Outreach to Overcome Lung Screening Barriers

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  • American College of Radiology Innovation Grant
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CAN YOU GUESS THEIR ETHNICITY?
State of Lung Cancer & Lung Cancer Screening
Lung Cancer Statistics

Estimated 2018 statistics:

- Lung and Bronchus: 154,050
- Female Breast: 41,400
- Pancreas: 44,330
- Colon and Rectum: 50,630

Estimated 2019 statistics:

- 228,150 new lung cancer cases
- 142,670 deaths from lung cancer
# Lung Cancer Mortality

<table>
<thead>
<tr>
<th>Common Types of Cancer</th>
<th>Estimated New Cases 2019</th>
<th>Estimated Deaths 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Breast Cancer (Female)</td>
<td>268,600</td>
<td>41,760</td>
</tr>
<tr>
<td>2. Lung and Bronchus Cancer</td>
<td>228,150</td>
<td>142,670</td>
</tr>
<tr>
<td>3. Prostate Cancer</td>
<td>174,650</td>
<td>31,820</td>
</tr>
<tr>
<td>4. Colorectal Cancer</td>
<td>145,600</td>
<td>51,020</td>
</tr>
<tr>
<td>5. Melanoma of the Skin</td>
<td>96,480</td>
<td>7,230</td>
</tr>
<tr>
<td>6. Bladder Cancer</td>
<td>80,470</td>
<td>17,870</td>
</tr>
<tr>
<td>7. Non-Hodgkin Lymphoma</td>
<td>74,200</td>
<td>19,970</td>
</tr>
<tr>
<td>8. Kidney and Renal Pelvis Cancer</td>
<td>73,820</td>
<td>14,770</td>
</tr>
<tr>
<td>9. Uterine Cancer</td>
<td>61,880</td>
<td>12,160</td>
</tr>
<tr>
<td>10. Leukemia</td>
<td>61,780</td>
<td>22,840</td>
</tr>
</tbody>
</table>

Lung and bronchus cancer represents 12.9% of all new cancer cases in the U.S.

Lung Cancer Statistics by Race/Ethnicity

Number of Deaths per 100,000 Persons by Race/Ethnicity & Sex: Lung and Bronchus Cancer

- **MALE**
  - All Races: 51.6
  - White: 51.7
  - Black: 62.1
  - Asian/Pacific Islander: 30.2
  - American Indian/Alaska Native: 42.0
  - Hispanic: 25.3
  - Non-Hispanic: 54.1

- **FEMALE**
  - All Races: 34.4
  - White: 35.6
  - Black: 32.4
  - Asian/Pacific Islander: 17.3
  - American Indian/Alaska Native: 29.4
  - Hispanic: 13.1
  - Non-Hispanic: 36.5
Cancer Mortality Rates by County-Level Poverty, 1970 to 2016

Lung

Rate per 100,000

- Male, poor counties
- Male, affluent counties
- Female, poor counties
- Female, affluent counties
Benefits of Lung Cancer Screening

• Early lung cancer detection with annual screening
• Clinical trials have proven **20% or more** reduction in mortality among high risk eligible patients\(^1,2,3\)
• Covered by Medicare and private insurance

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LUNG SCREENING STATISTICS

Only 1.9% screened

100,000 Eligible People

Screened

Unscreened

BARRIERS TO LUNG CANCER SCREENING: PATIENT, PROVIDER & SYSTEM LEVELS
BARRIERS TO LCS
Transportation Challenges
Low Health Literacy
Limited English Proficiency
Scheduling Conflicts
Social Stigma
Overcoming Barriers to LCS
Radiology Equity And Community Health (REACH) Initiatives

- Promote culturally competent care
- Educate providers about available resources
- Engage patients to take active role in their care
- Reach out and provide additional assistance
# Overcoming Language Barriers

## English

### Lung Cancer Screening

<table>
<thead>
<tr>
<th>Are You Eligible?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age?</strong></td>
</tr>
<tr>
<td>You are 55–80 years old</td>
</tr>
<tr>
<td><strong>Smoke?</strong></td>
</tr>
<tr>
<td>You currently smoke OR HAVE QUIT IN THE PAST 15 YEARS</td>
</tr>
</tbody>
</table>

