A MODEL FOR ASTHMA CARE: INCREASING AVAILABILITY OF ASTHMA CARE PLANS IN SCHOOLS THROUGH THE USE OF TECHNOLOGY AND COMMUNITY COLLABORATION

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Texas School Nurses Organization
Background-Incidence & Burden of Asthma

• Most common disease among children

• Almost 7 million children in US (10% of U.S. population) younger than 18 years have asthma

• Costs the U.S. $19.7 billion each year

• Responsible for 12.8 million lost school days & 14.5 million lost work days each year

• Leading cause of health disparities among minority & low SES groups with largest impact on minority children

• Incidence high despite treatment plan availability & disease management guidelines

(Cambridge, 2011; Trent, Zimbro, & Rutledge, 2015; Viswanathan et al., 2011; World Health Organization, 2013)
Background/Significance

• 1997 Asthma Action Plan (AAP) - an asthma self-management tool created by NIH (EPR) 2

• 2007 Written AAP - an evidence-based recommendation by NIH (EPR) 3

• AAP - plan from clinician to help manage asthma & prevent asthma attacks:
  • child’s medication,
  • daily medication management guidelines,
  • specific steps for handling worsening symptoms and
  • when, how and who to contact in an emergency

• Written asthma care plan outlines asthma management & serves as medical order for schools.

(NAEPP EPR-2; NAEPP EPR-3; Cicutto, Gleason, & Szefler, 2014; Hanson, Hart, & Yawn, 2013)
Is an Action Plan Helpful?

- Evidence based reviews have shown that providing patients with individual written asthma action plans can reduce symptoms and unscheduled use of healthcare resources (Gibson Cochrane database of systematic reviews. 2003(1); CD001117.1236 17, Thoonen Thorax. 2003, 58(3):30-6).

- Self-management action plans have been shown to improve asthma-specific quality of life, as patients feel less anxious about the influence of asthma on their daily activities and 9 out of every 10 caretakers with an action plan reported the asthma action plan to be of value in managing exacerbations (Dinakar Journal of Asthma 2004; 41(8):807-12).
Study Aim

As a result of the Quality Improvement project, community clinicians can foster seamless asthma management between home and school.

A model for school-centered asthma care can provide opportunities to link asthma health care providers through the use of technology to reach asthmatic children, particularly those at highest risk for asthma burden.

One page standardized asthma care plan signed by clinician sent electronically or via fax to school nurse with parental consent for sharing of health information.
Doctorate of Nursing Practice Project School Based Asthma Team

Primary Investigator: Sandra Tovar, RN, PNP

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<td>Frank Ambriz, PA</td>
<td>Becky Hesbrook Garcia</td>
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### Objectives

- Definition
- Etiology of asthma
- Incidence of asthma
- Pathophysiology
- Triggers
- History
- Diagnosis
- Assessment-Risk, Severity & Control
- Goals of therapy
- Medications
Definition of Asthma

- Asthma is a chronic inflammatory disease of the airway with:
  - Airway obstruction that is reversible, either spontaneously or with medication in susceptible individual may become irreversible
  - Airway inflammation caused by many cellular components
  - Increased airway hyperresponsiveness
Etiology of Asthma

- **Atopy**: genetic predisposition to develop immunoglobulin E (IgE) mediated response to aeroallergens (seen most in children)
  - Strongest factor for developing asthma

Exposure to triggers

![Images of pollen, dust mites, mold, and pet dander]
Etiology of Asthma

- “Hygiene Hypothesis” - one theory used to explain the development of asthma
- Based on the observations
- Infants raised in a large family with sibs are less likely to develop asthma than only children
- Asthma is more common in urban areas than in rural areas
- Children raised on farms have a lower incidence than children raised in cities
Factors favoring the Th1 phenotype

- Presence of older siblings
- Early exposure to day care
- Tuberculosis, measles, or hepatitis A infection
- Rural environment

Factors favoring the Th2 phenotype

- Widespread use of antibiotics
- Western lifestyle
- Urban environment
- Diet
- Sensitization to house-dust mites and cockroaches

Th1

Protective immunity

Th2

Allergic diseases including asthma

Cytokine balance
Incidence of Asthma

- One in 12 people ~22 million have asthma
- More children than adults have asthma
- Females more than males
- Blacks largest ethnic group with asthma
- In Hispanics Puerto Ricans higher incidence than others

Asthma attacks % people with attacks as last year
49% total, 58% in children

Death rate 8.4 in whites, 25.9 in Blacks, Hispanics 9%
Asthma

• 7% prevalence rate
• 250,000 new asthma cases/year due to obesity
• As BMI increases, increased incidence of asthma
Asthma Pathophysiology - Disease characterized by alterations in lung anatomy:

- Chronic inflammation,
- Bronchial wall edema
- Excess mucous secretion
  - Bronchial hyperresponsiveness
  - Smooth muscle contractions
How is asthma diagnosed?

