

**Children's Environmental Health on the Border:
Protecting Children Where They Live, Learn, and Play
September 24, 2015**

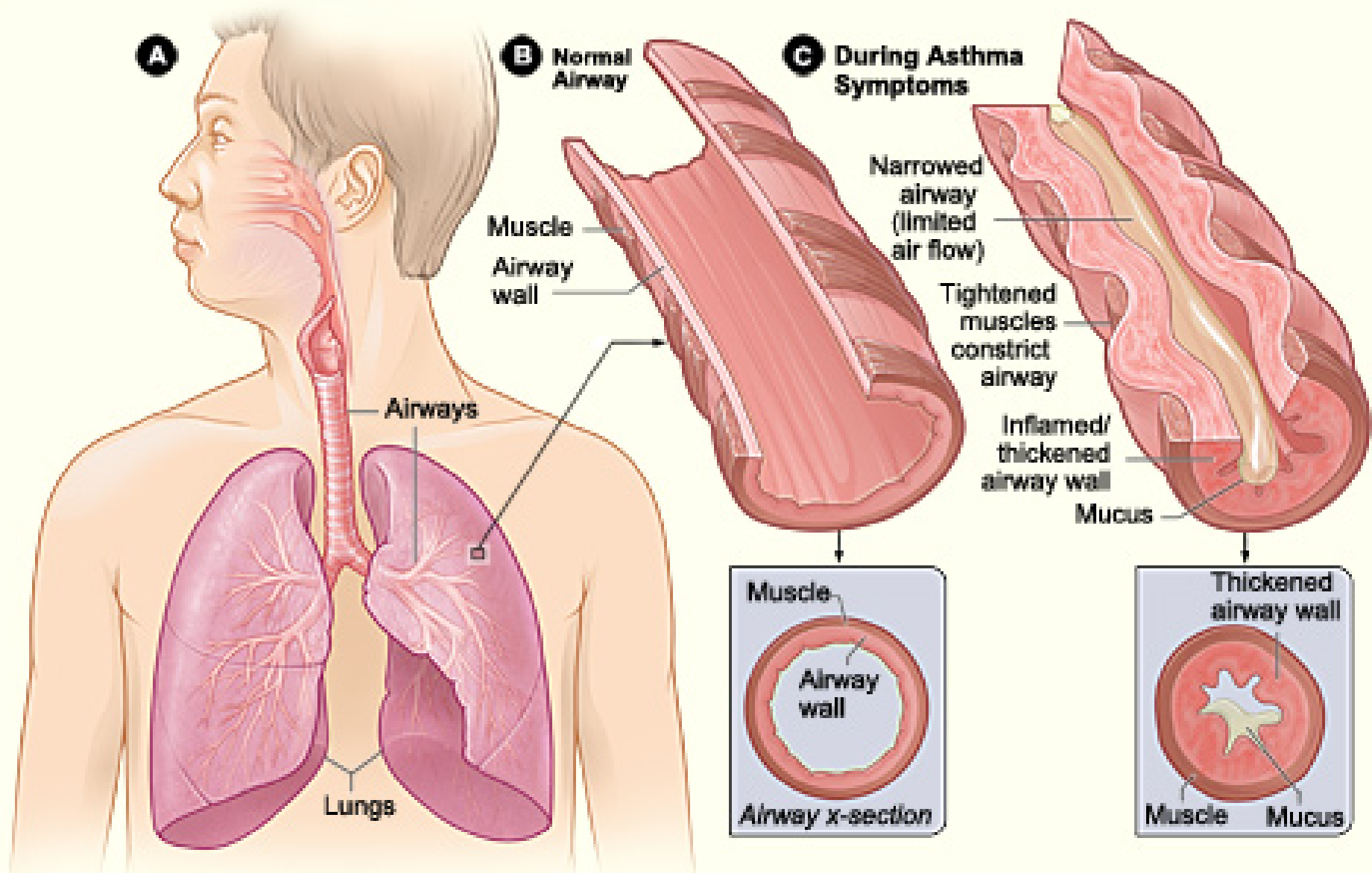
**Addressing Childhood Asthma
Concurrent Session 4**

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- “Asthma is a chronic lung disease that inflames and narrows the airways. Asthma causes recurring periods of wheezing (a whistling sound when you breathe), chest tightness, shortness of breath, and coughing. The coughing often occurs at night or early in the morning.”
 - National Heart, Lung, and Blood Institute
- Sometimes mislabeled/misdiagnosed as reactive airway disease, chronic bronchitis, respiratory infection, persistent cold, pertussis, etc.
- There is no cure for asthma but it can be managed & controlled.

