

Managing Asthma

2.0 Contact Hours

Presented by:

CEU Professor[©]

www.CEUProfessorOnline.com

Copyright © 2009 The Magellan Group, LLC. All Rights Reserved.
Reproduction and distribution of these materials is prohibited without the
written consent of The Magellan Group, LLC

Managing Asthma

By Rene' Jackson RN BSN MS LHRM

Objectives

Upon completion of this course, the learner will be able to:

1. Discuss the steps patients and families can take to limit exposure to common triggers of asthma.
2. List the four components of managing asthma.
3. Identify the four components of asthma treatment.
4. Define and discuss long-term and quick-relief asthma medications.

Background

Asthma is a chronic lung disease that causes breathing problems, with acute exacerbations. It affects more than 22 million persons in the United States, and is one of the most common chronic diseases of childhood, affecting more than 6 million children (Guidelines, 2007). It is the third-ranking cause of hospitalization for children and one of the leading causes of school absenteeism (CDC, 2009). Asthma can begin at any age and differs from other chronic obstructive lung diseases in that it is reversible and can be controlled. However, as well as school attendance, it affects occupational choices, physical activity, and many other activities of daily living. Asthma can be life-threatening if it is not managed properly. The Centers for Disease Control and Prevention (CDC) reports that four thousand people die each year from asthma-related causes, and asthma is a contributing factor in another 7,000 deaths every year (CDC, 2009). The estimated annual cost of asthma is nearly \$19.7 billion (CDC, 2009). Many years ago, it was believed that emotional problems caused asthma, but this has been proven false. Its cause is unknown, and a cure has not been found. Asthma most commonly occurs in:

- children, by the age of 5
- adults in their 30s
- adults over the age of 65
- people who live in urban communities (Ohio State U.M.C., 2008)

Asthma is also seen more often in African Americans, who have the highest death rate of all groups, Puerto Ricans, people in the Northeast, those living below the federal poverty level, and those with particular work-related exposures (CDC, 2009).

Children most susceptible to asthma attacks include:

- those with a family history of asthma
- infants and other young children, who when they develop a respiratory infection also tend to have wheezing
- children who have allergies
- children who have exposure to tobacco smoke and other allergens prior to birth (Ohio State U.M.C., 2008)

About Asthma

The disease is manifested by narrowing of the airways, resulting in difficulty breathing (dyspnea), cough, and wheezing. In some persons, a cough may be the only symptom. Asthma attacks happen frequently at night, and can resemble other respiratory problems such as lower respiratory infections, bronchitis and emphysema. Lung function declines faster in those with asthma, especially if they smoke. Excessive mucus production is an indication of poor treatment control.

There are many things that can trigger the symptoms of asthma: viruses (respiratory infections and colds), allergies (to pollen, mold, animal dander, feathers, dust, food, and cockroaches), gases (indoor and outdoor air pollutants or particle pollution), exposure to cold air or sudden temperature change, excitement, exercise, and cigarette smoke. In addition, over-the-counter drugs can trigger an attack. Children are especially vulnerable to asthma attacks when they breathe second hand smoke, and it is known to worsen their asthma. Knowing what the triggers are can help prevent the attacks.

Characteristics of the airway problems are:

- obstruction
- hyper-responsiveness
- inflammation (Ohio State U.M.C., 2008)

Research has shown that though the basic cause of the abnormality has not been discovered, the inflammation leads to the following:

- contraction of airway muscles
- mucus production
- swelling in the airways (Ohio State U.M.C., 2008)

In healthy lungs, breathing is relaxed and effortless because air flows unobstructed through the airways. In the first stage of asthma, the lining of the airways swells and becomes more inflamed. In the next stage, mucus clogs the airways and muscles tighten around the airways. In severe asthma attacks, patients become progressively extremely short of breath, which causes difficulty talking. Lips and fingernails may turn gray or blue and the skin around the ribs may be sucked in. In mild and moderate attacks, which are more common, the patient starts to feel chest tightness. He may cough or bring up mucus, as well as be restless and have sleeping difficulties. There may be a whistling or wheezing sound when the patient breathes, which is the air going in and out of narrowed airways. Sometimes the attack eases a bit, but another attack can occur that is more severe than the first. This second attack can last days and weeks and can precipitate admission to the hospital.

