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

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Turcotte, David; Woskie, Susan; Chaves, Emily; Gore, Rebecca; Adejumo, Kelechi; Caraballo, Carla; and Mouth, Ronnie, "Healthy Homes for Elders: Multi-trigger, Multi-component Environmental Interventions for Asthma" (2014). *Community Engagement and Research Symposia*. 6.  
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Comments
Presented at the 2014 UMass Center for Clinical and Translational Science Community Engagement and Research Symposium, held on November 7, 2014 at the University of Massachusetts Medical School, Worcester, MA.

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

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Emily Chaves, MA
Rebecca Gore, PhD
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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
Education, Supplies, Remediation Cont.

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

Assessment → Education, Supplies, Remediation → Mid-term Assessment 6th month → Final Assessment 12th month
## Results

<table>
<thead>
<tr>
<th>Table 1. Demographics of participants</th>
<th>(n=49)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>22.5</td>
</tr>
<tr>
<td>Female</td>
<td>38</td>
<td>77.5</td>
</tr>
<tr>
<td><strong>Race/ethnicity</strong></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><strong>Mean Age = 69.4 (n=45)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## General Health

<table>
<thead>
<tr>
<th>Health Status</th>
<th>(n=49)</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>Everyday to several days per week</th>
<th>(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>Event</th>
<th>(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>
<tr>
<td>Environmental Exposures Asthma Triggers</td>
<td>(n=46)</td>
<td>Percent (%)</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>Air freshener used (1+ days/wk)</td>
<td>35</td>
<td>76.1</td>
</tr>
<tr>
<td>Candles/incense 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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