Asthma In North Carolina

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North Carolina Department of Health and Human Services
Interactive Poll

1. How many Brothers do you have?

2. How many years have you been attending the asthma summit?
Adult Asthma
Prevalence

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (BRFSS)
Map L1
Adult Self-Reported Lifetime Asthma
Prevalence Rate (Percent) by State: BRFSS 2014

Footnote: Ranges are based on quintiles of the overall prevalence estimates from year 2011 data.

Air Pollution and Respiratory Health Branch, National Center for Environmental Health
Centers for Disease Control and Prevention

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (BRFSS)
Percentage of North Carolina Adults Who Answered Yes to "Has a doctor, nurse, or other health professional ever told you that you had asthma?"

by North Carolina Association of Local Health Directors (NCALHD) Regions, 2015

Legend

Percent
- 11.5 - 11.6
- 11.7 - 13.1
- 13.2 - 15.3
- 15.4 - 17.0

NCALHD Regions
County Boundary

Source: 2015 Behavioral Risk Factor Surveillance System (BRFSS)
Percentage of North Carolina Adults Who Answered Yes to "Do you still have asthma?"
by North Carolina Association of Local Health Directors (NCALHD) Regions, 2015

Legend
Percent
- 7.0
- 7.1 - 7.3
- 7.4 - 9.1
- 9.2 - 10.7

NCALHD Regions
County Boundary

Source: 2015 Behavioral Risk Factor Surveillance System (BRFSS)
*Adults without asthma are included in the denominator to estimate current asthma prevalence.
NC Adult Current Asthma Prevalence Rates by Gender, 2015

Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)
NC Adult Current Asthma Prevalence Rates by Race/Ethnicity, 2015

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic White</td>
<td>8.5</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>8.7</td>
</tr>
<tr>
<td>Non-Hispanic Am Indian</td>
<td>14.7</td>
</tr>
<tr>
<td>Non-Hispanic Other</td>
<td>5.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)
NC Adult Current Asthma Prevalence Rates by Age Group, 2015

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-34</td>
<td>7.8</td>
</tr>
<tr>
<td>35-44</td>
<td>8.1</td>
</tr>
<tr>
<td>45-54</td>
<td>8.7</td>
</tr>
<tr>
<td>55-64</td>
<td>8.4</td>
</tr>
<tr>
<td>65-74</td>
<td>7.7</td>
</tr>
<tr>
<td>75+</td>
<td>9.5</td>
</tr>
</tbody>
</table>

Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)
NC Adult Current Asthma Prevalence Rates by Household Income, 2015

Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)
NC Adult Current Asthma Prevalence
Comorbid Conditions/Risk Factors, 2015

- Uninsured: 7.0%
- Current Smoker: 11.7%
- Diabetes: 14.9%
- Obesity: 11.3%
- CVD: 14.3%
- Disability: 16.6%
- COPD: 35.1%

Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)
Asthma Mortality
## NC Resident Deaths with Asthma Listed as a Primary Cause, CY2015

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Asthma Deaths</td>
<td>96</td>
</tr>
<tr>
<td>Crude (unadjusted) Mortality Rate</td>
<td>9.6</td>
</tr>
<tr>
<td>Age-adjusted Mortality Rate</td>
<td>9.0</td>
</tr>
</tbody>
</table>

*Source: North Carolina State Center for Health Statistics, Death Certificate Data*
Asthma Hospitalizations
# 2014 NC Resident Inpatient Hospitalizations with a Primary Diagnosis of Asthma

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Hospital Discharges</td>
<td>9,035</td>
</tr>
<tr>
<td>Discharge Rate per 100,000 Population</td>
<td>90.9</td>
</tr>
<tr>
<td>Average Length of Stay (in days)</td>
<td>3.2</td>
</tr>
<tr>
<td>Total Charges</td>
<td>$139,306,354</td>
</tr>
<tr>
<td>Average Charge per Day</td>
<td>$4,872</td>
</tr>
<tr>
<td>Average Charge per Hospitalization</td>
<td>$15,420</td>
</tr>
</tbody>
</table>

Source: North Carolina State Center for Health Statistics, Inpatient Hospital Discharge Data
2014 NC Resident Inpatient Hospitalizations with A Primary Diagnosis of Asthma by Payer

- Medicaid: 38%
- Medicare Part A: 25%
- Blue Cross & Blue Shield: 10%
- Self Pay: 9%
- All Other: 18%

Source: North Carolina State Center for Health Statistics, Inpatient Hospital Discharge Data
2005-2014 Asthma Hospital Discharge Rates per 100,000 Resident Population

* Primary Diagnosis of Asthma

Source: North Carolina State Center for Health Statistics, Inpatient Hospital Discharge Data
North Carolina
2014 Hospital Discharge Rates with the Primary Diagnosis of Asthma, by County

Rate per 100,000 Population
- 0.0 - 43.2
- 43.3 - 85.8
- 85.9 - 151.2
- 151.3 - 318.3

Source: North Carolina Hospital Discharge Data
Data includes only North Carolina resident data, served in North Carolina hospitals. It is provisional data and is subject to change.

