

# Asthma and Allergies Overview

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# Course Objectives

- Learn the definition of asthma, alterations in the lung anatomy and the symptoms
- Learn to identify triggers – allergens, irritants and others
- Learn about control measures for asthma



# Background

- Asthma is the most common chronic condition among children and is one of the leading causes for pediatric hospitalizations
- Asthma is the number one cause of hospitalization for children under 15 years of age in WA
- Prevalence of childhood asthma is now at an all-time high affecting 9.6% of all U.S. children
- For 2009-2010 WA's child asthma rate was 6.7%
- 50% of children with asthma experience at least one asthma attack per year, leading to an increased risk for poor health outcomes including hospitalizations and visits to an emergency department





# Pediatric Patients with Asthma: A High Risk Population for Subsequent Hospitalization

Michele R. Shaw, RN, PhD

Kenn B. Daratha, PhD

Tamara Odom-Maryon, PhD

Ruth Bindler, RN, PhD

<http://www.doh.wa.gov/DataandStatisticalReports/HealthcareinWashington/HospitalandPatientData/HospitalDischargeDataCHARS.aspx>

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# Implications

- The study found a 33% increased risk of subsequent hospitalization for children with an initial hospitalization for asthma compared to all other children hospitalized in WA state during 2004-2008
- Children from the asthma group < 13 years old were found to be at significantly greater risk for subsequent hospitalizations
- Children who were 3-5 years old were found to be at the highest risk (50%) compared to an age matched reference group



# Why are children more susceptible?

- Their airways are smaller
- Their bodies are still developing
- They are more active and breathe 2 to 3 times harder and deeper than adults
- They spend more time on the ground and have more hand-to-mouth transfers



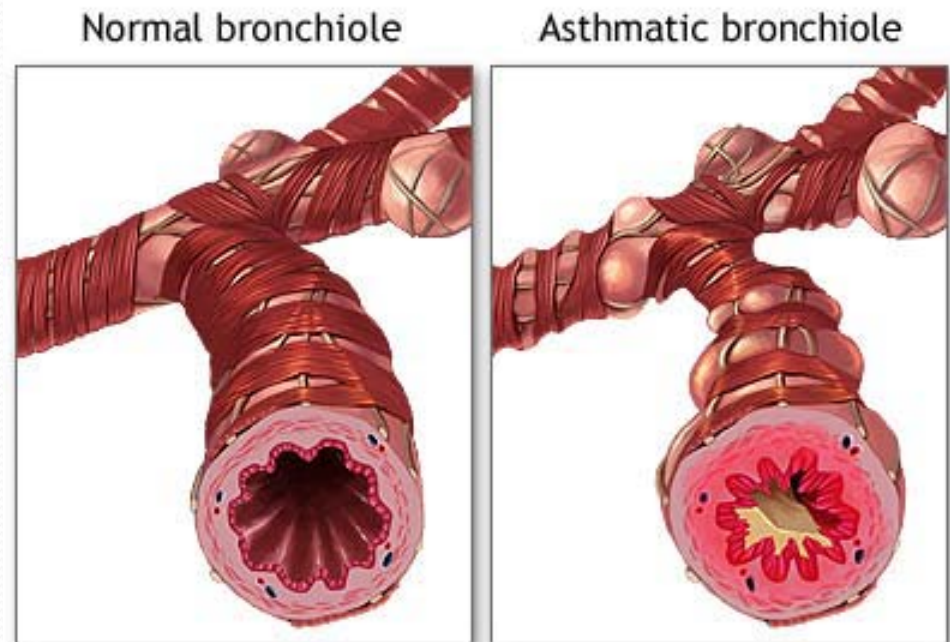
# Got ASTHMA?

- Allergies?
  - Shortness of breath?
  - Tight chest?
  - Hard to breathe?
  - Missed work or school?
  - Always coughing?
- “I can’t breathe when I get around cats, dogs and smokers.”
  - “It feels like there’s a bag on my head.”
  - “I can’t get enough air, no matter how hard I try.”
  - “I feel like there’s a band tightening around my chest.”
  - “When I exercise, I can’t seem to catch my breath.”



# Alterations in the lung anatomy

- Inflammation
- Bronchial hyper-responsiveness
- Excess mucus secretion
- Smooth muscle contraction



ADAM.