### Calculate Your Pack Years

- Number of packs of cigarettes smoked per day
- Number of years you smoked

### Treatment?

- You are willing & able to have treatment

### Early Detection Saves Lives

- Talk to your doctor about your risk for lung cancer and the risks and benefits of being screened

## Spanish

### Examen de Detección de Cáncer de Pulmón

<table>
<thead>
<tr>
<th>¿Es Usted Candidato?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>¿Su Edad?</strong></td>
</tr>
<tr>
<td>Está entre los 55 a 80 años</td>
</tr>
<tr>
<td><strong>¿Fuma?</strong></td>
</tr>
<tr>
<td>Dejó de fumar en los últimos 15 años</td>
</tr>
</tbody>
</table>

### Calcule Su Índice Tabáquico

- Número de años de tabaco que ha fumado

### Tratamiento?

- ¿Está dispuesto y en la capacidad de recibir tratamiento?

### Detección Temprana Salva Vidas

- Consulte con su médico sobre su riesgo de padecer cáncer de pulmón y sobre los riesgos y beneficios de estos exámenes

Collaborations with Dr. Shepard, Dr. Park, Dr. Haas, Dr. Rigotti
OVERCOMING SCHEDULING CONFLICTS

SAME-DAY LUNG CANCER SCREENING
CT PILOT PROGRAM FOR VULNERABLE PATIENTS

The pilot program goal is to decrease barriers to lung cancer screening in vulnerable patients seen by Boston Health Care for the Homeless Program at MGH and by the MGH Chelsea Community HealthCare Center.

Eligible patients will be offered the option to undergo Lung cancer screening CT on the same day as their clinic visit, without the need for a prior radiology appointment. This may help increase the likelihood that these patients undergo screening.

Details for patients to undergo same-day screening:

- Currently only available for the MGH Healthcare for Homeless Program and the MGH Chelsea Community HealthCare Center.
The Largest Health Disparity We Don’t Talk About

Americans with serious mental illnesses die 15 to 30 years earlier than those without.
OUTREACH FOR INDIVIDUALS WITH SERIOUS MENTAL ILLNESS

USUAL LCS PROCESS

Radiologist → PCP → Person → Mental Health (MH) Clinician

VS

ENHANCED INTEGRATED LCS PROCESS

Radiologist → Mental Health (MH) Clinician → PCP → Person

Collaboration with Dr. Irwin, Dr. Park and...
MENTEET PATIENTS WHERE THEY NEED

- Radiologist collaborates with Mental Health Clinician and PCP in adapting LCS education
- Mental Health Clinician and Radiologist facilitate education leveraging trusted mental health clinic
- Radiologist assists PCP and Mental Health Clinician in streamlining LCS referral process
Specific Aims and Outcomes

- **Aim 1**: To tailor an educational intervention (shared decision making) that combines LCS and smoking cessation to fit the needs of patients with SMI

- **Aim 2**: To assess the **acceptability** and **feasibility** of the pilot intervention
  - **Acceptability**: 75% of patients are satisfied with the intervention
  - **Feasibility**: 50% consent rate and 75% enrolled complete the intervention

- **Aim 3**: To examine the impact of the intervention on LCS risk knowledge
Qualitative Study

• Developed a tailored SDM tool with concrete language (5th grade readability)
• Conducted 3 qualitative group interviews to refine the tool
  • Mental health clinician group (n=6)
  • Radiology clinician group (n=9)
  • Primary care physician group (n = 5)
• Rapid qualitative analysis to incorporate input and tailored SDM tool:
  • Two educational sessions that were focused on LCS and smoking cessation
  • Improved patient educational material
  • Enhanced LCS patient educational video
Pre-adaptation material
Adapted LCS & Smoking Cessation educational material