• Asthma is sometimes hard to diagnose because it can resemble other respiratory problems such as bronchitis and lower respiratory infections. For that reason, asthma is underdiagnosed – that is, many people with the disease do not know they have it and therefore are never treated. Sometimes the only symptom is a chronic cough, especially at night. Or, coughing or wheezing may occur only with exercise. Some people mistakenly think they are having recurrent bronchitis, since respiratory infections usually settle in the chest in a person predisposed to asthma.

• To diagnose asthma and distinguish it from other lung disorders, physicians rely on a combination of medical history, a thorough physical examination, and certain laboratory tests. These tests include spirometry (using an instrument that measure the air taken into and out of the lungs), peak flow monitoring (another measure of lung function), chest X-rays and sometimes blood and allergy tests.
Triggers

- Outdoor allergens: Pollens from grass, trees & weeds
- Indoor allergens: Pet dander, dust mites, & mold
- Irritants in the air: Smoke, chemical fumes, & strong odors
- Exercise
- Stress
- Weather conditions: Cold air, dry, wet or windy weather
Triggers

Colds, flus & other illnesses
- Viral respiratory infections, including flu, are leading cause of acute asthma attacks
- Heartburn

Drugs & food additives
- Aspirin, NSAIDS
- Beta blockers
- Food additives rarely trigger asthma- Most common food trigger is sulfite- found in frozen potatoes & some beer & wine
Pathophysiology - Risk Factors

Preventable: Increase risk
• Allergen exposure
• Tobacco smoke exposure
• Outdoor & indoor air pollution
• Occupational exposures

Preventable: Decrease risk
• Breastfeeding

Non-preventable: Increase risk
• Genetics - family history, gender, ethnicity
• H/O atopic dermatitis or eczema
• Viral infections
• Airway size - prematurity
History

Signs and symptoms of asthma:
- Coughing - may be worse at night
- Recurrent wheezing - most common symptom
- Recurrent difficulty breathing
- Recurrent chest tightness
Exercise Induced Bronchoconstrictio (EIB)/Asthma (EIA)

Problems breathing can start 5-20 minutes after exercise.
Wheezing, tight chest, cough, shortness of breath, chest pain (rarely)
History
Symptoms occur or worsen in the presence of:

- Exercise
- Infections-viral being the most common
- Inhalant allergies-Aeroallergens
- Weather changes
- Emotions-laughing or crying hard
- Stress
- Menstrual cycle
- Symptoms occur or worsen at night, awakening the patient
Asthma Diagnosis- by History, Patient Must Meet 3 Criteria

- Symptoms of asthma occur in response to an allergen trigger or airway irritant (airway hyperreactivity)
- Repeated episodes of symptoms (recurrence)
- Response to treatment (reversibility) measured objectively by spirometry with a significant increase post-bronchodilator or relief of symptoms
History
As Per EPR 3

- Identify symptoms (quantify)
- Pattern of symptoms (qualify)
- Precipitating &/or aggravating factors
- Development of disease & treatment
- Past treatments & response
- Medication administration/technique
- OTCs & alternative complementary therapies
- Family history (asthma, allergies, atopic dermatitis)
Assessment-Risk

To reduce risk:

- Prevent exacerbations /minimize ED hospitalizations
- Prevent loss of lung function
- For children prevent reduced lung growth
- Provide optimal pharmacology with minimal or no adverse effects
Assessment - Severity: the intrinsic intensity of the disease (Initial Diagnosis) Based on Impairment & Risk

Classification of **severity** to **initiate** treatment:
- Intermittent = Step 1 treatment
- Mild persistent = Step 2 treatment
- Moderate persistent = Step 3 or 4 treatment
- Severe persistent = Steps 5 or 6 treatment
Asthma Severity

Classification of severity to initiate treatment:

- Intermittent = Step 1 treatment
- Mild persistent = Step 2 treatment
- Moderate persistent = Step 3 or 4 treatment
- Severe persistent = Steps 5 or 6 treatment
Asthma Severity

- The level of severity is based on most life-threatening impairment or risk category
- Assess impairment domain based on patient’s recall of previous 2-4 weeks
Asthma Severity

CONTROL: the degree to which the manifestations of asthma are minimized by therapeutic intervention and the goals are met.

