PEDIATRIC ASTHMA

Estimated Time: 30 minutes • Debriefing Time: 30 minutes

Scan to Begin

Patient Name: Patrick Armstrong

SCENARIO OVERVIEW

Patrick Armstrong is a 16-year-old patient who presents to the clinic experiencing an exacerbation of his asthma. State 1 consists of gathering patient data and reviewing the Asthma Protocol. In state 2, students obtain a peak flow reading to determine the severity of the asthma attack. In state 3, students administer a nebulizer treatment and repeat the peak flow reading. In state 4, students discuss their findings with the provider and receive new orders. Students may use the patient education handouts provided to coach the patient about improved asthma self-management.

LEARNING OBJECTIVES

1. Demonstrate professionalism in a healthcare setting
2. Practice standard precautions
3. Obtain vital signs
4. Obtain patient history
5. Employ elements of therapeutic communication based upon theories of psychology
6. Assist physician with patient care: routine examinations
7. Assist physician with patient care: specialty examinations in pediatrics
8. Perform pulmonary function testing
9. Coach patients related to health maintenance, disease prevention and treatment
10. Apply pharmacological principles to the preparation and administration of non-parenteral medications

CURRICULUM MAPPING

WTCS PROGRAM OUTCOMES

- Provide patient care in accordance with regulations, policies, laws, and patient rights
- Demonstrate professionalism in a healthcare setting
- Demonstrate safety and emergency practices in a healthcare setting

SIMULATION LEARNING ENVIRONMENT & SET-UP

PATIENT PROFILE

Name: Patrick Armstrong

DOB: 11/16/20xx

Age: 16

MR#: 1116

Gender: Male

Height: 177.5 cm (5 ft 11 in)

Weight: 109 kg (240 lbs)

Allergies: NKDA

Admitting Diagnosis: shortness of breath (R06.02)

Medical History: asthma, unspecified (493.90)

Surgical History: none

Code Status: Full code

Ethnicity: African American

Spiritual Practice: unknown

Primary Language spoken: English

EQUIPMENT/SUPPLIES/SETTINGS

Patient

- Street clothes, ball cap, phone, jewelry can be present
- Has his Albuterol inhaler with him

Monitor Settings

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

Supplies

- Equipment to obtain vitals including oxygen saturation
- Peak flow meter
- Nebulizer equipment
- Duoneb medication

QR CODES

REPORT	PATIENT	ASTHMA ACTION PLAN	FACILITATOR
PEAK FLOW A	PEAK FLOW B	PEAK FLOW C	DUONEB

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.
    - For some scenarios, it may be helpful to tell students where the QR code are located. For others, you may want students to "find" the QR codes during their assessments. This is your choice.
    - As the facilitator, you should be aware that throughout the simulation some QR codes are necessary to the programming of the iPad content. 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.
- Discuss the simulation "Learning Objective(s)" (on iPad) as well as any other Prebrief materials
- Get "Report" on iPad
    - Possible Facilitator Questions
        - What are your priorities when you are rooming a pediatric patient experiencing an asthma attack?
        - How should peak flow readings be obtained?
        - What is the proper technique for administering a nebulizer treatment?
- Play the "Patient" video on iPad
    - Possible Facilitator Questions
        - What are your priorities of data collection for Patrick?

- Review initial tabbed content
    - Possible facilitator questions
        - What is the asthma action plan and how is it used to help patients to self-manage their asthma?
        - Review the protocol for referring a patient experiencing an acute asthma attack. Based on the initial video interaction with the patient, where do you anticipate the patient may fall in the mild-moderate-severe categories?