Lung Screening

What is Lung Screening?
- Getting screened does not mean you have cancer
- Screening looks for early lung cancer
- Finding cancer early means we might cure it
- Lung screening uses a low dose CAT scan
- No preparation is needed, no needles, and pain free
- The machine is shaped like a donut (no enclosed space)
- Screening every year

CANCER SCREENING CAN SAVE YOUR LIFE

Potential Benefits and Risks
- Benefits of lung screening
  - Can be life saving
  - More treatment options are available
- Risks of lung screening
  - May have unclear findings and need more tests
  - Low radiation exposure

If you decide to get lung screening, what are the next steps?
- Your clinician at Freedom Trail will order your exam
- Easy to schedule: Can be same day or flexible date and time
- Your results will be shared with you and your clinician the same day
- Your insurance will cover screening with no additional cost to you

Smoking Cessation and Myths

It is safe to smoke while wearing the patch.
- Myth #1: Smoking while wearing the nicotine patch is dangerous.
  - This is FALSE! Nicotine replacement therapies (patch, gum, lozenge) with other forms of nicotine (cigarette, cigar, etc.)
  - However, if you continue to smoke while wearing the patch, you might need more support – talk to your provider about other forms of additional support

You can reverse the damage from smoking.
- Myth #2: You can never reverse the damage you have done from smoking.
  - Yes you can! It is never too late to quit
  - Quitting smoking at any age increases life expectancy and improves quality of life
  - After one year, you can reduce your risk of lung cancer and cut your chance of having a heart attack in half

What Happens When You Quit Smoking?

Quitting smoking can improve your health and reduce illnesses in the body over time.

ARE YOU ELIGIBLE?

AGE?
- 55-80 YEARS OLD

SMOKE?
- YOU CURRENTLY SMOKED
- HAVE QUIT FOR THE PAST 15 YEARS

CALCULATE YOUR PACK YEARS

- NUMBER OF YEARS YOU SMOKED
- NUMBER OF PACK YEARS OR GREATER HISTORY OF SMOKING

TREATMENT?
- DID YOU ANSWER YES?

- YOU ARE WILLING & ABLE TO HAVE TREATMENT
- A 15-MINUTE EXAM COULD SAVE YOUR LIFE
- NON-INVASIVE
- NO PREPARATION

EARLY DETECTION SAVES LIVES

MORE THAN 80% OF PEOPLE WITH LUNG CANCER ARE CURRENT OR FORMER SMOKERS

Smoking helps care money!

Quitting helps care money!

Quitting smoking can improve your health and reduce illnesses in the body over time.

It is safe and effective to take Varenicline if you have a mental illness.
- Myth #3: Varenicline is not safe to take if you have a mental illness and can increase symptoms of depression or suicidal ideation.
  - FALSE: Varenicline is safe to take and is found to be the most effective smoking cessation aid, doubling your chance of quitting.
  - A large study called the EAGLE trial proved that Chantix did not increase symptoms including suicidal ideation compared to placebo, nicotine replacement therapy (patch, gum, lozenge), or placebo.

Quitting smoking can decrease anxiety and depression.
- Myth #4: Smoking helps people cope with anxiety.
  - Symptoms of nicotine withdrawal can mimic anxiety – irritability, restlessness, feeling on edge.
  - Smoking can INCREASE stress/anxiety by causing periods of nicotine withdrawal throughout the day.
Patient is too young; unrealistic for LCS population

No information about safely storing belongings

Angle does not show that CT is like a “donut” not a “tunnel”

Patient is within eligibility age range (55-77) for LCS

Shows that patient’s belongings will be kept secure

Angle shows patient entering “donut” and feet coming out
LCS Intervention

- Two separate educational sessions:
  - Lung cancer screening
  - Smoking cessation
- Conducted at a community mental health clinic
- Interventional sessions led by radiology and mental health clinician
- Sessions completed one month apart
- Intervention delivered in a group setting
Adaptation in implementation

Original Intervention
- Two separate educational sessions:
  - Lung cancer screening
  - Smoking cessation
- Sessions completed 1 month apart
- Intervention delivered in group setting

