PEDIATRIC ASTHMA

Estimated Time: 60 minutes • Debriefing Time: 60 minutes

Scan to Begin

Patient Name: Patrick A. Armstrong

SCENARIO OVERVIEW

Patrick Armstrong is a 16-year-old patient who presents to a clinic for a visit for asthma. His asthma worsened after being exposed to a cat at a friend's house, so he called for a same day appointment. He is in stable condition but in the "yellow zone" on the Asthma Action Plan.

In State 1, patient assessment data is gathered, including lungs sounds from multiple anatomical locations. In State 2, students will obtain peak flow readings and assess if patient is using the peak flow meter properly. In State 3, students will assess if the patient's technique in using his albuterol MDI is correct. In State 4, students discuss their findings with the provider and receive new orders are for Advair and a new Asthma Action Plan. Students then perform patient education regarding the new medication and Asthma Action Plan, using Patient Education handouts provided.

LEARNING OBJECTIVES

1. Perform a focused respiratory assessment on a pediatric patient with asthma
2. Obtain a focused health history
3. Evaluate the patient's use of a peak flow meter
4. Evaluate the patient's self-administration of an inhaler
5. Perform patient education using the Asthma Action Plan

CURRICULUM MAPPING

WTCS NURSING PROGRAM OUTCOMES

- Implement one's role as a nurse in ways that reflect integrity, responsibility, ethical practices, and an evolving professional identity as a nurse committed to evidence-based practice, caring, advocacy and quality care
- Demonstrate appropriate written, verbal, and nonverbal communication in a variety of clinical contexts
- Integrate social, mathematical, and physical sciences, pharmacology, and pathophysiology in clinical decision making
- Provide patient centered care by utilizing the nursing process across diverse populations and health care settings
- Minimize risk of harm to patients, members of the healthcare team and self through safe individual performance and participation in system effectiveness
- Lead the multidisciplinary health care team to provide effective patient care throughout the lifespan
- Use information and technology to communicate, manage data, mitigate error, and support decision-making

BASIC SKILLS

- Obtain a health history
- Perform a general survey assessment
- Measure blood pressure and other vital signs

- Perform a basic respiratory assessment

NURSING FUNDAMENTALS

- Maintain a safe, effective care environment for adults of all ages
- Use appropriate communication techniques
- Use the nursing process
- Provide nursing care for patients with alterations in oxygenation
- Adapt nursing practice to meet the needs of diverse patients in a variety of settings

HEALTH ALTERATIONS

- Plan nursing care for patients with alterations in the respiratory system

NURSING HEALTH PROMOTION

- Use principles of teaching/learning when reinforcing teaching plans
- Promote healthy coping in acute and chronic illness

SIMULATION LEARNING ENVIRONMENT & SET-UP

PATIENT PROFILE

Name: Patrick A. Armstrong

DOB: 11/16/20xx

Age: 16

MR#: 1116

Gender: Male

Height: 177.5 cm (5 ft 11 in)

Weight: 109 kg (240 lbs)

Code Status: Full code

Primary Language spoken: English

Allergies: NKDA

EQUIPMENT/SUPPLIES/SETTINGS

Patient

- Wearing: Street clothes, ball cap, phone. Jewelry may be present.
- No arm band is present since setting is a clinic.

- Has his albuterol inhaler with him
- Note placement of multiple QR codes for lung sounds. See Appendix A for anatomical placement of QR codes on mannequin

Monitor Settings

- HR 84, RR 24, BP 108/64, Temp 36.8, O2 sat 97% on RA, Pain 0/10

Supplies

- General
- Equipment to obtain vitals including oxygen saturation
- Peak Flow Meter (if available)

Medications

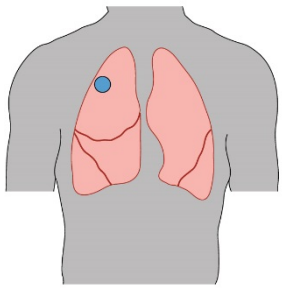
- Albuterol MDI (with spacer if available)
- Advair DPI

QR CODES

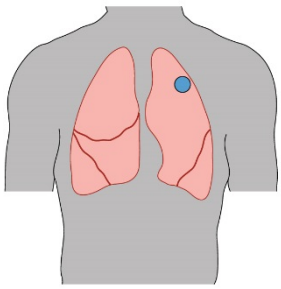
REPORT	PATIENT	ASTHMA ACTION PLAN	ALBUTEROL MDI
ADVAIR DPI	FACILITATOR	ASTHMA SEVERITY PROTOCOL	PEAK FLOW METER
PEAK FLOW A	PEAK FLOW B	INHALER A	INHALER B
INHALER C			

CHEST QR CODES

Cut along the dotted lines. Fold along the solid line to create a bi-fold of the diagram and QR code.



ANTERIOR 2



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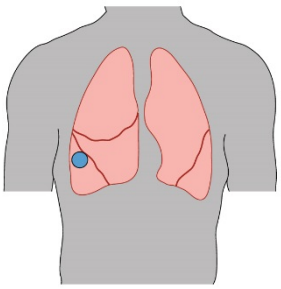

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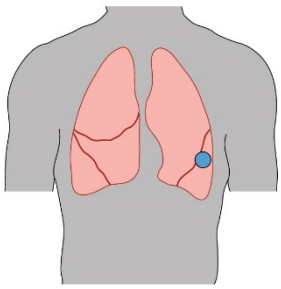

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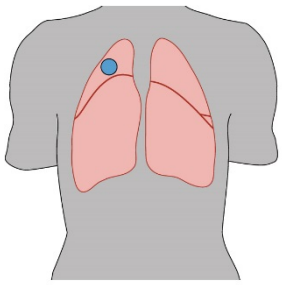
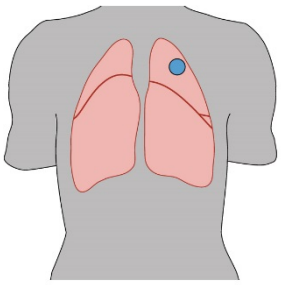
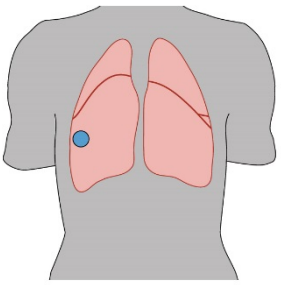


POSTERIOR 0



POSTERIOR 1



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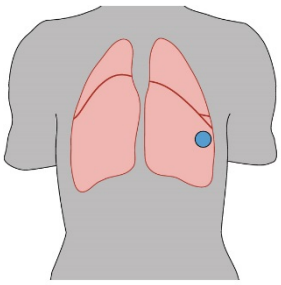

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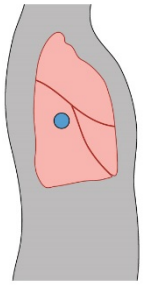
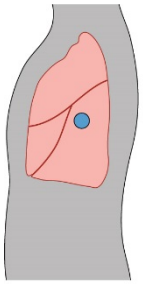
	
RIGHT AXILLARY 1	LEFT AXILLARY 1

TEACHING PLAN

PREBRIEF

The facilitator should lead this portion of the simulation. The following steps will guide you through Prebrief.