Based on Impairment and Risk
Assessment-Control

Classification of control

- Well controlled
- Not well controlled
- Very poorly controlled
Assessment-Control

- The level of control is based on most life-threatening impairment risk category.
- Assess impairment domain based on patient’s recall of previous 2-4 weeks.
Assessment-Goals of Therapy

Before step up in therapy:
- Review adherence to medications
- Medication administration technique
- Environmental control
- Co-morbid conditions (GERD, sinus disease, nasal polyps, sulfites in wine, seafood, food additives, obesity, etc.)

Consider step down if well controlled at least 3 mo.
Assessment

Patients at high risk of asthma related death:

- Previous severe exacerbation (e.g. intubation, treatment in the ICU)
- Two or more hospitalizations or ≥3 ED visits in the past year
- Use of ≥2 canisters of SABA (rescue inhaler) per month (overuse of beta-agonists)
- Difficulty perceiving airway obstruction or the severity of worsening asthma (Poor perceivers)
Assessment

Students at high risk of asthma related death:

- Low socioeconomic status
- Illicit drug use
- Major psychological problems or psychiatric disease
- Co-morbidities such as cardiovascular disease or chronic lung disease
- Per NAECB content outline: Frequent use of systemic corticosteroids
Well controlled asthmatic may be normal

Compare auscultation of breath sounds during normal breathing and forced exhalation for:

- Prolonged expiratory phase
- Air entry: air movement may be diminished or even absent
- Absence = “Silent chest” medical emergency
Physical Exam - Identify: wheezing or other abnormal breath sounds like crackles or rhonchi, their location & whether they are heard with inspiration, expiration or both

<table>
<thead>
<tr>
<th>Auscultatory Finding</th>
<th>Physical Effect</th>
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<tr>
<td>• Crackles</td>
<td>• Secretions in alveoli</td>
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<td>• Wheezing</td>
<td>• Narrowed airways - Chest tightness &amp; dyspnea &amp; SOB</td>
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<tr>
<td>• Rhonchi</td>
<td>• Secretions in airway</td>
</tr>
<tr>
<td>• Cough</td>
<td>• Narrowed Airways &amp; in some cases secretions</td>
</tr>
<tr>
<td>• Silent Chest</td>
<td>• Narrowed Airways</td>
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Physical Exam

Acute asthma:
- General: “worried” look, increased RR/SOB, cough, decreased activity tolerance, may not be able to complete a full sentence
- HEENT: nasal flaring
- Chest retractions - Supersternal notch or intercostal
- Breath sounds: wheezing, rhonchi, crackles, silent chest
Physical Examination

Acute asthma:
- Abdomen: accessory muscle use
- Skin: assess for cyanosis
- Body position: tripod
Asthma Management

- Prevention is the best strategy
- Know the triggers & avoid whenever possible

- Quick-Relief/Preventive/Rescue Inhalers (MDIs)
- Bronchodilators
  - Short-acting inhaled beta-agonists-SABA
  - Proventil HFA, Ventolin HFA,
  - Pro-air HFA, Pro-air RespiClick & Xopenex HFA
Long-term controller medicine

- Taken every day to prevent symptoms & flare-ups
- Most effective medicines reduce airway inflammation & help improve asthma control/symptoms

- Inhaled corticosteroids-Flovent HFA, Q-Var HFA, Asmanex, Pulmicort,
- Leukotriene modifiers (Singulair/Montelukast)
- Long-acting inhaled beta2-agonists(always given with an inhaled corticosteroid)
- Oral corticosteroids
- Immunomodulators (Xolair)
- Cromolyn sodium, Nedocromil, Methylxanthines
Inhaled Corticosteroids (ICS) Most Effective Long-term Controller

- Daily use of ICS results in:
- Asthma symptoms will diminish. Improvement will continue gradually
- Occurrence of severe exacerbations is greatly reduced
- Use of quick-relief medication decreases
- Lung function improves significantly, as measured by PEF, FEV1 & airway hyperresponsiveness

- Problems due to asthma may return if patients stop taking ICS

National, Heart, Lung, and Blood Institute, 2007
Underutilization of ICS

- Inadequately prescribed by Providers
  - Inaccurate determination of persistent disease
  - Safety concerns
- Inadequately taken by patients
  - Reluctance to use daily therapy
  - Fear of “steroids” & confusion with anabolic steroids
  - Lack of perception of effect
Potential Side Effects/Risks to Medications