ASTHMA 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

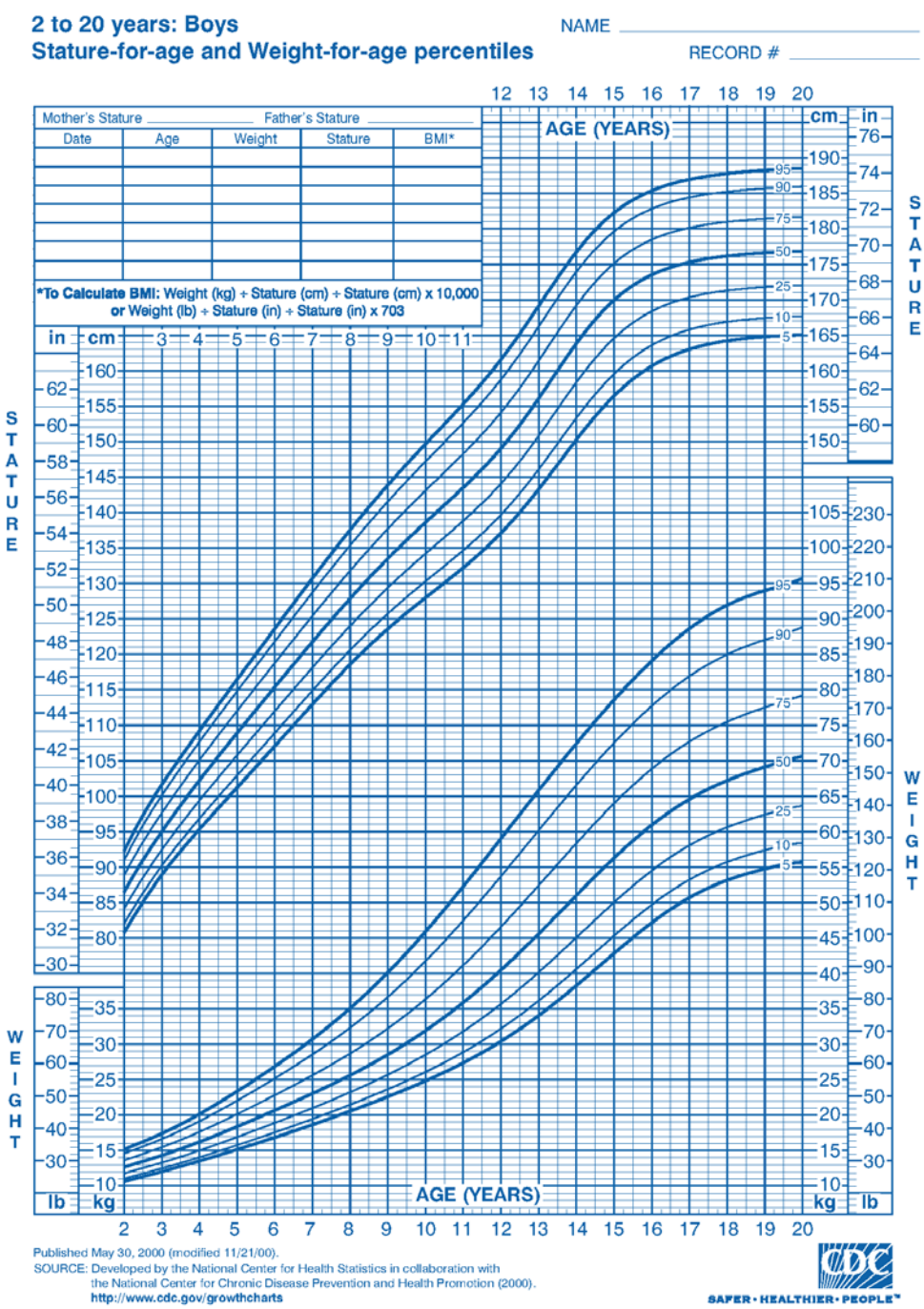
SIGNS/SYMPTOMS	Mild	Moderate	Severe	Respiratory Arrest Imminent
Breathlessness	While walking; can lie down	While at rest; prefers sittig (infant: shorter cry, difficulty feeding)	While at rest; Sits upright (Infant: stops feeding)	
Talks in...	Sentences	Phrases	Words	None
Alertness	May be agitated	Usually 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)

VITALS

- The iPad shows the “enterable” vitals screen.
- Checked against following values: HR 94, RR 30, BP 108/64, Temp 36.8, O2 sat 95% on RA, Pain 0/10

GROWTH CHART



PROBLEM LIST

Patient Name	DOB	MR#
Patrick A. Armstrong	*11/16/20XX*	*1116*
Allergies	**Height (cm)**	**Admission Weight (kg)**
NKDA	*177.5*	*109*

Problem List

Currently Known Medical Problem(s)
1. Asthma

CURRENT MEDICATION LIST

Patient Name	DOB	MR#
Patrick A. Armstrong	*11/16/20XX*	*1116*
Allergies	**Height (cm)**	**Admission Weight (kg)**
NKDA	*177.5*	*109*