*Rates based on small numbers (fewer than 10 cases) are unstable and should be interpreted with caution.
North Carolina
2014 Hospital Discharge Rates with the Primary Diagnosis of Asthma for Ages 0 to 14, by County

Rate per 100,000 Population Ages 0 to 14
- 0.0 - 50.6
- 50.7 - 126.3
- 126.4 - 222.1
- 222.2 - 486.2

Source: North Carolina Hospital Discharge Data
Data includes only North Carolina resident data, served in North Carolina hospitals. It is provisional data and is subject to change.

*Rates based on small numbers (fewer than 10 cases) are unstable and should be interpreted with caution.
Emergency Department Visits for Asthma
### 2014 NC Emergency Visits for Asthma (as a Primary Diagnosis) by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th># ER Visits</th>
<th>Rate per 10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>19,762</td>
<td>103.8</td>
</tr>
<tr>
<td>15-44</td>
<td>22,854</td>
<td>119.8</td>
</tr>
<tr>
<td>45-64</td>
<td>11,642</td>
<td>44.6</td>
</tr>
<tr>
<td>65+</td>
<td>3,958</td>
<td>28.2</td>
</tr>
<tr>
<td>Total</td>
<td>58,216</td>
<td>58.5</td>
</tr>
</tbody>
</table>

Source: North Carolina State Center for Health Statistics, Emergency Department Data
North Carolina
2014 Emergency Department Visits with the Primary Diagnosis of Asthma, by County

Rate per 100,000 Population
- 103.2 - 400.0
- 400.1 - 637.7
- 637.8 - 1015.3
- 1015.4 - 1696.0

Source: North Carolina Hospital Discharge Data
Data includes only North Carolina resident data, served in North Carolina hospitals. It is provisional data and is subject to change.

August 2016
North Carolina
2014 Emergency Department Visits with the Primary Diagnosis of Asthma for Ages 0 to 14, by County

Rate per 100,000 Population Ages 0 to 14
- 214.6 - 804.1
- 804.2 - 13870
- 13871 - 2218.5
- 2218.6 - 3358.2

Source: North Carolina Hospital Discharge Data
Data includes only North Carolina resident data, served in North Carolina hospitals. It is provisional data and is subject to change.

*Rates based on small numbers (fewer than 10 cases) are unstable and should be interpreted with caution.

August 2016
Asthma &
NC Children
# Prevalence of Asthma Among NC Resident Children

<table>
<thead>
<tr>
<th></th>
<th>Ever Asthma</th>
<th>Current Asthma</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>17.9%</td>
<td>10.5%</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>22.4%</td>
<td>11.4%</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>13.1%</td>
<td>9.5%</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>15.1%</td>
<td>6.9%</td>
</tr>
<tr>
<td><strong>African American/Black</strong></td>
<td>28.8%</td>
<td>21.5%</td>
</tr>
<tr>
<td><strong>Other Minorities</strong></td>
<td>12.1%</td>
<td>7.0%</td>
</tr>
<tr>
<td><strong>Hispanic</strong></td>
<td>9.8%</td>
<td>7.2%</td>
</tr>
</tbody>
</table>

*Statistically unreliable estimate.

Source: North Carolina State Center for Health Statistics, Child Health Assessment Monitoring Program (CHAMP)
Most Common Chronic Health Conditions Reported to School Nurses, 2014-15

### School Nurse Asthma Case Management Outcomes

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>% of Asthmatic Students Demonstrating Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consistently verbalized accurate knowledge of the pathophysiology of their condition</td>
<td>78%</td>
</tr>
<tr>
<td>2. Consistently demonstrated correct use of asthma inhaler and/or spacer</td>
<td>83%</td>
</tr>
<tr>
<td>3. Accurately listed his/her asthma triggers</td>
<td>62%</td>
</tr>
<tr>
<td>4. Remained within peak flow/pulse oximeter plan goals</td>
<td>66%</td>
</tr>
<tr>
<td>5. Improved amount and/or quality of regular physical activity</td>
<td>77%</td>
</tr>
<tr>
<td>6. Improved grades</td>
<td>64%</td>
</tr>
<tr>
<td>7. Decreased number of school absences</td>
<td>70%</td>
</tr>
</tbody>
</table>

Asthma &
Environmental Health
Environmental Public Health Tracking Program: NC Trends Data

http://ephtracking.cdc.gov/showHome.action
Agriculture and Air Quality

- Exposure: Hazardous or toxic air pollutants, odorants (Aneja 2008, 09; Erisman 2008)
- Health Impacts
  - Increased likelihood of death from asthma (Kravchenko & Lyerly, unpublished)
  - Decreased immune function from stress (Avery 2004)
  - Higher rates of wheezing among children & adults (Mirabelli 2006)
  - Impaired pulmonary functions (Keil 2011)
  - Acute blood pressure increase (Kilburn 2012)
Questions?

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