

# Asthma and Children

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# What is Asthma?

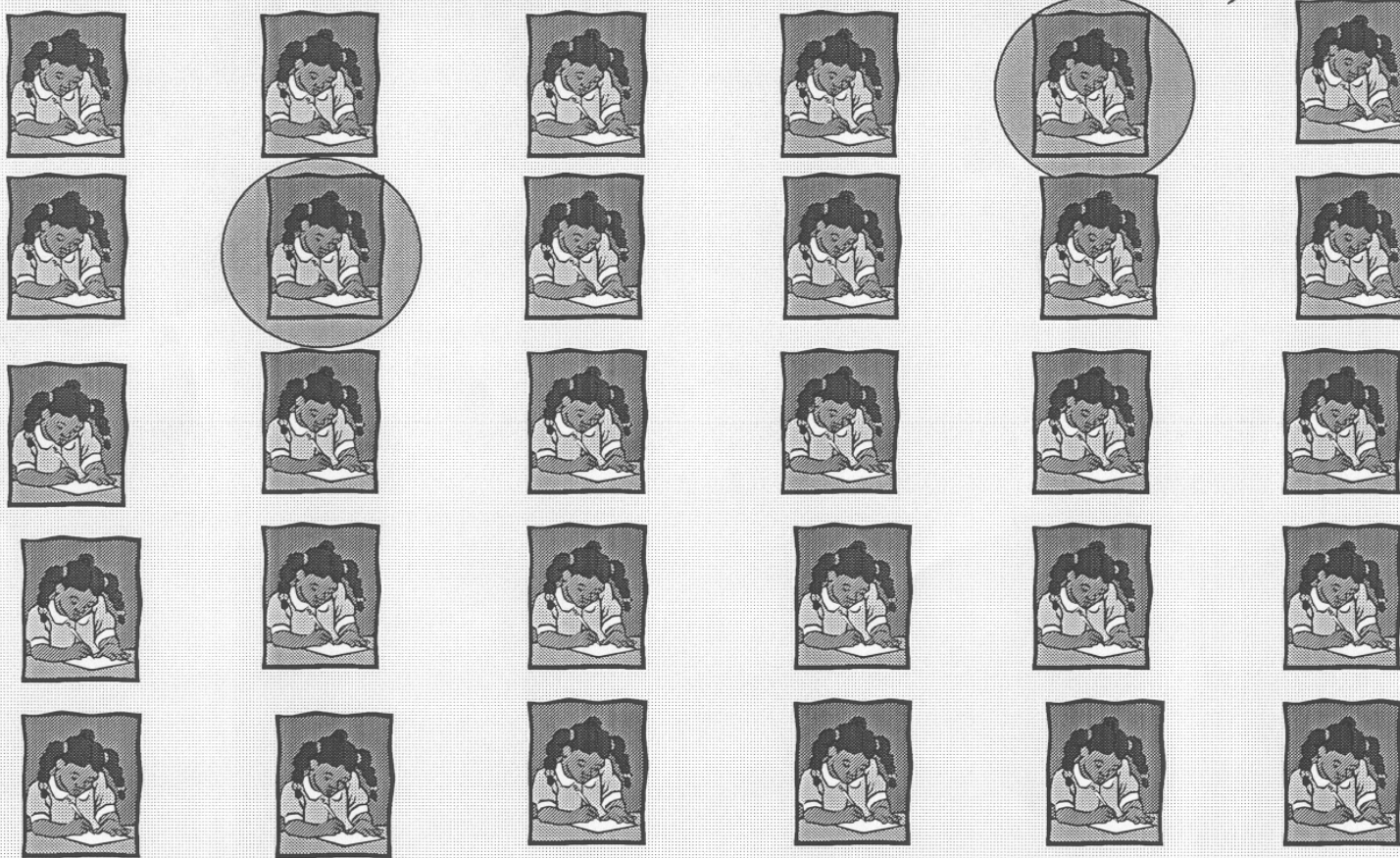
- Asthma is a disease that affects your lungs and breathing
- Most common chronic disorder in children and adolescents
- Major public health problem

# Frequency of Asthma

- Affects 26.3 million Americans
- 12 million asthma attacks yearly
- 9.2 million children (less than 18 years) have asthma
- More common in low-income and minority populations