SABA- Rescue Inhaler
- Tremors
- Palpatations

Preventive/Controller Medication-
- Clinically insignificant
- Benefits clearly outweigh risks
- Low to medium dose of ICS appear to have no serious effects of risks of:
  - Cataracts or glaucoma, osteoporosis or low BMD, HPA axis suppression
Review

- Asthma is an inflammatory & chronic disease.
- Asthma whether diagnosed as intermittent, mild, moderate, or severe can be well controlled.
- Asthma is a chronic inflammatory process that can be controlled with appropriate anti-inflammatory medications.
EDINBURG CONSOLIDATED INDEPENDENT SCHOOL DISTRICT
PO DRAWER 990 EDINBURG, TEXAS 78540
SCHOOL YEAR 20___ - 20____

School Name ___________________________ School contact# ___________________________ Date __________
School Phone# ___________________________ School Fax# ________________ School Email ________________

ASThma ACTION PLAN-SYMPtoM BASED

Student Name: ___________________________ ID# ___________________________ DOB ________________
Parent/Guardian Name: ___________________ Phone (H) ___________________________ (Cell) ___________
Emergency Contact: Name: ___________________ Relationship _______________ Phone #1 __________________
Health Care Provider: ___________________________ Phone ___________________________ Email ________________

DIAGNOSIS: Asthma  Severity (Select one) □ Intermittent: □ Persistent: □ Mild □ Moderate □ Severe □ Exercise Induced Asthma / Bronchoconstriction
Rescue Medication: □ Proventil HFA, □ Ventolin HFA, □ Xopenex HFA, □ ProAir HFA, □ ProAir RespiciK, □ Nebulizer
Preventive Medication (taken at home): □ Inhaler □ Diskus Puffs/inhalations ______ times a day, Other ____________________

Use following 3 categories to determine proper action:

GREEN ZONE: DOING WELL  If no cough, wheeze, chest tightness or shortness of breath during day or night, Can do usual activities, then
Take As needed before exercise □ 2 or □ 4 puffs of Rescue Medication, 5-15 minutes before exercise

YELLOW ZONE: ASTHMA IS GETTING WORSE  If student presents with: Cough, wheeze, chest tightness or shortness of breath, or can do some, but not all usual activities, waking at night due to asthma, then:
Take Rescue inhaler Dose: □ 2 □ or □ 4 puffs every 20 minutes for up to 1 hour as needed for cough, wheeze, shortness of breath or chest tightness or
□ Nebulizer, once or up to every 20 minutes for up to 1 hour for cough, wheeze, shortness of breath or chest tightness

Have student return to classroom if stable & symptoms return to green zone within 1 hour of treatment
Or continue monitoring to be sure student remains in green zone

Or If symptoms do not return to green zone after 1 hour of treatment Take Rescue Inhaler □ 2 or □ 4 puffs or □ Nebulizer & Call parent and health care provider

RED ZONE: MEDICAL ALERT  If one or more of the following are present:
- Coughing, wheezing, shortness of breath, not helped with medications
- Hard time breathing with: Chest and neck pulled in with breathing. Child is hunched over.
- Trouble walking or talking due to shortness of breath
- Stops playing and cannot start activity again.
- Lips or fingernails are gray or blue

Then:
Take Rescue inhaler 4-6 inhalations or nebulerizer. Call an ambulance, parent & health care provider. Repeat the dose if not improved in 15-20 minutes.

Patient MAY be allowed to carry and self-administer rescue inhaler. Patient MAY NOT be allowed to carry and self-administer rescue inhaler.

I authorize health information sharing on my child with relevant school officials & health care providers.

□ Autorizo a la información de salud compartiendo en mi hijo/hija con las autoridades escolares competentes y profesionales de la salud.