The Physiology of Asthma



- Airway hypersensitivity
- Reversible bronchospasm
- Airway inflammation & mucus production
- Typical symptoms:
 - Cough
 - Wheeze
 - Chest tightness
 - Shortness of breath
 - Frequently waking up at night



- Symptoms are present
 - Trouble breathing & chest tightness
 - Coughing can be the principal symptom, especially in young children
 - Symptoms get worse when triggers are encountered
 - Symptoms worse at night, waking up child
 - Wheezing—whistling sounds when breathing out, but not all children have this
- Spirometry in patients ≥ 5 years old demonstrates that airflow obstruction is partially reversible.
- Alternative diagnoses are excluded
- Family members with asthma

Asthma Triggers

- Allergens (dust, animal fur, cockroaches, mold, & **pollens** from trees, grasses, and flowers)
- Irritants such as **cigarette smoke, air pollution, dust**, chemicals in cleaning products & furniture, **pesticides**, perfumed products, & air “freshener”
- Medicines (aspirin or other nonsteroidal anti-inflammatory drugs & nonselective beta-blockers)
- Viral upper respiratory infections
- Physical activity
- Sulfites in foods & drinks
- **Sudden weather changes**
- Stress & strong emotions (laughing, crying)



2013 Childhood prevalence (CDC)

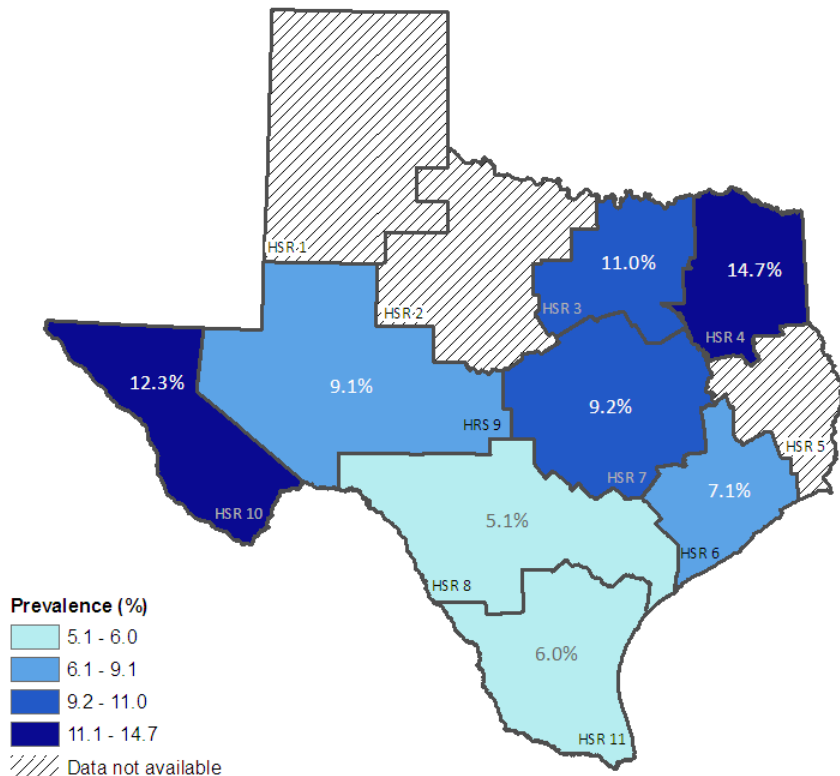
- U.S. overall = 14% 7,021,170
- Texas = 14% 927,825
- New Mexico = 12% 61,615
- Arizona = 18% 292,125
- California = 15% 1,179,521



Mexico Overall (2003 Healthy Border 2010 Plan)

- Hospitalizations around 4 per 100,000
- National incidence of asthma cases = 261 per 100,000 inhabitants.
- Border region incidence of asthma cases = 387.3 per 100,000 inhabitants.