- Scan the **QR code:** "**Scan to Begin**" while students are in Prebrief
- "Meet Your Patient" (on iPad) and explain how the iPad works in the simulated learning environment including:
    - Explain how to use the iPad scanner and QR codes. Remind students that there are multiple QR codes in the simulation, but they should only scan them if they think it will provide data necessary for their assessment and evaluation of the patient.
    - Describe how a QR Code sound will work in the scenario. Show them how to use the ARISE "stethoscope" and the symbol on the QR Code that signifies when a QR Code is audio 🔊. Example: **QR Code: Chest** 🔊
    - As the facilitator, you should be aware that throughout the simulation some QR codes are necessary to the programming of the iPad content and progression of the scenario. Directions for which QR codes are required (to be scanned) in each state are listed under each state of the documentation below. The QR codes are also in **BOLD** type.
    - Medication Hyperlinks – All medications are underlined and hyperlinked to DailyMed, which is a medication reference housed by the National Library of Medicine. Students can click on these links during the simulation for up-to-date medication content, labels, and package insert information.
- Discuss the simulation "Learning Objective(s)" (on iPad) as well as any other Prebrief materials
- Get "Report" on iPad
    - Possible Facilitator Question
        - What are your plans for a focused respiratory assessment when you hear that a patient has asthma?
        - How are peak flow meters used to manage asthma?
        - What is the proper technique for using a peak flow meter?
- Play the "Patient" video on iPad

- Possible Facilitator Question
  - How would you evaluate the patient's respiratory status based on his statement?
  - What are your clinical concerns and priorities as you enter the room?
  - How will you manage a teenage patient who is using their cell phone during your exam?

- Review initial tabbed content as a group. Encourage students to organize and prioritize a plan of care for when they enter the room.

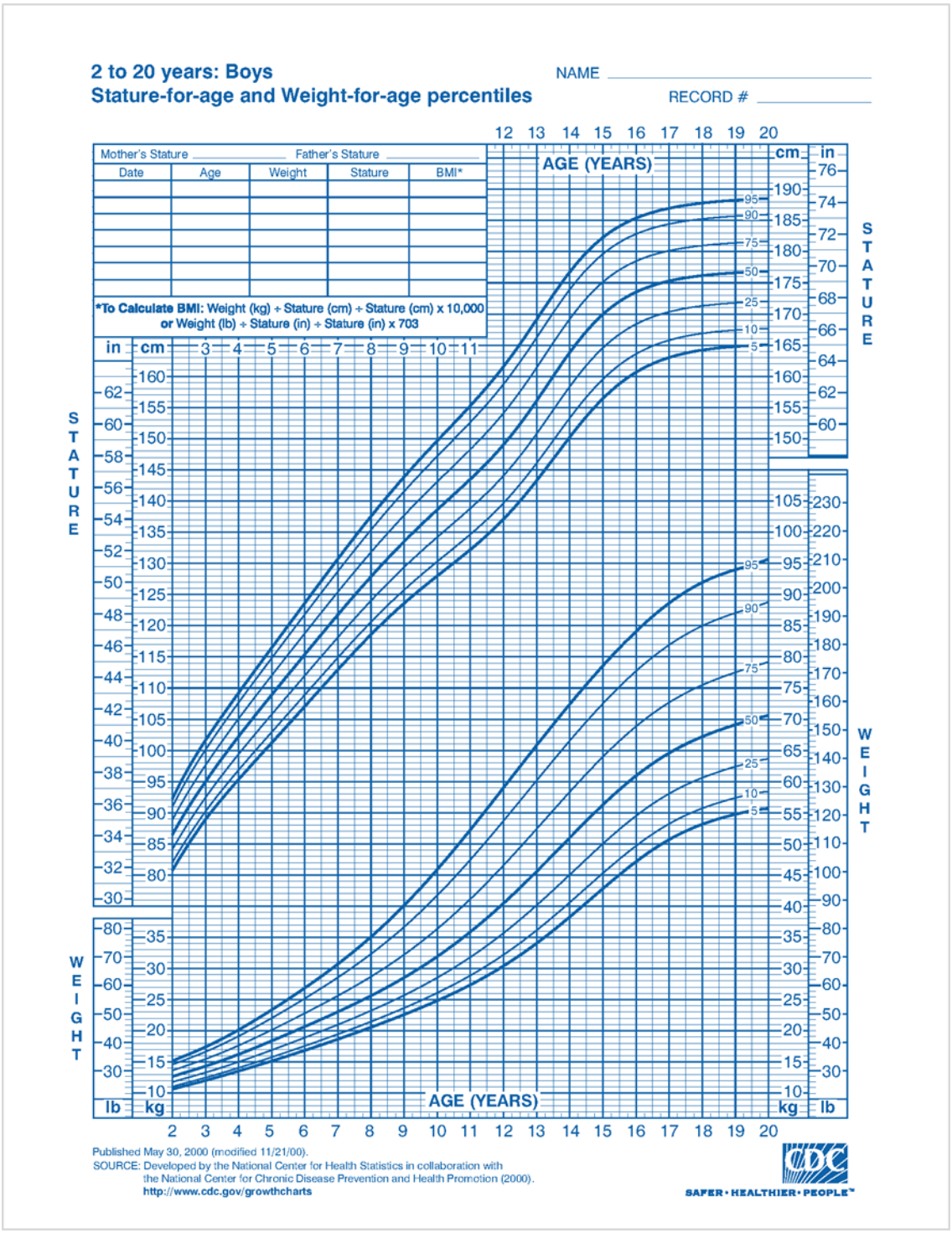
PROTOCOL

See Appendix A for a printable version of the Asthma Severity Protocol

VITALS

- Screen is open for entry; Simulator settings: HR 84, RR 24, BP 108/64, Temp 36.8, O2 sat 97% on RA, Pain 0/10

GROWTH CHART



PROBLEM LIST

Currently Known Medical Problem(s)
1. Asthma

CURRENT MEDICATION LIST

Medication	Description
Albuterol Inhaler	2 puffs q4 hours PRN for shortness of breath

ASTHMA ACTION PLAN

See Appendix B for a printable version of the Asthma Action Plan

PATIENT EDUCATION

See Appendix C for printable versions of the Patient Education handouts

EMERGENCY CONTACT INFORMATION

Contact	Contact Information
Father: Martin Armstrong	Phone: 555-555-0155 Address: 202 South Main Street Anytown, WI

LEVEL

The iPad reads, “The iPad is at Level 1.”