Current Medication List

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

ASTHMA ACTION PLAN

See Appendix A

PATIENT EDUCATION

See Appendix B for Patient Education handouts

EMERGENCY CONTACT INFORMATION

Patient Name	DOB	MR#
Patrick A. Armstrong	*11/16/20XX*	*1116*

Allergies	Height (cm)	Admission Weight (kg)
NKDA	*177.5*	*109*

Emergency Contact Information

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

LEVEL 1

When the Level 1 tab is tapped, 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

MEASURE AND RECORD PATIENT INFORMATION

- Patient Overview
    - Patient is experiencing an acute asthma attack. He is in the "yellow zone" after being exposed to a cat today and is feeling very short of breath.
- Expected Student Behaviors
    - Introduce themselves to the patient
    - Verify patient identity with name and date of birth
    - Communicate therapeutically regarding patient concerns
    - Modify communication to the developmental level of a teenager
    - Immediately obtain vital signs to establish status
    - Obtain a brief patient history
    - Determine patient's current respiratory status by referring to asthma protocol
    - Review Asthma Action Plan
- Technician Prompts
    - Patient is very short of breath and slightly anxious. He is distracted by the messages coming in on his phone. He continues to text and view texts while the student is attempting to gather data (until the student asks him to put his phone away).
    - Initial patient responses can include:
        - (optional) His phone continues to "bing" with texts while student is trying to talk to him.
        - "I have asthma... but it usually goes away... when I use my Albuterol."
        - "I was... at a friend's house... He has a cat... I'm really allergic... to cats."
        - "I've already used... my inhaler... 4 or 5 times today."

- "I called... my dad... he said to... call the doctor... that's why... I'm here."
- "Why is it... not getting better... with my inhaler?"
- If students ask the following questions, provide these responses:
- If students ask the following questions, provide these responses:
    - Do you feel short of breath today?
        - Answer: "A little."
    - 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."
    - 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."

- Possible Facilitator Questions
    - How will you modify your approach to the developmental level of a teenager?
    - Using the vital signs you obtained and the protocol, what is Patrick's current asthma status in terms of mild, moderate, or severe?
    - Do you need to immediately notify the provider or can you proceed with your data gathering?
- 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.”

LEVEL 1/2

- When the Level 1 tab is tapped, the iPad reads, “The iPad is at Level 1.”
- After the student(s) scans **QR Code: Facilitator**, the Level 1 tab will automatically change to a Level 2 tab (students are not prompted about this).
- When the Level 2 tab is tapped, the iPad reads, “The iPad is at Level 2.”

STATE 2

OBTAIN PEAK FLOW READINGS

- Patient Overview
    - Students quickly instruct the patient on how to perform a Peak Flow reading. If students give correct instructions, the facilitator will instruct the student to scan **QR Code: Peak Flow C**. This is a video of the patient performing the procedure but is feeling so short of breath it is difficult for him to do it properly. If students give poor instructions, the facilitator will instruct the student to scan **QR Code: Peak Flow B**. This is a video is of the patient performing the procedure incorrectly.
    - After scanning and watching any of the aforementioned videos, students will need to decide (without prompting) if the patient did the procedure correctly or if they need to reinstruct the patient and have the patient repeat the procedure. This is repeated until students decide the procedure was correct and moves on. The **QR code Facilitator** must be scanned to move to state 3.
- Expected Student Behaviors
    - Accurately but rapidly 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.)
    - Evaluate if the patient uses the peak flow meter accurately
    - Obtain three readings and use the best one (Facilitator will provide the following numbers to the student: 240 lpm)
    - Determine if patient is in the green, yellow, or red zones by referring to the Asthma Action Plan
    - Document peak flow reading accurately
- Technician Prompts
    - Overview: Patient is still short of breath. He does not know how to use the peak flow meter correctly. He is irritated that he has to do this when he can't breathe very well.
    - Initial patient responses can include:
        - "I don't know... how to use... this thing."
        - "Why do I... have to do this?"

        - "I can't hardly... breathe... How can I... blow out?!"
    - Students will be scanning QR codes to view videos of the patient actually using a Peak Flow meter. Provide the following peak flow results when the student asks: 250, 230, 240

- Possible Facilitator Questions
    - What is the proper procedure using a peak flow meter? (Refer students to handout under Patient Education tab if needed.)
    - How will you evaluate if the patient performed the procedure accurately?
    - How is the peak flow reading used in conjunction with the Asthma Action Plan?
    - Does Patrick fall in the green, yellow, or red zone right now?
    - 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.
    - The iPad will read, "You have been approved to proceed."