In 1991, the National Asthma Education and Prevention Program (NAEPP) of the National Institutes of Health's National Heart, Lung, and Blood Institute issued guidelines for the diagnosis and management of asthma designed to prevent and reverse airway inflammation and manage asthma attacks (CDC, 2009). The guidelines were updated in 1997 and 2007, reflecting new research findings. As a public health approach to asthma, in 1999 the CDC started identifying and tracking asthma cases by creating the National Asthma Control Program. Various federal agencies, state health departments, and local entities partner with the CDC in the program.

Diagnosis

Diagnosis is made with regular physical checkups that include assessment of lung function and checking for allergies. The physician (or healthcare provider) will ask about:

- coughs, especially at night, and if breathing problems become worse after physical activity or at a particular time of year.
- symptoms like chest tightness, wheezing, and colds lasting more than 10 days
- if family members have or have had asthma, allergies, or other breathing problems
- your home
- missing schools or work
- trouble performing certain activities (CDC, 2009)

The physician combines the medical history, physical examination, and laboratory tests to assist with diagnosis. Some tests include:

- Spirometry – a simple lung function test that measures the largest amount of air a person can exhale after taking a deep breath. It measures airflow before and after medication.
- Peak Flow Monitoring (PFM) – measures the fastest speed in which a person can blow air out of the lungs. A peak flow meter is a device used to measure how well the asthma

is under control, and when used properly, can reveal narrowing of the airways well in advance of an asthma attack. It is used mainly on a person with moderate to severe and persistent asthma (Ohio State U.M.C., 2008).

- Chest x-ray – a diagnostic test that produces images of tissues, bones, organs on film.
- Blood tests – to analyze the amount of oxygen and carbon dioxide in the blood.

In addition, the role of allergens is evaluated by using the patient's medical history to identify allergen exposures, which may worsen the asthma. A skin test can reliably determine sensitivity to indoor inhalant allergens. The patient's history can also be used to assess sensitivity to seasonal allergens.

Treatment

Since asthma is a chronic disease, it has to be continuously monitored. Recommendations for the management of asthma are based on the following four components:

- Identify and minimize contact with asthma triggers.
- Understand and take medications as required.
- Monitor the asthma so that worsening signs are recognized.
- Understand and know what to do when asthma is exacerbated (Ohio State U.M.C., 2008).

The first step to reducing the symptoms, functional limitations, impairment in quality of life, and risk of adverse events is diagnosis. The goal is for the patient to live without the above manifestations; therefore, the initial assessment of the severity of the disease helps determine the type and intensity of the treatment (Guidelines, 2007). There are also specific guidelines for children: infants to 4 years old, 5 to 11 years old, and 12 and older.

The four components of asthma treatment are:

- Using objective measures of lung function to assess the severity and monitor the course of treatment.
- Using medication therapy to reverse and prevent airway inflammation and treat the narrowing airway.
- Using environmental control measures to avoid or eliminate factors that induce or trigger flare-ups.
- Patient education, including partnership among the patient, family, and physician (Ohio State U.M.C., 2008).

Environmental Control Measures

There are steps patients and families can take to limit exposure to common triggers of asthma:

- Allergies
 - *Dust*

Dust is the most common year round allergy. The allergy is caused by tiny insect-like creatures called dust mites, which are found in mattresses, carpets, and upholstered furniture. They thrive in warm, humid conditions and feed on the shed scales of human skin. Dust and vacuum frequently.
 - *Pollens*

In many areas, pollens can be a problem from February through November each year. If there is an allergy to pollen, during pollen season it is important to keep all car/house windows closed and use the air conditioning.
 - *Animal dander*

Pets that have fur or feathers often cause allergy troubles. If there is an allergy to animal dander (the "skin" of the animal), it is best not to have pets and not to visit homes where these types of pets are kept.
 - *Mold/mildew*

Mold and mildew grow in areas that are dark, humid, and have poor ventilation. It is best to use the air conditioner and avoid using humidifiers. Reduce indoor humidity to less than 50 percent - use a dehumidifier, if needed. Empty and clean the dehumidifier daily.
 - *Cockroaches*

Some people are very allergic to the substance the cockroach leaves behind. Cockroaches are very common in warm climates and in homes of people living in the city. However, even in climates with much cooler temperatures, the use of central heat allows the cockroaches to live. To avoid exposure to cockroaches, it is best to use insect sprays (air out the house after spraying, however) and roach traps.