SCANNER

Use this to scan available QR Codes.

EXIT

The iPad reads, “Are you sure you want to exit? All data will be lost.”

- If “No” is selected, the iPad will return to the tabbed content.
- If “Yes” is selected, the iPad will let the student(s) exit and prompt them to complete an embedded 3-5 minute survey.

STATE 1

PATIENT ASSESSMENT

- Patient Overview
    - Patrick is returning to the clinic for a follow-up visit after being diagnosed with asthma last month. He is feeling short of breath that he relates to exposure to a cat.
- Expected Student Behaviors
    - Introduce themselves to the patient
    - Verify patient identity by asking name and date of birth
    - Communicate therapeutically regarding patient concerns
    - Manage the patient's use of his cell phone during exam
    - Obtain vital signs accurately
    - Obtain a focused health history on Patrick's respiratory concerns
    - Perform a focused respiratory physical assessment by scanning **QR codes: Chest** at various anatomical locations on anterior, medial and posterior chest
- Technician Prompts
    - Overview: Patient is distracted by the messages coming in on his phone. He is feeling short of breath and understands that the exposure to the cat at his friend's house triggered his asthma. He has already used his albuterol 4-5 times today.
    - Initial patient responses can include:
        - "I was hanging out at a friend's house today.... playing video games. I started to have... a hard time breathing."
        - "I noticed they ... have a cat.... I'm allergic to cats."
        - "I've used my inhaler .....like 4 or 5 times today."
        - "I called my dad at work .....and he said to go see the doctor.... so that's why I'm here."
        - If students ask the following questions, provide these responses:
            - Do you feel short of breath today?

    - Answer: “Yes.”
- Do you have a cough?
    - Answer: “At night sometimes.”
- Do you take any other medications?
    - Answer: “Just Advil when I’m sore from football practice.”
- Do you smoke?
    - Answer: “Sometimes. But don’t tell my parents, they’ll get mad.”
- Does anyone in your household smoke?
    - Answer: “Yes”
- Are you following an asthma action plan?
    - Answer: “Not sure?”
- Do you have your inhaler with you?
    - Answer: “Yes”

- Suggested Facilitator Questions
    - What focused questions will you ask when a patient has asthma?
    - What focused assessments will you perform on a patient with asthma?
    - How will you modify your approach to the developmental level of teenager?
    - What will you do if a teenager asks you to not share information with their parent(s)?
    - How would you describe the lungs sounds you are hearing?
    - What do these lungs sounds indicate is occurring in the patient’s airways?
    - Rate Patrick’s current status using the Protocol for Asthma Severity.
    - Look at Patrick’s Asthma Action Plan. How is an Asthma Action Plan used by a patient to self-manage their asthma symptoms at home?
    - How does albuterol help someone with asthma?

- Tabbed iPad Prompts & Content Changes
    - The scenario automatically advances to Level 2 after the student(s) scans **QR Code: Facilitator** indicating they have successfully completed the Expected Student Behaviors.
    - The iPad will read, “You have been approved to proceed with peak flow measurements.”

STATE 2

PEAK FLOW MEASUREMENT AND EVALUATION

- Overview
    - Students instruct the patient on how to do Peak Flow. Based on the accuracy of student instructions, the facilitator will direct them to scan a QR code displaying the patient performing the procedure. The student must then evaluate if the patient performed the procedure correctly or not.
- Expected Student Behaviors
    - Properly instruct the patient on how to use a peak flow meter. (A handout on how to use a Peak Flow Meter is included under the Patient Education tab for student use with the patient.)
    - Scan the Peak Flow QR code as directed by the facilitator. (If the student provides good instructions, the facilitator should direct them to scan **QR Code: Peak Flow A**, which is a video of the patient performing the procedure correctly. If students give poor instructions, the facilitator should instruct the student to scan **QR Code: Peak Flow B**, which is a video is of the patient performing the procedure incorrectly.)
    - Evaluate if the patient used the peak flow meter accurately based on the video viewed and re-instruct the patient if necessary.
    - Note: When the **QR code: Facilitator code** is scanned at the end of this state, an image of the peak flow result is displayed.
- Technician Prompts
    - Overview: Patient is still short of breath. He does not know how to use the peak flow meter correctly.
    - Initial patient responses can include:
        - "I don't know how to use this thing."
        - "Why do I have to do this?"
    - Students will be scanning QR codes to view videos of the patient actually using a Peak Flow meter.
    - Your responses will depend on if they gave accurate instructions or not.

- Suggested Facilitator Questions
    - What are the proper steps for using a peak flow meter? (Refer students to handout under Patient Education tab.)
    - How will you evaluate if the patient performed the procedure accurately?
    - How should you document a peak flow reading?
- Tabbed iPad Prompts & Content Changes
    - The scenario advances to Level 3 after the student(s) scans **QR Code: Facilitator** indicating they have successfully completed the Expected Student Behaviors. At this time, an image of the Peak Flow reading result will appear (250 L/min).
    - The iPad will read, "You have been approved to proceed."

