screening in Oregon

• 51% of rural hospital-based radiology facilities offer lung cancer screening using LDCT

• An **effective** lung cancer screening includes:

  — Accurately identifying high-risk patients to screen

  — Facilitating access to screening

  — Providing appropriate and timely follow-up care

  — Offering smoking cessation support
Lung Cancer Screening Program Components

- Who to Screen
- CT Performance
- Structured Reporting
- Smoking Cessation
- Data Collection

- Screening Frequency
- Lung Nodule Identification
- Lung Nodule Management
- Patient/Provider Education
Lung Cancer in Coos County

Coos County population 64,917

**Highest age-adjusted mortality rate** in the state (2015-2019)

- 47.9 cases per 100,000 people

**Higher age-adjusted incidence rate** than Oregon and U.S. rates

- Coos County: 67.4 cases per 100,000 people
- Oregon: 52.6 cases per 100,000 people
- United States: 57.3 cases per 100,000 people

**Second highest** self-reported smoking rate in Oregon

- 27.6% in Coos County
- 17.6% in Oregon
Bay Area Hospital (BAH) & The Knight Cancer Network

Bay Area Hospital is a Knight Cancer Network member

Knight Cancer Network supported BAH by:

– Conducting a cancer needs assessment
– Connecting BAH with lung cancer experts
– Hosting lung cancer & LDCT screening educational forums
– Facilitating the Community-Clinical Advisory Group & LDCT Roundtable discussions
A multi-step approach

Informed the collaborative decision making process for the lung cancer screening program’s design and implementation
Lung Cancer Screening Program Implementation

Multi-component implementation strategy

Planning

— Designing pre- through post-screening workflow processes

Education & Community Outreach

— Training PCPs and other medical professionals

Restructuring systems and processes

— Examining hospital infrastructure (personnel, technology, software, and equipment)
Identify Patients to Screen

Planning Activities

– Engaged community stakeholders in the program’s design
  • Community-Clinical Advisory Group
  • Knight Cancer Network Community Needs Assessment

Training, Education & Community Outreach

– LDCT lung cancer screening for primary care and other health care providers
  • Grand Rounds
  • Annual Community Cancer Educational Program
  • Webinars on lung cancer screening
  • Educational materials and shared decision-making resources distributed to primary care practices
Lung Cancer Screening Program Continuum

- Referral
- Screen
- Follow-up Care
- Smoking Cessation

LDCT Lung Cancer Screening Program

- Analyze
- Interpret
- Feedback
- Assemble
- Change
- Evaluate
Screening Continuum Process

**Pre-screening Activities**
- PCP identifies high-risk patients to screen
- PCP refers patient to LDCT screening

**Screening**
- Schedule appointment
- LDCT Scan

**Post-screening Follow-up Care**
- Radiologist interprets scan
- PCP receives results
- Patient receives results
- Follow-up scan & recommendations to patient

**Smoking Cessation Support**
- Patient receives tailored support through Oregon Quit Line
Post Screening Follow-up Care

Planning Processes

– **Lung-RADS**™ (lung imaging reporting and data system) classification system used to categorize scans

– Procedures developed to support **all** patients post scan (normal & abnormal scans)

  • Community Clinical Advisory Group led the process

  • Procedures jointly implemented by primary care providers and BAH
Smoking Cessation Support

- Vital component of screening continuum

- Planning Processes
  - Established referral pathways to the Oregon Tobacco Quit Line
  - A patient’s primary care provider initiated referral
Results: Planning Processes

• Three committees guided screening program development & implementation
  • Community Clinical Advisory Group
  • Lung Cancer Screening Committee
  • Quality Standardization Training Team
Results: Education Processes

- 11 education & training events for providers and other medical staff
  - LDCT screening
  - Screening criteria
  - Shared decision-making
  - Shared decision-making toolkit with 6 primary care clinics piloting the program
Results: Restructuring Processes

