Asthma Disparities
A National and Local Perspective

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Problem:
- Asthma prevalence rates remain at historically high levels affecting 20 million people of which 7 million are children.
- Despite advances in medical care the burden of asthma continues to also be at historically high levels.
- The burden of asthma disproportionately falls to Blacks and Puerto Ricans.
Asthma Burden in Children

- Minority children are less likely than white children to be prescribed or take recommended treatments to control their asthma, and are less likely to attend outpatient appointments.
- In 2008, asthma accounted for 10.5 million missed school days.
- Children with more severe asthma and/or nighttime symptoms are more likely to suffer academically than those with more mild symptoms.
Asthma Prevalence


Includes persons who answered "yes" to the questions: "Have you ever been told by a doctor or other health professional that [you/your child] had asthma?" and "Do [you/your child] still have asthma?"

Age-adjusted to the 2000 U.S. population, except age-group–specific estimates.
Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities

**Source:** CDC/NCHS, National Health Interview Survey, [http://www.cdc.gov/asthma/nhis/default.htm](http://www.cdc.gov/asthma/nhis/default.htm)

**The Problem**

Although the causes of asthma are poorly understood, we can document that asthma disproportionately affects minority children and children with family incomes below the poverty level.

The prevalence of current asthma in the U.S. is 16 percent among non-Hispanic black children; 10.7 percent among American Indian and Alaska Native children; 6.8 percent among Asian; 8.2 percent among non-Hispanic white; and 7.9 percent among Hispanic children (16.5 percent among Puerto Rican children and 7 percent among Mexican children).

Currently, 12.2 percent of children with a family income less than 100 percent of the federal poverty level have asthma – compared to 9.9 percent of children with a family income up to 200 percent of the federal poverty level, and 8.2 percent of children with a family income greater than 200 percent of the federal poverty level.

On top of disparities in the prevalence, there are significant racial and ethnic disparities in asthma outcomes (e.g., measures of asthma control, exacerbation of symptoms, quality of life, health care utilization and death). Among children with asthma, black children are:

- Twice as likely to be hospitalized.
- More than twice as likely to have an emergency department visit.
- Four times more likely to die due to asthma than white children.

Minority children are less likely than white children to be prescribed or take recommended treatments to control their asthma, and are less likely to attend outpatient appointments.

The burden of asthma also includes ripple effects in day-to-day life. For example, asthma affects the ability of children to fully engage in school and be physically active.

In 2008, asthma accounted for 10.5 million missed school days.
Figure 4. Relative burden of asthma health care use and mortality, adjusted for current asthma prevalence, by sex, race, and age group: United States, annual average 2005–2007.
## Table 2: Asthma – Age-Adjusted Death Rate per 100,000 population, by Race and Sex, 1999-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>White Male</th>
<th>White Female</th>
<th>Black Male</th>
<th>Black Female</th>
<th>Total Male</th>
<th>Total Female</th>
<th>All Other Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>1.7</td>
<td>1.4</td>
<td>2.0</td>
<td>1.4</td>
<td>1.0</td>
<td>1.7</td>
<td>3.4</td>
</tr>
<tr>
<td>2000</td>
<td>1.6</td>
<td>1.3</td>
<td>1.8</td>
<td>1.3</td>
<td>1.0</td>
<td>1.5</td>
<td>3.3</td>
</tr>
<tr>
<td>2001</td>
<td>1.5</td>
<td>1.2</td>
<td>1.7</td>
<td>1.2</td>
<td>0.9</td>
<td>1.5</td>
<td>3.2</td>
</tr>
<tr>
<td>2002</td>
<td>1.5</td>
<td>1.2</td>
<td>1.7</td>
<td>1.2</td>
<td>0.9</td>
<td>1.4</td>
<td>2.8</td>
</tr>
<tr>
<td>2003</td>
<td>1.4</td>
<td>1.0</td>
<td>1.8</td>
<td>1.2</td>
<td>0.8</td>
<td>1.6</td>
<td>2.2</td>
</tr>
<tr>
<td>2004</td>
<td>1.3</td>
<td>1.0</td>
<td>1.4</td>
<td>1.0</td>
<td>0.8</td>
<td>1.2</td>
<td>2.5</td>
</tr>
<tr>
<td>2005</td>
<td>1.3</td>
<td>1.0</td>
<td>1.5</td>
<td>1.0</td>
<td>0.7</td>
<td>1.3</td>
<td>2.5</td>
</tr>
<tr>
<td>2006</td>
<td>1.2</td>
<td>0.9</td>
<td>1.3</td>
<td>0.9</td>
<td>0.7</td>
<td>1.1</td>
<td>2.3</td>
</tr>
<tr>
<td>2007</td>
<td>1.1</td>
<td>0.9</td>
<td>1.2</td>
<td>0.9</td>
<td>0.7</td>
<td>1.0</td>
<td>2.1</td>
</tr>
<tr>
<td>2008</td>
<td>1.1</td>
<td>0.8</td>
<td>1.2</td>
<td>0.9</td>
<td>0.6</td>
<td>1.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

### Notes:
- Rates for 1999-2006 are age-adjusted to the 2000 U.S. standard population.
- Deaths from 1999-2006 are coded by the 10th revision of International Classification of Diseases, code J45-J46.
- All races other than White.