STATE 3

INHALER USE AND EVALUATION

- Overview
    - Students evaluate if patient is using his albuterol inhaler properly and provide appropriate patient education. Peak flow is then re-measured after albuterol is administered.
- Expected Student Behaviors
    - Students scan **QR code: Inhaler A** and view patient using his inhaler.
    - Students should realize the technique is incorrect, provide additional instruction using the Albuterol patient education handout and ask the patient to repeat the procedure.
        - Based on student instructions that are provided, the facilitator should direct student to scan:
            - **QR code: Inhaler B** (inhaler use without a spacer) or
            - **QR code: Inhaler C** (inhaler use with spacer)
        - If poor instructions are provided: Facilitator asks student to scan QR code A again. Students should realize patient is still using incorrect technique and provide additional instruction
    - Once the albuterol inhaler is administered correctly, students should ask patient to re-measure peak flow. Instructors will tell students to scan **QR code: Peak Flow A** for sake of time. When the **QR code: Facilitator** is scanned at the end of this scenario, an image of the follow-up peak flow reading will display (370 L/min).
    - Students should call and report their findings to the provider accurately.
- Technician Prompts
    - Overview: Patient is not confident in using his inhaler. Students view of video of him performing the procedure incorrectly and must provide instruction until he does it correctly.
    - Initial patient responses can include:
        - "I'm not sure how to do this?"
        - "What is the spacer for?"

        - "How does this medicine help my asthma?"
    - If students do not provide correct instructions about inhaler use, continue to ask confused. Say incorrect statements based on their instruction like:
        - "So I should breathe out fast after I inhale the medicine?"
    - If students give correct instructions, provide positive reinforcement like:
        - "That makes sense now."
        - "I feel a little better." (After a few minutes)
    - When students report their findings to the provider, be sure they include the following data. If not, ask for data such as:
        - Vital signs
        - Lung sounds
        - Initial peak flow reading and accuracy of use
        - Albuterol administration and accuracy of use
        - Follow-up peak flow reading
- Suggested Facilitator Questions
    - Why is it best to use a spacer when administering Albuterol?
    - What is the mechanism of action for Albuterol?
    - Why is albuterol often called a "rescue inhaler?
- Tabbed iPad Prompts & Content Changes
    - The scenario advances to Level 4 after the student(s) scans **QR Code: Facilitator** indicating the students have successfully completed the Expected Student Behaviors and notified the provider of their findings. The iPad will read, "You have been approved to proceed. New orders received. Perform patient education" followed by an image of the follow-up Peak Flow reading (370 L/min).

STATE 4

NEW ORDERS RECEIVED AND PATIENT EDUCATION COMPLETED

- Overview
    - New medication orders are received from the provider for Advair and a revised Action Plan is initiated. Students should perform patient education on both using the Patient Education handouts provided.
- Expected Student Behaviors
    - Accurately provide medication information about Advair
        - Facilitator note: students can read medication information about Advair by tapping on the hyperlink in the Current Medication List tab
    - Accurately provide patient education about how to use the Asthma Action Plan
        - Facilitator note: Students should tap on Patient Education tab to see the newly available Advair handout
- Technician Prompts
    - Overview: Patient does not understand the use of Advair or the Asthma Action Plan until proper instructions are provided.
    - Initial patient responses can include:
        - “What is the difference between Albuterol and Advair?”
        - “So do I use both when I’m having an asthma attack like today?”
- Possible Facilitator Questions
    - What is the mechanism of action for Advair?
    - How is does Advair work differently than albuterol?
    - Which inhaler should be used during an ‘asthma attack’?
    - What are some important teaching points to include about Advair? Albuterol?
    - What do the green, yellow and red zones mean on the Asthma Action Plan?

  - When should the patient seek immediate medical attention?
  - How should the patient use their Peak Flow meter at home?
- Tabbed iPad Content Changes

CURRENT MEDICATION LIST

Medication	Description
Albuterol Inhaler	2 puffs q4 hours PRN for shortness of breath
Salmeterol/fluticasone	250/50 mcg 1 inhalation twice daily

ASTHMA ACTION PLAN

See Appendix D for a printable version of Patrick's revised Asthma Action Plan handout

PATIENT EDUCATION

Additional Patient Education handout on Advair appears. See Appendix C for printable version.

EXIT

Students may exit after viewing the new Asthma Action Plan and performing accurate patient education.

DEBRIEF

Nothing needed from the iPad.

QUESTIONS

1. Reaction: "How do you feel this scenario went?" (Allow students to vent their emotional reactions before delving into learning objectives.)
2. Review understanding of learning objective: Perform a focused respiratory assessment on a pediatric patient with asthma
    a. What did you find on your focused respiratory assessment? What do these findings indicate?
3. Review understanding of learning objective: Obtain a focused health history
    a. What are some important focused assessments questions to ask a patient with asthma?
4. Review understanding of learning objective: Evaluate the patient's use of a Peak Flow Meter
    a. How is a Peak Flow Meter used to help a patient self-manage their asthma?
    b. Review the proper steps for using a Peak Flow Meter.
    c. What does the reading on the Peak Flow Meter indicate?
5. Review understanding of learning objective: Evaluate the patient's self-administration of an inhaler
    a. Why is it important to use a spacer when administering albuterol?
6. Review understanding of learning objective: Perform patient education using the Asthma Action Plan
    a. Explain the green/yellow/red zones on the Asthma Action Plan.
    b. How is the Asthma Action Plan used to help a patient self-manage their asthma?
    c. When should a patient with asthma seek immediate medical attention?
7. Summarize/Take Away Points:
    a. "In this scenario you assessed a patient with asthma who was currently experiencing symptoms in the "yellow zone" of his Asthma Action Plan. What is one thing you learned from participating in this scenario that you will take into

your nursing practice?" (Ask each student to share something unique from what the other students share.)

NOTE: Debriefing technique is based on INASCL Standard for Debriefing and NLN Theory-Based Debriefing by Dreifuerst.

APPENDIX A: ASTHMA SEVERITY PROTOCOL

PROTOCOL FOR REFERRAL OF A PATIENT EXPERIENCING AN ACUTE ASTHMA ATTACK

Use the severity scale below to evaluate the severity of asthma symptoms.

If signs/symptoms occur in the "Severe" or "Respiratory Arrest Imminent" columns: The Medical Assistant should immediately activate medical services, notify the provider, and administer a STAT DuoNeb nebulizer treatment while waiting for EMS to arrive. Someone should stay with the patient AT ALL TIMES.