LEVEL 2/3

- When the Level 2 tab is tapped, the iPad reads, "The iPad is at Level 2."
- After the student(s) scans **QR Code: Facilitator**, the Level 2 tab will automatically change to a Level 3 tab (students are not prompted about this).
- When the Level 3 tab is tapped, the iPad reads, "The iPad is at Level 3."

STATE 3

ADMINISTER NEBULIZER

- Overview
    - Students administer a nebulizer and recheck the peak flow. They communicate their findings to the provider.
- Expected Student Behaviors
    - Students should explain the nebulizer procedure accurately to the patient.
    - Students should administer the nebulizer using proper technique.
    - Peak flow readings should be obtained after the nebulizer is completed. Students should scan **QR code: Peak Flow A** which shows correct technique as well as less shortness of breath. Readings are improved at 350 lpm.
    - Students should report their findings to the provider accurately and using proper medical terminology.
- Technician Prompts
    - Overview: The patient has never used a nebulizer before. Students should explain how to breathe through the mouthpiece properly
    - Initial patient responses can include:
        - "What is this?"
        - "I'm not sure... how to do this?"
        - "How long... do I have to... do this?"
        - "How will this... help me breathe?"
    - If students give correct instructions, provide positive reinforcement like:
        - "That makes sense."
        - "I feel a little better." (After a few minutes on the nebulizer.)
    - After the nebulizer is administered and students attempt to obtain a peak flow reading:
        - "Why do I have to do this again?" (less short of breath)

        - Provide the following readings to the student when they ask: 360, 340, 350
    - When students report their findings to the "provider", be sure they include the following data. If not, ask for the data:
        - Vital signs
        - Peak flow reading before nebulizer
        - Patient's "personal best" on Asthma Action Plan and "zone" before nebulizer
        - Administration of nebulizer
        - Peak flow reading after nebulizer administration
- Possible Facilitator Questions
    - What is the mechanism of action for a DuoNeb nebulizer?
    - How is a DuoNeb different from an Albuterol 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, "New orders received. Perform patient education."

LEVEL 3/4

- When the Level 3 tab is tapped, the iPad reads, "The iPad is at Level 3."
- After the student(s) scans **QR Code: Facilitator**, the Level 3 tab will automatically change to a Level 4 tab (students are not prompted about this).
- When the Level 4 tab is tapped, the iPad reads, "The iPad is at Level 4."

STATE 4

NEW ORDERS RECEIVED AND PATIENT EDUCATION COMPLETED

- Overview
    - New orders are received from the provider for Advair and a new Action Plan is initiated. Students should perform patient coaching using the Asthma Action Plan and the Patient Education handouts provided.
- Expected Student Behaviors
    - Accurately provide medication information about Advair
    - Accurately provide patient coaching about how to use the new Asthma Action Plan
    - Accurately provide patient coaching about self-managing asthma at home
- 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?"
        - "Why do I have to use Advair every day?"
        - "So, which one do I use if I'm having an asthma attack like today?"
- Possible Facilitator Questions
    - What is the mechanism of action for Advair?
    - How 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

Patient Name	DOB	MR#
Patrick A. Armstrong	*11/16/20XX*	*1116*
Allergies	**Height (cm)**	**Admission Weight (kg)**
NKDA	*177.5*	*109*

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
Duoneb	Administered in office today

ASTHMA ACTION PLAN

See Appendix C for a printable version of the new Asthma Action Plan handout

PATIENT EDUCATION

Additional Patient Education handout on Advair appears. See Appendix B for printable versions of all patient handouts.

