Scenario about patient
- You are presenting a group asthma education program to 7 adults
- A 35 year old woman named Shanice is eating a snack that was provided to the group and develops a vigorous cough, she becomes very pale and reports that her chest and throat feel tight. She feels like something terrible is about to happen.
- She reports having both asthma and food allergies.

Is this patient struggling with asthma?

Or anaphylaxis?
Objectives

At the conclusion of the presentation, the learner will be able to:

1. Identify the unique and similar symptoms of asthma and anaphylaxis
2. Discuss appropriate treatment for both asthma and anaphylaxis
3. Describe how to implement learning experiences for patients, families and lay people to assist them in understanding the similarities and differences between asthma and anaphylaxis

Outline

• Overview of Asthma & Anaphylaxis
• Differentiating Asthma from Anaphylaxis
• School Concerns
• Community Concerns
• Strategies for Educators & Caregivers

Conflict of Interest

Cara Kraft  Sally Schoessler
No conflicts of interest to report. No conflicts of interest to report.
Together, we can work to end the needless death and suffering due to asthma, allergies and related conditions.

What We Believe

Leading national nonprofit advocating FOR the PATIENT
Founded in 1985
Fulfill our mission by working with leading experts in the field
Building patient-centered collaborative care teams

Overview of Asthma & Anaphylaxis

What symptoms are specific to asthma & anaphylaxis?
Asthma Heterogeneity

- Complex genetic disorder with heterogeneous phenotype
  - Largely attributed to interactions among many genes and between these genes and the environment
- Variability in underlying inflammation, clinical symptoms, natural history, and response to treatment
  - Variability contributes to suboptimal diagnosis and therapeutic control
  - Environment
  - Access to healthcare
  - Specialists vs primary care
  - Co-morbidities

Guideline Recommendations for Stepwise Treatment of Asthma

**Step 1**
Preferred: SABA PRN

**Step 2**
Preferred: Low-dose ICS + LABA

**Step 3**
Preferred: Low-dose ICS + LABA OR Medium-dose ICS

**Step 4**
Preferred: Medium-dose ICS + LABA
Alternative: Medium-dose ICS + either LTRA, theophylline, or zileuton

**Step 5**
Preferred: High-dose ICS + LABA
Alternative: High-dose ICS + LABA for patients who have allergies

**Step 6**
Preferred: High-dose ICS + LABA + oral corticosteroid + omalizumab for patients who have allergies

Each Step: Patient education, environmental control, and management of comorbidities.

Steps 2-4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma (see notes).

**Step up** if needed (first check adherence, environmental control, and comorbid conditions)

**Step down** if possible (and asthma is well controlled for at least 3 months)

**Assess Control**

Quick relief Medication for All Patients
• SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of oral systemic corticosteroids may be needed if use of SABA >2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment.

Current Assessment of Asthma Management

- Assessment of symptoms/history
- Assessment of lung function
- Assessment of AHR
- Symptoms are not predictive of response to ICS

- Lung function can be misleading, especially in children
- Quality control is a major issue
- Lung function can be normal in patients with severe asthma
- Measurement of AHR
  - Expensive
  - Technically difficult
  - Non-specific

- Hasn’t changed in >20 years

**UNDERSTANDING ASTHMA**

Asthma is a syndrome rather than a single disease!

Inflammation
Environmental and genetic factors
Airway hyper-responsiveness
Clinical symptoms (cough, wheezing, dyspnea)
Reversible airway obstruction

Does not reflect the heterogeneous characteristics of this disease that are observed in populations with asthma

Asthma Triggers

Cell Mediator Release

Symptoms

Physiological Changes

Airway Hyper-reactiveness

Airway Obstruction

Goal of Asthma Therapy: Control

Reduce Impairment

- Prevent chronic and troublesome symptoms (e.g., coughing or breathlessness in the daytime, in the night, or after exertion).
- Require infrequent use (≤2 days a week) of inhaled SABA for quick relief of symptoms (not including prevention of exercise-induced bronchospasm [EIB]).
- Maintain (near) normal pulmonary function.
- Maintain normal activity levels (including exercise and other physical activity and attendance at school or work).
- Meet patients’ and families’ expectations of and satisfaction with asthma care.

Reduce Risk

- Prevent recurrent exacerbations of asthma and minimize the need for ED visits or hospitalizations.
- Prevent loss of lung function; for children, prevent reduced lung growth.
- Provide optimal pharmacotherapy with minimal or no adverse effects of therapy.