FORMAL EVALUATION OF ASTHMA EXACERBATION SEVERITY

SIGNS/SYMPTOMS	Mild	Moderate	Severe	Respiratory Arrest Imminent
Breathlessness	While walking; can lie down	While at rest; prefers sittig (infant: shorter cry, difficulty feeding)	While at rest; Sits upright (Infant: stops feeding)	
Talks in...	Sentences	Phrases	Words	None
Alertness	May be agitated	Usually agitated	Usually agitated	Drowsy or confused
Respiratory Rate	Increased Guide to rates of breathing in awake children: <2 months: <60/min 2-12 months: <50/min 1-5 years: <40/min 6-8 years: <30/min	Increased	Often greater than 30 in adults	
Use of accessory musccles: suprasternal retractions	Usually not	Commonly	Usually	Paradoxical thoracoabdominal movement
Pulse/minute	<100 Guide to normal pulse rates in children: 2-12 months: <160/min 1-2 years: <120/min 2-8 years: <110/min	100-120	>120	Bradycardia
PEF Of percent predicted or percent personal best	≥70%	40-69%	<40%	<25%
SaO_2	≥95%	90-95%	<90%	

(based on National Heart, Lung, Blood Institute (2007) The Expert Panel Report 3 (EPR–3) Guidelines for the Diagnosis and Management of Asthma. Downloaded from: http://www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines)

APPENDIX B: ORIGINAL ASTHMA ACTION PLAN

Asthma Action Plan

For: Patrick Armstrong Doctor: Anibas Date: xx/xx/20xx

Doctor's Phone Number 855-555-0155 Hospital/Emergency Department Phone Number 855-555-0156

GREEN ZONE

Doing Well

- No cough, wheeze, chest tightness, or shortness of breath during the day or night
- Can do usual activities

And, if a peak flow meter is used,

Peak flow: more than 384
(80 percent or more of my best peak flow)

My best peak flow is: 480

Take these long-term control medicines each day (include an anti-inflammatory).

Medicine	How much to take	When to take it
Before exercise	X Albuterol	X 2 or ☐ 4 puffs	5 minutes before exercise

YELLOW ZONE

Asthma Is Getting Worse

- Cough, wheeze, chest tightness, or shortness of breath, or
- Waking at night due to asthma, or
- Can do some, but not all, usual activities

-Or-

Peak flow: 240 to 384
(50 to 79 percent of my best peak flow)

First **Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.**

Albuterol (short-acting beta$_2$-agonist) X 2 or ☐ 4 puffs, every 20 minutes for up to 1 hour ☐ Nebulizer, once

Second **If your symptoms (and peak flow, if used) return to GREEN ZONE after 1 hour of above treatment:**

X Continue monitoring to be sure you stay in the green zone.

-Or-

If your symptoms (and peak flow, if used) do not return to GREEN ZONE after 1 hour of above treatment:

☐ Take: _____ (short-acting beta$_2$-agonist) ☐ 2 or ☐ 4 puffs or ☐ Nebulizer

☐ Add: _____ (oral steroid) mg per day For _____ (3–10) days

X Call the doctor X before/ ☐ within _____ hours after taking the oral steroid.

RED ZONE

Medical Alert!

- Very short of breath, or
- Quick-relief medicines have not helped, or
- Cannot do usual activities, or
- Symptoms are same or get worse after 24 hours in Yellow Zone

-Or-

Peak flow: less than 240
(50 percent of my best peak flow)

Take this medicine:

X Albuterol (short-acting beta$_2$-agonist) X 4 or ☐ 6 puffs or ☐ Nebulizer

☐ _____ (oral steroid) mg

Then call your doctor NOW. Go to the hospital or call an ambulance if:

- You are still in the red zone after 15 minutes AND
- You have not reached your doctor.

DANGER SIGNS

- **Trouble walking and talking due to shortness of breath**
- **Lips or fingernails are blue**

- **Take ☐ 4 or ☐ 6 puffs of your quick-relief medicine AND**
- **Go to the hospital or call for an ambulance _____ (phone) NOW!**

How To Control Things That Make Your Asthma Worse

This guide suggests things you can do to avoid your asthma triggers. Put a check next to the triggers that you know make your asthma worse and ask your doctor to help you find out if you have other triggers as well. Then decide with your doctor what steps you will take.

Allergens

☐ **Animal Dander**

Some people are allergic to the flakes of skin or dried saliva from animals with fur or feathers.

The best thing to do:

- Keep furred or feathered pets out of your home.

If you can't keep the pet outdoors, then:

- Keep the pet out of your bedroom and other sleeping areas at all times, and keep the door closed.
- Remove carpets and furniture covered with cloth from your home. If that is not possible, keep the pet away from fabric-covered furniture and carpets.

☐ **Dust Mites**

Many people with asthma are allergic to dust mites. Dust mites are tiny bugs that are found in every home—in mattresses, pillows, carpets, upholstered furniture, bedcovers, clothes, stuffed toys, and fabric or other fabric-covered items.

Things that can help:

- Encase your mattress in a special dust-proof cover.
- Encase your pillow in a special dust-proof cover or wash the pillow each week in hot water. Water must be hotter than 130° F to kill the mites. Cold or warm water used with detergent and bleach can also be effective.
- Wash the sheets and blankets on your bed each week in hot water.
- Reduce indoor humidity to below 60 percent (ideally between 30–50 percent). Dehumidifiers or central air conditioners can do this.
- Try not to sleep or lie on cloth-covered cushions.
- Remove carpets from your bedroom and those laid on concrete, if you can.
- Keep stuffed toys out of the bed or wash the toys weekly in hot water or cooler water with detergent and bleach.

☐ **Cockroaches**

Many people with asthma are allergic to the dried droppings and remains of cockroaches.

The best thing to do:

- Keep food and garbage in closed containers. Never leave food out.
- Use poison baits, powders, gels, or paste (for example, boric acid). You can also use traps.
- If a spray is used to kill roaches, stay out of the room until the odor goes away.

☐ **Indoor Mold**

- Fix leaky faucets, pipes, or other sources of water that have mold around them.
- Clean moldy surfaces with a cleaner that has bleach in it.

☐ **Pollen and Outdoor Mold**

What to do during your allergy season (when pollen or mold spore counts are high):

- Try to keep your windows closed.
- Stay indoors with windows closed from late morning to afternoon, if you can. Pollen and some mold spore counts are highest at that time.
- Ask your doctor whether you need to take or increase anti-inflammatory medicine before your allergy season starts.

Irritants

☐ **Tobacco Smoke**

- If you smoke, ask your doctor for ways to help you quit. Ask family members to quit smoking, too.
- Do not allow smoking in your home or car.