## Conditions that may complicate the diagnosis and/or management of asthma:

- Surgery
- Vocal cord dysfunction
- Sinusitis
- Gastro esophageal reflux disease
- Allergic rhinitis
- Obesity
- Pregnancy
- Special sensitivities
- Age
- Culture

# Early Warning Signs

- Coughing or itchy throat
- Increase in mucus production
- Stuffy or runny nose
- Funny or tight feeling in chest
- Fatigue
- Behavioral changes, agitation, irritability
- Decreased appetite
- Dark circles under eyes
- Headache



# Recognize Asthma Episode Signs

- Incessant coughing
- Becoming anxious or scared
- Wheezing while breathing in or out
- Shoulders hunched over
- Tightness in chest
- Rapid or labored breathing
- Inability to say a full sentence without taking a breath
- Nasal flaring
- Requiring rescue medication more frequently than every 4 hours





# Respond to Early Warning Signs

- Provide rescue medications as directed by child's asthma plan
- Encourage child to relax and take slow, deep breaths
- Relax and stay calm
- Use belly breathing



## Call 911 or seek professional help if:

- No improvement 15-20 minutes after initial treatment with rescue medication
- Medications are not available and child has signs of a severe asthma attack
- Child is extremely anxious and you see them using neck muscles to breath or grunting at the end of each breath
- Lips or nail beds turn gray/blue (students with light complexions) or pale (students with dark complexions)
- Decreasing or loss of consciousness



## What issues contribute to or are associated with poor adherence?

- Patient factors
  - Social, cultural, psychological, severity
- Disease factors
- Health care provider factors
- Medication
  - Taste
  - Expense
  - Use





# Asthma Medications

- Inhaled Bronchodilators (quick acting)
  - Used in pre-treating
  - Used to stop an asthma attack
- Anti-inflammatory (long-term controller)
  - Used daily as a preventive medication
  - Used to control asthma instead of relieve it

**WILL NOT STOP AN ASTHMA ATTACK!**



# Triggers

- Successful long-term asthma management requires identification of allergens and irritants that increase asthma symptoms

**TRIGGER: ANYTHING THAT CAUSES  
INCREASED ASTHMA SYMPTOMS!**

# Triggers

## *Allergens:*

- Requires sensitization
- Not usually dose-dependent
- Ex: pollen, dust mites, animal dander, mold, foods

## *Irritants:*

- Dose dependent
- Will affect everyone at a high enough dose
- Ex: tobacco and wood smoke, ozone, exhaust fumes, perfumes





# Allergies

- Allergies are abnormal immune system reactions to things that are typically harmless to most people.
- In an attempt to protect the body, the immune system produces antibodies to that allergen.
- Those antibodies then cause certain cells in the body to release chemicals into the bloodstream, one of which is histamine

# Allergies

- The histamine then acts on a person's eyes, nose, throat, lungs, skin, or gastrointestinal tract and causes the symptoms of the allergic reaction
- An asthma attack can be an allergic reaction to something





# Triggers: Know your geographical area

- Dust mites
- Tobacco Smoke
- Pollution
- Pollens
- Mold
- Wood Smoke
- Industry
- Ozone
- Diesel exhaust





# Triggers: Cigarette Smoke

- 9-12 million children <12 are exposed to smoke (43%)
- 150,000-300,000 lower respiratory tract illnesses/yr
- 1,900-2,700 SIDS deaths/year
- Children exposed to smoke: have more and worse respiratory infections, have more asthma attacks, have more ER and hospital visits, are more at risk for low birth weight and SIDS, are more likely to have lung cancer, stroke and/or heart attack as adults

# Triggers: Wood Stoves and Fireplaces

Release more particles into the air each year than industry and vehicle exhaust combined



- Contains carbon monoxide, formaldehyde, organic gases, nitrogen oxides
- Reduces lung function and increases severity of existing lung disease



# Dust Mites

- They thrive in dark, warm, humid environments.
- Feed on shed human skin cells.
- The perfect home for the dust mite is.....





# Animal Dander

- Microscopic skin and saliva particles
- ALL warm-blooded, furry animals make dander
- Cats are most allergenic and their dander can remain in the home 6 - 9 months after the cat's removal!





