Health Literacy
Asthma Action Plans
Asthma Case Studies

Webinar for
Michigan Center for Clinical Systems Improvement (Mi-CCSI)

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Overview

- Key Educational Messages
  - Health Literacy
- Asthma Action Plans
- Case Studies

Patient Education

The goal of all patient education is to help patients take the actions needed to control their asthma.

Key Educational Messages

Teach and reinforce at every opportunity these messages:

- Basic facts about asthma
  - Differences between the airways of those with and without asthma
  - Role of inflammation
  - What happens to the airways during an asthma attack

Key Educational Messages

- Role of Medications
  - Long-term control
    - Prevent symptoms, often by reducing inflammation
    - Must be taken daily
    - Do not expect them to provide quick relief
  - Quick-relief
    - SABAs relax airway muscles to provide quick relief
    - Do not expect them to provide long-term control
    - Using SABAs $\geq$ 2 times/week indicates the need for starting or increasing long-term control

Key Educational Messages

- Patient Skills
  - Taking medications correctly
    - Inhaler technique and use of devices
  - Identifying and avoiding environmental exposures
    - Allergens
    - Irritants – including smoke
  - Self-monitoring
    - Assess level of control
    - Monitor symptoms ±PEF
    - Recognizes early s/s of worsening asthma

Key Educational Messages

Patient Skills (cont.)

– Using a written asthma action plan to know when and how to:
  - Take daily actions to control asthma
  - Adjust medications in response to worsening asthma
– Seeking medical care as appropriate

Simple Education??

- Basic facts about asthma
  - 3 items
- Role of medications
  - 2 items
  - Each with 3 sub-items
- Patient skills
  - 5 items
    - 8 sub-items with several sub-items

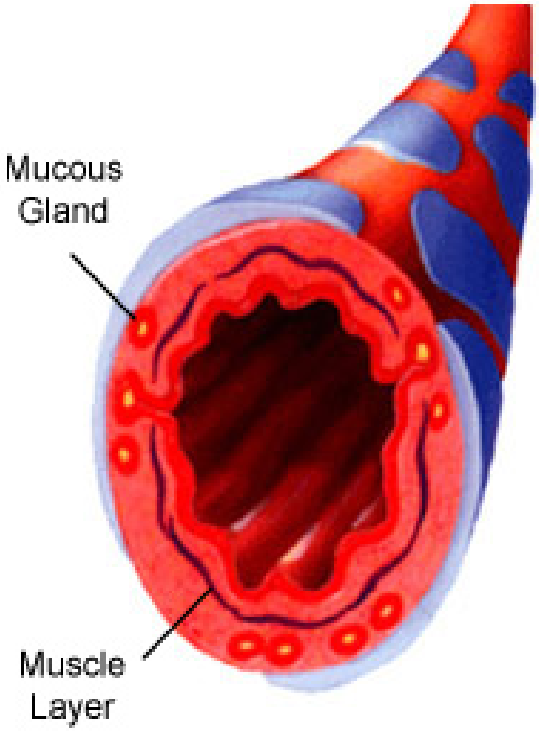
= 22 items!

How to approach education when there are many Items?

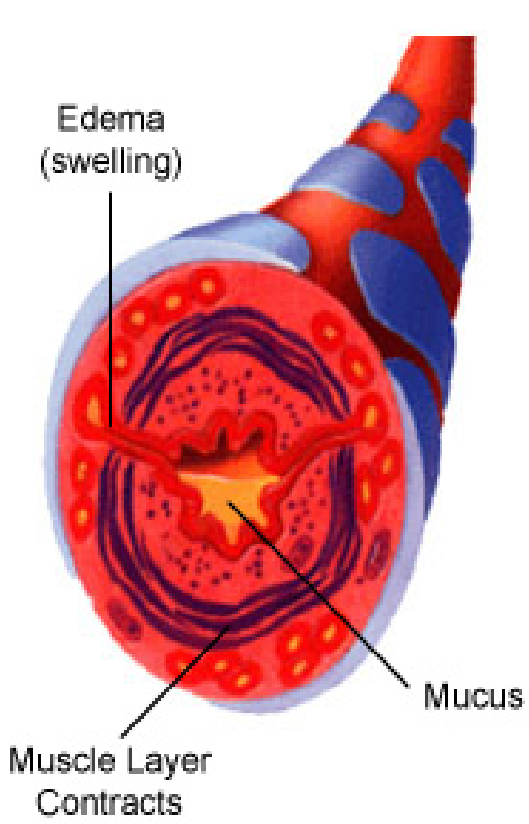
- "Chunking"
  - Basic facts about asthma
    - Differences between the airways of those with and without asthma
    - Role of inflammation
    - What happens to the airways during an asthma attack
  - Build on life experiences
  - Use problem-based learning
  - Focus on "need to know"
  - Deliver important messages up front and repeat at the end of the visit/call

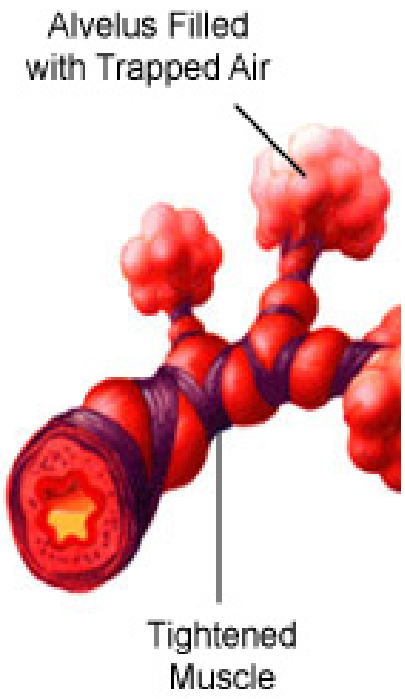
How to approach education when concepts are complex?

- Orient to discernable human anatomy
- Use analogies
  - Titanic
  - Burn on skin
  - Airbag/seatbelt
- Relate to other life experiences
  - Diabetes, hypertension are “silent” but damage is occurring

