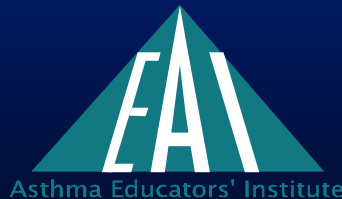


# Asthma Attacks and the “Asthma Action Plan”

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*Christopher Fanta, M.D.*

Mass General Brigham Asthma Center  
Harvard Medical School



# Disclosure of Conflicts of Interest

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- I have no financial conflicts of interest to disclose.

# Agenda

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- Define asthma attacks; discuss their frequency and causes.
- Describe a severe asthma attack.
- Consider how to manage asthma attacks and prevent them from becoming severe.
- Help patients use their asthma action plan.

**“WHEN I HAVE AN  
ASTHMA ATTACK  
I FEEL LIKE A FISH  
WITH NO WATER.”**

**-JESSE, AGE 5**



# Asthma Attacks Are Common

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- An asthma attack (or “exacerbation” or “flare”) is the onset (or increase) of asthma symptoms (cough, shortness of breath, chest tightness, and/or wheezing), different from usual.
- Survey data suggest that approximately 50% of persons with asthma report at least 1 attack in the past year, children and adults.

# Asthma Attacks – The Consequences

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- An asthma attack represents worsened narrowing of the bronchial tubes, which may be mild-moderate or severe.
- Severe asthma attacks lead to nearly 1 million emergency room visits each year.
- The danger: a severe asthma attack can lead to asphyxiation and death.

# **Laura Levis' death outside ER has changed hospital signage, lighting in Mass.**

The [new regulations](#) were announced Thursday at a State House press conference by Peter DeMarco, whose wife, Laura Levis, died from an asthma attack outside Somerville Hospital in September 2016. Levis couldn't find her way to the emergency department and couldn't find anyone to help her. She was 34.

[www.wbur.org/news/2023](http://www.wbur.org/news/2023)

There are approximately 10 (unnecessary) deaths in the U.S. from asthma every day.

# Common Causes of Asthma Attacks

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- Viral respiratory tract infection.
- Allergen exposure in an allergic patient.
- Medication discontinuation/non-adherence.
- Uncertain.

# Severe Asthma Attack

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Imagine the following scenario:

A 35-year-old lawyer with long-standing asthma is exposed to a respiratory infection (a “cold”) from her pre-school-aged daughter. She develops a low-grade fever, some cough, and generalized aching.

# Severe Asthma Attack (cont.)

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Over the next 2-3 days, her fever and achiness resolve, but her cough continues (with small amounts of clear sputum), and she notes some noisy breathing (wheezing) when she lies down at night to sleep.

# Severe Asthma Attack (cont.)

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She uses her albuterol inhaler, which provides only temporary relief. She finds herself needing it 6-7 times/day. She is short of breath climbing stairs and skips going to the gym.

Her sleep is restless, disturbed by cough and a sense of a weight on her chest. In the morning, she is short of breath just dressing and asks her husband to drive her to the hospital.

# Severe Asthma Attack: Physical Exam

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## In the Emergency Department:

Heart rate = 124 beats/min; respiratory rate = 32 breaths/min; normal blood pressure; no fever.

She uses her neck and shoulder muscles to help get air in. She braces herself with arms extended and is unable to lie down without getting very short of breath. She is perspiring (“diaphoretic”).

On listening to her chest, there are musical inspiratory and expiratory wheezes throughout.

# Severe Asthma Attack

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She is frightened and says that there are times when she feels as though she might not be able to get another breath in.

# Identifying a Severe Asthma Attack

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Symptoms: short of breath on light exertion (walking, talking, at rest); inability to lie down flat because of shortness of breath; limited relief from bronchodilator inhaler.

Signs: using chest/neck muscles to breathe; perspiration; blue lips or fingers; nasal flaring (children).

Measurement: peak flow less than half of its usual.