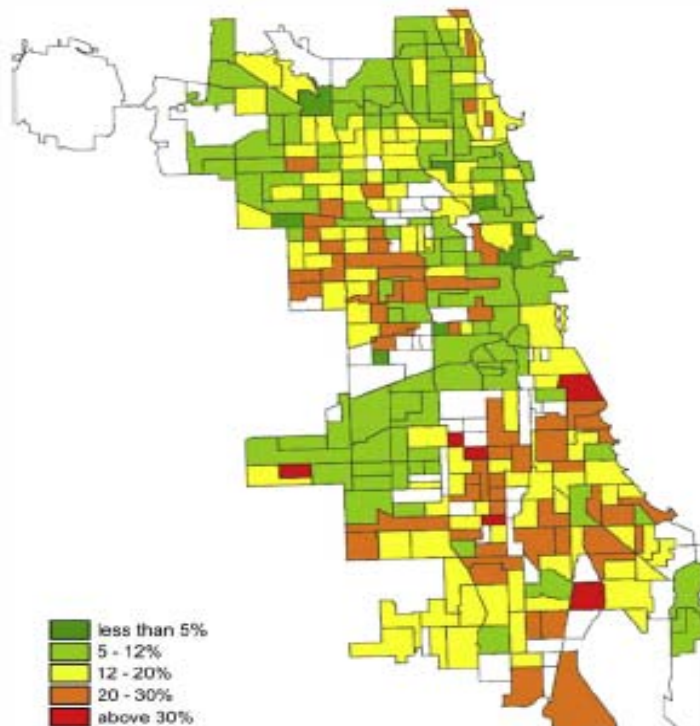


In a classroom of 30 children,



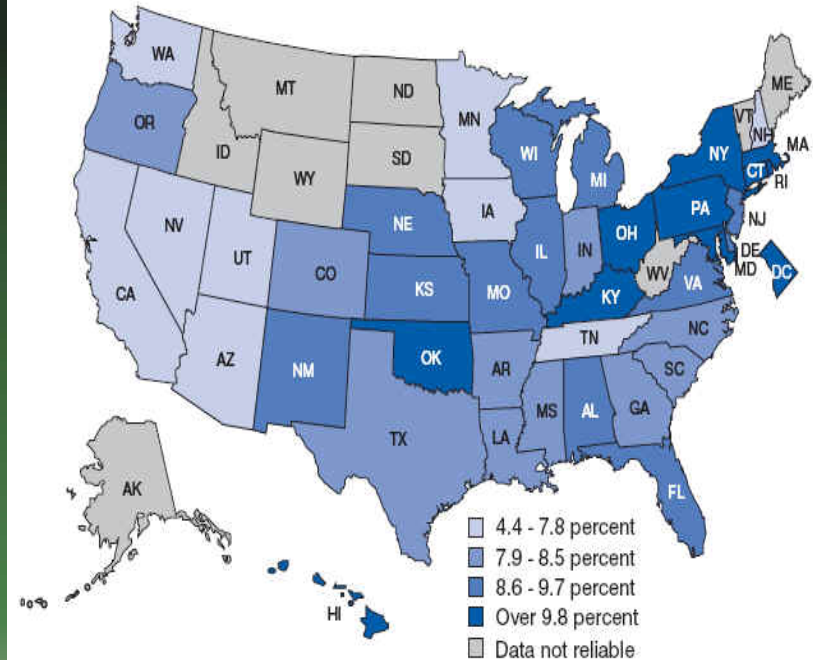
2 or more children are likely to have asthma

# Asthma in Chicago neighborhood & US



\*Neighborhoods with greater than 15 children from our sample were included in the analysis

FIG 1. Childhood asthma prevalence in Chicago neighborhoods.



NOTES: Ranges are based on approximate quartiles among states with available estimates. Differences portrayed in this map should be interpreted with caution. The 95 percent confidence intervals for many states overlap. Current asthma prevalence estimates are based on the questions "Has a doctor or other health professional ever told you that {child's name} had asthma?" and "Does {child's name} still have asthma?" Estimates for Delaware, the District of Columbia, Mississippi, Nebraska, Nevada, and New Hampshire have a relative standard error greater than 30 percent and less than or equal to 50 percent and should be interpreted with caution as they do not meet the standard of reliability or precision. The estimates for Alaska, Idaho, Maine, Montana, North Dakota, South Dakota, Vermont, West Virginia, and Wyoming have a relative standard error greater than 50 percent and therefore are not represented in this figure.  
 SOURCE: CDC/NCHS, National Health Interview Survey.