DEBRIEF

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 objectives: Demonstrate professionalism in a healthcare setting
    a. How did you professionally manage the patient visit when he continued to use his cell phone?
3. Review understanding of learning objectives: Practice standard precautions
    a. Describe the standard precautions you used while caring for Patrick.
4. Review understanding of learning objectives: Obtain vital signs
    a. Review the vital signs you obtained for Patrick. Are these within normal limits for a 16-year-old male?
5. Review understanding of learning objectives: Obtain patient history
    a. What kind of health history questions are important to review with a patient with asthma?
6. Review understanding of learning objectives: Employ elements of therapeutic communication based upon theories of psychology
    a. Did Patrick exhibit any “cues” that indicated you should utilize some therapeutic communication?
    b. How did you respond to his concerns? Was it effective?
    c. If you could “do over” while communicating with Patrick, is there anything you would do differently?
7. Review understanding of learning objectives: Assist physician with patient care: routine examinations, and assist physician with patient care: specialty examinations in pediatrics
    a. When assisting with patient care of a pediatric patients with asthma, what data should be collected?
8. Review understanding of learning objectives: Coach patients regarding: health maintenance, disease prevention and treatment

   a. Describe the handouts that you reviewed with a patient with asthma. What are some important topics to emphasize for self-management of this condition?

9. Review understanding of learning objectives: Perform pulmonary function testing

   a. Review the steps for obtaining an accurate peak flow reading.

   b. How are the peak flow readings used in the Asthma Action Plan?

10. Review understanding of learning objectives: Apply pharmacological principles to the preparation and administration of non-parenteral medications

   a. Compare Albuterol inhalers and Duoneb nebulizers. How do each help a patient with asthma?

   b. Which medication is a "quick relief" medication that should be used during an asthma attack?

   c. Which medication is a "long-term control medication?" Will it help during an acute asthma attack?

   d. What are important teaching points for patients when using these medications at home?

11. Summarize/Take Away Points:

   a. "In this scenario you assisted in caring for a pediatric patient experiencing an asthma attack. 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.

SURVEY

Print this page and provide to students.

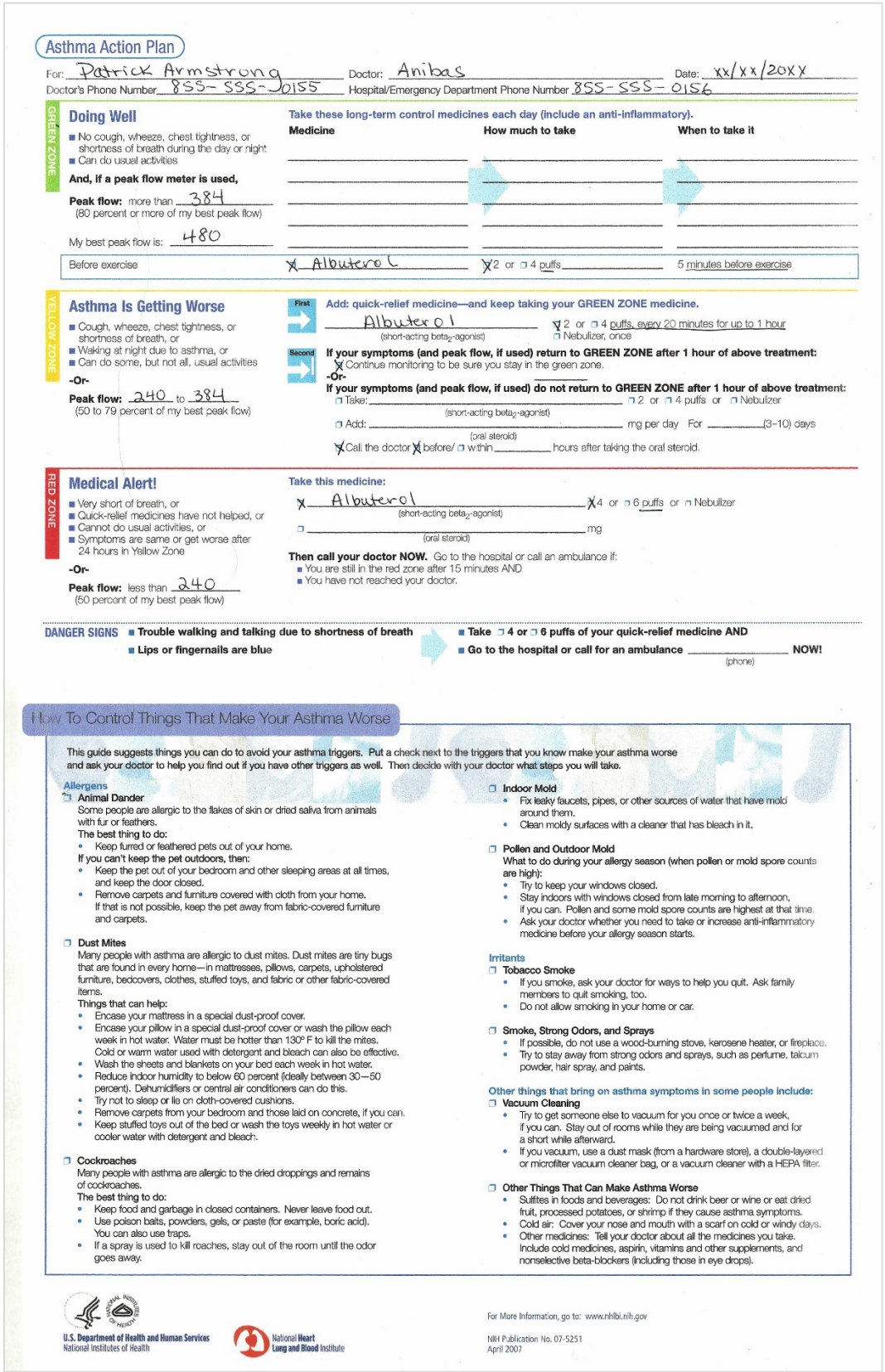
Students, please complete a brief (2-3 minute) survey regarding your experience with this ARISE simulation. There are two options:

1. Use QR code: Survey
    a. Note: You will need to download a QR code reader/scanner onto your own device (smartphone or tablet). There are multiple free scanner apps available for both Android and Apple devices from the app store.
    b. This QR code will not work in the ARIS app.

SURVEY

2. Copy and paste the following survey link into your browser:
    a. https://ircvtc.co1.qualtrics.com/SE/?SID=SV_6Mwfv98ShBfRnBX

APPENDIX A: 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

NIH Publication No. 07-5251
April 2007

APPENDIX B: PATIENT EDUCATION HANDOUTS

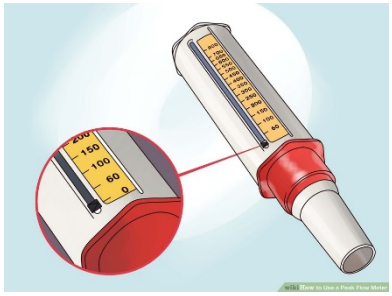
PEAK FLOW RATE

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.

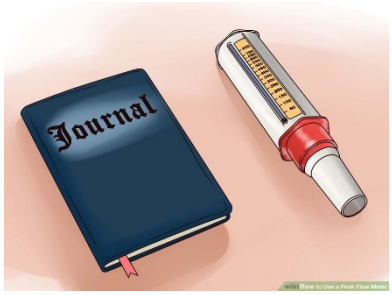
6. Breathe out as hard as you can through your mouth. Plug your nose if you have to.

7. Observe and record the reading.

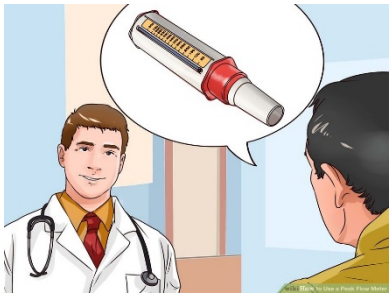
8. Repeat the process at least 2 more times and record the highest reading.

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

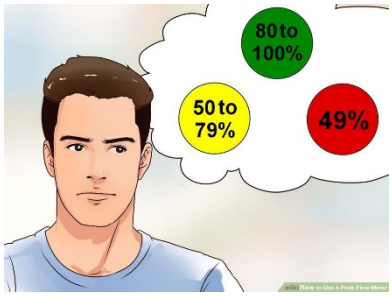
10. Keep a daily journal of your peak flow rates as well as any other asthma-like symptoms you experience (such as coughing or wheezing).



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.

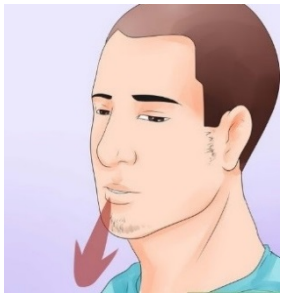
IMPORTANT: After you prime the MDI, you need to repeat Step 2 – Shake the MDI.

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**

APPENDIX C: NEW 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:

- 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

X 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

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