Life-Threatening Allergies

- 1 in 12 children have food allergies.
- $24.8 billion annual cost of food allergies.
- 29% of children with food allergies have asthma.
- 25% of food allergy reactions occur in children without a previous diagnosis.
- 150-200 fatalities per year due to bee stings.
- 40 fatalities per year due to medication allergy.
- 400 fatalities per year due to peanut allergy.
- 1-6% of Americans have latex allergy.
Anaphylaxis
- Occurs in 1 in 50 people
- May be higher
- May begin in seconds after exposure, may be hours

Top 8 Food Allergens

Other Major Allergens – Put Patients at Risk of Life-Threatening Allergies
Symptoms of Anaphylaxis

- **Severe Symptoms**
  - **LUNG**: Short of breath, wheeze, repetitive cough
  - **HEART**: Pale, blue, faint, weak pulse, dizzy, confused
  - **THROAT**: Tight, hoarse, trouble breathing/swallowing
  - **MOUTH**: Obstructive swelling (tongue and/or lips)
  - **SKIN**: Hives over body

- **Combination of Symptoms from Different Body Systems**
  - Or Combination of Symptoms from Different Body Systems:
    - **SKIN**: Hives, itchy rashes, swelling (eyes, lips)
    - **GUT**: Vomiting, cramping pain, diarrhea
    - **HEENT**: Runny nose, sneezing, swollen eyes, phlegmy throat
    - **OTHER**: Confusion, agitation, feeling of impending doom

Goal of Life-Threatening Allergy Care: Prevention of Anaphylaxis

- **Prevention**
  - Prevent exposure
  - Oral
  - Skin
  - Inhalation
  - Understand allergy management
  - Safe environments
    - Home
    - Restaurants
    - Work Place
    - School
    - Travel

- **Emergency Care**
  - Even with the best prevention strategies – exposures occur
  - Preparation is key
  - Epinephrine is the treatment of choice for anaphylaxis
    - 3 doses available for infants, children and adults
      - **Epinephrine FIRST**, Epinephrine FAST
### Differentiating Asthma from Anaphylaxis

How can you tell the difference between asthma and a life-threatening allergic reaction?

### Asthma and Life-Threatening Allergies

<table>
<thead>
<tr>
<th>Asthma</th>
<th>Allergic Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Chronic inflammatory disease of the airways</td>
<td>- Hypersensitive overreactions of the immune system</td>
</tr>
<tr>
<td>- Triggers</td>
<td>- Allergens</td>
</tr>
<tr>
<td>- Acute flare can lead to death</td>
<td>- Can be life-threatening</td>
</tr>
</tbody>
</table>

### Examples:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Allergen-induced asthma episode</strong></td>
<td><strong>Anaphylactic reaction to systemic allergen exposure</strong></td>
</tr>
<tr>
<td>- Inhalation of cat dander</td>
<td>- Peanut induced anaphylaxis</td>
</tr>
<tr>
<td>- Wheezing</td>
<td>- Hives, wheezing</td>
</tr>
<tr>
<td>- Cause: Allergen</td>
<td>- Cause: Allergen</td>
</tr>
<tr>
<td>- Result: Asthma flare</td>
<td>- Result: Anaphylaxis complicated by asthma</td>
</tr>
</tbody>
</table>
Asthma

- Affects the airways

Allergic Reactions

- Broader clinical manifestation – across multiple organ systems

Symptoms Overlap to Some Degree – Important Differences

- **Asthma** triggers are often environmental (pollen, mold, dust)
- Can be infections, pets, cold air, exercise
- Can be irritants – air pollution, smoke, chalk dust, strong smells, cleaning products
- **Anaphylaxis** most commonly occurs from ingestion of an allergen
  - 9 most common allergens: peanut, tree nuts, shellfish, fish, milk, eggs, soy, sesame, wheat
  - Insect stings, medications, latex, unknown source

Asthma or Anaphylaxis?

- **Anaphylaxis** – Sudden onset of multi-system symptoms
- **Asthma** – Respiratory symptoms – not likely to include skin, cardiovascular and gastrointestinal symptoms at the same time

**School Concerns**

What are the issues in the school setting?

**School Community Needs**

- Asthma
- Allergies
- ECP
- IHP
- Staff
- Planning
- Education
- Safe Environment
- Emergency Response
Planning and Coordination of Care

- School district policies and protocols
- Make sure students with asthma & allergies are identified – get written diagnosis/statement from provider
- Healthcare Plans in place
- Assess student’s ability to self-medicate and self-manage

Educating Staff, Students, Parents

- Stay up-to-date on best practices
  - Staff needs to know:
    - Signs & symptoms
      - Asthma
    - Anaphylaxis
    - Prevention strategies
    - Emergency response
  - Approach all subjects in a respectful & confidential manner (FERPA)

Educating Staff, Students, Parents

- Student:
  - Self-management skills
  - Recognize signs & symptoms
  - Use of medications
  - Know how to notify an adult when needed
- Parent/Guardian:
  - Consider offering education for parents at school
  - Connect families
  - Help communicate policies and practices
Providing a Safe Environment
- Assess the school environment regularly
- Include physical education, cafeteria and classrooms
- Identify potential triggers for asthma & allergies – reinforce prevention strategies
- Work with school staff to provide emotional support as needed
  - Lunch Bunch
  - Support Group
- Report any bullying

