Asthma
A Presentation on Asthma Management and Prevention

What Is Asthma?
- A chronic disease of the airways that may cause
  - Wheezing
  - Breathlessness
  - Chest tightness
  - Nighttime or early morning coughing

Pathology of Asthma

Epidemiology
The study of the distribution and determinants of diseases and injuries in human populations

Asthma Prevalence* by Age

Asthma Prevalence* by Sex
Age-Adjusted* Asthma Mortality Rates by Race, United States: 1979–1998

Source: Underlying Cause of Death dataset by the National Center for Health Statistics
* Age-adjusted to 2000 U.S. population

Asthma Mortality Rates by Race Ages 5-34, United States: 1979–1998

Source: Underlying Cause of Death dataset by the National Center for Health Statistics
* Unreliable (< 20 deaths) 1979–1995


Source: * Weiss, et al. 1992
** Weiss, et al. 2001

Risk Factors for Development of Asthma:
- Genetic characteristics
- Environmental exposures
- Contributing factors

Risk Factors for Development of Asthma: Genetic Characteristics

Atopy
- The body’s predisposition to develop an antibody called immunoglobulin E (IgE) in response to exposure to environmental allergens
- Can be measured in the blood

Risk Factors for Development of Asthma: Environmental

Clearing the Air: Asthma and Indoor Air Exposures
http://www.iom.edu (Publications)
Institute of Medicine, 2000
Committee on the Assessment of Asthma and Indoor Air

Review of current evidence regarding indoor air exposures and asthma
Clearing the Air
Categories for Associations of Various Elements
- Sufficient evidence of a causal relationship
- Sufficient evidence of an association
- Limited or suggested evidence of an association
- Limited or suggestive evidence of no association

Clearing the Air
Indoor Air Exposures and Asthma Development

**Biological Agents**
- Sufficient evidence of a causal relationship
- House dust mite
- Sufficient evidence of an association
- None found
- Limited or suggestive evidence of an association
- Cockroach (in preschool-aged children)
- Respiratory syncytial virus (RSV)

**Chemical Agents**
- Sufficient evidence of a causal relationship
- None found
- Sufficient evidence of an association
- Environmental tobacco smoke (in preschool-aged children)
- Limited or suggestive evidence of an association
- None found

Clearing the Air
Indoor Air Exposures and Asthma Exacerbation

**Biological Agents**
- Sufficient evidence of a causal relationship
- Cat
- Cockroach
- House dust mite
- Sufficient evidence of an association
- Dog
- Fungi/Molds
- Rhinovirus
- Limited or Suggestive Evidence of an Association
- Domestic birds
- Chlamydia and Mycoplasma pneumoniae
- RSV

**Chemical Agents**
- Sufficient evidence of a causal relationship
- Environmental tobacco smoke (in preschool-aged children)
- Sufficient evidence of an association
- NO₂, NO (high levels)
- Limited or suggestive evidence of an association
- Environmental tobacco smoke (school-aged, older children and adults)
- Formaldehyde
- Fragrances

Clinical Management of Asthma
Expert Panel Report 2
National Asthma Education and Prevention Program
National Heart, Lung, and Blood Institute, 1998

Diagnosing Asthma: Medical History
- Symptoms
  - Coughing
  - Wheezing
  - Shortness of breath
  - Chest tightness
- Patterns to Symptoms
- Severity
- Family History

Diagnosing Asthma: Patient Checklist
- Troublesome cough, particularly at night
- Awakened by coughing
- Coughing or wheezing after physical activity
- Breathing problems during particular seasons
- Coughing, wheezing, or chest tightness after exposure to allergens
- Colds that last more than 10 days
- Relief when medication is used
Diagnosing Asthma: Physical Examination

- Sounds of wheezing during normal breathing
- Hyperexpansion of the thorax
- Increased nasal secretions or nasal polyps
- Atopic dermatitis, eczema, or other allergic skin conditions

Medications to Treat Asthma

- Medications come in a variety of forms.
- Two major categories of medications are:
  - Long-term control
  - Quick relief

Medications to Treat Asthma: Long-Term Control

- Taken daily, over a long period of time
- Used to reduce inflammation, relax airway muscles, and improve symptoms and pulmonary function
  - Inhaled corticosteroids
  - Long-acting beta₂-agonists
  - Leukotriene modifiers

Medications to Treat Asthma: Quick-Relief

- Used in acute asthma episodes
- Generally they are short-acting beta₂-agonists

Medications to Treat Asthma: How to Use a Spray Inhaler

Health-care provider should evaluate inhaler technique at each visit.