☐ **Smoke, Strong Odors, and Sprays**

- If possible, do not use a wood-burning stove, kerosene heater, or fireplace.
- Try to stay away from strong odors and sprays, such as perfume, talcum powder, hair spray, and paints.

Other things that bring on asthma symptoms in some people include:

☐ **Vacuum Cleaning**

- Try to get someone else to vacuum for you once or twice a week, if you can. Stay out of rooms while they are being vacuumed and for a short while afterward.
- If you vacuum, use a dust mask (from a hardware store), a double-layered or microfilter vacuum cleaner bag, or a vacuum cleaner with a HEPA filter.

☐ **Other Things That Can Make Asthma Worse**

- Sulfites in foods and beverages: Do not drink beer or wine or eat dried fruit, processed potatoes, or shrimp if they cause asthma symptoms.
- Cold air: Cover your nose and mouth with a scarf on cold or windy days.
- Other medicines: Tell your doctor about all the medicines you take. Include cold medicines, aspirin, vitamins and other supplements, and nonselective beta-blockers (including those in eye drops).

U.S. Department of Health and Human Services
National Institutes of Health

National Heart Lung and Blood Institute

For More Information, go to: www.nhlbi.nih.gov

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April 2007

APPENDIX C: PATIENT EDUCATION HANDOUTS

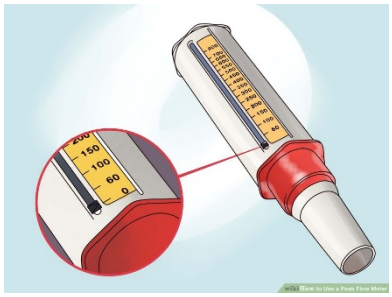
PEAK FLOW RATE

Peak flow rate (or peak expiratory flow rate) is the measurement of how much air you can blow out of your lungs in one breath. It is useful for you to measure and track this because it will help you know when your asthma is flaring up and/or when you should seek medical attention.

STEPS FOR PERFORMING THE PEAK FLOW RATE PROCEDURE:

1. Ensure the mouthpiece is clean and free of obstructions.

2. Ensure the marker is set to zero.



3. Stand up or sit upright.

4. Take as deep a breath in as you can and hold it.

5. Place the mouthpiece in your mouth and form as tight a seal as possible around it with your lips.

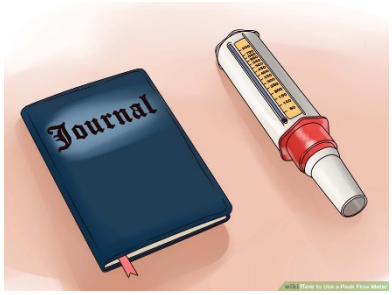
6. Breathe out as hard as you can through your mouth. Plug your nose if you have to.

7. Observe and record the reading.

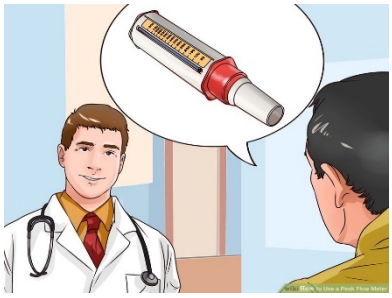
8. Repeat the process at least 2 more times and record the highest reading.

9. Take your readings every day. If possible, your readings should be taken about the same time every day.

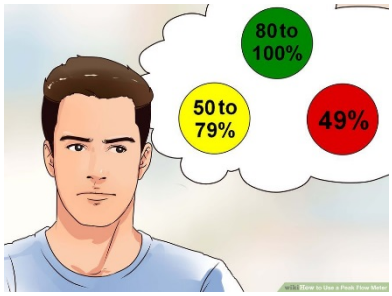
10. Keep a daily journal of your peak flow rates as well as any other asthma-like symptoms you experience (such as coughing or wheezing).



11. Bring your journal to doctors' appointments. This will help him/her make sure you are taking the proper asthma medications.



12. Find your "normal" peak flow rate and track your peak flow zone.



Related patient education handouts: NORMAL PEAK FLOW RATE, ASTHMA ACTION PLAN

Content adapted from: http://www.osceskills.com/e-learning/subjects/explaining-the-peak-expiratory-flow-rate-technique/ and http://www.wikihow.com/Use-a-Peak-Flow-Meter

USING AN MDI WITH A SPACER

If you have been diagnosed with a lung disease such as asthma or COPD, the use of an MDI (metered dose inhaler), like Albuterol or Flovent, may be indicated. These instructions will ensure you are using the MDI and Spacer correctly.

STEPS FOR USING AN MDI WITH A SPACER:

1. Take off the MDI cap.

The cap is a small covering located over the mouthpiece to prevent foreign objects from getting in the MDI. Ensure the mouthpiece and spray hole are clean.

2. Shake the MDI.

Hold the inhaler in a vertical position with one hand and shake it 10 to 15 times.

3. Prime the MDI.

If this is the first time you've used the MDI or if you have not used it in more than a week, you need to prime it. This ensures the inhaler delivers the correct amount of medicine when used. You prime the MDI by squeezing the canister down into the plastic mouthpiece, emitting a single spray.

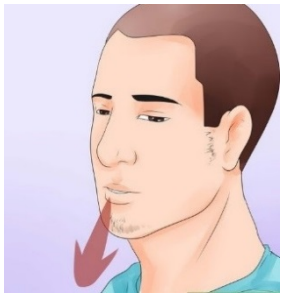
IMPORTANT: After you prime the MDI, you need to repeat Step 2 – Shake the MDI.

4. Connect the MDI and the spacer.

Connect the MDI mouthpiece to the back end of the spacer. Depending on the spacer and mouthpiece you have, they may click together neatly, or the mouth piece might simply slide in through a narrow rubber slit.

5. Breathe out as much as you can.

Ideally, you want to empty your lungs as much as possible.



6. Place the spacer's mouthpiece in your mouth.

It should sit just above your tongue. Keep your lips closed around it. Lift your chin up slightly. Hold the inhaler between your pointer finger and thumb.

7. Squeeze the inhaler once then breathe in the medication slowly and deeply.

Pull air into your lungs through your mouth until you reach your peak capacity. Some spacers have a whistle on them. Listen for the whistle. If you hear it, you are breathing in too rapidly. If you don't hear it, you are breathing in at an acceptable rate.

8. Remove the spacer mouthpiece from your mouth.

Hold your breath for about 10 seconds. Then, exhale slowly and deeply through your mouth.

