Implementation of a Hospital-Based Lung Cancer Screening Program

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Maryland Overview
I'M SENDING CHESTERFIELDS to all my friends.
That's the merriest Christmas any smoker can have—
Chesterfield mildness plus no unpleasant after-taste

Ronald Reagan

Marlboro
the filter cigarette
with the
unfiltered taste

Paul Hornung: Green Bay halfback
and 1961 National Football League
Player of the Year. Paul's a
Marlboro man all the way.

You get a lot to like—
Filter, Flavor, Pack or Box
Surgeon General Report – 1964
Why Should We Screen for Lung Cancer?
53,454 participants
- 55-74 years old
- current or former smokers (quit ≤ 15 years ago)
- ≥ 30 pack-years

Randomized to initial enrollment screening exam either low-dose CT or CXR followed by two annual exams
- CXR chosen as comparison group b/c of PLCO

Study median follow-up 6.5 years
National Lung Screening Trial 2002-2009

- Major results

  - Mortality from **lung cancer** reduced by 20% with low-dose CT compared to CXR
  
  - Mortality from **any cause** reduced by 7% with low-dose CT
National Lung Screening Trial
2002-2009

- Screening high-risk patients with annual LDCT reduces mortality from lung cancer

- Potential for immense public benefit
  - 94 million current or former US smokers
  - 7 million meet criteria for NLST inclusion
Why Should We Screen in Maryland?
Figure 2.3
Percentage of All Mortality Cancer Cases by Type of Cancer in Maryland, 2008-2012

- LUNG AND BRONCHUS, 26.8%
- COLON AND RECTUM, 9.0%
- NON-HODGKINS LYMPHOMA, 3.0%
- LEUKEMIA, 3.5%
- PROSTATE, 5.0%
- PANCREAS, 6.7%
- FEMALE BREAST, 7.9%
- OTHER, 11.5%
- URINARY BLADDER, 2.8%
- OVARY, 2.6%
- ESOPHAGUS, 2.4%
- BRAIN, 2.3%
- LIVER AND INTRAHEPATIC BILE DUCT, 2.3%
- KIDNEY AND RENAL PELVIS, 2.2%
- CORPUS AND UTERUS NOS*, 1.8%
- STOMACH, 2.0%
- MYELOMA, 2.2%
- MELANOMA OF THE SKIN, 1.5%
- ORAL CAVITY AND PHARYNX, 1.4%
- SOFT TISSUE INCLUDING HEART, 0.8%
- LARYNX, 0.7%
- CERVIX UTERI, 0.7%
- SMALL INTESTINE, 0.3%
- THYROID, 0.2%
- HODGKINS LYMPHOMA, 0.2%
- TESTIS, 0.1%

Source: NCHS Compressed Mortality File in CDC Wonder
*NOS is defined as Not Otherwise Specified

Maryland Comprehensive Cancer Control Plan, 2016-2020
Lung and Bronchus Cancer Age-Adjusted Rates per 100,000 Population

Maryland DHMH, Center for Cancer Prevention and Control, Annual Cancer Report, 2015
Lung Cancer Crude Incidence Rate per 100,000 Population by ZIP Code, Anne Arundel County, 2008-2012

Legend
- >25% above County rate
- 10-25% above County rate
- <10% above County rate
- Below County rate
- Zero or less than 20 cases

Data Source: Maryland Department of Health and Mental Hygiene, Maryland Cancer Registry, 2008-2012
Implementing A Lung Screening Program at Anne Arundel Medical Center
AAMC Timeline

NLST
06/2011

RACLAP
09/2010
Rapid Access Chest and Lung Assessment Program (RACLAP)

- Mission: rapidly identify, evaluate, and manage patients with thoracic imaging abnormalities

- Goals:
  - Avoid unnecessary delay in evaluation/consultation
  - Avoid unnecessary procedures
  - Provide timely feedback to referring provider/PCP

- Comprehensive, multi-disciplinary program **critical** to achieving positive results of NLST
# Screening for Lung Cancer

## Clinical Summary of U.S. Preventive Services Task Force Recommendation

<table>
<thead>
<tr>
<th>Population</th>
<th>Asymptomatic adults aged 55 to 80 y who have a 30 pack-year smoking history and currently smoke or have quit smoking within the past 15 y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation</td>
<td>Screen annually for lung cancer with low-dose computed tomography. Discontinue screening when the patient has not smoked for 15 y. Grade: B</td>
</tr>
</tbody>
</table>

## Risk Assessment

- Age, total cumulative exposure to tobacco smoke, and years since quitting smoking are the most important risk factors for lung cancer. Other risk factors include specific occupational exposures, radon exposure, family history, and history of pulmonary fibrosis or chronic obstructive lung disease.

## Screening Tests

- Low-dose computed tomography has high sensitivity and acceptable specificity for detecting lung cancer in high-risk persons and is the only currently recommended screening test for lung cancer.

## Treatment

- Non–small cell lung cancer is treated with surgical resection when possible and also with radiation and chemotherapy.

## Balance of Benefits and Harms

- Annual screening for lung cancer with low-dose computed tomography is of moderate net benefit in asymptomatic persons who are at high risk for lung cancer based on age, total cumulative exposure to tobacco smoke, and years since quitting smoking.

