Asthma is a:

- A. Greek word meaning “panting”
- B. Latin word meaning “wheezing”
- C. Egyptian word meaning “difficulty breathing”
- D. Hebrew word meaning “chest congestion”

Definition of Asthma

A chronic inflammatory disease of the airways with the following clinical features:

- Episodic and/or chronic symptoms of airway obstruction
- Bronchial hyperresponsiveness to triggers
- Evidence of at least partial reversibility of the airway obstruction
- Alternative diagnoses are excluded

Child-Onset Asthma

- Asthma is one of the most common chronic diseases in children.
- No one knows for sure what causes asthma.
- Both genetic and environmental factors play a role in the development of the disease.
- Asthma in children is often associated with allergies and eczema.

Diagnosis

1. History
2. Pulmonary function tests (PFTs)
3. Challenge studies
Diagnosing Asthma: Medical History

- Breathing problems during particular seasons, exposure to triggers, or after exercise
- Night-time cough
- Colds that last more than 10 days
- ED/hospitalization for breathing symptoms
- Relief of respiratory symptoms when medications are used
- History of eczema
- Family history

Wheezing—Asthma?

Wheezing with upper respiratory infections is very common in small children, but:

- Many of these children will not develop asthma.
- Asthma medications may benefit patients who wheeze whether or not they have asthma.

All that wheezes is not asthma.

Cough—Asthma?

Consider asthma in children with:

- Recurrent episodes of cough with or without wheezing
- Nocturnal awakening because of cough
- Cough that is associated with exercise/play
- Cough without wheeze is often not asthma

Cough may be the only symptom present in patients with asthma.

Asthma Predictive Index

- Identify high risk children (2 and 3 years of age):
  - ≥4 wheezing episodes in the past year (at least one must be MD diagnosed)

  PLUS

- One major criterion
  - Parent with asthma
  - Atopic dermatitis
  - Aero-allergen sensitivity

  OR

- Two minor criteria
  - Food sensitivity
  - Peripheral eosinophilia (≥4%)
  - Wheezing not related to infection


Common Asthma Triggers

- Pollens
- Molds
- Animal Dander
- House Dust Mites
- Tobacco Smoke
- Cockroaches
- Changes in Weather/Season
- Exercise
- Respiratory Infections, such as colds
- Strong Emotions
- Cold Air

Objective Evaluation of Asthma

- Physical examination
- Pulmonary function
- Allergen Skin Tests or in Vitro tests
Diagnosis:
Physical Examination

- Allergic "crease," "shiners"
- Pale boggy nasal turbinates
- Wheezing during normal breathing; chest hyperinflation
- Atopic dermatitis/eczema

Signs of airflow obstruction are often absent between attacks.-NAEPP

Diagnosis:
Pulmonary Function Testing

Spirometry Measures
- Forced Vital Capacity (FVC) - the maximal volume of air forcibly exhaled from the point of maximal inhalation
- Forced Expiratory Volume (FEV₁) - the volume of air exhaled during the first second of the FVC
- Peak Expiratory Flow (PEF) - maximum flow rate you can generate during a forced exhalation

Diagnosis:
Pulmonary Function Testing

Spirometry Testing
- Airflow obstruction is indicated by reduced FEV₁ and FEV₁/FVC values relative to reference or predicted values.
- Significant reversibility is indicated by an increase of ≥12% and 200 mL in FEV₁ after inhaling a short-acting bronchodilator (American Thoracic Society 1991).

Asthma Management

Allergen Avoidance

Asthma Medications
- Quick-relievers vs. controllers
- Proper use of inhaled medications

Peak Expiratory Flow
- When, how and why to use

Action Plan
- What to do when

What Are the Goals of Asthma Therapy?

- The ability to participate in normal activities and sports
- To sleep through the night without having asthma symptoms
- Normal pulmonary function tests
- No more than one "flare" of asthma that requires a doctor visit or additional medication per year
- No side effects to medication

Medications to Treat Asthma

Asthma Medications come in a variety of forms

Two major categories of medications are:
- Quick-relief inhaler
- Long-term controller
Classifying Asthma Severity and Initiating Treatment in Children 0 to 4 Years of Age

Assessing Asthma Control and Adjusting Therapy in Children 0 to 4 Years of Age

Stepwise Approach for Managing Asthma in Children 0 to 4 Years of Age

Classifying Asthma Severity and Initiating Treatment in Children 5 to 11 Years of Age

Stepwise Approach for Managing Asthma in Children 5 to 11 Years of Age

Assessing Asthma Control and Adjusting Therapy in Children 5 to 11 Years of Age

Classifying Asthma Severity and Initiating Treatment in Youth ≥12 Years of Age and Adults

Asthma Control Test™ (ACT)

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school, or at home?
   - Score
   - Not at all
   - A few days
   - Most of the time
   - All of the time

2. During the past 4 weeks, how often have you had shortness of breath?
   - Score
   - Not at all
   - A few days
   - Most of the time
   - All of the time

3. During the past 4 weeks, how often did your asthma symptoms (coughing, shortness of breath, chest tightness) stop you from doing your normal activities (work, school, or other activities)?
   - Score
   - Not at all
   - A few days
   - Most of the time
   - All of the time

4. During the past 4 weeks, how often have you used your quick-relief (rescue) medication (such as albuterol)?
   - Score
   - Not at all
   - A few days
   - Most of the time
   - All of the time

5. How would you rate your asthma control during the past 4 weeks?
   - Score
   - Poor
   - Fair
   - Good
   - Excellent

Peak Flow Monitoring

- A peak flow meter is a device that measures how well air moves out of the lungs.
- A peak flow meter is used to manage exacerbations.
- A peak flow meter is used for daily long-term monitoring.
- A peak flow meter guides therapeutic decisions in the home, school, clinician’s office, or ED.

Stepwise Approach for Managing Asthma in Children 12 Years of Age and Adults

Assessing Asthma Control in Children ≥12 Years of Age and Adults

Asthma Control Test™ (ACT)

- Classifying Asthma Severity and Initiating Treatment in Youth ≥12 Years of Age and Adults
- Stepwise Approach for Managing Asthma in Children 12 Years of Age and Adults
- Assessing Asthma Control in Children ≥12 Years of Age and Adults
- Asthma Control Test™ (ACT)
- Peak Flow Monitoring
Charting Peak Flow

“Personal Best”

The physician usually determines the child’s “Personal Best” peak flow by having the child monitor their peak flow a couple of times per day during a 2-week period of time when the child is not showing any symptoms of asthma.

Asthma Action Plan

- The peak flows are put into zones that are set up like a traffic light.
- Each zone determines what medications to use and what to do when the peak flow number changes.

Asthma Management Program

Your Asthma Management Program should have policies and procedures for administration of medications, specific actions for staff members to perform, and an Asthma Action Plan for asthma episodes.

In Conclusion

- Pediatric Asthma can be controlled
- Diagnosis by Physical Examination and Objective Measures (Spirometry)
- Treatment is 3 phase
  - Allergen and Irritant Avoidance
  - Proper Pharmacologic Therapy
  - Allergen Immunotherapy (under specialist care)