Childhood Current Asthma Prevalence by Health Service Region (HSR), Texas, 2013



Childhood Current Asthma Prevalence in Texas = 9.1% (95% Confidence Interval: 7.5-10.6)

Data Categorization: Quantiles.
Data Source: 2013 Texas Behavioral Risk Factor Surveillance System (BRFSS),
Center for Health Statistics, Texas DSHS.

Created by Erin Wu, 10/30/2013

Texas Overall Demographics

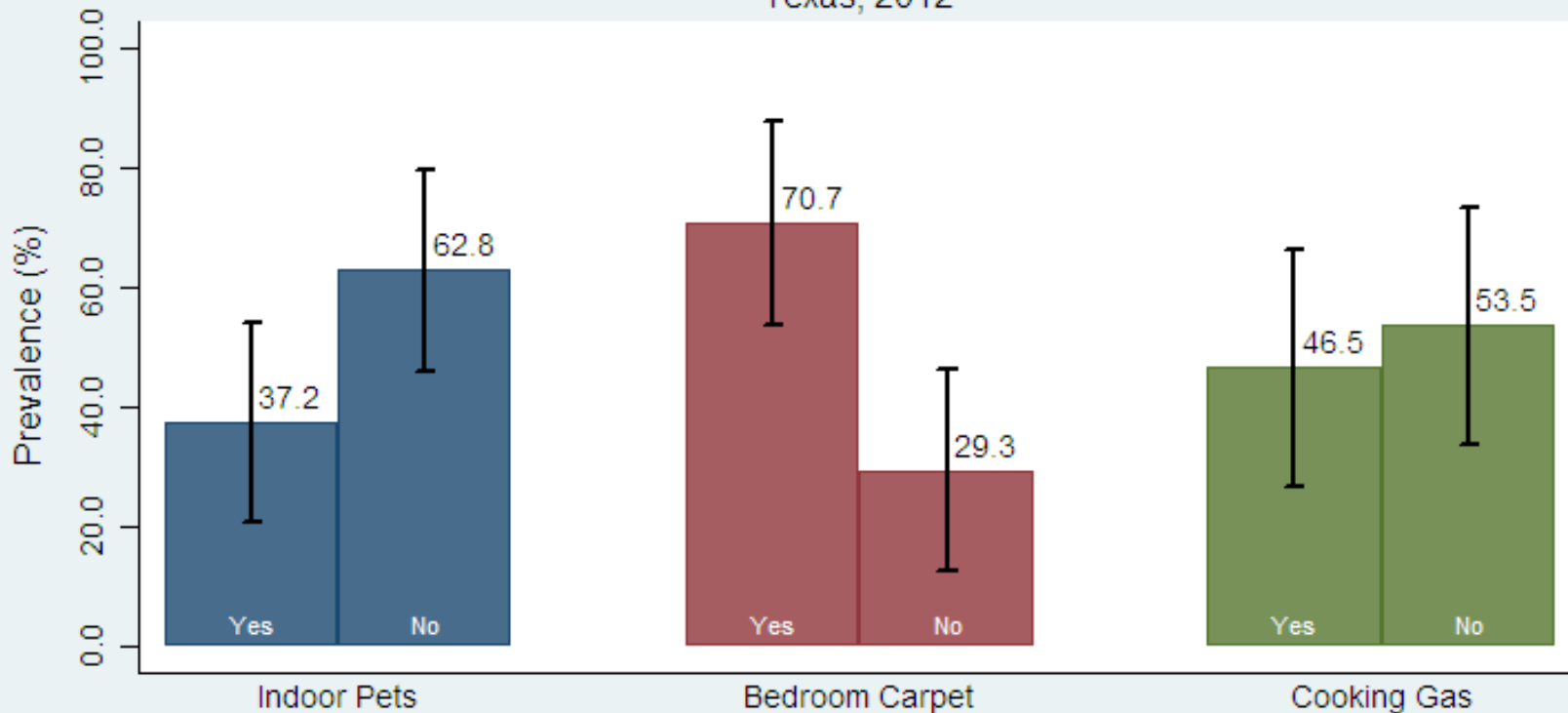
- **Sex:** No statistical difference
- **Race/Ethnicity:**
 - Blacks = 19%
 - Whites = 9%
 - Hispanic = 8%
- **Age:**
 - 0-4 years = 5%
 - 5-9 years = 11%
 - 10-14 years = 11%
 - 15-17 years = 10%