Parent/Guardian Signature: X ___________ Provider Signature: ____________________________

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SCHOOL YEAR 20____-20____  ASTHMA ACTION PLAN  Date:

Name: ___________________________ DOB: ____________ School: ___________________________
Health Care Provider #: __________________ Fax: __________________ Emergency #: 911 OR ___________________________

DIAGNOSIS: Asthma Severity (Select one): □ Intermittent □ Exercise Induced Asthma/Bronchoconstriction
□ Persistent □ Mild □ Moderate □ Severe

RESCUE MEDICATION: □ Proventil HFA □ Ventolin HFA □ Xopenex HFA □ ProAir HFA □ ProAir RespiClick □ Nebulizer
PREVENTATIVE MEDICATION (taken at home): _______ inhalations/Puffs _______ times a day; Other: __________________________

What triggers my asthma: □ Smoke □ Mold □ Tree/Grass/Weed Pollen □ Cold/Virus □ Exercise □ Seasons □ Other: __________________________

GREEN ZONE: DOING WELL
If no cough, wheeze, chest tightness or shortness of breath during the day/night and can do usual activities, then:

Take as Needed before exercise:
2 puffs of Rescue Medication 5-15 mins before exercise

YELLOW ZONE: ASTHMA GETTING WORSE
If cough, wheeze, chest tightness or shortness of breath; waking at night due to asthma; or can do some but not all usual activities, then:

TAKING rescue inhaler dose 2-4 puffs every 20 mins for up to 1 hour as needed for cough, wheeze, shortness of breath or chest tightness.

or:
Nebulizer, once or up to every 20 mins for up to 1 hour for cough, wheeze, shortness of breath or chest tightness.
Call the healthcare provider within 24 hours if asthma symptoms do not improve

IF AT SCHOOL:
Return student to classroom if stable & symptoms return to green zone and continue monitoring to be sure student remains in GREEN ZONE

Or if symptoms do not return to GREEN ZONE after 1 hour of treatment:
TAKING: Rescue Inhaler 2-4 puffs and CALL parent and health care provider.

(Circle one) Patient __MAY__ / __MAY NOT__ be allowed to carry and self-administer rescue inhaler.

□ I authorize health information sharing on my child with relevant school officials and healthcare providers.
□ Autorizo a la información de salud compartiendo en mi hija/hijo con las autoridades escolares competentes y profesionales de la salud.

Parent/Guardian Signature ___________________________ Provider Signature ___________________________

X ___________________________

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References

• ACAAI.org/ asthma/who-has-asthma.org


Anaphylaxis

• A serious allergic reaction that comes on quickly and may cause death
• Caused by an IgE-mediated reaction.
• Triggered when the immune system overreacts to a usually harmless substance causing mild to severe symptoms affecting various parts of body
• Symptoms appear within minutes to a few hours of exposure
• A medical emergency that requires treatment and then follow up care with an allergist
ANAPHYLAXIS RISK IS WIDESPREAD, and onset is UNPREDICTABLE.

- 43 million people in the U.S. are at risk for anaphylaxis due to allergic sensitivities.
- Almost 2x the asthma patient population.

- ~1 in 13 children are afflicted with a food allergy.
- Children at risk for anaphylaxis may be present in almost every classroom.
Anaphylaxis is an inherent danger for any at-risk patient.

Because the symptoms of anaphylaxis may progress rapidly and become life-threatening, it is important that treatment be administered promptly.

"Prior reactions do not necessarily predict future reactions."

Up to 20% of children will not have cutaneous symptoms during an anaphylactic reaction.
Every 3 minutes a food allergy reaction sends someone to the emergency department\(^1\) 

3 mins

~200,000 visits per year due to foods\(^1\)

An anaphylactic reaction occurs every 6 minutes.\(^1\)

Allergen-specific IgE (sIgE), the size of a skin prick test wheal, or the severity of past reactions cannot predict the severity of allergic reactions to foods\(^3\)
Almost half of anaphylactic reactions occur outside the home\textsuperscript{12}.

In a recent study, patients experienced an anaphylactic attack at\textsuperscript{12}: 

- **Home**: 51%
- **Hospital**: 14%
- **Friend/Family House**: 7.3%
- **Work**: 6.1%
- **Restaurant**: 6.1%
- **Travel**: 4.6%
- **School**: 3.4%
- **Outdoors**: 3.1%
Survey of caregivers of children and adults with reported anaphylaxis showed:\textsuperscript{12*}:

- 52% had never received a prescription for an epinephrine auto-injector.
- 60% did not have an epinephrine auto-injector available.

Overview

• In most cases, people with allergies develop mild to moderate symptoms, such as watery eyes, a runny nose or a rash. But sometimes, exposure to an allergen can cause a life-threatening allergic reaction known as anaphylaxis. This severe reaction happens when an over-release of chemicals puts the person into shock. Allergies to food, insect stings, medications and latex are most frequently associated with anaphylaxis.

• A second anaphylactic reaction, known as a biphasic reaction, can occur as long as 12 hours after the initial reaction.