J Allergy Clin Immunol 2008

CDC

# Asthma Prevalence in the US

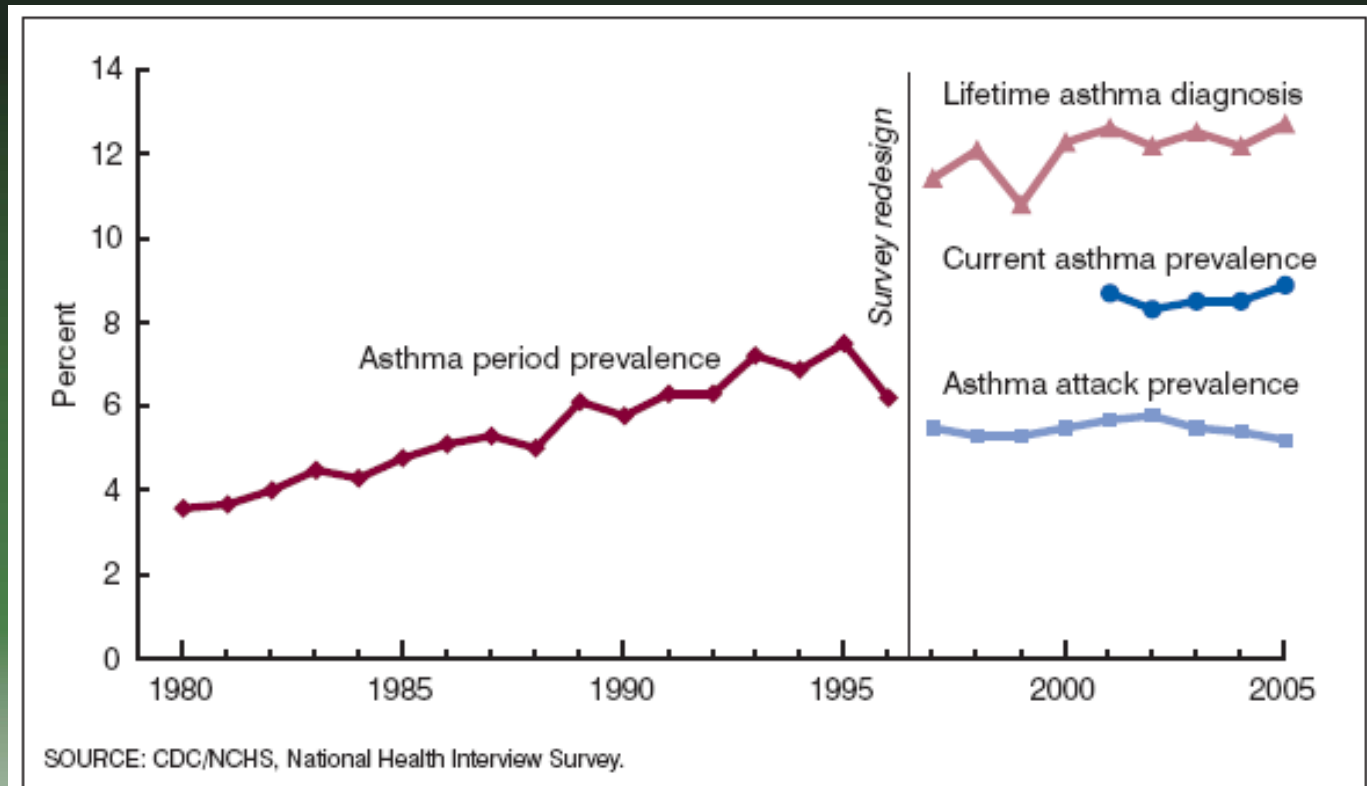


Figure 2. Asthma prevalence among children 0–17 years of age for measures of asthma prevalence available in each year, United States, 1980–2005

# Health Care Costs - \$\$\$

- \$12 billion annual cost
- \$3.2 billion annual cost to treat children <18 years and older



# Social Impact

- Leading cause of school absenteeism
- 12.8 million lost school days annually
- Significant increase in hospitalization rate



# Hospitalization Rates

Hospitalizations for asthma should be largely preventable if patients & families are adequately educated & have access to high quality of healthcare