Border Health Service Regions Prevalence Rates

- HSR 10 = 12%
- HSR 9 = 9%
- HSR 8 = 5%
- HSR 11 = 6%

- Medicaid was the intended payer for a majority of child asthma hospital discharges = \$104 million
- 10,075 children had an asthma related hospital discharge = 15 asthma hospital discharges per 10,000 children.
- Total asthma hospital discharges among children = **\$190.8 million** with an average charge of **\$18,900**.
- The asthma hospital discharge rate among children was highest among boys, blacks, & younger children.
- Half of children with current asthma missed one or more days of school due to their asthma in the past 12 months.
- Almost 3 in 4 children with current asthma had received asthma education.

Prevalence of Home Environmental Exposures Among Children (0 to 17 years) With Current Asthma Texas, 2012



Data Source: 2012 Child Asthma Callback Surveys, Texas Behavioral Risk Factor Surveillance System (BRFSS), Texas Department of State Health Services, Center for Health Statistics.

Results are among children with current asthma.

Survey Questions: 'Does the child's home have pets such as dogs, cats, hamsters, birds, or other feathered or furry pets that spend time indoors?'

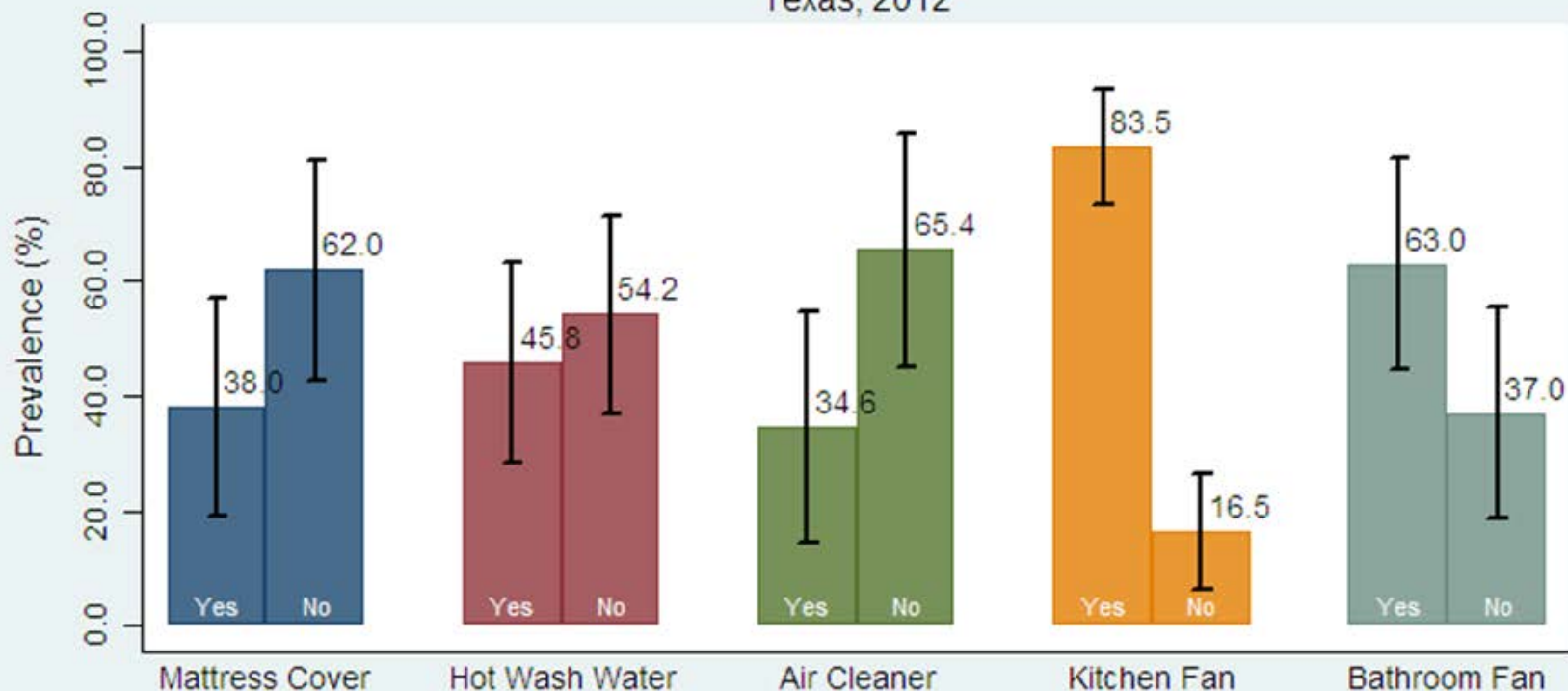
'Does the child have carpeting or rugs in his/her bedroom?'