Ensure a Prompt Emergency Response
- Develop school wide emergency response – assign roles to staff
  - Teach staff to respond
- Have albuterol & epinephrine available & accessible - always ✓ expiration date
- Train staff to administer inhaler & epinephrine auto-injector
- Stock medications?
  - Albuterol?
  - Stock epinephrine?
  - Know your state laws
- Debrief

Community Concerns
- What are the issues in the community setting?
Community Needs

- Safe Environment
- Planning
- Emergency Response
- Asthma/Allergies
- Education
- Equitable Outcomes

Solving the asthma/allergy issues in our communities means bringing people and resources together.

- Reducing the public health burden of asthma through improved asthma control is a goal shared by state and local leaders, patients and their families, and other community stakeholders.
- By engaging diverse perspectives and strengths, states, communities, and coalitions can use available resources more efficiently to achieve better and more equitable outcomes.

Community Planning

Educating & Uniting for Asthma/Allergy-friendly Communities

- Asthma/Allergy-friendly communities champion improvements that put evidence-based guidelines into practice by health care professionals, community organizations, and businesses...
Educating & Uniting for Asthma/Allergy-friendly Communities

- Which may increase the capacity of clinics, medical offices, hospitals, emergency departments, businesses, pharmacies, homes, schools and child care settings, to educate patients, families, employees and caregivers to recognize asthma/allergy signs and symptoms, and to prevent and treat asthma flare-ups and anaphylaxis.

Providing Safe Environment & Community

- Collaborate with other stakeholders via coalitions, task forces, and other efforts.
- Conduct a needs assessment to identify and prioritize areas for improvement.
- Enhance surveillance of asthma/allergy prevalence, morbidity, mortality, and relevant risk factors.
- Build in accountability and measure results for continuous improvement.
- Advance policy to enhance care systems, public health structures, airplane travel and environments.

Ensure a Prompt Emergency Response

- Develop community/business wide emergency response – assign roles to staff.
- Train family/friends/staff to administer inhaler & epinephrine auto-injector.
- Have albuterol & epinephrine available & accessible - always check expiration date.
- Teach coaches/staff to respond.
- Know your state laws!

Ensuring a Safe Environment & Community

- Provide a prompt emergency response.
- Train family/friends/staff to administer inhaler & epinephrine auto-injector.
- Have albuterol & epinephrine available & accessible - always check expiration date.
- Teach coaches/staff to respond.
- Know your state laws!
Strategies for Educators & Caregivers

What can you do to help patients and families understand the care of asthma & anaphylaxis?

Guidelines-based Educational Programming

Asthma Education

Parent Information

Signs and Symptoms for School Staff

Asthma Symptoms

Life-Threatening Allergy Symptoms
Utilize Available Resources

Allergy & Asthma Network – Understanding Guides

*Health Literacy Level - 6th grade*

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Allergy & Asthma Network – Posters

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Allergy & Asthma Network – Resources

Free download on website: *Outreach* | *Special Publications*
WHAT IS ASTHMA?

If you have asthma, the tubes that bring air into the tiny air passages in your lungs get too tight, which makes it hard to breathe. When you have trouble breathing, you could be having an asthma flare.

You feel symptoms of asthma 2+ times a week
Your asthma wakes you up 2+ times a month
You run out of quick-relief medicine 2+ times a year

YOUR ASTHMA MIGHT BE DIFFICULT TO CONTROL IF:

To learn more about managing your asthma symptoms, visit chestnet.org/asthma and AllergyAsthmaNetwork.org/asthma

DID YOU KNOW?

A good asthma action plan means you should be able to do everyday activities without any problems breathing

Walking          Sleeping          Playing Outside

YOU MIGHT...

BECAUSE OF...

Smoke or dirty air
Hard exercise
Allergens in the air
Feeling very happy or very sad

Have trouble breathing
Feel squeezing in your chest
Have coughing or wheezing fits
Feel tired

TAKE ACTION

Many different triggers can cause an asthma flare. You should learn about the things that make you sick so you can stop an asthma flare before it happens.

TAKE CONTROL

Practice your action plan with your caregivers. Asthma shouldn't hold you back! If you still have trouble breathing, talk to your doctor or caregivers.

3
1
2

Your doctor can help you make an Asthma Action Plan so you won't have as many asthma flares.

Tell your doctor or caregiver when it's hard to breathe.

This asthma awareness campaign is supported in part by grants from Boehringer Ingelheim and GlaxoSmithKline.

So going back to our patient Shanice – how would you respond to her?

Is it asthma?
Is it anaphylaxis?

What is your course of action?
Questions?

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