# The Best Management Is Prevention

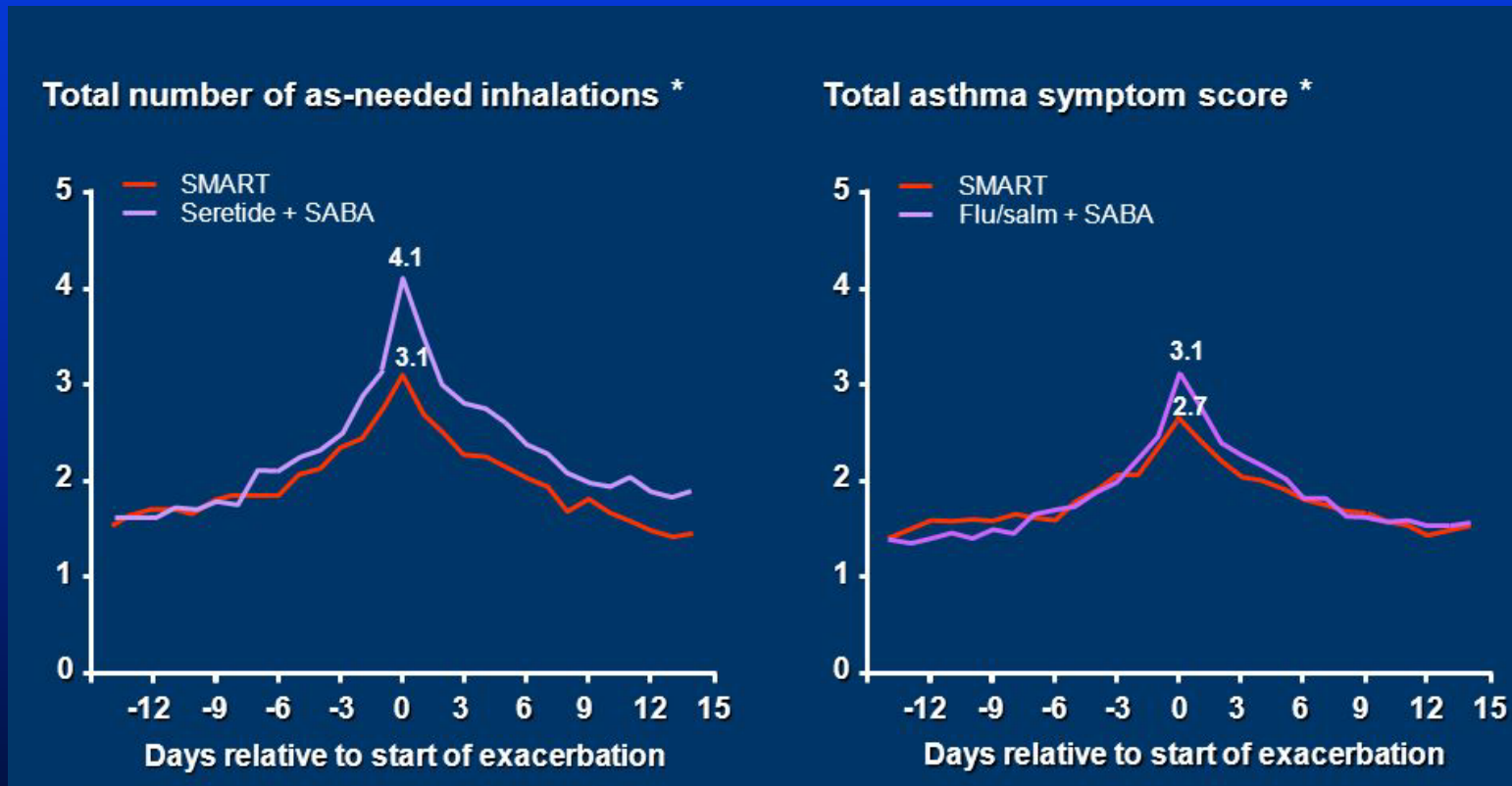
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“Treatment of status asthmaticus\* is best started 3 days prior to the attack.”

