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Healthy Homes for Elders: Multi-trigger, Multi-component Environmental Interventions for Asthma

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Comments
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Healthy Homes for Elders: Multi-trigger, Multi-component Environmental Interventions for Asthma

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Carla Caraballo Lowell Community Health Center
Ronnie Mouth
Why asthma? Why Lowell?

- High asthma rate
- Diverse community
- Community health & PHA partners
- Novel intervention research with asthmatic seniors
### Asthma Prevalence Rates in Lowell by Age-Group

<table>
<thead>
<tr>
<th>Age-Group</th>
<th>Prevalence in Lowell</th>
<th>95% CI-Lo</th>
<th>95% CI-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children (5-14)*</td>
<td>13.01</td>
<td>12.40</td>
<td>13.63</td>
</tr>
<tr>
<td>Adults (18-64)**</td>
<td>15.9</td>
<td>12</td>
<td>19.9</td>
</tr>
<tr>
<td>Adults (65+)**</td>
<td>13.6</td>
<td>6.6</td>
<td>20.7</td>
</tr>
</tbody>
</table>

*Pediatrics Asthma Surveillance, 2008-2009;  
**Massachusetts Behavioral Risk Factor Surveillance System, 2011  
Prepared 01/13/2014 by Massachusetts Department of Public Health
Project Goals:

Home assessments (90)
Home interventions (90)
Evaluate home intervention effectiveness
Disseminate findings
Partners & Roles

- University of Massachusetts Lowell
- Lowell Community Health Center
- Lowell Housing Authority
Who are we enrolling?

• Live in Lowell Public or Assisted Housing
• Age 62+
• Current Asthma or
• Asthma Diagnosis & COPD
• Low Income
What is Asthma?

- A serious & sometimes life-threatening respiratory disease
- Affects the quality of life for millions of Americans
- No cure for Asthma yet
- Can be controlled through medical treatment & management of environmental triggers
• Americans spend up to 90% of their time indoors
• Indoor concentrations of most pollutants are higher than outdoor
Indoor Environment and Asthma

• Indoor allergens and irritants can play significant roles in triggering asthma attacks
  – Ex: pet dander, mice, cockroaches, dust mites, harsh chemicals, fragrances, smoke, moisture/mold, pollen

• Important to recognize potential asthma triggers & reduce exposure
Home Intervention - Assessment

• Health/environmental assessments
  – Health questionnaires
  – Urinary cotinine
  – eNO (Niox Mino)
  – Environmental walk-through assessment
  – Environmental questionnaire
  – Dust sampling
  – NO2 sampling (gas stoves)
Education, Supplies, Intervention

Based on findings from assessment:

- **Education**
  - Dust mites and healthy cleaning practices
  - Pets
  - Avoiding pests
  - Moisture/mold control
  - Smoking
  - Air pollution (indoor & outdoor)

- **Supplies**
  - HEPA vacuum
  - Allergen-proof mattress and pillow covers
  - Trash can with lid
  - Food containers
  - Non-toxic cleaner
  - Baits and traps for pests

---

Assessment → Education, Supplies, Remediation → Mid-term Assessment 6\(^{th}\) month → Final Assessment 12\(^{th}\) month
Education, Supplies, Remediation Cont.

- Remediation
  - Gas stove replacement
  - Install & repair ventilation
  - Integrated Pest Management (IPM)
  - Industrial cleaning

Assessment ➔ Education, Supplies, Remediation ➔ Mid-term Assessment (6th month) ➔ Final Assessment (12th month)
Mid-term Assessment

• Health questionnaire (abbreviated)
• Environmental questionnaire (abbreviated)
• More supplies if needed
• Reinforce education
Final Assessment

- Health questionnaires
- Urinary cotinine
- eNO (Niox Mino)
- Environmental questionnaire
- Environmental walk-through
- Dust sampling
- NO2 sampling (gas stoves)
- Gift certificate
## Results