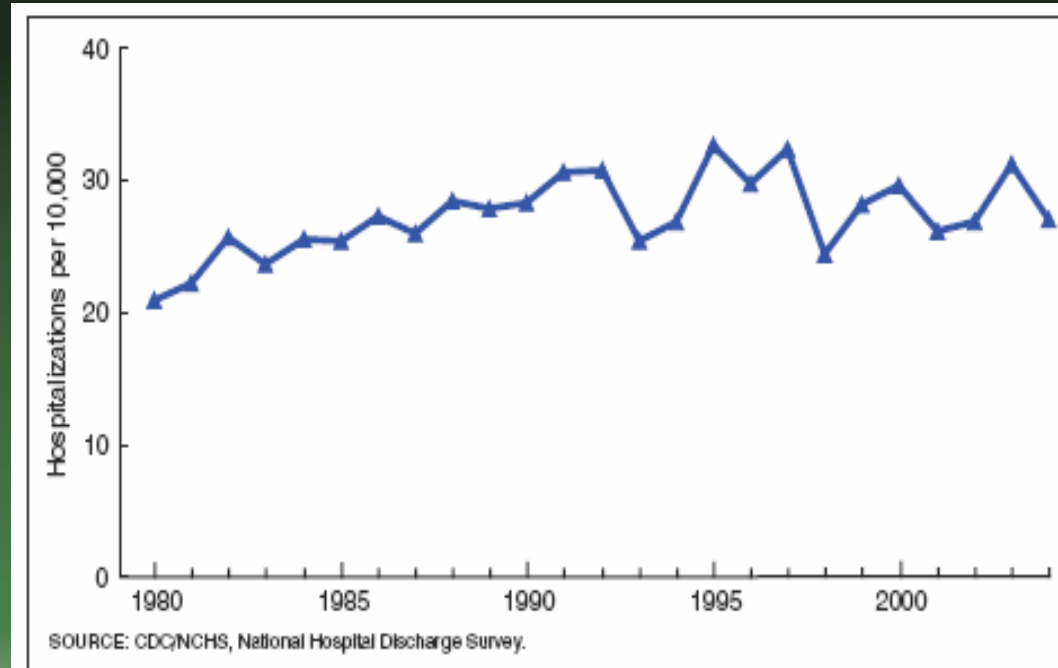


Figure 5. Number of hospitalizations for asthma per 10,000 children 0–17 years of age, United States, 1980–2004

CDC

# Mortality

- Even MILD asthma can lead to death
- 4487 deaths/year in U.S.
- The rate of asthma related death has declined among children (2.5 deaths/million)
- Almost all are PREVENTABLE

# Asthma- What is it?

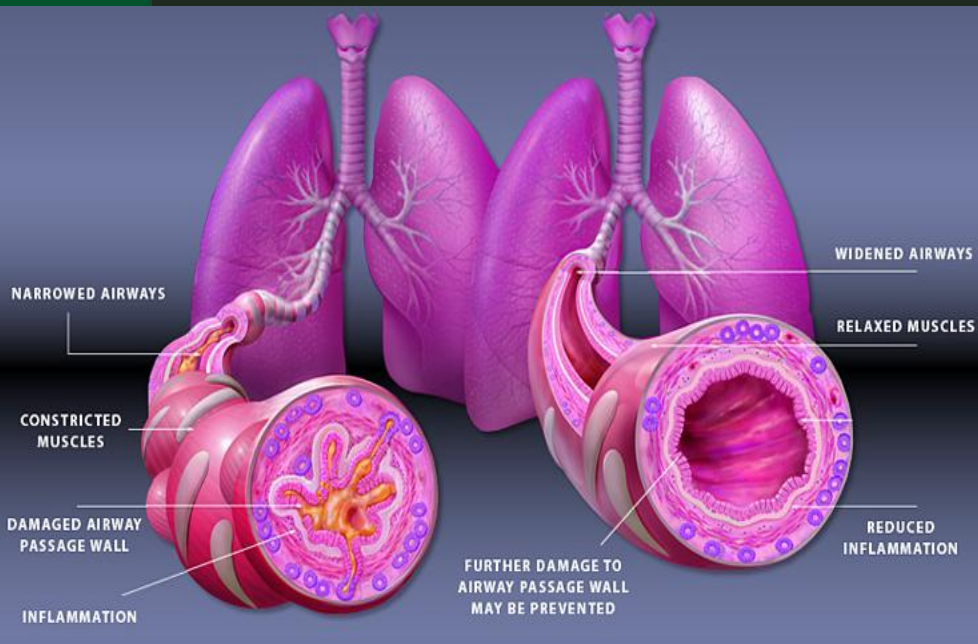
- Chronic lung disease with inflammation of the airways
- Asthma causes:
  - Wheezing
  - Chest tightness
  - Night or early morning coughing
  - Cough
  - Shortness of breath

# Asthma- What is it?

- Can not be cured but can be controlled
- May be a result of genetic and environmental factors
- Children with asthma still can lead quality and productive lives

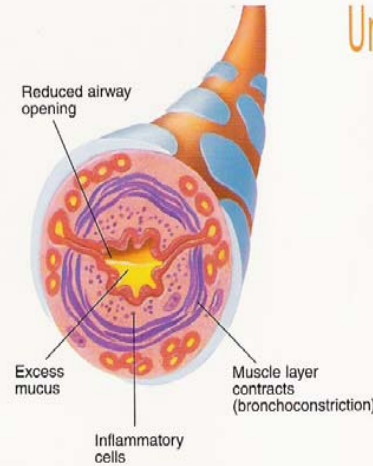
# Asthma- What happens?