-- Thomas Petty, M.D.

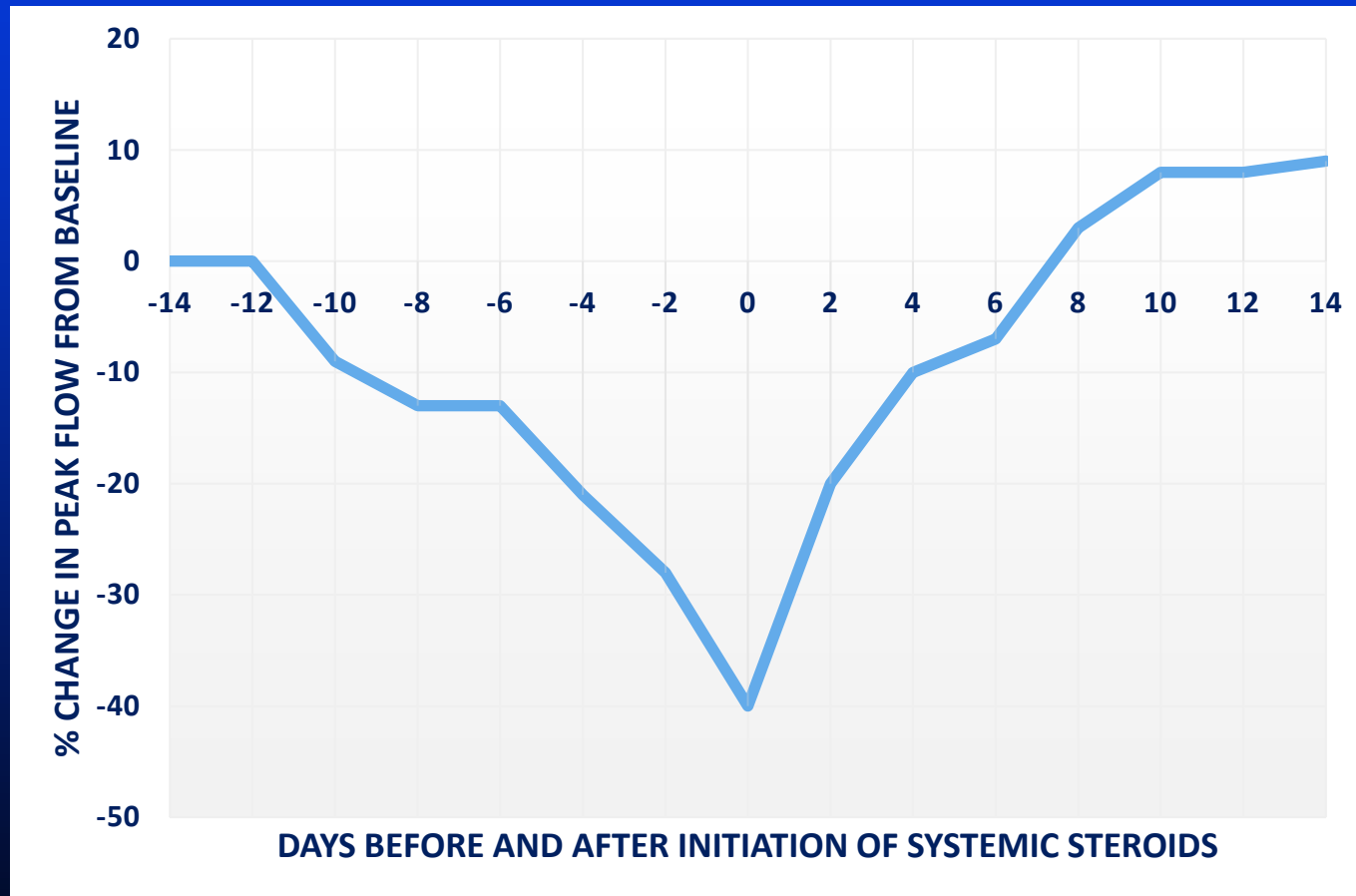
\*an old-fashioned term for a persistent severe asthma attack.