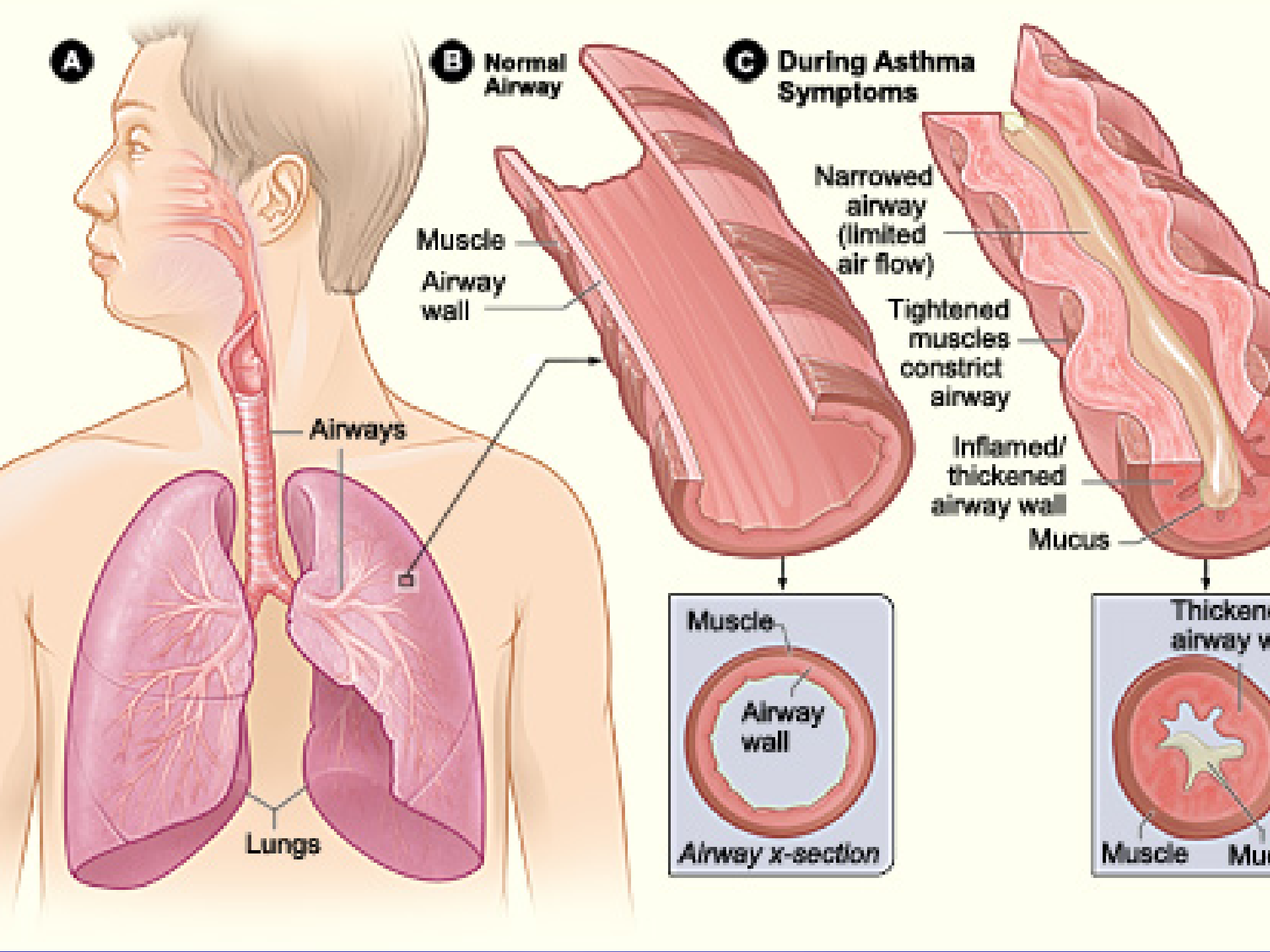


Normal Airway

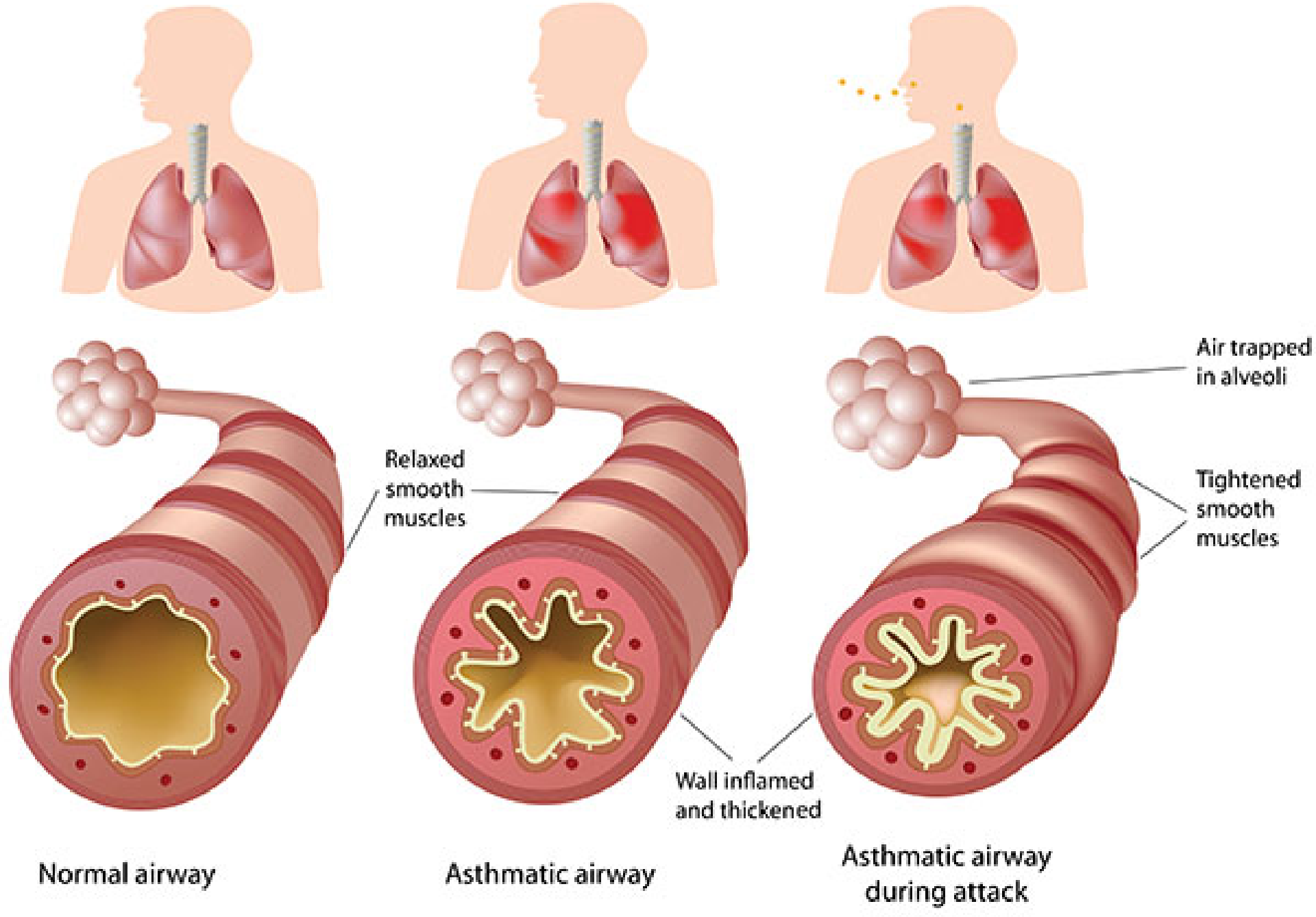




Inflamed Asthmatic Airways


A
Airways
Lungs
B Normal Airway
Muscle
Airway wall
Muscle
Airway wall
Airway x-section
C During Asthma Symptoms
Narrowed airway (limited air flow)
Tightened muscles constrict airway
Inflamed/ thickened airway wall
Mucus
Muscle

Asthma and Your Airways



What is Health Literacy?

- The ability to read, understand, and effectively use basic medical instructions and information. Low health literacy can affect anyone of any age, ethnicity, background or education level.
- People with low health literacy:
  - Often less likely to comply with prescribed treatment and self-care regimens
  - Fail to seek preventive care and are at higher (more than double) risk for hospitalization

Why is Health Literacy Important?

- You may not know which patients have low health literacy because:
  - They are often embarrassed or ashamed to admit they have difficulty understanding health information and instructions.
  - They are using well-practiced coping mechanisms that effectively mask their problem.
- The average American reads at the 8th-9th grade level; however, health information is usually written at a higher reading level.

Why Is Health Literacy Important?

Health literacy is important because it affects people's ability to:

- Navigate the healthcare system, including locating providers and services and filling out forms
- Share personal and health information with providers
- Engage in self-care and chronic disease management
- Adopt health-promoting behaviors, such as exercising and eating a healthy diet, taking daily medications
- Act on health-related news and announcements

These intermediate outcomes impact:

- Health outcomes
- Healthcare costs
- Quality of care

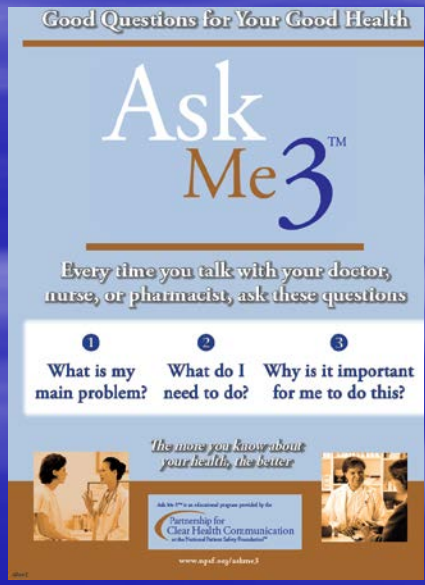
Health Literacy and Health Outcomes

- Persons with limited health literacy skills have:
  - Higher utilization of treatment services
    - Hospitalization
    - Emergency services
  - Lower utilization of preventive services
- Higher utilization of treatment services results in higher healthcare costs.

Health Literacy: What Can We Do? Ask Me 3

- **Ask Me 3** promotes three simple but essential questions that patients should ask their providers in every health care interaction. Providers should always encourage their patients to understand the answers to:

1. What is my main problem?
2. What do I need to do?
3. Why is it important for me to do this?



http://www.npsf.org/for-healthcare-professionals/programs/ask-me-3/

Health Literacy: What Can We Do?
Teach Back Method

Explain

Assess

Clarify

Understanding

‘Teach Back’ For Patients with Diabetes

Audio taped visits – 74 patients, 38 physicians

- Patients recalled < 50% of new concepts
- Physicians assess recall 13% of time
- When physicians used “teach back,” the patient was 9x more likely to have HbA1c levels below the mean
- Visits that assessed recall were not any longer than visits that did not assess recall

Schillinger, D. Arch Int Med., 2003

Begin with a Small Test of Change

- Use Teach Back with your last patient of the day
- See if it disrupts your usual routine
- Record the number of times you identified misunderstandings
- Expand to 2 patients per day
- Begin to share with your colleagues

ASTHMA ACTION PLANS

NHLBI Asthma Guidelines (2007)

- The Expert Panel recommends that clinicians provide to all patients who have asthma a written asthma action plan that includes instructions for
  (1) daily management and
  (2) recognizing and handling worsening asthma, including adjustment of dose of medications.

