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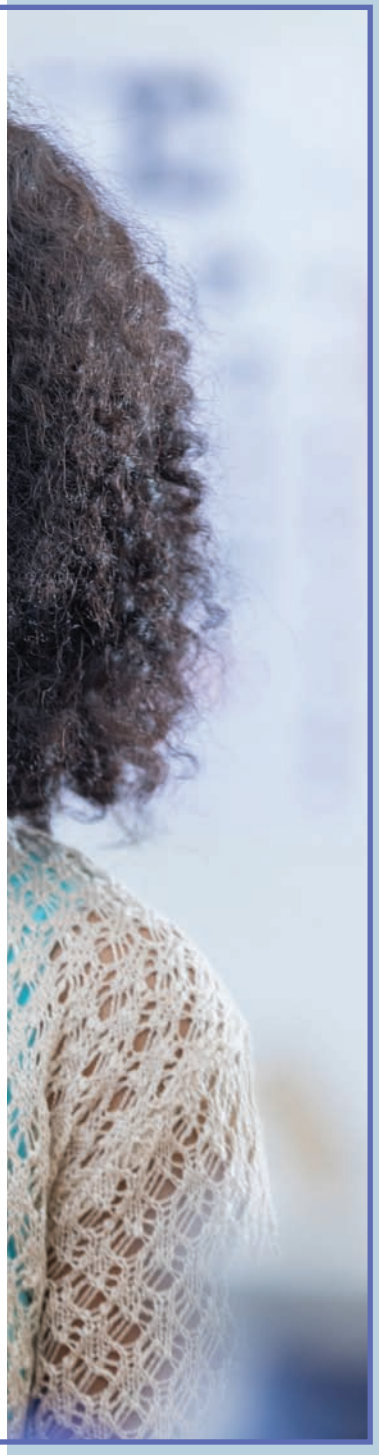
Asthma

medication update



AS I SEE IT / ISTOCK

Take these steps to minimize patient confusion and uncertainty.

By Susan Montag, DNP, CRNP, FNP-BC

Why's asthma management and understanding asthma medication a concern? Here are some quick facts from the World Health Organization and the National Institutes of Health (NIH):

- From 2010 through 2013, asthma was the most common chronic medical condition in the United States.
- The national prevalence of asthma in school-age children is 8%; 28% of children with asthma miss school because of it.
- Non-Hispanic Black and Hispanic children are less likely to use asthma controllers than non-Hispanic White children.
- There's a known connection between low socioeconomic level and poor health literacy, and increased asthma incidence.

It's essential for nurses to have a basic understanding of asthma, how to identify and treat it, and when to refer patients to a specialist.

What's asthma?

Asthma is a hyperresponsive state of the airways caused by chronic inflammation. It's characterized by expiratory airflow limitation that varies in duration and intensity. Symptoms can include wheezing, chest tightness or cough, and shortness of breath. There are five types of asthma: allergic asthma, nonallergic asthma, late-onset asthma, asthma with fixed airflow limitation, and asthma with obesity. Allergic asthma is the most recognized.

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Obtaining a history of respiratory symptoms is important to determine if your patient is experiencing asthma. Testing for asthma includes pulmonary function testing, bronchial provocation testing, exercise pulmonary testing, and exhaled nitrous oxide and peak expiratory flow monitoring. If allergies are suspected, then allergy testing is indicated.

Controlling asthma is a two-pronged approach: symptom management and prevention of future events. Symptom management means asking if your patient has any daytime and/or nighttime symptoms, and how often he or she is using and needing a rescue inhaler. In my practice, I try to specify if patients are using a rescue inhaler because they're afraid of symptoms occurring or if they need it. If your patient needs a rescue inhaler, then asthma isn't being controlled, whereas if he or she is using it because of fear, then there's a need for more education on asthma management. Prevention of future events includes managing symptoms to prevent flares; monitoring lung function regularly; and ensuring that contributing factors, such poor inhaler technique, smoking, medication adherence, and trigger exposure, are controlled. If you cover asthma basics and your patient is still having difficulty, then a referral to an asthma specialist is warranted.

Treatment guidelines

There are two nationally recognized guidelines for asthma management in the United States: the National Asthma Education and Prevention Program Expert Panel Report 3 Guidelines for the Diagnosis and Management of Asthma (EPR-3) and the Global Initiative for Asthma (GINA). The EPR-3 was last revised in 2007 and is used by the Association of Asthma Educators for its certification exam; GINA was last revised in 2017. Both guidelines define asthma, explain its identification and management, instruct how to treat and prevent flare-ups, and classify asthma medications.