# Evolution of Asthma Exacerbations: Quick-Reliever Use and Symptoms



From Medical Education Network, downloaded at:  
<https://www.slideserve.com/trula/studies>

# Evolution of Asthma Exacerbations: Peak Flow



Adapted from presentation by Dr. Ian Pavord at CME course, *Update on Severe Asthma 2023*.

# Prevention = Early Intervention Before Attack Becomes Severe

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Treatment options depend on medications available at home and prior experience with asthma attacks, and include:

- Rest; allergen/irritant avoidance.
- Larger, more frequent doses of some medications.
- Oral steroid tablets (prednisone, *Medrol*).
- Contact medical provider.
- Urgent care/emergency department.

# Consider Treatments in the Emergency Department

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Mainstays of treatment in an urgent care center or emergency department are:

- Frequent doses of quick-acting bronchodilator (e.g., albuterol), often given by nebulizer, as often as every 20 minutes during the first hour, then hourly.
- Intravenous or oral steroids.

# What Else Is Available in An Emergency Department?

- Close monitoring; enforced rest in an allergen- and irritant-free environment.
- Intravenous magnesium (a novel bronchodilator).
- Face-mask ventilation.
- Intubation and mechanical ventilation.



# Options at Home ... Before an Attack Becomes Severe

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- Start controller medications (inhaled steroids; combination inhaled steroid/long-acting bronchodilator).
- Increase dose of inhaled steroids.
- Use inhaled steroid with each dose of quick-acting bronchodilator (such as albuterol or formoterol).

# Additional, More Intense Options That Can Be Initiated at Home

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- Some patients will have a nebulizer and liquid albuterol at home.
- 4-6 puffs of albuterol by metered-dose inhaler (HFA), carefully inhaled, is = 1 nebulizer treatment.
- Prednisone tablets (40-60 mg) are equally effective as intravenous steroids.

# Safety First!

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## Key advice for the patient:

If not getting better, get help –

- Call your medical provider;
- Go to your local urgent care center or emergency department (if possible, have someone else drive you);
- Call 911.

# Dealing with Worsening Asthma Symptoms: Have a Plan

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- Patients with asthma (or their caregivers) should discuss with their medical provider – in advance -- a plan for dealing with an increase in asthma symptoms: make a written **asthma action plan**.
- School-aged children should share their asthma action plan with teachers/coaches.

# Most Asthma Action Plans Are Based on the Traffic Light Model

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Three zones:

- **Green** Zone – all good, continue usual medications.
- **Yellow** Zone – mild-to-moderate asthma attack; reduce activities and intensify medications.
- **Red** Zone – severe asthma attack; stop what you are doing and take immediate action; get emergency help if not getting better.

# If Using a Peak Flow Meter ...

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Three zones:

- **Green** Zone – >80% of usual/best value.
- **Yellow** Zone – 50-80% of usual/best value.
- **Red** Zone – <50% of usual/best value.

# Massachusetts Adult Asthma Action Plan

Name: \_\_\_\_\_  
 Date of birth: \_\_\_\_\_  
 Drug allergies: \_\_\_\_\_  
 Emergency contact: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Doctor/nurse: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Needs flu shot \_\_\_\_\_  
 Your personal best peak flow: \_\_\_\_\_  
 Avoid things that make your asthma worse: \_\_\_\_\_

Date: \_\_\_\_\_  
 Next visit: \_\_\_\_\_  
 Prepared by: \_\_\_\_\_  
 Bring this plan to every visit

## greenzone-go Take these medicines to control your asthma

- Breathing is good
- No cough or wheeze
- Sleep through the night
- Can perform usual daily activities
- This is how you should feel every day



Medicine	How much	When

Peak flow (100%-80%) from \_\_\_\_\_ to \_\_\_\_\_

## yellowzone-caution Take these medicines to get your asthma under control

- Cough
- Mild wheeze
- Tight chest
- Trouble breathing
- Wake up at night
- First signs of a cold



Medicine	How much	When	How long

- Continue "green zone" controller medicines
- Use a spacer with \_\_\_\_\_

If symptoms do not improve within \_\_\_\_\_ hours, call your doctor/nurse. Let your doctor/nurse know if you keep going into the yellow zone. The green zone medicines may need to be changed to keep other episodes from starting.