NHLBI Asthma Guidelines (2007)

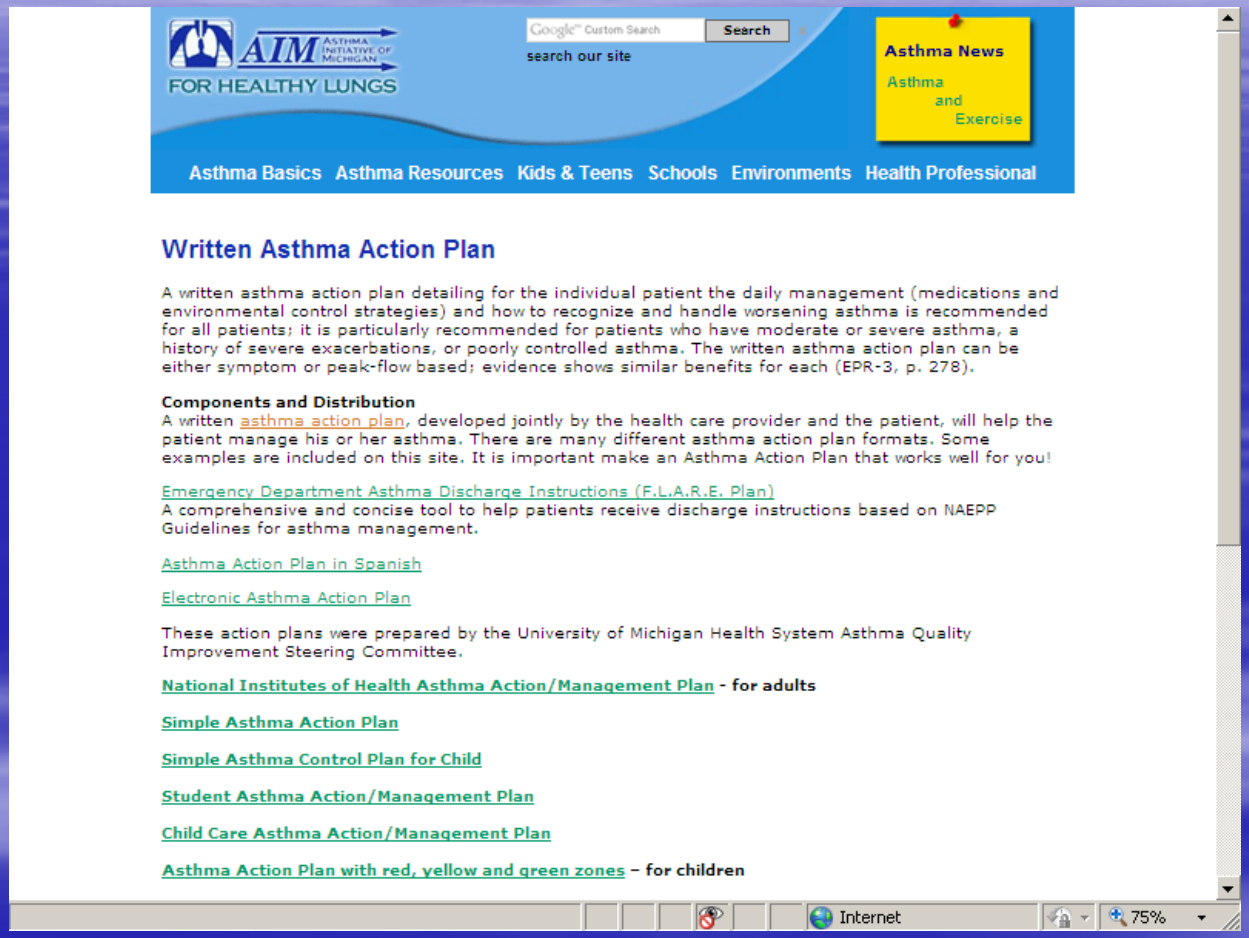
- Written action plans are particularly recommended for patients who have
  - moderate or severe persistent asthma,
  - a history of severe exacerbations, or
  - poorly controlled asthma.

NHLBI Asthma Guidelines (2007)

- Written asthma action plans may be based on PEF measurements or symptoms or both, depending on the preference of the patient and clinician.
- A peak-flow-based plan may be particularly useful for patients who have difficulty perceiving signs of worsening asthma.

Asthma Action Plans

- **Green Zone**
- **Yellow Zone**
- **Red Zone**



Visit www.GetAsthmaHelp.org
for examples of Asthma Action Plans

Asthma Action Plan

Name	Date
Doctor	Medical Record #
Doctor's Office Phone #: Day	Night/Weekend
Emergency Contact	
Doctor's Signature	

The Colors of a traffic light will help you use your asthma medicines.

Green means **Go Zone!**
Use preventive medicine.

Yellow Means **Caution Zone!**
Add quick-relief medicine.

Red means **Danger Zone!**
Get help from a doctor.

Personal Best Peak Flow _____

GO

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

Peak flow from _____ to _____

CAUTION

You have *any* of these:
- First signs of a cold
- Exposure to known trigger
- Cough
- Mild wheeze
- Tight chest
- Coughing at night

Peak flow from _____ to _____

DANGER

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

Peak flow reading below _____

Use these daily preventive anti-inflammatory medicines:

MEDICINE	HOW MUCH	HOW OFTEN/WHEN
For asthma with exercise, take:		

Continue with green zone medicine and add:

MEDICINE	HOW MUCH	HOW OFTEN/WHEN

CALL YOUR PRIMARY CARE PROVIDER.

Take these medicines and call your doctor now.

MEDICINE	HOW MUCH	HOW OFTEN/WHEN

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. DO NOT WAIT.

Make an appointment with your primary care provider within two days of an ER visit or hospitalization.

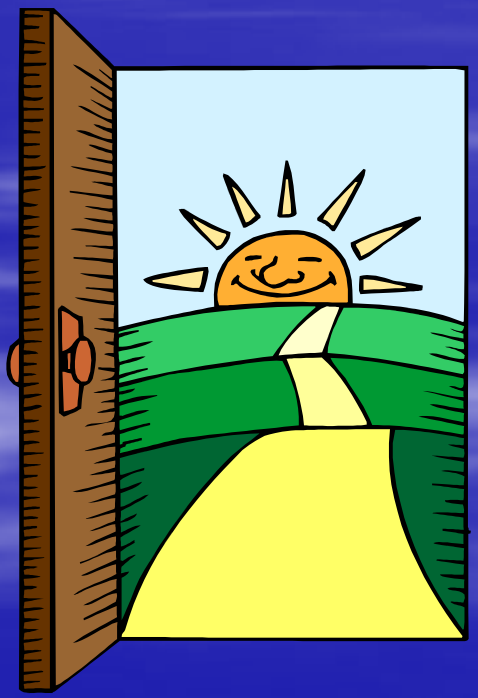
State of New York, George E. Pataki, Governor
Department of Health, Antonia C. Novello, M.D., M.P.H., Dr.P.H., Commissioner

Asthma Action Plans

- **Green Zone**
- Yellow Zone
- Red Zone

Asthma is Controlled
Green Zone – Go!