- Exercise

Even though exercise is a common asthma trigger, don't limit participation in sports/exercise, unless directed by a physician. Exercise is good for health and lungs. Persons with asthma should be able to participate in most physical activities. Always warm-up prior to exercise and cool down at the end of exercise. Using reliever medicine 15-20 minutes before starting exercise can be very helpful, as directed by the physician. Patients should talk with the physician about exercise and asthma if this is a problem.

- Irritants
 - *Smoke*

Do not allow family and friends to smoke anywhere inside the house. Do not allow smoking in the car at any time. Smoke is very irritating in an enclosed area and its odor may be trapped in the car's upholstery for a long period of time and continue to trigger symptoms. When eating out, always sit in non-smoking sections of restaurants. Child care providers should also be non-smokers.

- *Strong perfumes/odors*
Avoid things that have a strong smell such as cleaning products, perfumes, hair spray, tar, fresh paint, gasoline, insect sprays, and room deodorizers (Ohio State U.M.C., 2008).

Medication Therapy

Medication treatments for asthma include long-term control medications and short-term (quick-relief) medications. Long-term medication is taken every day to control symptoms and prevent occurrence of attacks. Quick-relief medication is taken to relieve the sudden onset of symptoms (as in an attack), and when symptoms only occur occasionally. The medication prescribed will depend on the type and severity of the asthma in conjunction with the patient's other medical needs.

The goal of long-term medications is to reduce and prevent the swelling of the airways that can trigger asthma attacks. These medications may be recommended for those who experience asthma symptoms three or more times a week, or those who experience symptoms at night three or more times a month. With long-term medications, it may take a few weeks for them to become effective. Long-term medications must be taken every day, even if the patient is feeling well (Ohio State U.M.C., 2008).

During an asthma attack, the muscles in and around the airway tighten. Quick-relief medications relax those muscles. The sooner the medication is taken after the onset of symptoms, the faster the asthma will be controlled. Sometimes, though, the relief is short-lived – about four hours. These medications do not keep symptoms from recurring – only long-term medications can do that. Many patients use both types of medication, especially if the asthma is severe or frequent. The long-term medication keeps the inflammation controlled and the quick-relief medication is used for asthma attacks.

There are several types of inhalation devices used to treat asthma. Inhalers deliver medication directly to the lungs and cause fewer side effects than those medications taken by mouth or injection. When the medication is inhaled, it goes directly to the lungs and they take a shorter amount of time to become effective. Inhalers can contain bronchodilator medications or anti-inflammatory medications.

Patient Education

Asthma patient education materials are available from a wide variety of sources. Practitioners should evaluate the quality and effectiveness of the information based on national guidelines and appropriate management of asthma, as well as up-to-date information for current preventive strategies. Education should be based on self-management so patients and families can be

provided with the skills necessary to control asthma and enhance their understanding and perception of the disease, as well as demonstrate positive outcomes and quality of life.

References

Guidelines for the Diagnosis and Management of Asthma – Full Report. National Heart Lung and Blood Institute. August 2007. Edited August 5, 2008. Retrieved February 9, 2009 from: <http://www.nhlbi.nih.gov/guidelines/asthma/>.

The Centers for Disease Control and Prevention. (2009). CDC National Asthma Control Program. *America Breathing Easier*, p.14 . Retrieved February 24, 2009 from: http://www.cdc.gov/asthma/pdfs/breathing_easier_brochure.pdf

The Ohio State University Medical Center. (2008). *All About Asthma*. Retrieved February 9, 2009 from: http://medicalcenter.osu.edu/patientcare/healthcare_services/allergy_asthma/about_asthma/Pages/index.aspx

Resources

American Lung Association. (2009). Asthma Management. Retrieved February 1, 2009 from: http://www.lungusa.org/site/c.dvLUK9O0E/b.22581/k.A24C/Asthma_Management.htm.

National Heart Lung and Blood Institute. (2009). What is Asthma. Retrieved February 1, 2009 from: http://www.nhlbi.nih.gov/health/dci/Diseases/Asthma/Asthma_WhatIs.html.