Peak flow (80%-50%) from \_\_\_\_\_ to \_\_\_\_\_

## redzone-danger Take action right away

- Breathing hard & fast
- Difficulty walking and talking
- Working hard to breathe



Take these medicines now AND then call your doctor/nurse right away!

Medicine	How much	How long

**DANGER SIGNS- Call 911 or go to the nearest emergency room if:**  
 - Lips or fingernails are blue  
 - You are struggling to breathe  
 - You do not feel any better 15 minutes after you start the red zone medicines and you have not reached your doctor/nurse

Peak flow (less than 50%) \_\_\_\_\_

Contact your doctor/nurse within two days of an emergency room visit or hospitalization.

Make copies of this plan for patient and provider

# Mass Asthma Action Plan for Adults



# Massachusetts Adult Asthma Action Plan

Name: **Taylor Slow**  
 Date of birth: **August 31, 1998**  
 Drug allergies: **penicillin, ampicillin**  
 Emergency contact: **Gooden Sluw** Phone: **978-654-XXXX**  
 Doctor/nurse: **Dr. B. Good** Phone: **617-123-XXXX**  
 Needs flu shot  
 Your personal best peak flow: **400**  
 Avoid things that make your asthma worse: **cats, dogs; vaping**

Date: **October 15, 2024**  
 Next visit: **January 10, 2025**  
 Prepared by: **Dr. Good**  
 Bring this plan to every visit

## greenzone-go Take these medicines to control your asthma

- Breathing is good
- No cough or wheeze
- Sleep through the night
- Can perform usual daily activities
- This is how you should feel every day



Medicine	How much	When
Symbicort 160/4.5	2 puffs	as needed

Peak flow (100%-80%) from **400** to **320**

## yellowzone-caution Take these medicines to get your asthma under control

- Cough
- Mild wheeze
- Tight chest
- Trouble breathing
- Wake up at night
- First signs of a cold



Medicine	How much	When	How long
Symbicort 160/4.5	2 puffs	twice every day and up to 12 puffs in a day if needed	

Continue "green zone" controller medicines  
 Use a spacer with **your Symbicort inhaler**  
 If symptoms do not improve within 2 hours, call your doctor/nurse.  
 Let your doctor/nurse know if you keep going into the yellow zone. The green zone medicines may need to be changed to keep other episodes from starting.

Peak flow (80%-50%) from **320** to **200**

## redzone-danger Take action right away

- Breathing hard & fast
- Difficulty walking and talking
- Working hard to breathe



**Take these medicines now AND then call your doctor/nurse right away!**

Medicine	How much	How long
Symbicort 160/4.5	2 puffs up to 12 puffs in a day if needed	
Begin prednisone 20 mg	2 tablets	once

Peak flow (less than 50%) **<200**

**DANGER SIGNS- Call 911 or go to the nearest emergency room if:**  
 - Lips or fingernails are blue  
 - You are struggling to breathe  
 - You do not feel any better 15 minutes after you start the red zone medicines and you have not reached your doctor/nurse

Contact your doctor/nurse within two days of an emergency room visit or hospitalization.

# Mass Asthma Action Plan for Adults - Completed



Make copies of this plan for patient and provider

# Massachusetts Asthma Action Plan

Name:		Date:
Birth Date:	Doctor/Nurse Name:	Doctor/Nurse Phone #:
Patient Goal:	Parent/Guardian Name & Phone #:	
Important! Avoid things that make your asthma worse:		

The colors of a traffic light will help you use your asthma medicine.