- Patient feels good
- No asthma symptoms or early warning signs
- Asthma under control
- Asthma treatment is working



Green Zone

- List expectations for Well Controlled Asthma
- Can list Peak Flow Meter Range (above 80%)
- List Controller Medication
- List Potential Triggers

“Rules of 2”

- Daytime symptoms > twice a week
- Night-time symptoms > twice a month
- Refill short-acting beta-agonist (SABA) inhaler > twice a year

“Rules of 2” - Expanded

- One or two bad days
- Daytime symptoms > twice a week
- Short-acting bronchodilator > twice a week
- Night-time symptoms > twice a month
- Need two or more SABA canisters in 1 year
- Need oral steroids two or more times in 1 year

ASTHMA ACTION PLAN

Name: _____ **DOB:** _____ **Date:** _____

Be aware of common triggers: ❑ catching a cold (viral infection); ❑ cigarette smoke; ❑ strong odors, fumes or sprays; ❑ exercise ❑ weather changes; ❑ allergens, like dust mites, cockroaches, mice, cats, dogs, mold, pollens

GREEN ZONE (Doing Well)

- **STEP 1.** Monitor to see if your asthma is **Well Controlled**

⇒ Daytime symptoms	Less than or 2 times per week
⇒ Night-time symptoms	Less than or 2 times per month
⇒ Quick relief inhaler use	Less than or 2 times per week
⇒ Oral steroid use	Less than 2 times in 12 months
⇒ Peak flow meter	_____ more than 80% normal

- **STEP 2.** Use your controller medication every day

_____

_____

_____

_____

_____

_____

YELLOW ZONE (Think in 2's)

- **STEP 1.** Monitor to see if your asthma is **Not Well Controlled**

⇒ Daytime symptoms	**More than 2 times per week**
⇒ Night-time symptoms	**More than 2 times per month**
⇒ Quick relief inhaler use	**More than 2 times per week**
⇒ Catch a cold	**Within 1 - 2 days of viral infection**
⇒ Peak flow meter	_____ **only 50 - 80% normal**

Symptoms can include:
- shortness of breath
- chest tightness
- wheezing
- cough

****** **If not controlled, make medication changes** ******
Go to Step 2

- **STEP 2.** Use quick relief medication for fast improvement:

_____

⇒ usual doses: 2 puffs or one neb every 4 hours as needed
⇒ higher does: can use 2 - 4 - 6 puffs OR one neb every 20 minutes up to 3 times (up to 1 hour) then try to extend to every 4 hours

If using higher doses and no better, then seek help — contact doctor, or go to the emergency room, or call 911!

- **STEP 3.** Even if better - change controller med:

_____

_____

_____

_____

- **STEP 4.** If no improvement in 1 - 2 days:
Consider adding oral steroid … OR … **Call Office**

⇒ Prednisone (_____mg tablet) - *take with food*
⇒ _____tablets = _____ mg once a day for _____ days

RED ZONE (Danger Signs)

- **STEP 1.** Monitor for severe symptoms
  - ⇒ Cannot walk or talk or do activities due to breathing
  - ⇒ Cannot sleep due to breathing
  - ⇒ Lips or fingernails are blue
  - ⇒ Peak flow meter _____ less than 50% normal

- **STEP 2.** Use quick relief medication for fast improvement:

_____

Can use 2 - 4 - 6 - 8 puffs or one neb every 20 minutes up to 3 times.

- **STEP 3.** Add oral steroid - Prednisone (_____mg tablet)
_____ tablets = _____ mg once
- **STEP 4.** **Contact doctor, or go to the emergency room, or call 911!**

Template by
Asthma Network of West Michigan

_____ Practitioner Name (please print)

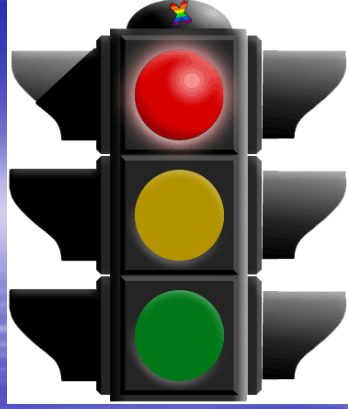
_____ Phone Number

_____ Signature

Asthma Action Plans

- Green Zone
- Yellow Zone
- **Red Zone**

Emergency
Red Zone – Stop!



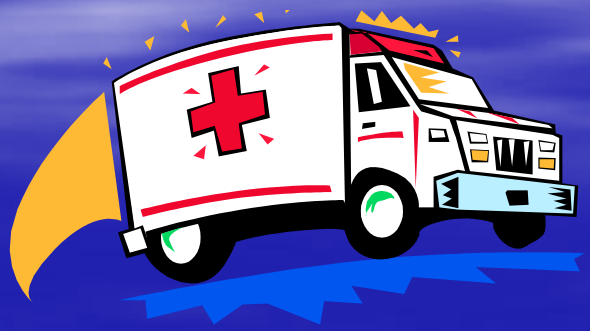
Patient <u>feels awful</u>

- Very short of breath
- Breathing is hard or fast
- Can't stop coughing
- Rescue medicines are not helping
- Sucking in of skin above breastbone or in between ribs
- Can't speak a full sentence

<u>This is a medical emergency!!</u>

What to do?

- Add or increase quick-relief medicines
- Get help immediately
- Call 911



Red Zone

- List Severe Signs and Symptoms
- List Peak Flow Meter drop of 50% or more
- Use Quick Relief Medication
- Consider Oral Steroid
- List emergency contacts (doctor or ER or 911)

Short-Acting Beta-Agonist

- Dosages for asthma exacerbations (MDI):
  - Usual dose is 2 puffs every 4 hours as needed
  - Child 2-4 puffs every 20 minutes for 3 doses, then every 1-4 hours as needed
  - Adult 2-4 puffs (can use up to 8 puffs) every 20 minutes for 3 doses, then every 1-4 hours as needed

Oral Corticosteroid

Prednisone

- Child range: 1-2 mg/kg/day for 3 to 10 days
  common: 1 mg/kg a day for 5-10 days
- Adult range: 40-80 mg/day for 5 to 10 days
  common: 40 mg a day for 5-10 days

Asthma Action Plans

But . . .

- Would like to avoid ER
- Would like to avoid oral steroids

Asthma Action Plans

- Green Zone
- **Yellow Zone**
- Red Zone

Asthma is Not Controlled
Yellow Zone – Caution!

Patient does not feel good

- First sign of cold
- Cough is just starting
- Chest tightness/pain
- Itchy nose/nose rubbing
- Itchy chin
- Scratchy throat
- Throat clearing
- Add or increase asthma medication according to asthma action plan

Yellow Zone

- Recognize Early Warning Signs (Step 1)
- Use Quick Relief Medication (Step 2)
- Escalate Controller Medication (Step 3)
- Add Oral Steroid if necessary (Step 4)

Recognize Early Warning Signs

- *Gradual* Worsening
  - exceeding the Rules of 2
- *Acute* Worsening
  - within 1 to 2 days if severe
  - first sign of viral infection
- Peak Flow Meter Readings drop 20%

Asthma Action Plans

- Assess/recognize early warning signs (Step 1)
- Quick Relief Medication (Step 2)
  - usually 2 puffs every 4 hours as needed
  - can use 2 to 4 puffs (up to 8 puffs)
  - can be every 20 minutes up to 1 hour (3 doses max.)
  - try to space to every 1 to 4 hours thereafter
    - If needing SABA more frequently than every 4 hours, danger sign – need to seek care
    - In mild-to-moderate exacerbations, inhaler/spacer is as effective as nebulized therapy with appropriate administration technique and coaching by trained personnel.

Asthma Action Plans

- Controller Medication (Step 3)
- If not already on an inhaled steroid . . .
- Add inhaled steroid (medium to high dose) for 5-10 days

Asthma Action Plans

- Controller Medication (Step 3)
- If already on inhaled steroid . . .
- Can increase inhaled steroid
  - double dose?
  - triple dose?
  - quadruple dose?

Asthma Action Plans - Review

- Doubling dose of inhaled steroid
  - typical clinical strategy
  - studies do not show this improves outcomes
  - are study designs flawed? Intervene too late?

- Quadrupling dose of inhaled steroid
  - studies indicate this can be effective
  - but should intervene early

Asthma Action Plans

- At least triple ICS dose
- Consider quadrupling dose of inhaled steroid
- Notes one study quintupled dose of ICS
- Increasing ICS and adding oral steroid is best

Yellow Zone: A Practice Parameter

From the AAAAI: **Management of acute loss of asthma control in the yellow zone: a practice parameter** (Dinakar et al, Ann Allergy Asthma Immunol, 2014)

1) Provide patients with AAP including instructions for recognition of loss of control
2) Activate the yellow zone plan with acute loss of asthma control
3) Activate the yellow zone plan at the onset of a URI
4) Escalate asthma therapy in the yellow zone

Yellow Zone: A Practice Parameter
(continued)

5) For quick-relief asthma therapy – 2-4 puffs every 4-6 hours (if exceeding 12 puffs/day, contact provider)
6) For patients being treated with daily ICS, consider increasing their dose by 4-fold
7) For children <6 years with risk factors for asthma, consider high dose ICS or oral montelukast at early signs of wheezing illness
8) For patients with mild-moderate asthma, consider recommending symptom-driven use of ICS with SABA for control of yellow zone symptoms

Asthma Action Plans - Review

- Assess/recognize early warning signs (Step 1)
- Quick reliever PRN (Step 2) – can use escalated doses
- Inhaled steroid dose (Step 3):

  Double / Triple / Quadruple / Quintuple
- Can proceed to oral steroids (Step 4) if not improving

Isn’t that a lot of inhaled steroid?