Source: "What You and Your Family Can Do About Asthma" by the Global Initiative For Asthma

Medications to Treat Asthma: Inhalers and Spacers

Spacers can help patients who have difficulty with technique and can reduce potential side effects.

Use of trade names does not reflect endorsement of these products.
Medications to Treat Asthma: Nebulizers

- Uses compressed air machine to deliver medicine as a mist
- Good for small children or for severe asthma episodes

Managing Asthma: Asthma Management Goals

- Control symptoms
- Prevent exacerbation
- Maintain lung function as close to normal as possible
- Avoid adverse effects from medications
- Prevent irreversible airway obstruction
- Prevent asthma mortality

Managing Asthma: Asthma Management Plan

- Develop with a physician
- Tailor to meet individual needs
- Educate patients and families on all aspects of the plan
  - Recognizing symptoms
  - Medication benefits and side effects
  - Proper use of inhalers and peak expiratory flow (PEF) meters

Managing Asthma: Sample Asthma Management Plan

Describes what medicines to use and actions to take

Managing Asthma: Peak Expiratory Flow (PEF) Meters

Allows the patient to assess the status of his or her asthma

Managing Asthma: Peak Flow Chart

People with moderate or severe asthma should take readings—
- Every morning and evening
- After an exacerbation
- Before inhaling certain medications

Source: "What You and Your Family Can Do About Asthma" by the Global Initiative For Asthma
Created and funded by NIH/NHLBI
Managing Asthma: Indications of a Severe Attack

- Breathless at rest
- Hunched forward
- Talking in words rather than sentences
- Agitated
- Peak flow rate is less than 60% of normal

Managing Asthma: Things You Can Do

- Have an individual management plan
- Educate yourself and others about—
  - Asthma management plans
  - Environmental interventions
- Seek help from asthma resources
- Join an asthma support group

A Public Health Response to Asthma

A call to action for organizations and individuals with an interest in asthma management to work as partners in reducing the burden of asthma within our nation's communities

A Public Health Response to Asthma: Surveillance

Over time...
- How much asthma is there in the population?
- How severe is asthma across the population?
- How well is asthma controlled in the population?
- What is the cost of asthma?

A Public Health Response to Asthma: Uses of Surveillance Data

- Education about asthma in the population
- Basis for planning and targeting intervention activities
- Evaluation of intervention activities

A Public Health Response to Asthma: Education

Education programs can be targeted to—
- People with asthma
- Parents of children with asthma
- Medical care providers
- School personnel
- General public
A Public Health Response to Asthma: Coalitions

Successful asthma campaigns need the cooperation of committed partners.

A Public Health Response to Asthma: Advocacy

Asthma needs to be addressed in a comprehensive manner by multiple government agencies.

A Public Health Response to Asthma: Interventions

- Medical management
- Environment
- Schools

A Public Health Response to Asthma: Medical Management Interventions

Ensuring people with asthma know about their disease and are empowered to demand appropriate management.

A Public Health Response to Asthma: Environmental Interventions

Help people create and maintain a healthy home and work environment.

A Public Health Response to Asthma: School Interventions

- Education
- Environment
- Resolution of school issues
A Public Health Response to Asthma: School Interventions

- #1 cause of school absence for a chronic disease
- Most common disease addressed by school nurses
- Affects teachers, administrators, nurses, coaches, and maintenance personnel

Mold and mildew
- Animals in the classroom
- Carpets in the classroom
- Cockroaches
- Air quality
  - Fumes and vapors
  - ETS

Put policies and procedures in place for managing children with asthma.
- Keep management plan on file at the school.
- Make medications available at all times:
  - During school hours
  - During pre-school and after-school programs
  - On field trips or when away from campus
- Train personnel to recognize signs of an asthma attack and to use appropriate medications.

Are we doing the right thing?
- Are we doing things right?

Asthma is complex and not yet preventable or curable.
- Asthma can be managed with medication, environmental changes, and behavior modifications.
- By working together, we can ensure that people with asthma enjoy a high quality of life.

Resources
- National Asthma Education and Prevention Program
- Asthma and Allergy Foundation of America
  - http://www.aafa.org
- American Lung Association
  - http://www.lungusa.org
- American Academy of Allergy, Asthma, and Immunology
  - http://www.aaaai.org
Resources

- Allergy and Asthma Network, Mothers of Asthmatics. Inc.
  - [http://www.aanma.org/](http://www.aanma.org/)
- American College of Allergy, Asthma, and Immunology
  - [http://allergy.mcg.edu](http://allergy.mcg.edu)
- American College of Chest Physicians
  - [http://www.chestnet.org](http://www.chestnet.org)
- American Thoracic Society
  - [http://www.thoracic.org](http://www.thoracic.org)