**Source:** CDC Wonder On-line Database, compiled from Compressed Mortality File 1999-2009 Series 20 No. 2O, 2012.
Children with Asthma are Disproportionately Covered by Medicaid, 1996-2000

- **Children with Asthma, 1996 - 2000**
  - 28% Uninsured
  - 9% Public Only
  - 63% Private Only/Public

- **All Children, 1996 - 2000**
  - 15% Uninsured
  - 21% Public Only
  - 64% Private Only/Public

N=982
n=65.4 Million

Outstanding Issues in Reducing Asthma Disparities

- Unequal housing
- Lack of infrastructure to support CHW’s being integrated into care
- Lack of policies to support multifaceted interventions in homes
- Lack of incentives to primary care providers to provide adequate and culturally appropriate care
- Lack of enforcement of healthy home standards across the nation
HP2020-Asthma Objectives

- Reduce asthma deaths
- Reduce asthma emergency visits
- Reduce asthma hospitalizations
- Reduce proportion of people with missed school and work days due to asthma
- Increase proportion of persons who have current care receive appropriate care according to NAEPP guidelines

Case Study: Community Asthma Prevention Program
Improving Asthma Outcomes through Closing the Circle of Care

The Children’s Hospital of Philadelphia® | CARE NETWORK
Prevalence of Asthma in Philadelphia

Door to Door  N=2345

- Positive 22%
- Probable 5%
- Negative 73%

School Screenings  N=5563

- Positive 27%
- Probable 17%
- Negative 56%

J of Asthma 2012
Community Asthma Prevention Program Interventions

Community Classes for Parents

School Classes for Students

Before

After

Home Environmental Asthma Trigger Reduction and Education
You Can Control Asthma Navigator Study

- Prospective Case Matched control study
- Enroll 240 high risk asthmatics from three inner-city practices
- Assign to a CHW who acts as Asthma Navigator embedded in each practice
CHOP CARE Network

- Community Health Workers with a combined total of 23 years experience with asthma
- Assigned to three CHOP CARE Network inner-city offices and integrated into clinical health team
- Residents of Philadelphia
- Charmane Braxton and Carmen Perez

30+ primary care practices

3 serving ~40,000 inner-city, primarily disadvantaged

~8,000 children diagnosed with asthma

~2400 moderate or severe persistent

240
Eligibility Criteria

- 0-17 years old
- 1 inpatient or 2 ED visits in past year
- On at least two controller medications
- PCP in one of 3 CHOP primary care practices
- Medicaid or CHIP insured

Case matched Control

- Birth year
- Gender
- Ethnicity
- Number of ED or IP visits year prior to identification
YCCA Navigator Program

Care Coordination
- Identification of Goals in Asthma Management
- Integrate AN into health care team
- Provide Education, Resources, “teach back” opportunities
- Schedule follow-up Visits

Asthma Education
- Understanding Medications
- Environment Mitigation
- Asthma Care Plan

Navigation
- Needs Assessment
- Identification of Barriers and Resources
- Specialist Visits
Methodology

- MCAN caregiver Survey completed at baseline and repeated at 12 months used by four sites.
- The survey instruments included questions addressing the following domains:
  - patient demographics
  - health care utilization
  - asthma control
  - asthma medications
  - asthma symptoms
- Home assessments surveyed Asthma Triggers present at baseline and 12 months
- Observation of Home condition
- Remediation actions taken within the home at 12 months
## Baseline Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>4.97 years (±3.5)</td>
</tr>
<tr>
<td>African-American (race)</td>
<td>93.4%</td>
</tr>
<tr>
<td>Male (sex)</td>
<td>64.8%</td>
</tr>
<tr>
<td>Well Controlled</td>
<td>16.0%</td>
</tr>
<tr>
<td>Uncontrolled</td>
<td>19.9%</td>
</tr>
<tr>
<td>Poorly Controlled</td>
<td>30.9%</td>
</tr>
</tbody>
</table>
## Symptom/Medication Results