Steroid Dose Comparison

- Inhaled Steroid vs. Systemic Steroid (oral or IV)
- micrograms vs. milligrams
- 1000 micrograms = 1 milligram
- A usual prednisone “burst” is 40mg a day for 5 days for a total of 200mg or 200,000mcg. By way of comparison, each dose of Advair 100/50 contains 100mcg of fluticasone, the steroid. If you took Advair 100/50 twice a day (200 mcg), the usual dose, it would take you 1000 days (2.7 years) of regular use to equal the amount of steroids in one burst of prednisone on a mcg-per-mcg basis.

ASTHMA ACTION PLAN EXAMPLES

ASTHMA ACTION PLAN

Name: _____ **DOB:** _____ **Date:** _____

Be aware of common triggers: ❑ catching a cold (viral infection); ❑ cigarette smoke; ❑ strong odors, fumes or sprays; ❑ exercise
❑ weather changes; ❑ allergens, like dust mites, cockroaches, mice, cats, dogs, mold, pollens

GREEN ZONE (Doing Well)

- **STEP 1.** Monitor to see if your asthma is **Well Controlled**

⇒ Daytime symptoms	Less than or 2 times per week
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⇒ Quick relief inhaler use	Less than or 2 times per week
⇒ Oral steroid use	Less than 2 times in 12 months
⇒ Peak flow meter	_____ more than 80% normal

- **STEP 2.** Use your controller medication every day

_____
_____
_____
_____
_____
_____

YELLOW ZONE (Think in 2's)

- **STEP 1.** Monitor to see if your asthma is **Not Well Controlled**

⇒ Daytime symptoms	**More than 2 times per week**
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Symptoms can include:
- shortness of breath
- chest tightness
- wheezing
- cough

****** If not controlled, make medication changes ******
Go to Step 2

- **STEP 2.** Use quick relief medication for fast improvement:
  Short-acting bronchodilator
  - ⇒ usual doses: 2 puffs or one neb every 4 hours as needed
  - ⇒ higher does: can use 2 - 4 - 6 puffs OR one neb every 20 minutes up to 3 times (up to 1 hour) then try to extend to every 4 hours

If using higher doses and no better, then seek help — contact doctor, or go to the emergency room, or call 911!

- **STEP 3.** Even if better - change controller med:
  Inhaled Steroid (strength)
  4 puffs – twice a day
  (for 1-2 weeks)
- **STEP 4.** If no improvement in 1 - 2 days:
  ~~Consider adding oral steroid ... OR~~ .. **Call Office**
  - ⇒ ~~Prednisone (_____mg tablet) - take with food~~
  - ⇒ ~~_____tablets = _____mg once a day for _____days~~

RED ZONE (Danger Signs)

- **STEP 1.** Monitor for severe symptoms
  - ⇒ Cannot walk or talk or do activities due to breathing
  - ⇒ Cannot sleep due to breathing
  - ⇒ Lips or fingernails are blue
  - ⇒ Peak flow meter _____ less than 50% normal

- **STEP 2.** Use quick relief medication for fast improvement:
  Short-acting bronchodilator
  Can use 2 - 4 - 6 - 8 puffs or one neb every 20 minutes up to 3 times.
- **STEP 3.** ~~Add oral steroid - Prednisone (_____mg tablet)~~
  _____ tablets = _____ mg once
- **STEP 4.** **Contact doctor, or go to the emergency room, or call 911!**

Template by
Asthma Network of West Michigan

_____ Practitioner Name (please print)

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_____ Signature

ASTHMA ACTION PLAN

Name: _____ **DOB:** _____ **Date:** _____

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⇒ Oral steroid use	Less than 2 times in 12 months
⇒ Peak flow meter	_____ more than 80% normal

- **STEP 2.** Use your controller medication every day

Inhaled Steroid (strength)

2 puffs – twice a day

YELLOW ZONE (Think in 2's)

- **STEP 1.** Monitor to see if your asthma is **Not Well Controlled**

⇒ Daytime symptoms	**More than 2 times per week**
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Short-acting Bronchodilator

⇒ usual doses: 2 puffs or one neb every 4 hours as needed
⇒ higher does: can use 2 - 4 - 6 puffs OR one neb every 20 minutes up to 3 times (up to 1 hour) then try to extend to every 4 hours

If using higher doses and no better, then seek help — contact doctor, or go to the emergency room, or call 911!

- **STEP 3.** Even if better - change controller med:

Inhaled Steroid

4 puffs – 2 to 4 times a day (for 1-2 weeks)

- **STEP 4.** If no improvement in 1 - 2 days:
Consider adding oral steroid … OR … **Call Office**

⇒ Prednisone (10 mg tablet) - *take with food*
⇒ 4 tablets = 40 mg once a day for 5 days

RED ZONE (Danger Signs)

- **STEP 1.** Monitor for severe symptoms
  - ⇒ Cannot walk or talk or do activities due to breathing
  - ⇒ Cannot sleep due to breathing
  - ⇒ Lips or fingernails are blue
  - ⇒ Peak flow meter _____ less than 50% normal

- **STEP 2.** Use quick relief medication for fast improvement:

Short-acting Bronchodilator

Can use 2 - 4 - 6 - 8 puffs or one neb every 20 minutes up to 3 times.

- **STEP 3.** Add oral steroid - Prednisone (10 mg tablet)
6 tablets = 60 mg once
- **STEP 4.** **Contact doctor, or go to the emergency room, or call 911!**

Template by
Asthma Network of West Michigan

_____ Practitioner Name (please print)

_____ Phone Number

_____ Signature

ASTHMA ACTION PLAN

Name: _____ **DOB:** _____ **Date:** _____

Be aware of common triggers: ❑ catching a cold (viral infection); ❑ cigarette smoke; ❑ strong odors, fumes or sprays; ❑ exercise ❑ weather changes; ❑ allergens, like dust mites, cockroaches, mice, cats, dogs, mold, pollens

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⇒ Quick relief inhaler use	Less than or 2 times per week
⇒ Oral steroid use	Less than 2 times in 12 months
⇒ Peak flow meter	_____ more than 80% normal

- **STEP 2.** Use your controller medication every day

Inhaled Steroid/Long-Acting BD (strength)

2 puffs - twice a day

YELLOW ZONE (Think in 2's)

- **STEP 1.** Monitor to see if your asthma is **Not Well Controlled**

⇒ Daytime symptoms	**More than 2 times per week**
⇒ Night-time symptoms	**More than 2 times per month**
⇒ Quick relief inhaler use	**More than 2 times per week**
⇒ Catch a cold	**Within 1 - 2 days of viral infection**
⇒ Peak flow meter	_____ **only 50 - 80% normal**

Symptoms can include:
- shortness of breath
- chest tightness
- wheezing
- cough

****** If not controlled, make medication changes ******
Go to Step 2

- **STEP 2.** Use quick relief medication for fast improvement:

Short-acting Bronchodilator

⇒ usual doses: 2 puffs or one neb every 4 hours as needed
⇒ higher does: can use 2 - 4 - 6 puffs OR one neb every 20 minutes up to 3 times (up to 1 hour) then try to extend to every 4 hours

If using higher doses and no better, then seek help — contact doctor, or go to the emergency room, or call 911!

- **STEP 3.** Even if better - change controller med:

→ continue Inhaled Steroid/Long-Acting BD

→ add Inhaled Steroid (for 1-2 weeks)
2 puffs - 2 to 4 times a day

- **STEP 4.** If no improvement in 1 - 2 days:
Consider adding oral steroid ... OR ... **Call Office**

⇒ Prednisone (10 mg tablet) - *take with food*
⇒ 4 tablets = 40 mg once a day for 5 days

RED ZONE (Danger Signs)

- **STEP 1.** Monitor for severe symptoms
  - ⇒ Cannot walk or talk or do activities due to breathing
  - ⇒ Cannot sleep due to breathing
  - ⇒ Lips or fingernails are blue
  - ⇒ Peak flow meter _____ less than 50% normal

- **STEP 2.** Use quick relief medication for fast improvement:

Short-acting Bronchodilator

Can use 2 - 4 - 6 - 8 puffs or one neb every 20 minutes up to 3 times.