9. Shake the MDI.

If you are prescribed a second “puff” of the MDI, you must shake the MDI again (like in Step 2) before repeating Steps 4-8.

Content adapted from: http://www.wikihow.com/Use-an-Asthma-Inhaler

NORMAL PEAK FLOW RATE

To create your asthma action plan, you need to find your "normal" peak flow rate. This is done by recording your peak flow rate for two weeks at about the same time of day when your asthma is under control. Then, you and your doctor will determine what a normal peak flow rate is for you.

Once you know your normal peak flow rate, follow the "zone" system on your "Asthma Action Plan." This system helps you and your doctor decide how to treat your asthma.

The zone system can be compared to the colors of a traffic light.

Green Zone

80% to 100% of your normal peak flow rate signals go. Your asthma is under good control. Continue to follow the green zone of your asthma action plan.

Yellow Zone

50% to 80% percent of your normal peak flow rate signals caution. Your symptoms could get better or worse. Follow the yellow zone of your asthma action plan.

Red Zone

Less than 50% of your normal peak flow rate signals stop. This a Medical Alert! Contact your healthcare provider now and follow the red zone of your asthma action plan.

Related patient education handouts: PEAK FLOW METER, ASTHMA ACTION PLAN

Content adapted from: http://www.lung.org/lung-health-and-diseases/lung-disease-lookup/asthma/living-with-asthma/managing-asthma/measuring-your-peak-flow-rate.html and https://www.aaaai.org/conditions-and-treatments/library/at-a-glance/peak-flow-meter

HOW TO USE ADVAIR DISKUS

Advair is a prescription drug containing fluticasone and salmeterol that helps asthma sufferers prevent asthma attacks. Advair comes in an easy-to-operate disc-shaped inhaler called the "Diskus." Knowing how (and when) to use your Advair inhaler properly is vital to preventing asthma symptoms.

STEPS FOR USING THE ADVAIR DISKUS:

1. **Expose the mouthpiece.** Hold the Discus horizontal in one hand. With your other hand, put your thumb on the the small curved section. Slide it away from you. The inner part of the Diskus should turn and click into place. The mouthpiece is now exposed. Turn the mouthpiece towards you.

2. **Push the lever to prepare the dose.** Hold the inhaler flat and level with the mouthpiece facing you. Use your finger to slide the lever until you feel it click into place. The dose is now ready.

3. **Breathe out as much as you can.** Ideally, you want to empty your lungs completely.

4. **Inhale.** Bring the Advair inhaler to your mouth. Place your lips on the mouthpiece. Breathe in deeply. Take

your entire breath through your mouth in order to inhale the complete dose. Don't breathe through your nose.

Keep the inhaler flat and level as you breathe. This ensures the medicine is dispensed properly.

5. **Hold it in.** Hold your breath for at least 10 seconds (or as long as you can) after inhaling. The medicine needs a short amount of time to be fully absorbed.

   After 10 seconds (or as long as you're able to hold your breath), breathe out slowly, smoothly and evenly. You can start breathing normally.

6. **Rinse your mouth.** Rinse your mouth out with clean water. Do this each time you take a dose of Advair. Finish by gargling before your spit the water out. Do not swallow the water you use to rinse.

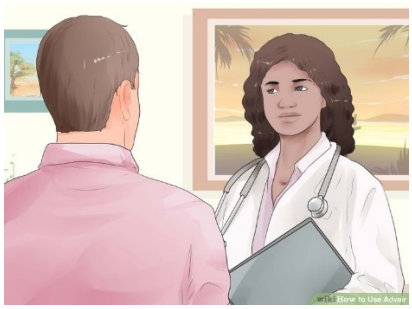
   This is to prevent a fungal infection of the throat called Thrush. Advair can cause an imbalance of the organisms in your mouth which allows this fungus to take hold.

7. **Close and store the inhaler**. Slide the Diskus closed again. The dose dial will automatically move forward one number. Put the inhaler someplace safe and clean for easy access in the future.

   Store Advair in a cool, dry place where it isn't within the reach of children. An Advair inhaler can be used for one month after it is first removed from the foil.

8. **Using Advair Responsibly**

   When in doubt, always follow your health care provider's directions. The specifics for when to take Advair vary from patient to patient. Advair is a prescription drug, so you'll need to meet with a provider before you can use it.



9. **Use Advair as prescribed to prevent attacks**. Advair is typically used once in the morning and once in the evening. Try to take your Advair doses at roughly the same time each day.

10. **Take one dose at a time.** You may not be able to taste or smell the medicine when you inhale it, but it's still there.

    Do not double an Advair dose even if you feel your symptoms worsen. The medicine takes time to work. Your provider will be able to recommend alternative treatments for sudden, severe symptoms