- GREEN** means Go Zone!  
Use controller medicine.
- YELLOW** means Caution Zone!  
Add quick-relief medicine.
- RED** means Danger Zone!  
Get help from a doctor.

Personal Best Peak Flow: \_\_\_\_\_

GO — You're doing well!	Use these daily controller medicines		
Peak flow from	MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/WHEN
_____			
to			
_____			

- You have *all* of these:
- Breathing is good
  - No cough or wheeze
  - Sleep through the night
  - Can go to school and play

CAUTION — Slow Down!	Continue with green zone medicine and add:		
Peak flow from	MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/WHEN
_____			
to			
_____			

- You have *any* of these:
- First signs of a cold
  - Cough
  - Mild wheeze
  - Tight chest
  - Coughing, wheezing or trouble breathing at night

CALL YOUR DOCTOR/NURSE: \_\_\_\_\_

DANGER — Get Help!	Take these medicines and call your doctor now.		
Peak flow from	MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/WHEN
_____			
to			
_____			

- Your asthma is getting worse fast:
- Medicine is not helping
  - Breathing is hard and fast
  - Nose opens wide
  - Ribs show
  - Can't talk well

**GET HELP FROM A DOCTOR NOW!** Do not be afraid of causing a fuss. Your doctor will want to see you right away. It's important! If you cannot contact your doctor, go directly to the emergency room and bring this form with you. **DO NOT WAIT.**

Make an appointment with your doctor/nurse within two days of an ER visit or hospitalization.

Doctor/NP/PA Signature \_\_\_\_\_ DATE \_\_\_\_\_

I give permission to the school nurse, my child's doctor/NP/PA or \_\_\_\_\_ to share information about my child's asthma.

Parent/Guardian Signature \_\_\_\_\_ DATE \_\_\_\_\_

# Mass Asthma Action Plan for Children



# Low Literacy Asthma Action Plan

**Everyday** Keep your child healthy.  
Give **everyday medicine** when healthy or sick.



Your child is feeling good:

- No trouble breathing
- No cough or wheeze
- Sleeps well
- Can play as usual



Morning

**Flovent**  
2 puffs with spacer



Night

**Singulair**  
1 chewable tablet

and

**Flovent**  
2 puffs with spacer

**Sick** Give **sick medicine** and add **everyday medicine**.  
If not feeling better in 1 day, call your doctor.



Your child has **any** of these:

- Some trouble breathing
- Cough in the day or night
- Mild wheeze
- Feels tightness in chest

**Albuterol**  
2 puffs with spacer

If needed,  
give every 4 hours

and

**Everyday**



Morning

**Flovent**  
2 puffs with spacer



Night

**Singulair**  
1 chewable tablet

and

**Flovent**  
2 puffs with spacer



Your child has **any** of these:

- Breathing is hard and fast
- Can't stop coughing
- Ribs show when breathing
- Neck pulls in
- Can't talk or walk well

**Very sick** The asthma is getting worse.  
Give **sick medicine**. **Get help now!**

**Albuterol**  
2 puffs with spacer

and

Call a doctor or 911  
Go to the hospital

The H.E.L.P. Project Bellevue Hospital Pediatric Clinic (212) 562-5524  
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# How You Can Help

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- Encourage patients to make an asthma action plan with their medical provider.
- Make sure that they understand the plan and have available the medications to implement it – and know how to use them!
- Action plans may need to be updated when patients' asthma (and their treatment regimen) changes.

# Conclusions

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- Asthma attacks are common. They typically develop over a period of a few days.
- A severe asthma attack is frightening and can be dangerous.
- Patients with asthma and/or their caregivers can be taught to recognize signs of an asthma attack and take action before it becomes severe.

# Conclusions (cont.)

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- A written asthma action plan details steps to take when asthma worsens; patients /caregivers should have a plan and share it with other family members, school, camp, etc.
- You can help make sure that patients with asthma have an action plan and understand it.