- **STEP 3.** Add oral steroid - Prednisone (10 mg tablet)
6 tablets = 60 mg once
- **STEP 4.** **Contact doctor, or go to the emergency room, or call 911!**

Template by
Asthma Network of West Michigan

_____ Practitioner Name (please print)

_____ Phone Number

_____ Signature

Asthma Action Plans - Summary

- Asthma Action Plans are important . . .but should be part of a broader asthma education effort.
- Every patient is different . . . Asthma Action Plans will be different . . . and may change over time.
- How much should patients self-manage?

CASE STUDIES

Tyler

- Tyler is a two year old with a history of wheezing, frequent cough, and three emergency room visits for worsened respiratory symptoms last winter.
- At the first two emergency room visits, Tyler was treated with an antibiotic.
- At the last visit, he also was treated with albuterol.
- He was hospitalized in March with bronchiolitis which was culture-positive for infection with RSV (respiratory syncytial virus).

Tyler

- At discharge, Tyler's mother was provided with a nebulizer and was instructed to give him inhaled albuterol four times daily until the cough resolved. He was also give a 5-day course of oral steroids.
- Three months later, Tyler’s cough has returned.
- He has just experienced another ER visit and is completing another course or oral steroids.

Tyler

- In children of this age it may be difficult to diagnose viral-induced wheezing.
- Under-diagnosis of asthma is a common problem in children who wheeze only when they have a respiratory infection.
- Often these children are misdiagnosed as having pneumonia, bronchitis, or bronchiolitis and receive antibiotics, but this is not the appropriate treatment.

Think…Asthma Predictive Index (API)

High risk children (under age 3) who:

- have had ≥ 4 wheezing episodes in the past year that lasted more than one day and affected sleep are significantly *more* likely to have persistent asthma after the age of 5 if they have either (1) of the following:

OR

One major criteria

- Parent with asthma
- Physician diagnosis of atopic dermatitis
- Evidence of sensitization to aeroallergens

Two minor criteria

- Evidence of sensitization to foods
- ≥4 percent blood eosinophilia
- Wheezing apart from colds

Castro-Rodriguez J et al. *AJRCCM* 2000; 162:1403-1406.

Asthma Predictive Index (API)

- Birth cohort followed through 13 years of age
- 76% of children diagnosed with asthma after 6 years of age had a positive asthma predictive index before 3 years of age.
- 97% of children who did not have asthma after 6 years of age had a negative asthma predictive index before 3 years of age.

Castro-Rodriguez J et al. *AJRCCM* 2000; 162:1403-1406.

Tyler

- Most asthma clinicians believe that a step-wise approach to treatment is the most effective.
- The NHLBI guidelines recommend that patients <5 y/o with persistent asthma be treated with an inhaled anti-inflammatory medication routinely/daily and also receive a short-acting beta-agonist on an as needed basis.
- Corticosteroids are the first line of treatment for persistent asthma.
- Every child with asthma should have a prescription for a short-acting beta- agonist for use as needed.

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ASTHMA DIAGNOSIS TOOL

Consider the diagnosis of asthma if patient states any of the following:

❒ Family history of asthma, allergies or eczema ❒ Symptoms occur seasonally ❒ Symptoms when near chemicals, dusts, fumes at work
❒ Symptoms worsened by URI lasting longer than ten days, smoke, allergens or exercise

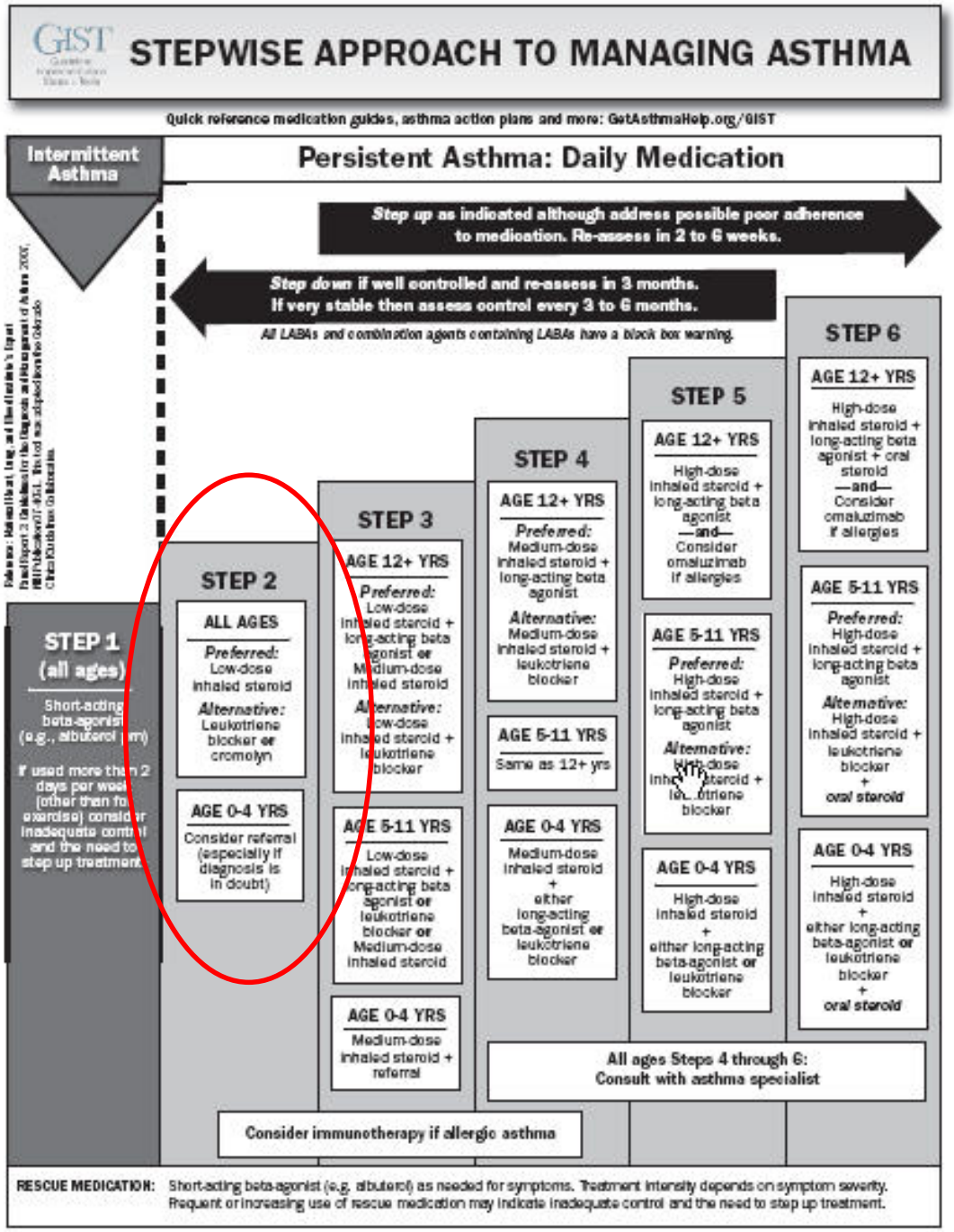
AND SPIROMETRY DEMONSTRATES OBSTRUCTION AND/OR REVERSIBILITY BY AN INCREASE IN FEV_1 OF 12% OR MORE AFTER BRONCHODILATOR.
Rule out co-morbid conditions. If in doubt, consult with an asthma specialist.