### Table 1. Demographics of participants

<table>
<thead>
<tr>
<th>Category</th>
<th>(n=49)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender: Male</td>
<td>11</td>
<td>22.5</td>
</tr>
<tr>
<td>Gender: Female</td>
<td>38</td>
<td>77.5</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>41</td>
<td>83.7</td>
</tr>
<tr>
<td>Black/African American</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>Asian</td>
<td>4</td>
<td>8.2</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>2</td>
<td>4.1</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>27</td>
<td>55.1</td>
</tr>
<tr>
<td>Mean Age = 69.4 (n=45)</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
# General Health

<table>
<thead>
<tr>
<th>Health Status</th>
<th>Count</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>2</td>
<td>4.1</td>
</tr>
<tr>
<td>Good</td>
<td>10</td>
<td>20.4</td>
</tr>
<tr>
<td>Fair</td>
<td>21</td>
<td>42.9</td>
</tr>
<tr>
<td>Poor</td>
<td>10</td>
<td>20.4</td>
</tr>
<tr>
<td>Very Poor</td>
<td>6</td>
<td>12.2</td>
</tr>
</tbody>
</table>

St. George Respiratory Questionnaire English for the U.S.
### Respiratory Problems Over Last 3 Months

<table>
<thead>
<tr>
<th>Condition</th>
<th>Count (n=49)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coughed</td>
<td>33</td>
<td>67.3</td>
</tr>
<tr>
<td>Brought up phlegm (sputum)</td>
<td>23</td>
<td>46.9</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>34</td>
<td>69.4</td>
</tr>
<tr>
<td>Wheezing attacks</td>
<td>17</td>
<td>34.7</td>
</tr>
<tr>
<td>Severe respiratory attacks (3+)</td>
<td>12</td>
<td>24.5</td>
</tr>
</tbody>
</table>

St. George Respiratory Questionnaire English for the U.S.
## Health & Medical Care During Past Year

<table>
<thead>
<tr>
<th>Service</th>
<th>Count (n=49)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overnight in the hospital</td>
<td>10</td>
<td>20.4</td>
</tr>
<tr>
<td>Seen in an emergency room</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>Emergency visit to doctor/clinic</td>
<td>16</td>
<td>32.6</td>
</tr>
<tr>
<td>Treated with antibiotics for a chest illness</td>
<td>15</td>
<td>30.6</td>
</tr>
<tr>
<td>Daily medication use for respiratory problems</td>
<td>44</td>
<td>89.8</td>
</tr>
</tbody>
</table>
# Environmental Exposures Asthma Triggers

<table>
<thead>
<tr>
<th></th>
<th>(n=46)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air freshener used (1+ days/wk)</td>
<td>35</td>
<td>76.1</td>
</tr>
<tr>
<td>Candles/incensed used (1+ days/wk)</td>
<td>5</td>
<td>10.9</td>
</tr>
<tr>
<td>Signs of mice (past month)*</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Signs of cockroaches (past month)*</td>
<td>7</td>
<td>15.2</td>
</tr>
<tr>
<td>Mold or mildew</td>
<td>7</td>
<td>15.2</td>
</tr>
<tr>
<td>Gas Stove (NO &amp; NO2)</td>
<td>29</td>
<td>61.7</td>
</tr>
</tbody>
</table>

*2 household had signs of mice and cockroaches
# Environmental Exposures Asthma Triggers - Smoking

<table>
<thead>
<tr>
<th></th>
<th>(n=46)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject smokes</td>
<td>11</td>
<td>23.9</td>
</tr>
<tr>
<td>Others in household smoke</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Visitors smoke</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Smoke enters from other apartments/outside</td>
<td>12</td>
<td>26.1</td>
</tr>
</tbody>
</table>
Conclusion

• Prevalence of environmental asthma triggers
• Difficulties with exhaled Nitric Oxide (eNO) measurement using Niox Mino device
• Recruitment challenges
• Involve key partners to increase impact
• Importance of multi-cultural, multilingual lay community health outreach workers
Contact Information

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