- Airways are irritated; the airway linings are swollen
- Airways are narrowed and breathing becomes difficult
- Airways are extremely sensitive and react to many things



# What Asthma Looks and Feels Like

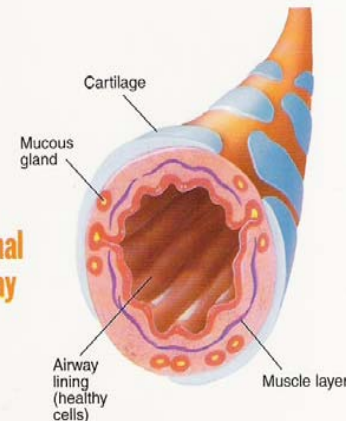
## Inflamed Airway



## Untreated/Undertreated Asthma

- Chest tightness
- Wheezing
- Coughing
- Out of breath / unable to catch breath
- Limited ability to perform normal activities
- Waking up at night with breathing problems or cough

## Normal Airway



## Effectively Treated Asthma

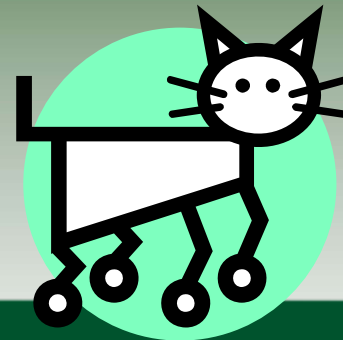
- No tightness in chest
- Normal breathing
- Able to perform normal tasks and everyday activities (no restrictions)

# Asthma- Symptoms

- Shortness of breath
- Chest tightness
- Wheezing
  - not everyone with asthma wheezes
- Prolonged cough
  - may be the only symptom for some

# Asthma- Triggers

- Infections - Colds are the most common trigger in children
- Allergens – Includes pollens, dust mites, molds, grasses, trees, and animal dander



# Asthma- Triggers

- Irritants - tobacco, smoke, perfumes, cleaning agents, air pollutants
- Air temperature- cold/hot
- Exercise



# Tobacco Smoke Exposure

- Increases a child's risk of developing asthma
- More frequent and severe attacks
- More medicine needed to control symptoms
- More likely to go to the hospital with attacks



# Asthma symptoms at night

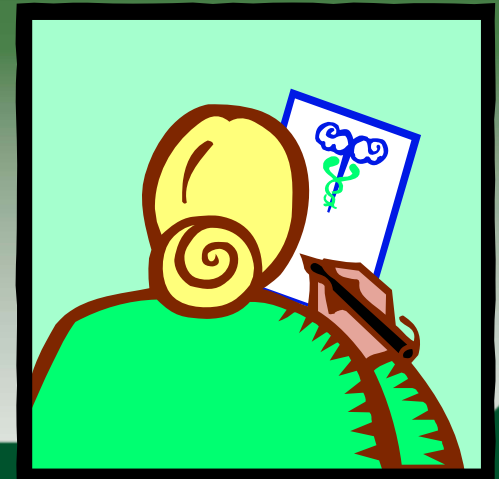
- Nighttime cough is common
- Caused by allergens, heartburn, drop in body temperature, sleep apnea or delayed reactions to daytime triggers
- Circadian rhythms (the body's internal clock) - may make you prone to early morning attacks

# Exercise Induced Asthma

- For some, physical activity is their only trigger
- Symptoms occur within a few minutes after beginning exercise
- They are worst 5 to 10 minutes after starting an activity & may continue for another 20 to 30 minutes

# The evaluation

- History of present illness
- Past medical history
  - Birth history
  - Hospitalizations/ER visits
  - Immunizations
  - Drug allergies
  - Medications