HIGHEST LEVEL OF CHECKED BOX = SEVERITY LEVEL / FOLLOW SEVERITY LEVEL DOWN TO FIND TREATMENT STEP → SEE TREATMENT STEPWISE APPROACH

	INTERMITTENT	MILD PERSISTENT	MODERATE PERSISTENT	SEVERE PERSISTENT
IMPAIRMENT	**SYMPTOMS:** ❒ Less than 2x/week **NIGHTTIME AWAKENINGS:** ❒ Less than 2x/month **INTERFERENCE W/NORMAL ACTIVITY:** ❒ None **SHORT-ACTING B_2-AGONIST USE:** ❒ Less than 2 days/week **LUNG FUNCTION:** ❒ FEV_1 more than 80% pred.	**SYMPTOMS:** ❒ More than 2x/week, not daily **NIGHTTIME AWAKENINGS:** ❒ More than 2x/month **INTERFERENCE W/NORMAL ACTIVITY:** ❒ Minor limitation **SHORT-ACTING B_2-AGONIST USE:** ❒ More than 2 days/week but not daily or more than 1x/day **LUNG FUNCTION:** ❒ FEV_1 more than 80% pred.	**SYMPTOMS:** ❒ Daily **NIGHTTIME AWAKENINGS:** ❒ About 1x/week, not nightly **INTERFERENCE W/NORMAL ACTIVITY:** ❒ Some limitation **SHORT-ACTING B_2-AGONIST USE:** ❒ Daily **LUNG FUNCTION:** ❒ FEV_1 60-80% pred.	**SYMPTOMS:** ❒ Throughout the day **NIGHTTIME AWAKENINGS:** ❒ More than 1x/week, often nightly **INTERFERENCE W/NORMAL ACTIVITY:** ❒ Extremely limited **SHORT-ACTING B_2-AGONIST USE:** ❒ Several times/day **LUNG FUNCTION:** ❒ FEV_1 less than 60% pred.
RISK	**EXACERBATIONS REQUIRING ORAL STEROIDS:** ❒ All ages: 0-1/year	**EXACERBATIONS REQUIRING ORAL STEROIDS:** consider severity and interval since last exacerbation ❒ Age 0-4: more than 2 in 6 months or more than 4 wheezing episodes/year lasting more than 1 day ❒ All ages: more than 2/year • *Exacerbations of any severity may occur in patients in any severity category.* • *Frequency and severity may fluctuate over time.*		
TREATMENT STEP	✓ **All ages: STEP 1**	✓ **All ages: STEP 2**	✓ **All Ages: STEP 3**; consider short course oral steroids option	✓ **Age 0-4: STEP 3**; short course oral steroids option ✓ **Age 5-11: STEP 3**; STEP 4 short course oral steroids option ✓ **Age 12 & over: STEP 4 or 5**; short course oral steroids option
		TREATMENT FOR PERSISTENT ASTHMA: ✓ Daily inhaled steroids (see treatment stepwise approach) ✓ Assess response within 2-6 weeks		

FOR ALL PATIENTS WITH ASTHMA: ❒ Rescue medication for all ages, all severity levels: Short-acting B_2-agonist PRN. Treatment intensity depends on symptom severity.
❒ Provide written Asthma Action Plan ❒ Identify & avoid triggers ❒ Flu vaccine recommended annually, pneumococcal vaccine for adults ❒ Review correct device technique each visit

Reference: National Heart, Lung, and Blood Institute's Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007, NIH Publication 07-4051. This tool was adapted from Washington Asthma Initiative materials.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Quick reference medication guides, asthma action plans and more: GetAsthmaHelp.org/GIST
Intermittent Asthma
Persistent Asthma: Daily Medication
Step up as indicated although address possible poor adherence to medication. Re-assess in 2 to 6 weeks.
Step down if well controlled and re-assess in 3 months. If very stable then assess control every 3 to 6 months.
All LABAs and combination agents containing LABAs have a black box warning.
STEP 1 (all ages)
Short-acting beta-agonist (e.g., albuterol inhaler)
If used more than 2 days per week (other than for exercise) consider inadequate control and the need to step up treatment
STEP 2
ALL AGES
Preferred: Low-dose inhaled steroid
Alternative: Leukotriene blocker or cromolyn
AGE 0-4 YRS
Consider referral (especially if diagnosis is in doubt)
STEP 3
AGE 12+ YRS
Preferred: Low-dose inhaled steroid + long-acting beta agonist or Medium-dose inhaled steroid
Alternative: Low-dose inhaled steroid + leukotriene blocker
AGE 5-11 YRS
Low-dose inhaled steroid + long-acting beta agonist or leukotriene blocker or Medium-dose inhaled steroid
AGE 0-4 YRS
Medium-dose inhaled steroid + referral
STEP 4
AGE 12+ YRS
Preferred: Medium-dose inhaled steroid + long-acting beta agonist
Alternative: Medium-dose inhaled steroid + leukotriene blocker
AGE 5-11 YRS
Same as 12+ yrs
AGE 0-4 YRS
Medium-dose inhaled steroid + either long-acting beta-agonist or leukotriene blocker
STEP 5
AGE 12+ YRS
High-dose inhaled steroid + long-acting beta agonist —and— Consider omalizumab if allergies
AGE 5-11 YRS
Preferred: High-dose inhaled steroid + long-acting beta agonist
Alternative: High-dose inhaled steroid + leukotriene blocker
AGE 0-4 YRS
High-dose inhaled steroid + either long-acting beta-agonist or leukotriene blocker
STEP 6
AGE 12+ YRS
High-dose inhaled steroid + long-acting beta agonist + oral steroid —and— Consider omalizumab if allergies
AGE 5-11 YRS
Preferred: High-dose inhaled steroid + long-acting beta agonist
Alternative: High-dose inhaled steroid + leukotriene blocker + oral steroid
AGE 0-4 YRS
High-dose inhaled steroid + either long-acting beta-agonist or leukotriene blocker + oral steroid
All ages Steps 4 through 6: Consult with asthma specialist
Consider immunotherapy if allergic asthma
RESCUE MEDICATION: Short-acting beta-agonist (e.g. albuterol) as needed for symptoms. Treatment intensity depends on symptom severity. Frequent or increasing use of rescue medication may indicate inadequate control and the need to step up treatment.

Tyler

- Everyone who cares for Tyler needs to receive instructions, demonstration and return demonstration addressing how, when and which medicines are to be provided to him.
- Develop an asthma action plan that is shared with all of his caregivers.
- Review inhaler/spacer technique (with face mask) and oral rinse.

Questions - Tyler

What are the long-term effects of daily medication on growth and puberty?

- The long-term effects of daily medication on growth and puberty are still being studied but we know that under-treatment or poorly treated asthma itself may suppress growth.
- Treatment with corticosteroids both oral and inhaled have been shown to impact growth.

Questions - Tyler

- The goals of asthma therapy are to have patients be on the lowest possible dose of the least number of medications.
- Controlling asthma is the primary goal.
- Most asthma experts believe if treatment is initiated early and at the appropriate doses, growth and puberty will not be significantly impacted.
- The potential small risk of adverse effects on linear growth from the use if inhaled steroids is well balanced by their efficacy.

Sharona

- Sharona is a 15-year-old high school sophomore with asthma.
- Sharona was well, with the "usual colds," until the age of six. She then began having more lower respiratory tract illnesses.
- Though she improved during the spring and summer, she developed sneezing, coughing, along with chest tightness, shortness of breath with exercise, and wheezing 4 to 5 days a week in the early fall.
- These symptoms persist through the winter months.

Sharona

- Sharona uses an albuterol inhaler at least twice a day, when she "needs" it.
- She has an inhaler that she was supposed to use 2 times a day which was prescribed by her previous doctor, but she "forgets" to use it.
- Sharona tells you that her albuterol inhaler "works" and the other didn't when she used it.
- She used to participate in sports at school but quit because she "got too tired."
- Sharona admits that she is awakened by coughing two nights a week and more often if her family uses their fireplace.

Sharona

- In addition, she coughs when she visits her girlfriend's house where there is a cat.
- ACT score is 17. Sharona's asthma is "Not Well Controlled."
- Both her daytime symptoms and nighttime symptoms, as well as ACT score, fall into that category.
- She, like all patients with asthma, should be assigned to the category that demonstrates the most severe findings.
- Her asthma is triggered by seasonal allergen exposure and possibly by other perennial allergens, which need to be more precisely identified.