## Medications and other things that may trigger an asthma episode:

- Aspirin, non-steroidal anti-inflammatory drugs (nsaids)
- Beta-blockers (some heart/bp drugs, glaucoma eye drops)
- Sulfites: shrimp, dried fruit, processed potatoes, beer and wine
- Allergies to foods, pollens, animal dander etc.



# Exercise Induced Asthma (EIA)

- Exercise is a trigger for almost all asthma patients
- Exercise may be the **ONLY** trigger for some people
- People can effectively exercise without experiencing an asthma attack as long as their asthma is managed correctly





# Triggers: Schools

- Leaky roofs, wet carpet
- Chemicals from new carpet
- Solvent based markers, air fresheners, candles
- Dust from repairs and renovations
- Unventilated portable classrooms
- Insecticides, fungicides, herbicides
- Animal dander



# Triggers: Chemicals and Personal Care Products

- Strong smelling cleaning materials, air fresheners, candles, incense and dryer sheets
- Perfume or other strong smelling personal care products





# Triggers: Occupational Exposures

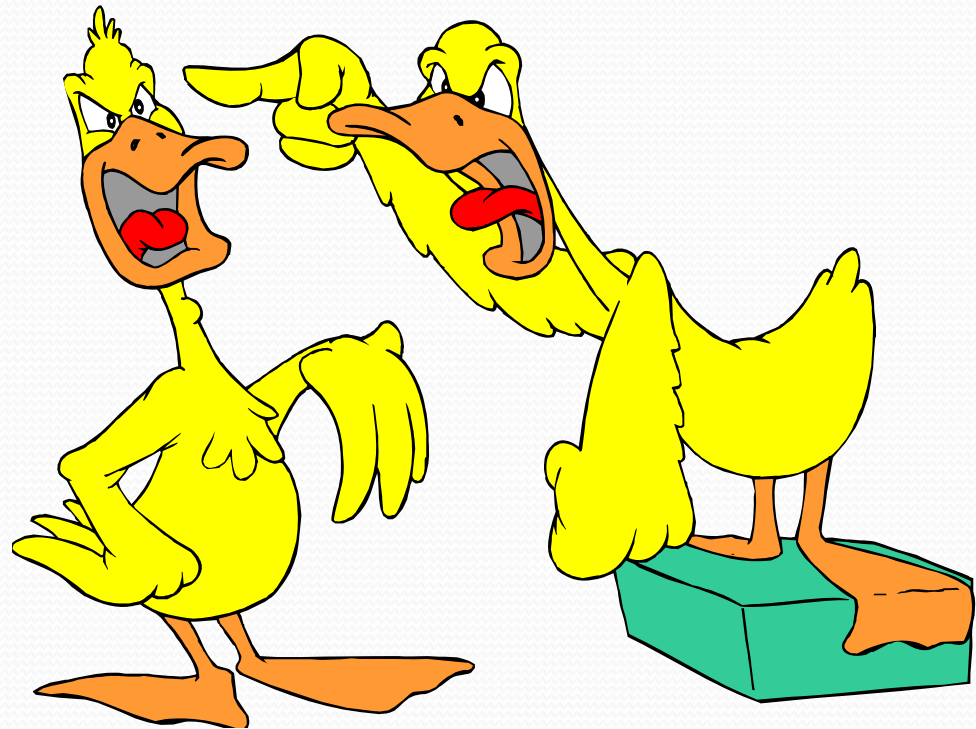
- Wood dust
- Paint
- Varnish
- Adhesives
- Latex
- Cigarette smoke
- Poor ventilation
- Ozone from copiers, laminator's etc.
- Pesticides





# Miscellaneous Triggers

- Stress
- Crying
- Laughing
- Yelling
- Hyperventilating





# Control Measures

- Install dust mite pillow, mattress and box spring covers
- Wash sheets weekly in hot (130° ) water
- If possible remove carpeting from the asthmatic's bedroom and install a hard and easily cleanable surface
- If allergic to pets, keep off of the bed and out of the bedroom. If necessary, remove the pet from the home
- Vacuum at least with a high quality vacuum with a bag
- Damp dust at least weekly



# Control Measures

- Humidifiers are generally not recommended and must be properly cleaned at least weekly
- Install a dehumidifier if moisture is a problem
- Install a HEPA air purifier – NO OZONE GENERATORS
- Don't use any strong smelling household or personal care products





*Questions?*  
*Thank you!*