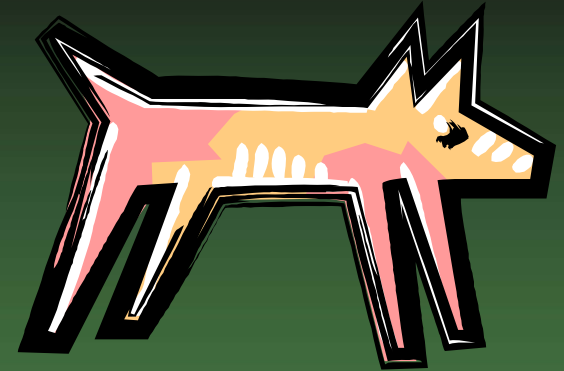


# Diagnosis

- Family History
  - Allergic diseases
  - Lung diseases
  - Other chronic illnesses

# Diagnosis

- Environmental history
  - Home
  - Pets
  - Smoke exposure



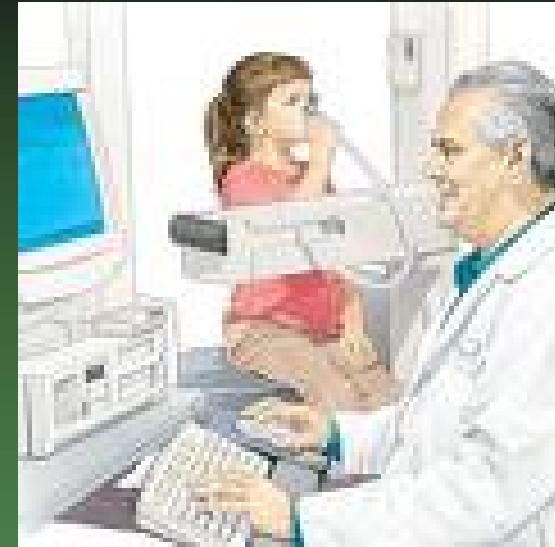
# Diagnosis



- Social History
  - Employment
  - School
- Daycare

# Testing

- Pulmonary function tests (PFTs)
- Blood tests for allergies
- Exercise testing
- X-ray tests to look for gastro-esophageal reflux



# What else can cause asthma symptoms? (a partial list)

- Post nasal drip
- Airway infection
- GERD
- Cystic fibrosis
- Immotile Cilia
- T-E fistula
- Psychogenic cough
- Bacterial bronchitis
- Heart/Lung disease
- Foreign Body
- Airway abnormalities
  - Structural
  - Dynamic/Functional

# Asthma Treatment

- Prevention, prevention, prevention
- Step-wise treatment -
  - Start aggressive and step down as symptoms resolve
- Stop cigarette smoke exposure
- Find and eliminate as many triggers as possible

# Bronchodilators

- Medicines that relax the muscles that surround the narrowed airways
- RESCUE medicines that are taken to relieve symptoms
  - Taken on an “as needed” basis
- Common drugs:
  - Albuterol, Levalbuterol & Ipratropium bromide

# Anti-inflammatory medications

- CONTROLLER medicines that are taken regularly, even when having no symptoms
- Medicines that prevent, reduce and reverse airway swelling
- Inhaled steroids and others—
  - Pulmicort, Flovent, Advair

# Asthma Treatment – allergies

- Antihistamines
  - Zyrtec, Claritin, Allegra
- Nasal Steroids
  - Flonase, Rhinocort, Nasonex

Allergy shots – Some studies suggest that they may not help control symptoms in children with allergies and asthma

# Other Asthma Treatments

- Infection - Antibiotics
  - Only benefit of adding antibiotics to standard asthma therapy is if there is pneumonia or suspected bacterial sinusitis
  - No studies suggest adding antibiotics as supplemental therapy for asthma flare-ups

# Drug Delivery - Gadgets



The IN-CHECK Dial inhaler and mouthpiece



# Other Asthma Treatments

- Annual influenza vaccine
- Synagis for premature babies
- Avoid over the counter cough and cold medicines

# Asthma Education

- Studies suggest good education can prevent frequent ER visits
- Action plan – a written treatment plan based on symptoms/peak flows.
- When and how to use medications
- How to use nebulized and inhaled medications properly

# Monitoring

- Frequent clinic visits to gain control, then every season to review:
  - Symptoms
  - Use of rescue medicines
  - Emergency room visits/hospitalizations
  - School days missed
  - Significant illnesses
  - Courses of oral steroids

# Remember, the goals of treatment are:

- To keep the child as asymptomatic as possible
- Find the lowest doses of medicine to keep lungs normal and symptoms to a minimum
- Full participation in sports, and daily activities, including work and school