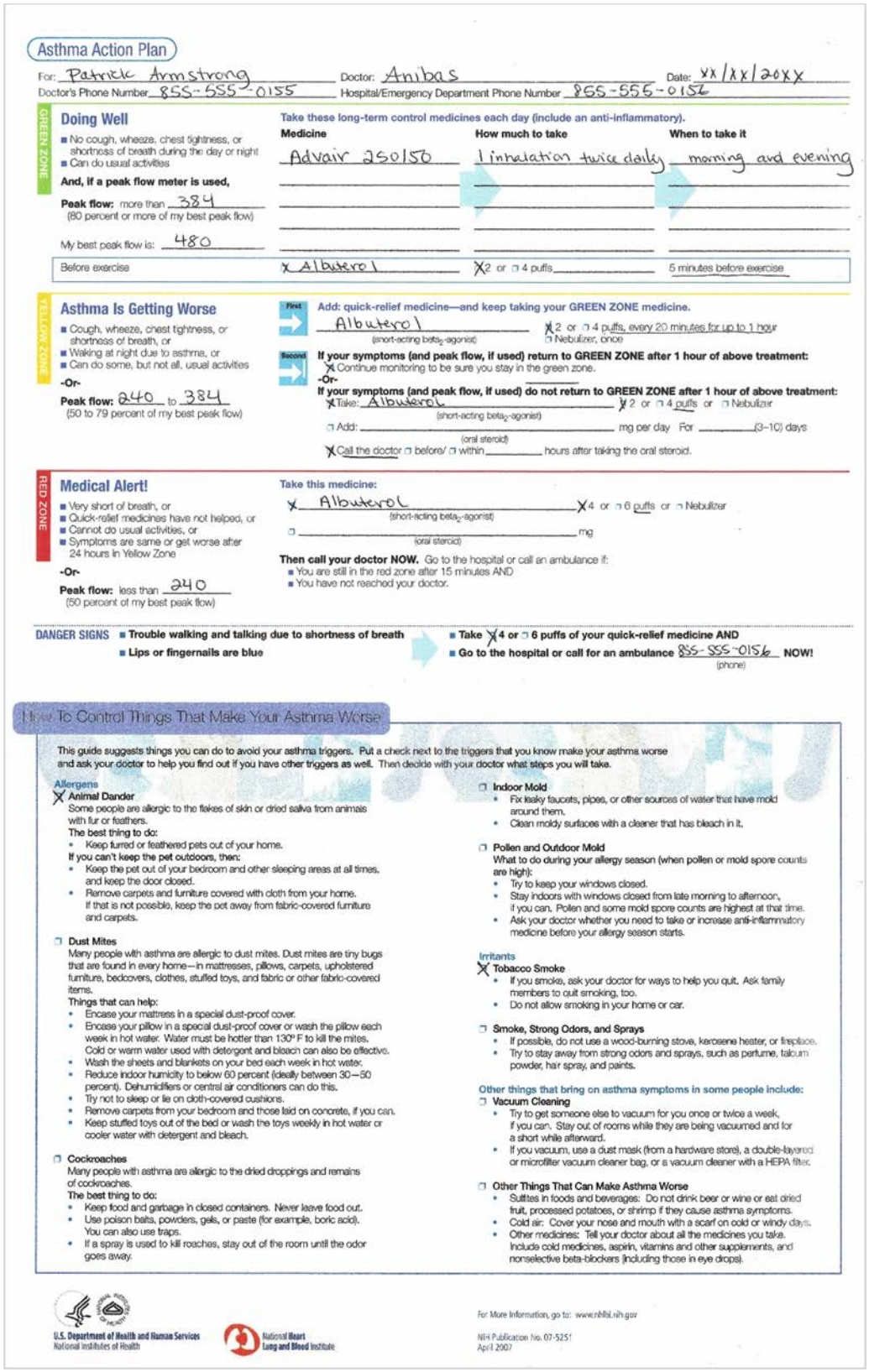
11. **Take the medicine until you are directed to stop**. Just like you shouldn't take the medicine more often than it's prescribed, you also won't want to take it *less* often. If you stop too early, your symptoms can worsen.

12. **Don't use Advair to treat asthma attacks**. The medicine in Advair is not meant to stop sudden, acute asthma attacks.

    Instead, carry a prescribed "rescue inhaler" such as Albuterol for use during an acute attack.

Content adapted from: http://www.wikihow.com/Use-Advair

APPENDIX D: REVISED ASTHMA ACTION PLAN



Asthma Action Plan

For: Patrick Armstrong Doctor: Anibas Date: xx/xx/20xx

Doctor's Phone Number 855-555-0155 Hospital/Emergency Department Phone Number 855-555-0152

GREEN ZONE

Doing Well

- No cough, wheeze, chest tightness, or shortness of breath during the day or night
- Can do usual activities

And, if a peak flow meter is used,

Peak flow: more than 384 (80 percent or more of my best peak flow)

My best peak flow is: 480

Take these long-term control medicines each day (include an anti-inflammatory).

Medicine	How much to take	When to take it
Advair 250/50	1 inhalation twice daily	morning and evening

Before exercise	X Albuterol	X 2 or ☐ 4 puffs	5 minutes before exercise

YELLOW ZONE

Asthma Is Getting Worse

- Cough, wheeze, chest tightness, or shortness of breath, or
- Waking at night due to asthma, or
- Can do some, but not all, usual activities

-Or-

Peak flow: 240 to 384 (50 to 79 percent of my best peak flow)

First — **Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.**

Albuterol (short-acting beta$_2$-agonist) X 2 or ☐ 4 puffs, every 20 minutes for up to 1 hour ☐ Nebulizer, once

Second — **If your symptoms (and peak flow, if used) return to GREEN ZONE after 1 hour of above treatment:**

X Continue monitoring to be sure you stay in the green zone.

-Or-

If your symptoms (and peak flow, if used) do not return to GREEN ZONE after 1 hour of above treatment:

X Take: Albuterol (short-acting beta$_2$-agonist) X 2 or ☐ 4 puffs or ☐ Nebulizer

☐ Add: _____ (oral steroid) mg per day For _____ (3–10) days

X Call the doctor ☐ before/ ☐ within _____ hours after taking the oral steroid.

RED ZONE

Medical Alert!

- Very short of breath, or
- Quick-relief medicines have not helped, or
- Cannot do usual activities, or
- Symptoms are same or get worse after 24 hours in Yellow Zone

-Or-

Peak flow: less than 240 (50 percent of my best peak flow)

Take this medicine:

X Albuterol (short-acting beta$_2$-agonist) X 4 or ☐ 6 puffs or ☐ Nebulizer

☐ _____ (oral steroid) mg

Then call your doctor NOW. Go to the hospital or call an ambulance if:

- You are still in the red zone after 15 minutes AND
- You have not reached your doctor.

DANGER SIGNS

- **Trouble walking and talking due to shortness of breath**
- **Lips or fingernails are blue**

- **Take X 4 or ☐ 6 puffs of your quick-relief medicine AND**
- **Go to the hospital or call for an ambulance** 855-555-0156 (phone) **NOW!**

How To Control Things That Make Your Asthma Worse

This guide suggests things you can do to avoid your asthma triggers. Put a check next to the triggers that you know make your asthma worse and ask your doctor to help you find out if you have other triggers as well. Then decide with your doctor what steps you will take.

Allergens

X **Animal Dander**

Some people are allergic to the flakes of skin or dried saliva from animals with fur or feathers.

The best thing to do:

- Keep furred or feathered pets out of your home.

If you can't keep the pet outdoors, then:

- Keep the pet out of your bedroom and other sleeping areas at all times, and keep the door closed.
- Remove carpets and furniture covered with cloth from your home. If that is not possible, keep the pet away from fabric-covered furniture and carpets.

☐ **Dust Mites**

Many people with asthma are allergic to dust mites. Dust mites are tiny bugs that are found in every home—in mattresses, pillows, carpets, upholstered furniture, bedcovers, clothes, stuffed toys, and fabric or other fabric-covered items.

Things that can help:

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