Lung Screening: Race & Gender Disparities

Mary M. Pasquinelli, DNP, FNP-BC, APRN
Nurse Practitioner: Pulmonary and Thoracic Medical Oncology
University of Illinois Hospital and Health Science System (UI Health)
From Screening Through Cancer Survivorship

- Lung Screening
- Pulmonary Nodule Clinic
- Lung Cancer Clinic
Outcomes From a Minority-Based Lung Cancer Screening Program vs the National Lung Screening Trial

• Race:
  • African American = 70% vs. 4.5%

• Smoking Status
  • Current Smokers: 73% vs 48%

• Diagnosed Lung Cancer Cases
  • 2.6% vs. 1.1%

Chicago Race/Gender Eligibility for Screening Cohort (CREST)

Design: Retrospective study of lung cancer cases with a history of smoking, 2010-2019, University of Illinois at Chicago, N=883

Aim: To compare USPSTF criteria vs the PLCOm2012 risk prediction model for sensitivity in identifying lung cancer and removing disparities in lung screening eligibility criteria
Chicago Race/Gender Eligibility for Screening Cohort (CREST)

PLCOm2012 Risk Prediction Model (6/yr risk)

11 variables:

- Age
- Race
- Smoking status – Current/Former
- Smoking Duration – cigs/day x years
- Years quit
- Highest level of education
- COPD, emphysema
- Personal hx of cancer
- Family hx of lung cancer
- BMI

*The PLCOm2012 does not have an age, smoking pack-year, or quit time limit
Risk Prediction Model Versus United States Preventive Services Task Force Lung Cancer Screening Eligibility Criteria: Reducing Race Disparities

Mary M. Pasquinelli, DNP, Martin C. Tammemägi, PhD, Kevin L. Kovitz, MD, Marianne L. Durham, DNP, Zanë Deliu, MS, Kayleigh Rygalski, BS, Li Liu, PhD, Matthew Koshy, MD, Patricia Finn, MD, Lawrence E. Feldman, MD

aDivision of Pulmonary, Critical Care, Sleep and Allergy, University of Illinois at Chicago, Chicago, Illinois
bDepartment of Health Sciences, Brock University, St Catharines, Ontario, Canada
cCollege of Nursing, University of Illinois at Chicago, Chicago, Illinois
dDivision of Hematology and Oncology, University of Illinois at Chicago, Chicago, Illinois
eUniversity of Illinois Cancer Center, University of Illinois at Chicago, Chicago, Illinois
fDivision of Epidemiology and Biostatistics, School of Public Health, University of Illinois at Chicago, Chicago, Illinois
gDepartment of Radiation Oncology, University of Illinois at Chicago, Chicago, Illinois

Received 24 June 2020; revised 2 August 2020; accepted 4 August 2020
# Chicago Race Eligibility for Screening Cohort (CREST) - Population Characteristics

N = 883

African American = 56%

White = 29%

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>African American Non-Hispanic</th>
<th>White, Non-Hispanic</th>
<th>Other (Includes Hispanic, Asian, Unknown)</th>
<th>Total</th>
<th>p Value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pack-years, Mean (SD)</td>
<td>37.3 (23.5)</td>
<td>48.2 (28.5)</td>
<td>37.0 (27.1)</td>
<td>40.4 (26.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pack-years, PKYR, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥30</td>
<td>293 (61.4)</td>
<td>194 (81.2)</td>
<td>71 (61.7)</td>
<td>558 (67.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>20-&lt;30</td>
<td>95 (19.9)</td>
<td>21 (8.8)</td>
<td>8 (7.0)</td>
<td>124 (14.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>10-&lt;20</td>
<td>61 (12.8)</td>
<td>19 (7.9)</td>
<td>19 (16.5)</td>
<td>99 (11.9)</td>
<td></td>
</tr>
<tr>
<td>&lt;10</td>
<td>28 (5.9)</td>
<td>5 (2.1)</td>
<td>17 (14.8)</td>
<td>50 (6.0)</td>
<td></td>
</tr>
<tr>
<td>Smoking status, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Former</td>
<td>171 (34.4)</td>
<td>111 (43.0)</td>
<td>70 (54.7)</td>
<td>352 (39.9)</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>326 (65.6)</td>
<td>147 (57.0)</td>
<td>58 (45.3)</td>
<td>531 (60.1)</td>
<td></td>
</tr>
<tr>
<td>Quit time (former smokers), mean (SD)</td>
<td>12.8 (11.3)</td>
<td>12.3 (11.3)</td>
<td>18.8 (13.3)</td>
<td>13.80 (11.9)</td>
<td>0.003</td>
</tr>
<tr>
<td>Quit time (former smokers), y, n (%)</td>
<td>88 (68.2)</td>
<td>68 (72.3)</td>
<td>24 (45.3)</td>
<td>180 (65.2)</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Chicago Race Eligibility for Screening Cohort (CREST)

Sensitivity (%) USPSTF2013 Criteria Vs PLCOm2012 at a 1.7% 6/yr risk

<table>
<thead>
<tr>
<th>Sample</th>
<th>USPSTF 2013</th>
<th>PLCOm2012, Threshold ≥ 1.70%</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>52.3</td>
<td>66.1</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>White</td>
<td>62.4</td>
<td>66.0</td>
<td>0.203</td>
</tr>
<tr>
<td>African American</td>
<td>50.3</td>
<td>71.3</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Screening for lung cancer in persons with lighter smoking histories (20 pack-years) and at an earlier age (50 years) may also help partially ameliorate racial disparities in screening eligibility.
Chicago Race/Gender Eligibility for Screening Cohort (CREST)

Reanalysis

USPSTF2013 vs PLCOM2012 at a \( \geq 1.7\% \) 6/yr risk threshold
USPSTF2020 vs PLCOM2012 at a \( \geq 1\% \) 6/yr risk threshold

\( \geq 1.7\% \) and \( \geq 1.0\%/6yr \) risk threshold was used as it was identified as the threshold that selects for a similar number of eligible individuals as the USPSTF2013 and the USPSTF2020 draft guideline respectively
Thank You

I want to thank my collaborations on this research:

Martin C. Tammemägi, PhD, Kevin L. Kovitz, MD, Marianne L. Durham, DNP, Zanë Deliu, MS, Kayleigh Rygalski, BS, Li Liu, PhD, Matthew Koshy, MD, Patricia Finn, MD, Lawrence E. Feldman, MD
Mary Pasquinelli, DNP, FNP-BC
mpasqu3@uic.edu
Twitter: @MaryPasquinelli