Adapted Intervention
- One combined educational sessions:
  - Lung cancer screening and smoking cessation
- Sessions completed on the same day
- Intervention delivered individually to account for scheduling conflicts
Patients eligible by history of smoking & age: 89

<table>
<thead>
<tr>
<th>Eligible</th>
<th>54</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quit smoking &gt; 15 years ago</td>
<td>4</td>
</tr>
<tr>
<td>Pack year &lt; 30 years</td>
<td>15</td>
</tr>
<tr>
<td>Pt. has lung cancer</td>
<td>2</td>
</tr>
<tr>
<td>Pt. has already had lung cancer screening</td>
<td>4</td>
</tr>
<tr>
<td>Guardian</td>
<td>27</td>
</tr>
<tr>
<td>Pt. never returned to clinic</td>
<td>1</td>
</tr>
</tbody>
</table>

LCS eligibility not confirmed: 5

Approached: 30

<table>
<thead>
<tr>
<th>Not Consented</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt. declined: No time/ too busy</td>
<td>5</td>
</tr>
<tr>
<td>Pt. declined: Not interested in research</td>
<td>6</td>
</tr>
<tr>
<td>Pt. declined: Does not come to clinic often</td>
<td>1</td>
</tr>
<tr>
<td>Pt. declined: paranoid/fearful around doctors</td>
<td>2</td>
</tr>
<tr>
<td>Pt. declined: does not need money</td>
<td>1</td>
</tr>
</tbody>
</table>

Patients Consented: 15

Patients Enrolled: 15

<table>
<thead>
<tr>
<th>Session Complete</th>
<th>15/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung Cancer Screening</td>
<td>CM patients</td>
</tr>
<tr>
<td>15/15</td>
<td></td>
</tr>
<tr>
<td>Smoking Cessation Session</td>
<td>CM patients</td>
</tr>
<tr>
<td>15/15</td>
<td></td>
</tr>
<tr>
<td>Post-intervention Survey</td>
<td>CM patients</td>
</tr>
<tr>
<td>15/15</td>
<td></td>
</tr>
</tbody>
</table>

Consort
PROPOSED WORKFLOW

- Two educational sessions:
  1. Lung Cancer Screening
  2. Smoking Cessation
- 4-6 participants per group
- Sessions held during clozapine clinic on Tuesdays at noon
Original intervention

Begin recruitment

Consent and enroll participants (includes pre-intervention survey)

April
- LCS Group 1
- Smoking Group 3
- LCS Group 2
- Smoking Group 4
- LCS Group 3
- Smoking Group 5
- Smoking Group 6

May
- LCS Group 1
- Smoking Group 3
- LCS Group 2
- Smoking Group 4
- LCS Group 3
- Smoking Group 5
- Smoking Group 6

June
- LCS Subject 1
- LCS Subject 2
- LCS Subjects 3 & 9
- LCS Subject 4
- LCS Subject 5
- Smoking Subject 4
- Smoking Subject 7

July
- LCS Subject 1
- LCS Subject 2
- LCS Subjects 3 & 9
- LCS Subject 4
- LCS Subject 5
- Smoking Subject 4
- Smoking Subject 7

August
- LCS and Smoking Subject 10
- LCS and Smoking Subject 11
- LCS and Smoking Subject 12
- LCS and Smoking Subject 13

September
- LCS and Smoking Subject 14
- LCS and Smoking Subject 15

October
- LCS and Smoking Subject 10
- LCS and Smoking Subject 11
- LCS and Smoking Subject 12
- LCS and Smoking Subject 13

Adapted Schedule

Begin recruitment at clozapine clinic

Consent and enroll participants (includes pre-intervention survey)

April
- LCS Subject 7
- LCS Subject 8
- LCS Subject 6
- LCS Subject 1
- LCS Subjects 3 & 9
- Smoking Subject 4

May
- LCS Subject 7
- LCS Subject 8
- LCS Subject 6
- LCS Subject 1
- LCS Subjects 3 & 9
- Smoking Subject 4