• BAH designated staff to manage the program

• Membership in the American College of Radiology Lung Cancer Screening Registry™ Developed & implemented:
  • Referral through post-screening patient tracking processes
  • Reporting processes for screening results
Baseline & Annual Scans, 2018-2020

<table>
<thead>
<tr>
<th>Year</th>
<th>Baseline</th>
<th>Annual &amp; Follow-up</th>
<th>Total Scans</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>41</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>2019</td>
<td>183</td>
<td>23</td>
<td>206</td>
</tr>
<tr>
<td>2020</td>
<td>175</td>
<td>143</td>
<td>318</td>
</tr>
</tbody>
</table>
## Distribution of Scans by Year & Lung-RADS Category

<table>
<thead>
<tr>
<th>Year</th>
<th>Lung-RADS 1 Negative</th>
<th>Lung-RADS 2 Benign Appearance/ Behavior</th>
<th>Lung-RADS 3 Probably Benign</th>
<th>Lung-RADS 4A Suspicious</th>
<th>Lung-RADS 4B Very Suspicious</th>
<th>Lung-RADS 4X Very Suspicious</th>
<th>Indeterminate</th>
<th>Total Scans by Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>Percent</td>
<td>Count</td>
<td>Percent</td>
<td>Count</td>
<td>Percent</td>
<td>Count</td>
<td>Percent</td>
</tr>
<tr>
<td>2018</td>
<td>11</td>
<td>7.80%</td>
<td>19</td>
<td>5.60%</td>
<td>9</td>
<td>16.36%</td>
<td>2</td>
<td>11.76%</td>
</tr>
<tr>
<td>2019</td>
<td>49</td>
<td>34.75%</td>
<td>118</td>
<td>34.81%</td>
<td>22</td>
<td>40.00%</td>
<td>8</td>
<td>47.06%</td>
</tr>
<tr>
<td>2020</td>
<td>81</td>
<td>57.45%</td>
<td>202</td>
<td>59.59%</td>
<td>24</td>
<td>43.64%</td>
<td>7</td>
<td>41.18%</td>
</tr>
<tr>
<td>Total Scans by Category</td>
<td>141</td>
<td></td>
<td>339</td>
<td></td>
<td>55</td>
<td></td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>
Recommendations

1. Approach lung cancer screening as a continuum.
2. Unite the community around the shared goal: to improve lung cancer outcomes through early detection.
3. Empower & engage community stakeholders and create opportunities for primary and specialty care providers to collaborate around program design, workflow processes, & outcomes.
4. Have dedicated lung cancer screening program staff.
5. Identify multiple program champions to bring the community together around a shared goal.
Dissemination

Bay Area Hospital & the Knight Cancer Network co-wrote a manuscript describing this process entitled:

• A Coordinated Approach to Implementing Low-dose Computed Tomography Lung Cancer Screening in a Rural Community Hospital: an implementation study investigating the effectiveness of multifaceted strategies to promote adoption, integration, and sustainability of lung cancer screening

• The Journal of the American College of Radiology will publish our manuscript in 2022.
Thank you, Authors!

- Jessica Currier, PhD; Knight Cancer Institute
- Deb Howes, MSEd; formerly Knight Cancer Institute
- Cherie Cox, MSN, MBA/HCM, OCN; Bay Area Hospital
- Margaret Bertoldi, MPH, BSN, RN; OHSU
- Kent Sharman, MD; formerly North Bend Medical Center, now Advanced Health (CCO)
- Bret Cook, MD; Bay Area Hospital
- Derek Baden, RN; formerly Bay Area Hospital, now Gene Upshaw Memorial Tahoe Forest Cancer Ctr.
- Paige E. Farris, MSW; Knight Cancer Network
- Wesley Stoller, MA; Knight Cancer Institute
- Jackilen Shannon, PhD; Knight Cancer Institute
Thank You!
Questions?