The goals of asthma treatment are to prevent loss of lung function, maintain the patient's normal activities, prevent exacerbations, manage symptoms, and encourage infrequent use of short-acting beta$_2$-agonists. With these goals, a physical exam, and the use of assessment tools, the EPR-3 or GINA guidelines can be used to develop a treatment plan.

Bonus content

Head to www.NursingMadeIncrediblyEasy.com for more information on asthma.

Asthma Education: Five Key Messages
http://journals.lww.com/nursingmadeincrediblyeasy/Fulltext/2016/07000/Asthma_education__Five_key_messages.6.aspx

Like a Fish Out of Water: Asthma and Children
http://journals.lww.com/nursingmadeincrediblyeasy/Fulltext/2014/05000/Like_a_fish_out_of_water__Asthma_and_children.6.aspx

2017 GINA guidelines

	Step 1	Step 2	Step 3	Step 4	Step 5
Preferred controller choice	As needed SABA	Low-dose ICS	Low-dose ICS/ LABA	Medium-/high-dose ICS/LABA	Refer to an expert, such as a pulmonologist or allergy specialist
Other controller options	Consider a low-dose ICS for those at increased risk for exacerbations	LTRA	Medium-/high-dose ICS or low-dose ICS + LTRA	Tiotropium mist inhaler*	Add low-dose OCS
Reliever medication	Rescue medication, such as a SABA, as needed				

SABA = short-acting beta$_2$-agonist
ICS = inhaled corticosteroid
ICS/LABA = inhaled corticosteroid with a long-acting beta$_2$-agonist
LTRA = leukotriene receptor antagonist
OCS = oral corticosteroid
*Tiotropium mist inhaler is for patients older than age 12 with a history of exacerbations.

When you see a patient with asthma or suspected asthma, ask the following questions: Is the patient experiencing chest tightness, wheezing, coughing, or shortness of breath? Does the patient experience nighttime symptoms? Do certain activities, weather changes, or smells/odors make the patient cough or wheeze? Does a viral infection or cold trigger symptoms? These symptoms may be constant or intermittent.

In fact, some patients or caregivers are so accustomed to symptoms that they aren't recognized as a problem until an asthma attack occurs. During an asthma attack, the patient and/or caregiver is only treating the acute crisis, not managing the disease process. Better disease management helps alleviate the morbidities associated with asthma.

Use an asthma symptom control assessment, such as the Asthma Control Test, Childhood Asthma Control Test, Asthma Control Questionnaire, Lara Asthma Symptom Scale, or Asthma Therapy Assessment Questionnaire, to evaluate perceived asthma control. These tools should be used with every visit to compare and assess the patient and/or caregiver's subjective asthma control.

After you've collected the pertinent data, discuss your patient's asthma treatment plan. This plan should include medication benefits, such as decreasing the chronic inflammation of asthma; asthma action plans; how to take medications appropriately; when to take maintenance versus rescue medications; and improving quality of life using a team approach. Empower your patient to comanage his or her asthma with you.

The following is a brief explanation of the steps suggested by the GINA guidelines (see *2017 GINA guidelines*):

- ***Step 1.*** Order a rescue inhaler (short-acting beta$_2$-agonist) only or possibly a low-dose inhaled corticosteroid (ICS) for patients considered at high risk for exacerbations.
- ***Step 2.*** Order a maintenance low-dose ICS and possibly a leukotriene receptor antagonist or mast cell stabilizer. The addition of theophylline may be considered (requires special considerations).
- ***Step 3.*** Add a long-acting beta$_2$-agonist to the ICS with combination drugs, such

as fluticasone propionate and salmeterol, fluticasone furoate and vilanterol, mometasone furoate and formoterol fumarate dihydrate, or budesonide and formoterol fumarate dihydrate.

Asthma medications for patients age 12 and older

Inhaled corticosteroids

- Beclomethasone dipropionate
- Budesonide
- Ciclesonide
- Fluticasone furoate
- Fluticasone propionate
- Mometasone furoate
- Triamcinolone acetonide

Possible adverse reactions

Require medical treatment:
- Wheezing
- Puffy face
- Rash
- Palpitations
- Thrush

Don't require medical treatment:
- Cough
- Hoarseness
- Headache
- Dry mouth
- Throat irritation

Long-term:
- Cataracts in adults
- Slowed growth in children

Inhaled corticosteroids with long-acting beta$_2$-agonist

- Budesonide and formoterol fumarate dihydrate
- Fluticasone furoate and vilanterol inhalation powder
- Fluticasone propionate and salmeterol
- Mometasone furoate and formoterol fumarate dihydrate

Possible adverse reactions:
- Headaches
- Sleeplessness
- Tremor or shaking feeling
- Nausea/vomiting