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ASTHMA PATIENT FOLLOW-UP TOOL *Assess patient's asthma control and device technique.*

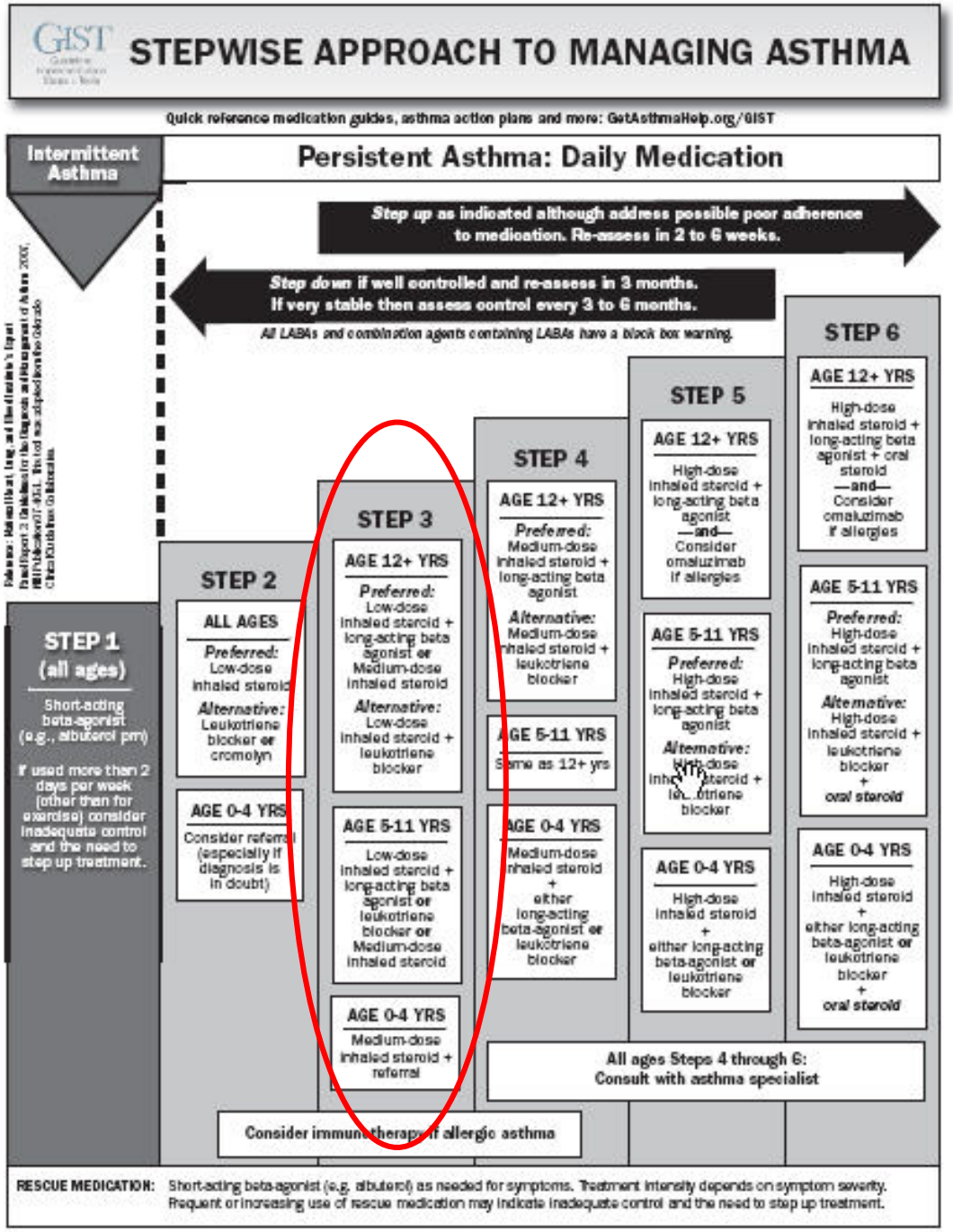
❒ ACT™ Test Score _____ **Severity level at diagnosis:** ❒ Intermittent ❒ Mild Persistent ❒ Moderate Persistent ❒ Severe Persistent

HIGHEST LEVEL OF CHECKED BOX = CONTROL LEVEL / FOLLOW CONTROL LEVEL DOWN TO FIND TREATMENT STEP → SEE TREATMENT STEPWISE APPROACH

	WELL CONTROLLED	NOT WELL CONTROLLED	VERY POORLY CONTROLLED
IMPAIRMENT	**SYMPTOMS:** ❒ 2 day/week or less, not more than once per day **NIGHTTIME AWAKENINGS:** ❒ No more than once/month **INTERFERENCE W/NORMAL ACTIVITY:** ❒ None **SHORT-ACTING B_2-AGONIST USE:** ❒ 2 days/week or less **FEV_1 OR PEAK FLOW:** ❒ Age 5 & over: More than 80% predicted/personal best **FEV_1/FVC:** ❒ Age 5 & over: more than 80% **ACT SCORE:** ❒ 20 or more	**SYMPTOMS:** ❒ More than 2 days/week or multiple times on 2 days/week or less **NIGHTTIME AWAKENINGS:** ❒ Ages 0-4: More than once/month ❒ Ages 5-11: 2 times/month or more ❒ Age 12 & over: 1-3 times/week **INTERFERENCE W/NORMAL ACTIVITY:** ❒ Some limitation **SHORT-ACTING B_2-AGONIST USE:** ❒ More than 2 days/week **FEV_1 OR PEAK FLOW:** ❒ Age 5 & over: 60-80% pred./personal best **FEV_1/FVC:** ❒ Age 5 & over: 75-80% **ACT SCORE:** ❒ 16-19	**SYMPTOMS:** ❒ Throughout the day **NIGHTTIME AWAKENINGS:** ❒ Ages 0-4: More than once/week ❒ Ages 5-11: 2 times/week or more ❒ Age 12 & over: 4 times/week or more **INTERFERENCE W/NORMAL ACTIVITY:** ❒ Extremely limited **SHORT-ACTING B_2-AGONIST USE:** ❒ Several times/day **FEV_1 OR PEAK FLOW:** ❒ Age 5 & over: Less than 60% pred./personal best **FEV_1/FVC:** ❒ Age 5 & over: less than 75% **ACT SCORE:** ❒ 15 or less
RISK	**EXACERBATIONS REQUIRING ORAL STEROIDS** ❒ All ages: 0-1/year	**EXACERBATIONS REQUIRING ORAL STEROIDS** ❒ Age 0-4: 2-3/year ❒ Age 5 & over: More than 2/year; consider severity	**EXACERBATIONS REQUIRING ORAL STEROIDS** ❒ Age 0-4: More than 3/year ❒ Age 5 & over: More than 2/year; consider severity
TREATMENT STEP	❒ Maintain current step ❒ Consider step down if well controlled for at least 3 months	✓ Check adherence & environmental control ❒ Step up 1 step and assess response in 2-6 weeks	✓ Check adherence & environmental control ❒ Consider short course of oral corticosteroids ❒ Consider co-morbid conditions ❒ Step up 1-2 steps and assess response in 2 weeks
		❒ For side effects, consider alternative treatment options	

❒ Rescue medication for all ages, all severity/control levels: Short-acting B_2-agonist PRN. Treatment intensity depends on symptom severity.
❒ Provide written Asthma Action Plan; review/update
❒ Spirometry annually for age 5 & over
❒ Flu vaccine recommended annually, pneumococcal vaccine for adults
❒ Consider referral to a specialist if not well controlled within 3-6 months using stepwise approach OR 2 or more ED visits or hospitalizations for asthma in a year.

Reference: National Heart, Lung, and Blood Institute's Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007, NIH Publication 07-4051. This tool was adapted from Washington Asthma Initiative materials.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Questions - Sharona

Will I have to take this medication for the rest of my life? Will I get addicted?

- Asthma is a disease that comes and goes, but it cannot be cured.
- By treating asthma aggressively with anti-inflammatory therapy, it may be prevented from getting worse.
- Current recommendations are that therapy should be reduced once symptoms come under control, so we will continually attempt to lower your dose and possibly even stop your medications once control is achieved.

Questions - Sharona

- In many children with asthma, asthma can improve as they get older, so in general, we would expect your asthma to improve over time.
- Asthma medications are not addicting and taking them does not make your asthma worse or more dependent on taking medication.
- Once the medications reduce the inflammation in your airways, you will likely need less medication.

Questions - Sharona

I've heard that steroids are bad for me.

- Any drugs are bad for you if taken in excessive doses, however, the steroids you may be referring to are systemic corticosteroids or steroids used for muscle building.
- The inhaled corticosteroids avoid systemic effects by directing the anti-inflammatory effect to the lungs.
- Once absorbed from the lungs, they are quickly broken down and inactivated. If taken in very large doses they can produce bad effects.
- Using a spacer device will decrease the amount of drug that is swallowed with each dose and also reduce systemic activity.

Sharona

- She is non-adherent, possibly related to her age, and she has a poor understanding of asthma and its management.
- Non-allergic triggers also appear to present such as smoke exposure.
- Based upon the NHLBI guidelines, consider referral for consultation to an allergy/asthma specialist, which can help improve care through appropriate testing to identify allergens and other environmental factors that worsen Sharona's asthma.

Questions?

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