'Is gas used for cooking in his/her home?'

Texas Actions to Reduce Triggers

Prevalence of Actions to Reduce Home Environmental Exposures Among Children (0 to 17 years) With Current Asthma

Texas, 2012



Data Source: 2012 Child Asthma Callback Survey, Texas Behavioral Risk Factor Surveillance System (BRFSS), Texas Department of State Health Services, Center for Health Statistics.

Results are among children with current asthma.

Survey Questions: 'Does he/she use a mattress cover that is made especially for controlling dust mites?'

'Are his/her sheets and pillowcases washed in cold, warm, or hot water?'

'Is an air cleaner or purifier regularly used inside the child's home?'

'Is an exhaust fan that vents to the outside used regularly when cooking in the kitchen in his/her home?'

'In the child's bathroom, does he/she regularly use an exhaust fan that vents to the outside?'

The *Community Preventive Services Task Force* recommends the use of **home-based multi-trigger, multicomponent interventions with an environmental focus** for children and adolescents with asthma based on strong evidence of effectiveness in improving overall quality of life and productivity, specifically:

- Improving asthma symptoms
- Reducing the number of school days missed due to asthma



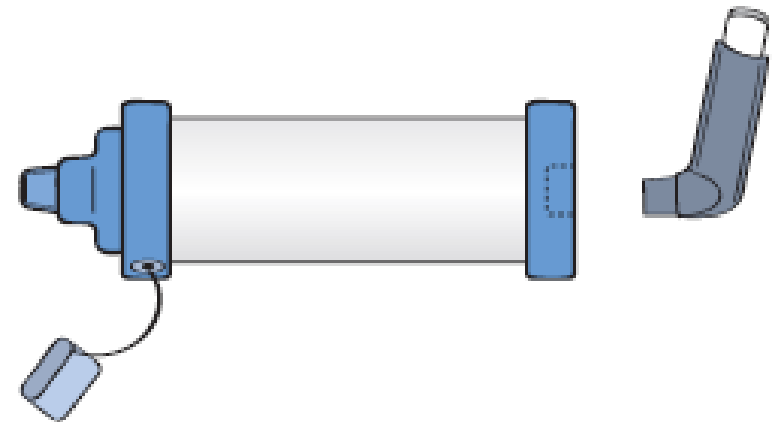
- **Personnel must be trained**
- **Conduct two or more activities including:**
 - Assessment of the home environment
 - Changing the indoor home environment to reduce exposure to asthma triggers
 - Education about the home environment
- **Most programs also included one or more of the following additional non- environmental activities:**
 - Training and education to improve asthma self-management
 - General asthma education
 - Social services and support
 - Coordinated care for the asthma client



- Asthma symptom days: median decrease of 21 days per year
- School days missed: median decrease of 12 days per year
- Acute healthcare visits:
 - Combined median decrease of 0.57 visits per year
 - Median decrease of 0.4 hospitalizations per year
 - Emergency department visits: median decrease of 0.2 visits per year
 - Unscheduled office visits: median decrease of 0.5 visits per year
- Costs:
 - Return of \$5.3 to \$14.0 for each dollar invested
 - Savings from averted costs of asthma care and improvement in productivity