## Other Relevant USPSTF Recommendations

- The USPSTF has made recommendations on counseling and interventions to prevent tobacco use and tobacco-caused disease. These recommendations are available at www.uspreventiveservicestaskforce.org.
<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>General Screening Population</th>
<th>Screening Test and Frequency of Screening</th>
<th>Special Screening Population</th>
<th>Screening Test and Frequency of Screening for Special Population</th>
<th>Additional Recommendations or Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>Adults age 55 to 80 years with a 30 pack-year smoking history and currently smoke or have quit within the past 15 years</td>
<td>Low-dose Computed Tomography, annually</td>
<td>USPSTF published Dec 2013; Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
AAMC Timeline

- NLST 06/2011
- USPSTF 12/2013
- Medicare NCD 02/2015
- RACLAP 09/2010
- Screening Trial Begins 03/2012
- Screening Trial Ends 02/2014
- AAMC Smoke-Free Employer 2015
AAMC Lung Screening Program

![Graph showing the increase in the number of baseline screenings from 2012 to 2016 (A). The number of screenings increases from 38 in 2012 to 472 in 2016 (A).]
Current Focus of the Lung Screening Program

- Increase awareness
  - Providers, employers, community
- Increase number of patients who return for subsequent scans
- Focus on the underserved community
Why Should We Focus on the Underserved for Lung Screening?
## Table 2.4

### Significant Health Disparities in Cancer by Race and Sex, Maryland, 2008 - 2012

<table>
<thead>
<tr>
<th>CANCER TYPE</th>
<th>INCIDENCE RATES</th>
<th>MORTALITY RATES</th>
<th>RATE DIAGNOSED IN REGIONAL OR DISTANT STAGE**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lung</td>
<td>White: 60.7</td>
<td>White Males: 56.3</td>
<td>White: 42.9</td>
</tr>
<tr>
<td></td>
<td>Black: 57.3</td>
<td>Black Males: 65.0</td>
<td>Black: 39.5</td>
</tr>
<tr>
<td></td>
<td>White Males: 68.0</td>
<td>White Females: 40.8</td>
<td>White Males: 48.7</td>
</tr>
<tr>
<td></td>
<td>Black Males: 73.4</td>
<td>Black Females: 36.2</td>
<td>Black Males: 50.1</td>
</tr>
<tr>
<td></td>
<td>White Females: 55.3</td>
<td></td>
<td>White Females: 38.6</td>
</tr>
<tr>
<td></td>
<td>Black Females: 47.0</td>
<td></td>
<td>Black Females: 32.8</td>
</tr>
</tbody>
</table>

**Percentage of cancers diagnosed in regional or distant stages; applied to incidence rates

Rates are per 100,000 and are age-adjusted to 2000 US Standard Population

Sources: Maryland Cancer Registry, 2008 – 2012
NCHS Compressed Mortality File in CDC Wonder
Use of Tobacco Products
Maryland Adults Ages 18 and Older, 2000–2012

Current Cigarette Smoking
Maryland Adults Ages 18 and Older—by Highest Educational Attainment, 2011 and 2012

Maryland Adults Ages 18 and Older—by Annual Household Income, 2011 and 2012

Current Focus of the Lung Screening Program

- Focus on the underserved community
- Bristol-Myers Squibb Foundation
  - 3-year grant
Prince George’s County
Pop: 863,420
Smokers: 13.6%
Uninsured: 20%
< Poverty Level: 7.9%

Anne Arundel County
Pop: 556,348
Smokers: 18%
Uninsured: 7.2%
< Poverty Level: 6.3%

Calvert County
Pop: 90,484
Smokers: 18.9%
Uninsured: 9.5%
< Poverty Level: 4.9%
Project Goals and Objectives

Expand program for primary and secondary lung cancer prevention in vulnerable populations in Anne Arundel, Calvert, and Prince George’s Counties

- Smoking Avoidance and Cessation
- Lung Cancer Screening
- Rapid Access Chest and Lung Assessment Program
Reaching Vulnerable Populations

- Utilize existing infrastructure and resources
- Leverage existing community relationships and forge new relationships
- Multiple strategies necessary for diverse populations
Example of BPA: Health Maintenance Modifier Selected

Electronic Medical Record
Best Practice Alert
Maryland is on Track to be 50% Minority by 2019

Maryland in 46.2% Racial/Ethnic Minority*

*American Community Survey, 2012
†Maryland Department of Planning, 2014
Community Collaboration

- Anne Arundel Medical Center (AAMC) and the Housing Authority of the City of Annapolis (HACA)
- A primary care practice in a low-income housing unit acting as a community-embedded health resource
Percentage of Adults Without Health Insurance (At the Time of Survey), Maryland 2006-2010

* Significantly different from NH White rate

- NH White: 7.2%
- NH Black: 15.0%*
- NH Asian: 10.1%
- NH Other: 17.1%*
- Hispanic: 38.6%*
Vulnerable Populations in Maryland

- Spanish-speaking tobacco treatment specialist

**Top 10 Non-English Languages Spoken at Home, Among Residents Ages 5 and Older, 2008-2012 ACS**

- Spanish or Spanish Creole: 52%
- African languages: 10%
- French (incl. Patois, Cajun): 7%
- Russian: 3%
- Other Indic Languages: 3%
- Chinese: 8%
- Korean: 5%
- Vietnamese: 3%
- Tagalog: 5%
- Other Asian Languages: 4%

ACS = American Community Survey
Community Collaboration

- US Housing and Urban Development (HUD) – smoke-free housing initiative
  - Implementation over 18 months of final rule
- Federally Qualified Health Centers (FQHC)*
  - Higher prevalence smoking
  - Increased interest in smoking cessation
  - High rate of EMR use

*AJPH 105(1), 180-188, January 2015
Early lung cancer shows no signs or symptoms. However, when found early it is curable. Take a step toward a healthier outcome by learning your risk for lung cancer with our free lung health profiler at askAAMC.org/Breathe.
Lung Health Risk Assessment

www.aahs.org/breathe
Minority Health and Health Disparities
Maryland Department of Health and Mental Hygiene
Thank You