June
- LCS Subject 7
- LCS Subject 8
- LCS Subject 6
- LCS Subject 1
- LCS Subjects 3 & 9
- Smoking Subject 4

July
- LCS Subject 7
- LCS Subject 8
- LCS Subject 6
- LCS Subject 1
- LCS Subjects 3 & 9
- Smoking Subject 4

August
- LCS Subject 7
- LCS Subject 8
- LCS Subject 6
- LCS Subject 1
- LCS Subjects 3 & 9
- Smoking Subject 4

September
- LCS and Smoking Subject 10
- LCS and Smoking Subject 11
- LCS and Smoking Subject 12
- LCS and Smoking Subject 13

October
- LCS and Smoking Subject 10
- LCS and Smoking Subject 11
- LCS and Smoking Subject 12
- LCS and Smoking Subject 13

Sessions can be individual or group to overcome scheduling issues

Expanded recruitment to non-clozapine clinic days

Add Thursday session option

Sessions can be completed on the same day and in either order
# Demographics

## Patient Demographics (n=15)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M(SD) / n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>61.33 (3.68)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>9 (60)</td>
</tr>
<tr>
<td>Female</td>
<td>6 (40)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>13 (86)</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>2 (14)</td>
</tr>
<tr>
<td>Ethnicity (Hispanic/Latino)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1 (7)</td>
</tr>
<tr>
<td>Highest education level&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Did not complete high school</td>
<td>5 (33)</td>
</tr>
<tr>
<td>Completed high school or GED</td>
<td>2 (13)</td>
</tr>
<tr>
<td>Some college</td>
<td>6 (40)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Numbers may not add up to the 15 because some participants declined to answer.
# Medical Characteristics

<table>
<thead>
<tr>
<th>Medical Characteristics (n=15)</th>
<th>M(SD) / n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medical characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Perceived overall health</td>
<td></td>
</tr>
<tr>
<td>Excellent condition</td>
<td>2 (13)</td>
</tr>
<tr>
<td>Very good or good condition</td>
<td>8 (53)</td>
</tr>
<tr>
<td>Fair condition</td>
<td>3 (20)</td>
</tr>
<tr>
<td>Poor condition</td>
<td>2 (13)</td>
</tr>
<tr>
<td><strong>Smoking History</strong></td>
<td></td>
</tr>
<tr>
<td>Tobacco use</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>10 (67)</td>
</tr>
<tr>
<td>Former smoker</td>
<td>5 (33)</td>
</tr>
<tr>
<td><strong>Cigarettes per day</strong></td>
<td>20.76 (8.62)</td>
</tr>
<tr>
<td>Time to first cigarette (under 30 mins)</td>
<td>10 (67)</td>
</tr>
<tr>
<td>Age started smoking</td>
<td>16.67 (7.19)</td>
</tr>
<tr>
<td>Recent quit attempt (Less than 6 months)</td>
<td>4 (27)</td>
</tr>
<tr>
<td><strong>On a scale of 0 to 10 rate how confident you are that you can quit smoking or stay quit.</strong></td>
<td>8.21 (3.60)</td>
</tr>
</tbody>
</table>

*Numbers may not add up to the 15 because some participants declined to answer.*

*b One participant was excluded because he/she reported smoking cigars.
# Feasibility and Acceptability

## Feasibility and Acceptability Outcomes

<table>
<thead>
<tr>
<th>Feasibility Outcomes</th>
<th>% (n/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants consented</td>
<td>50 % (15/30)</td>
</tr>
<tr>
<td>Participants who completed the intervention</td>
<td>100 % (15/15)</td>
</tr>
</tbody>
</table>

## Acceptability Outcomes

Overall, I was satisfied with the educational sessions.

- Strongly agree or agree: 93 % (14/15)
- Neither agree nor disagree: 7 % (1/15)
Transportation Challenges

Tailored Health Education

Limited English Proficiency

Scheduling Flexibility

Compassionate Care

BARRIERS TO CARE
SMOKER, FORMER SMOKER, NEVER-SMOKER: NO ONE DESERVES LUNG CANCER

We Can END the STIGMA
Questions?

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