• Call 911 and get to the nearest emergency facility at the first sign of anaphylaxis, even if you have already administered epinephrine, the drug used to treat severe allergic reactions. Just because an allergic person has never had an anaphylactic reaction in the past to an offending allergen, doesn’t mean that one won’t occur in the future. If you have had an anaphylactic reaction in the past, you are at risk of future reactions.
What causes an allergic reaction?

• Hundreds or even thousands of ordinary substances can trigger allergic reactions. These are called "allergens." Among the most common are plant pollens, molds, household dust (dust mites), animal dander, industrial chemicals, foods, medicines and insect stings.

• An allergic reaction may occur anywhere in the body, but usually appears in the skin, eyes, lining of the stomach, nose, sinuses, throat and lungs -- places where special immune system cells are stationed to fight off invaders that are inhaled, swallowed or come in contact with the skin.
Causes

• Foods- Peanuts, tree nuts (walnut, cashew, Brazil nut), shellfish, fish, milk, eggs, and preservatives
• Medications- Almost all medication (often antibiotics and anti-seizure medication) Post surgery fluids, vaccines, blood and blood products, radiocontrast dyes, pain medications (NSAIDs)
• Latex – especially with contact with moist areas of body or internal surfaces during surgery
• Exercise- rare (May not occur after every exercise session, sometimes only after eating certain foods before exercise)
• Insect stings
Eight foods that cause 90% of food-allergic reactions

Peanuts and Tree nuts- pecans, almonds, walnuts, pistachios, cashews, Brazil and hazelnuts

Fish and Shell fish

Milk

Eggs

Soy

Wheat
Who is more at risk?

- If allergies or asthma are present
- If family history of anaphylaxis
- If history of previous anaphylaxis
- Teenagers and young adults
Anaphylaxis symptoms occur suddenly and can progress quickly. The early symptoms may be mild, such as a runny nose, a skin rash or a "strange feeling." These symptoms can quickly lead to more serious problems, including:

- Trouble breathing
- Hives or swelling
- Tightness of the throat
- Hoarse voice
- Nausea
- Vomiting
- Abdominal pain
- Diarrhea
- Dizziness
- Fainting
- Low blood pressure
- Rapid heart beat
- Feeling of doom
- Cardiac arrest
True or False: An anaphylactic reaction can be as simple as developing a rash after exposure to an allergen?

False. Anaphylaxis often involves more than one part of the body at the same time. For example, a serious reaction could involve developing a rash and vomiting or diarrhea after being exposed to an allergen.

Most dangerous symptoms are:
• Low blood pressure
• Breathing difficulty
• Loss of consciousness
- All of which can be fatal

• Other warning signs of a serious reaction:
  – Swollen throat or swollen areas of body
  – Wheezing
  – Passing out
  – Chest tightness
  – Trouble breathing
  – Hoarse voice
  – Trouble swallowing
  – Stomach cramping
  – Pale or red color to face/body
  – Feeling of impending doom
Treatment

- Epinephrine is the *only* medication that can reverse severe anaphylactic symptoms. To ED after use.
- In 20% of acute anaphylaxis a second dose may be needed if inadequate response to first dose or symptoms relapse within 15 min. of first dose.
- The sooner reaction is treated, the less severe it is likely to become.
It is critical that patients know to use epinephrine, not an antihistamine, for anaphylaxis\textsuperscript{3,4,13}

NIH-sponsored expert panel findings

- Use of antihistamines as first-line therapy for anaphylaxis is the most common reason reported for not using epinephrine\textsuperscript{3}.
- Misuse of antihistamines may significantly increase the risk of a life-threatening reaction\textsuperscript{3}.

**EDUCATE YOUR PATIENTS:**

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"EAI FIRST-LINE, EVERY TIME"
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Tell your patients that epinephrine, not an antihistamine, is the only first-line treatment for anaphylaxis\textsuperscript{3,4,13}.
Anaphylaxis – a potentially life-threatening condition, requiring immediate medical attention

- Most fatalities occur due to delay and delivery of needed medication
- Epinephrine is the life-saving medication that must be given immediately to avoid death
Resources

- American Academy of Allergy, Asthma & Immunology
- American College of Allergy, Asthma, & Immunology
- Asthma and Allergy Foundation of America
- Food Allergy Resource and Education
- National Asthma Education and Prevention Program National Heart, Lung, and Blood Institute
- Allergy & Asthma Network, Mothers of Asthmatics
- American Academy of Pediatrics
- American Lung Association
- Asthma and Allergy Foundation of America
- Centers for Disease Control and Prevention
Contact-FAQs

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