- **Long-term control medications:**

- Prevent symptoms, often by reducing inflammation.
- Must be taken daily.
- Don't give quick relief



- **Quick-relief medications**

- SABAs relax airway muscles for prompt relief of symptoms
- Don't provide long-term asthma control
- Using SABA more than 2 days a week indicates need for starting or increasing long-term control medications

- Diagnose per guidelines
- Determine severity & prescribe medications to initiate treatment
- Educate family & create Asthma Action Plan
- Regularly assess control & step up or down medication levels
- Allergy testing
- Treat comorbid conditions & offer vaccinations
- Follow up & assess skills & knowledge
 - Correct inhaler use
 - Control & emergency medicines
- Refer family to resources
 - Smoking cessation
 - Community Health Services (community health worker)
 - Health insurance/funding source for medicine & healthcare



- Follow Asthma Action Plan & share with caretakers & school nurse/personnel
- Collaborate & cooperate with Community Health Worker
- Implement environmental control measures

- Smoke free home and car
- Home repairs
- Cleaning
- Pest control
- Allergen reduction



- Take child to regular doctor visits
- Ensure that medicines are available & taken as prescribed
- Maintain health insurance/healthcare funding coverage

- Pharmacist

- Ensure correct medicines & equipment are accessible
 - Difference between control & emergency medicines, inhaler technique
 - Spacers for all children, nebulizers for younger or impaired
 - Recommend and/or offer flu vaccinations
- Demonstrate & test correct inhaler use

- Community Health Services

- Evaluate home & primary caretaker environment(s)
- Help family obtain needed resources
 - Environmental remediation supplies & repairs
 - Smoking cessation
 - Health insurance/funding for medicine & doctor's visits
- Assess skills and knowledge
 - Maintenance of a healthy home environment
 - Smoke-free rules
 - Asthma Action Plan adherence
 - Difference between control & emergency medicine, inhaler technique
- Follow up



- Policies—Guidelines for districts & schools supported by leadership
- Documentation
 - All children with asthma have an Asthma Action Plan on file & available for quick & easy reference
- Emergency medicine available
 - Child can carry inhaler or have quick & easy access
 - Procedure to safely & quickly escort child to medicine
- Environmental controls
 - Indoor & outdoor air quality monitoring
 - Building maintenance & cleaning
 - Integrated Pest Management
 - Bus & other vehicles idling
- Staff education & Training
 - School nurse/health personnel
 - Janitorial & administrative staff
 - Educators & coaches



Community Role in Control

- Promote cross sector partnerships—schools, business, healthcare providers, faith-based orgs, etc.
- Improve regional & local air quality
- Reduce vehicle exhaust
- Smoke free ordinances & enforcement in all multiple unit housing & public spaces
- Comprehensive, affordable, high quality, accessible health care services



The Importance of Early Control



- **Physical & emotional pain** for the child—trauma of not being able to breathe, & missing out on normal peer activities.
- **Permanent lung damage** can occur, blocking air passages & reducing lung capacity as an adult.
- Leading cause of **school absenteeism**, lowering academic performance & affecting future wage earning potential.
- **Economic burden** for families resulting from lost work days for parents caring for children with asthma symptoms & paying for ER visits.
- Adults with asthma are at **higher risk for other chronic health conditions** such as obesity; COPD, emphysema, or chronic bronchitis; depression, diabetes, and hypertension. May be moderated by learning to control the disease as a child & improving health behaviors.

- **Centers for Disease Control**

http://www.cdc.gov/asthma/most_recent_data.htm

- **National Heart, Blood and Lung Institute National Asthma Education and Prevention Program Expert Panel Report 3 Guidelines for the Diagnosis and Management of Asthma**

<http://www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines>

- **The Community Guide**

<http://www.thecommunityguide.org/asthma/index.html>

- **United States/Mexico Border Health Commission**

<http://www.borderhealth.org/>

- **Texas Asthma Control Program website:**

<http://www.dshs.state.tx.us/asthma/default.shtm>

- **DSHS Center for Health Statistics:**

<http://www.dshs.state.tx.us/chs/>

Thank You! ¡Gracias!

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