Anticholinergics

Tiotropium bromide

Possible adverse reactions:
- Dry mouth
- Urinary retention
- Increased eye pressures
- Increased wheezing

Short-acting beta$_2$-agonists

- Albuterol sulfate
- Levalbuterol hydrochloride

Possible adverse reactions:
- Anxiety
- Palpitations
- Insomnia
- Nervousness
- Restlessness
- Headache

• ***Step 4.*** For patients who continue to have symptoms, ensure that triggers are managed; inhalers are being taken appropriately; and other factors, such as gastroesophageal reflux disease, heart disease, and obesity, are addressed. Tiotropium mist may be added for patients older than age 12.

• ***Step 5.*** When medium- and high-dose ICSs and long-acting beta$_2$-agonists aren't effective, refer the patient to a pulmonologist or allergy specialist.

Treatment decisions are determined based on cost, insurance coverage, and patient adherence (see *Asthma medications for patients age 12 and older*). Titrating medications every 6 to 12 weeks to get the best effect is ultimately the most cost-effective approach to managing your patient's asthma. Once your patient's symptoms are controlled with an ICS, he or she will be maintained on that dosage for a minimum of 3 months before consideration of decreasing it. It isn't unreasonable to consider increasing the ICS dosage during peak trigger seasons identified by your patient. This includes times with high pollen counts or when indoor allergies are worse and living areas are closed. When your patient is out of his or her high trigger season, then the ICS dosage can be decreased.

Asthma action plans are part of the standard of care from GINA and the NIH. To formulate an action plan, have your patient use a peak flow device three times and determine the average volume that your patient is able to forcefully exhale in one second. Volumes are then categorized into three stages: green (greater than 80% of best volume), yellow (50% to 80% of best volume), and red (less than 50% of best volume). The action plan is then personalized for your patient with instructions to determine how to control his or her asthma situation. See https://www.nhlbi.nih.gov/files/docs/public/lung/asthma_actplan.pdf for a downloadable example.

Patient education

When performing patient and caregiver education, teach the appropriate technique for taking inhaled medications. After you demonstrate this technique, have your patient provide a return demonstration. This allows you to evaluate if he or she has the inspiratory effort to correctly take inhaled medications. If your patient can't perform the technique, then consider a nebulizer—a device that aerosolizes liquid medication and propels it through a mouthpiece to allow for easier administration and inhalation. The teach-back method also helps determine which inhaled medication is best for any other physical or mental limitations, such as arthritis or cognitive difficulty taking medications.

Another practice to help with medication adherence is to instruct your patient to rinse, gargle, and spit with water after taking an ICS. This helps prevent hoarseness, sore throat, and oral candidiasis. Using a spacer (holding chamber) device with hydrofluoroalkane-propelled inhalers will help your patient achieve better medication effectiveness. If your patient has questions about these techniques or devices, use your resources, such as a cardiopulmonary or respiratory technician, for assistance.

You'll also need to address questions or concerns about ICSs, such as: Will my child have stunted growth? What about my bones? Will this medication cause cataracts? Will it make me gain weight? Is my inhaler available in generic form? Medication cost is a concern for many patients and caregivers. Only nebulized medications are generic as a rule; Medicare Part B covers them, but they tend to be expensive. Explain your institution's and local pharmacies' assistance programs to help your patient get the most cost-effective care. Pharmaceutical companies also offer assistance programs.

Visual references can help with medication questions and communication. Most patients know they take the "orange one," the "red one," or the "purple one." As nurses, we're patient educators and advocates. Using a picture reference, such as the poster of inhalers from the Allergy & Asthma Network, can be a useful resource for your patient.

on the web

Allergy & Asthma Education Network poster of inhalers:
www.allergyasthmanetwork.org

EPR-3 guidelines:
https://www.nhlbi.nih.gov/files/docs/guidelines/asthma_qrg.pdf

GINA guidelines:
http://ginasthma.org/2017-pocket-guide-for-asthma-management-and-prevention

NIH sample asthma action plan:
https://www.nhlbi.nih.gov/files/docs/public/lung/asthma_actplan.pdf

Less complicated

A good history and physical are essential to identify asthma early in the process and decrease morbidities associated with this chronic disease. But understanding

asthma treatments can be complicated for patients. Educate your patient and/or his or her caregiver about medications, trigger management, and early identification of exacerbations. When you see a patient with asthma medications, inquire about them. Ensure that the patient is taking medications appropriately and with good technique. Work with your local pharmacies to answer patients' questions about their medications. Helping your patients understand their asthma medications will increase their overall quality of life and disease management. ■

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