<table>
<thead>
<tr>
<th>Symptom/Medication</th>
<th>Mean days Baseline n=254</th>
<th>Mean Days 12 months n=254</th>
<th>Number of Days Reduced</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Took rescue meds (in past 2 weeks)</td>
<td>5.87 (±5.8)</td>
<td>2.74 (±3.5)</td>
<td>3.1 days</td>
<td>.000</td>
</tr>
<tr>
<td>Symptom Days (in past 4 weeks)</td>
<td>6.78 (±7.9)</td>
<td>3.00 (±5.2)</td>
<td>3.78 days</td>
<td>.000</td>
</tr>
<tr>
<td>Symptom Nights (in past 4 weeks)</td>
<td>7.00 (±9.3)</td>
<td>2.42 (±5.2)</td>
<td>4.58 days</td>
<td>.000</td>
</tr>
<tr>
<td>Slowed Activity</td>
<td>5.50 (±8.6)</td>
<td>2.51 (±5.7)</td>
<td>~3 days</td>
<td>.000</td>
</tr>
<tr>
<td>School Days Missed</td>
<td>9.77 (±11.5)</td>
<td>2.82 (±3.3)</td>
<td>~7 days</td>
<td>.000</td>
</tr>
<tr>
<td>Work Days Missed</td>
<td>9.16 (±16.7)</td>
<td>1.52 (±3.0)</td>
<td>7.5 days</td>
<td>.000</td>
</tr>
</tbody>
</table>
## Asthma Triggers in Home Environment Results

### n=254

<table>
<thead>
<tr>
<th>Trigger</th>
<th>First Home Visit</th>
<th>Last Home Visit</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roaches</td>
<td>29.0%</td>
<td>15.1%</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>Rodents</td>
<td>72.5%</td>
<td>61.3%</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>Smokers</td>
<td>40.2%</td>
<td>38.5%</td>
<td>NS</td>
</tr>
<tr>
<td>Pets</td>
<td>38.6%</td>
<td>34.8%</td>
<td>p&lt;.006</td>
</tr>
<tr>
<td>Wall-to-wall carpet</td>
<td>41.3%</td>
<td>38.9%</td>
<td>p&lt;.057</td>
</tr>
<tr>
<td>Wet basement</td>
<td>13.5%</td>
<td>2.0%</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>Upholstered furniture</td>
<td>85.9%</td>
<td>85.7%</td>
<td>NS</td>
</tr>
<tr>
<td>Stuffed animals</td>
<td>64.6%</td>
<td>33.5%</td>
<td>p&lt;.001</td>
</tr>
</tbody>
</table>
Healthcare Utilization Results

- **ACUTE**
- **ED**
- **HOSPITAL**

- before
- at 12 months
Sustainability Strategies

✓ Integrated community health workers into multidisciplinary clinical team led to shared valuable information not readily available to physician
✓ Removed barriers to communication between caregiver and physician
✓ Facilitated communications between CHW and physician through the EMR
✓ Shared information about outcomes with Medicaid managed care asthma coordinators on a bi-annual basis face-to-face
✓ Met with state payors through the PA AAP to discuss asthma interventions and need for reimbursements
Sustainability Milestones and Successes

- Contracts with 2/3 Medicaid payors
- Medicaid payor agrees to cover 2 spacers every 180 days
- Medicaid payor considering designation of CHOP PCC as High Performance Practice and removed barriers to clinical care (e.g., prior authorization)
- CHOP CARE Network now supports two asthma navigators
- Able to dispense asthma medicines and devices at point of care for largest Medicaid payor
- Asthma Navigator
  - role now fully integrated into practice
  - now on staff
  - now reimbursed by two MMCO’s to do home visits
Opportunities for Medicaid

• Provide one formulary for all asthma medications
• Provide reimbursement for asthma educational and multi-trigger removal by non-traditional health care workers
• Provide holding chambers for children at home and at school
Summary

- Asthma Disparities are complex in origin.
- Evidence supports that a multi-system approach to asthma care for disadvantaged racial and ethnic populations can lead to elimination of asthma disparities.
- Asthma Disparities must be approached at a population and individual level in order to achieve health equity for all.
Conclusions

- CAPP’s asthma navigator program successfully integrated CHWs into the clinical setting while providing much-needed support to the caregivers of high risk children with asthma.

- The asthma navigators promoted national asthma-guideline based care in the home and in the office which resulted in increased primary care office acute visits, reduced asthma symptoms and reduced healthcare utilization.

- The value added by this program has been acknowledged by the practices and the insurers evidenced by their willingness to support and sustain these asthma navigators.