Asthma in Minnesota

Wendy Brunner
Asthma Program
Minnesota Department of Health

October 12, 2009
Asthma

- Chronic respiratory disease
- Bronchoconstriction
- Inflammation
Common Symptoms of Asthma

- Frequent cough, especially at night
- Shortness of breath or rapid breathing
- Chest tightness
- Chest pain
- Wheezing
- Fatigue
Airway Obstruction

Normal Bronchiole

Inflamed Bronchiole with Mucus
Child and Adult Asthma Prevalence
United States, 1980-2007

- Child
- Adult

12-Month
Lifetime
Current

Year

Source: National Health Interview Survey; CDC National Center for Health Statistics
Causes of Asthma

- Genetics
- Environmental exposures
  - *Sufficient evidence for causal relationship*: house dust mites
  - *Sufficient evidence for an association*: environmental tobacco smoke (pre-school children)
  - *Limited/suggestive evidence for an association*: cockroach (pre-school children), respiratory syncytial virus (RSV)
- “Hygiene hypothesis”
Common Triggers - Allergens

- Pollen
- Animal dander saliva/urine
- Dust mites
- Cockroach/mice/rat droppings and urine
- Mold
- Some medications (e.g., aspirin)
- Some foods
Common Triggers - Irritants

- Exercise
- Cold air
- **Viral/upper respiratory infections**
- Air pollution
- Tobacco smoke or secondhand smoke
- Chemical irritants and strong smells
- Strong emotional feelings
- Diesel fumes
Asthma - Key Points

- Chronic disease with acute components (asthma episodes)
- Factors that cause asthma to develop are unknown
- Asthma episodes can be caused by exposures to triggers
Asthma Surveillance Framework

Minnesotans with Asthma (Asthma Prevalence)

- Asthma Emergency Department Visits
- Asthma Hospitalizations
- Asthma Deaths

Asthma Symptoms & Severity
- Asthma Management
- Quality of Life
Asthma Prevalence
Asthma Prevalence, Minnesota and U.S. Adults, 2008

Source: Behavioral Risk Factor Surveillance System
Current Asthma Prevalence, Minnesota and U.S. Adults, 2000-2008

Source: Behavioral Risk Factor Surveillance System
Current Asthma Prevalence by Residence, Minnesota Adults, 2000-2007

Source: Behavioral Risk Factor Surveillance System
Lifetime and Current Asthma, Adults, Hennepin County, 2006

Data source: Hennepin County: SHAPE 2006
Current Asthma Rates Among Adults by Racial and Ethnic Groups, Hennepin County, 2006

Notes: Hispanic/Latino ethnicity and race are mutually exclusive. The race presents the primary racial designation.
Source: SHAPE 2006.
Asthma Prevalence, Minnesota Children, 2003-2006

Source: Behavioral Risk Factor Surveillance System
Asthma Hospitalizations & Emergency Department Visits
Asthma Emergency Department Visit Rates by Age and Sex, Minnesota, 2007

Source: Minnesota Hospital Association
Asthma Hospitalization Rates by Age and Sex, Minnesota, 2007

Source: Minnesota Hospital Association
Asthma Hospitalization Rates by Age Group and Region, 1998-2006

Source: Minnesota Hospital Association
Seasonal Variations in Asthma Hospitalizations, Minnesota, 2007

Source: Minnesota Hospital Association
Asthma Mortality
Asthma Mortality by Age, Minnesota, 2003-2007

65 and older 68%

35-64 yrs 23%

15-34 yrs 6%

5-14 yrs 2%

0-4 yrs 0%

Source: Minnesota Center for Health Statistics
Age-Adjusted Asthma Mortality Rates, Minnesota, 1990-2007

Source: Minnesota Center for Health Statistics
Special Topics
Environment

Air pollutants, such as smog, automobile exhaust and chemicals, may cause poor outdoor air quality, and on some days, result in air quality alerts or advisories.

Have you ever heard of air quality alerts or advisories in the area where you live?

Yes: 46.3% of Minnesota adults

Source: Behavioral Risk Factor Surveillance System, 2005
Using Asthma Data to Respond to Environmental Concerns
Responding to Environmental Concerns

- Wood smoke, outdoor wood boilers
- Avon wood-finishing facility
- Eyota ethanol facility
- Midtown Eco-Energy project
### Estimated percentage of adults (age 18 and older) who have asthma

<table>
<thead>
<tr>
<th>Phillips neighborhood</th>
<th>Minneapolis</th>
<th>Hennepin Co.</th>
<th>Minnesota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current asthma</td>
<td>8.1%±2.6</td>
<td>8.5%±1.1</td>
<td>7.6%±1.0</td>
</tr>
</tbody>
</table>

Notes: ± = 95% confidence intervals (margin of error)
Current asthma = Yes to: "Has a doctor or other health professional ever told you that you had asthma?"
and "Do you still have asthma?"
Sources: SHAPE 2002, Hennepin County Human Services and Public Health Department
Behavioral Risk Factor Surveillance System, 2007

### Estimated percentage of children (age 0-17) who have asthma

<table>
<thead>
<tr>
<th>Central (Powderhorn/Phillips)</th>
<th>Minneapolis</th>
<th>Hennepin Co.</th>
<th>Minnesota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current asthma</td>
<td>9.4%</td>
<td>10.0%</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

Current asthma = Yes to both: Has a doctor ever told you that your child has asthma? and Does your child still have asthma?
Sources: Unpublished SHAPE 2006 data, Hennepin County Human Services and Public Health Department
Behavioral Risk Factor Surveillance System, 2004

### Asthma Emergency Department Visits by Zip Code, 2006

<table>
<thead>
<tr>
<th>Children (0-17)</th>
<th>Rate per 10,000 residents</th>
<th>Adults (18+)</th>
<th>Rate per 10,000 residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>55404</td>
<td>301.7</td>
<td>55404</td>
<td>108.1</td>
</tr>
<tr>
<td>55407</td>
<td>229.5</td>
<td>55407</td>
<td>56.0</td>
</tr>
<tr>
<td>Minnesota</td>
<td>55.7</td>
<td>Minnesota</td>
<td>22.6</td>
</tr>
</tbody>
</table>

### Asthma Hospitalizations by Zip Code, 2006

<table>
<thead>
<tr>
<th>Children (0-17)</th>
<th>Rate per 10,000 residents</th>
<th>Adults (18+)</th>
<th>Rate per 10,000 residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>55404</td>
<td>43.4</td>
<td>55404</td>
<td>21.2</td>
</tr>
<tr>
<td>55407</td>
<td>33.0</td>
<td>55407</td>
<td>17.0</td>
</tr>
<tr>
<td>Minnesota</td>
<td>12.0</td>
<td>Minnesota</td>
<td>7.1</td>
</tr>
</tbody>
</table>
Average Annual Adult Asthma
Emergency Department Visit Rates by Zip Code
Minneapolis/St. Paul, 2005-2006

Adult ED visit rates per 10,000 population
- <= 20 claims per zipcode
- <= 24.9
- 25.0 - 38.1
- 38.2

Data Source: MN Hospital Association
For more information

Wendy Brunner
wendy.brunner@state.mn.us
651.201.5895

MDH Asthma Program website:
www.health.state.mn.us/asthma/