Work-Related Asthma in Massachusetts Health Care Workers

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Public Health Impact of Asthma*

- 20.7 million adults reported asthma (8.9 million children)

**Adult asthma**
- 12.9 million office visits for asthma
- 1.7 million ED visits for asthma

**Children have higher rates than adults, but asthma is an adult disease**

http://www.cdc.gov/nchs/fastats/asthma.htm
Sentinel Event Notification System for Occupational Risks (SENSOR)

- Active state-based surveillance for ‘sentinel’ work-related conditions
- Focus on prevention-oriented workplace intervention
- Funded by National Institute for Occupational Safety and Health (NIOSH)
Surveillance case definition
Work-related asthma

- Health care professional diagnosis consistent with asthma
  AND
- An association between symptoms of asthma and work

Includes both new onset asthma (OA, RADS) and work-aggravated asthma
Surveillance of Work-Related Asthma (WRA)

- Mandatory reporting by physicians of cases of WRA (confirmed and suspected)
- 1993 to present, >1100 cases reported, of whom about 500 have been interviewed
- Track industries, occupations and agents that cause or exacerbate WRA
- Design interventions to reduce WRA
Massachusetts Surveillance System for Work-Related Asthma

Hospital Discharges

Heath Care Provider reports

Emergency Dept Visits (65 per year)

OHSP

Worker interview

Workers’ comp

Medical records

Employer follow-up

• Worksite investigations

Worker follow-up

• Educational materials
• Resources in state

Summary data analysis

Industry-wide interventions
Work-related asthma, 1995—2003, Massachusetts n=374

Health Care Workers

- 116 cases, 31% of all confirmed cases
- 92% of HCW are female
- 88% white
- Average age 40 years
- 92% work in health care industry
- Most likely health care worker with WRA is a nurse, non-smoker, with allergies
Occasions of health care workers with work-related asthma, n=114

Nurses 63
Office workers 15
Aides/therapists 13
Technicians 12
Dental health 5
Janitor/Food 4
Other 2

PROVISIONAL DATA
<table>
<thead>
<tr>
<th></th>
<th>Health care workers</th>
<th>Non-health care worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>116</td>
<td>258</td>
</tr>
<tr>
<td>% Female</td>
<td>92%</td>
<td>49%</td>
</tr>
<tr>
<td>% White</td>
<td>88%</td>
<td>84%</td>
</tr>
<tr>
<td>% Smoke</td>
<td>35%</td>
<td>53%</td>
</tr>
<tr>
<td>% Allergies</td>
<td>60%</td>
<td>45%</td>
</tr>
<tr>
<td>% ER Visit</td>
<td>52%</td>
<td>51%</td>
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</tbody>
</table>

PROVISIONAL DATA
<table>
<thead>
<tr>
<th>Category</th>
<th>HCW</th>
<th>Non-HCW</th>
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<tbody>
<tr>
<td>Still exposed</td>
<td>33%</td>
<td>36%</td>
</tr>
<tr>
<td>Still same job</td>
<td>68%</td>
<td>65%</td>
</tr>
<tr>
<td>Applied for workers compensation</td>
<td>71 (62%)</td>
<td>139 (55%)</td>
</tr>
<tr>
<td>Awarded</td>
<td>43 (61%)</td>
<td>69 (50%)</td>
</tr>
<tr>
<td>Denied</td>
<td>6 (8%)</td>
<td>18 (13%)</td>
</tr>
</tbody>
</table>

PROVISIONAL DATA
## Work-related asthma classified HCWs v non-HCW, n=374

<table>
<thead>
<tr>
<th>Inducer</th>
<th>HCW</th>
<th>Non-HCW</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOA known inducer</td>
<td>34%</td>
<td>22%</td>
<td>26%</td>
</tr>
<tr>
<td>NOA unknown inducer</td>
<td>45%</td>
<td>57%</td>
<td>53%</td>
</tr>
<tr>
<td>WAA</td>
<td>9%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>RADS</td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>31%</td>
<td>69%</td>
<td></td>
</tr>
</tbody>
</table>

PROVISIONAL DATA
Health Care Workers—4 states, 1993-1997

- 305 of 1,879 cases = 16%
- Leading exposures
  - Cleaning products 24%
  - Latex 20%
  - Glutaraldehyde 9%
  - Chemicals, NOS 9%
  - Paints, solvents 7%

42 y/o assistant nurse manager/RN worked in ob-gyn in a large urban hospital for 6 years. Noted wheezing, cough, chest tight, SOB. Diagnosed at age 3 with asthma, with allergies to trees, grass, dust, but no symptoms since age 24. Symptoms were triggered by use of powdered latex gloves. Out of work >2 years. Hospital changed gloves, banned balloons.
Incident—Small community hospital

- Cluster of respiratory problems among operating room staff, September 19, 2005
- 18 employees to Occupational Health
- 2 employees persistent WAA, reported to OHSP as WRA (October 2005)
- 152 bed hospital, incorporated 150 years
Incident—Small community hospital

- Meeting and walk-through December 2005
- 2 employees persistent sx unable to return to usual work in OR
- 25 year old hospital wing, flat floating roof, with concrete deck, 2-layers rubber, stones, persistent leaks (planned replacement 2006)
Four Possible Exposures

- Silicone sealant used on air handling unit
- Fungi, mold, bacteria from previous leaks
- Dust from moving OR equipment
- HB Quat and other disinfectants and cleaners used in OR
HB Quat Distributed by Ecolab
Manufactured by 3M Corporation

- quaternary ammonium compounds, benzyl-c12-18-alkyldimethyl, chlorides 68391-01-51-5
- quaternary ammonium compounds, c12-14-alkyl [(ethylphenyl) methyl] dimethyl, chlorides 85409-23-01-5
Quaternary ammonium compound most likely agent

- 2 quaternary ammonium compounds recognized as asthmagens
- Two workers out of the OR for 6-7 months
- Changed cleaning chemical from HB Quat to PCMX (para chloro meta xylenol)
- Workers returned to usual work
- Update—PCMX failed to kill S. aureus
Most cases of WRA go unrecognized

374 confirmed cases
Recommendations

- Heighten awareness of WRA for diagnosis, treatment, reporting, control & prevention
- Monitor ventilation, h & s programming
- Replace latex, glutaraldehyde, known sensitizers
- Improve cleaning practices
  - Minimize need for cleaning
  - Clean, minimize disinfection
  - Select products without asthmagens