Section 19
Cardiorespiratory Conditions CAP

Problem

The Cardiorespiratory Conditions CAP alerts the health care professional to the need to assess and manage the person for possible cardiovascular or respiratory problems. Many, but not all, adults who have cardiorespiratory difficulties will already be under the care of a physician. In addition, some persons may develop new symptoms or an exacerbation of old symptoms that require medical or other intervention.

The prevalence of heart disease increases rapidly with age. In Western societies, 75% of all persons with heart failure are 60 years of age or older, and 20% or more of persons 75 years of age or older have a history of a heart attack or angina. Many older persons with hypertension may develop symptoms from an abrupt change in blood pressure or a new medication. Chronic obstructive pulmonary disease (COPD) is widespread especially in those who have smoked or who have worked in certain industries.

Some signs and symptoms, such as shortness of breath or chest pain associated with exertion, may be clearly attributable to the cardiorespiratory systems. However, in some cases such as general fatigue, the relationship to the cardiorespiratory systems may not be immediately apparent. Furthermore, signs and symptoms of acute illness, such as pneumonia, may be difficult to recognize in the presence of a chronic condition such as COPD. All such problems can severely restrict a person's lifestyle and should be monitored and addressed.

<BOX BEGIN>

Overall Goals of Care

- Help nonphysicians working with older adults in the community identify potential cardiovascular or respiratory symptoms.
- Refer to a physician and other health professionals those who exhibit signs and symptoms of cardiovascular or respiratory difficulties and are not already under active care.

</BOX END>

Cardiorespiratory Conditions CAP Triggers

Cardiovascular and respiratory disease in older adults may or may not be under treatment and the person may or may not have participated in cardiopulmonary self-management or other intervention programs. Limitation in functioning may not be recognized as being due to cardiorespiratory disease or may be attributed to the onset of old age. Many symptoms, such as shortness of breath, may be accepted and tolerated. Thus, this CAP identifies whether the symptom is present without first excluding those who may already be under a physician's care.

TRIGGERED

Persons who display any of the following symptoms:

- Chest pain

- Shortness of breath
- Irregular pulse
- Dizziness
- Presence of any of the following test results. (These items do not appear on the interRAI assessment forms and are available only if you or the physician ordered or completed the test. Also, they should not be taken as normal limits.)
  - Systolic blood pressure > 200 or < 100 mmHG
  - Respiratory rate > 20 per minute
  - Heart rate > 100 or < 50 per minute
  - Oxygen saturation < 94%

This triggered group includes 15% of persons in long-term care facilities, about 40% of persons receiving home care (9% with chest pain, 25% with shortness of breath, 15% with irregular pulse, and 20% with dizziness), and 35% of older adults living independently in the community (4% with chest pain, 15% with shortness of breath, 10% with irregular pulse, and 20% with dizziness).

NOT TRIGGERED — Persons who do not have any of the previously mentioned symptoms.

Cardiorespiratory Conditions CAP Guidelines

It is important to ensure that cardiorespiratory symptoms are evaluated. Many persons with such symptoms will require urgent attention, and there are many therapeutic options to treat these conditions, depending on the cause of the symptoms. Heart failure, for example, usually responds to treatment for a considerable period of time, leading to an improved quality of life in terms of exercise tolerance and degree of fatigue. In addition, some symptoms may not be immediately recognized as resulting from cardiovascular disease. For example, light-headedness, dizziness, or blackouts (syncope), often related to a drop in blood pressure, may also be the result of abnormalities of a heart valve or an arrhythmia, both of which may be amenable to medical or surgical intervention.

Frequently, persons may have both cardiovascular and respiratory illnesses. The principal symptoms and signs associated with cardiovascular and respiratory disease are as follows:

- **Cardiovascular disease** — Shortness of breath (dyspnea), chest pain, palpitations, swelling of the lower extremities, light-headedness, dizziness, blackouts (syncope).
- **Respiratory disease** — Shortness of breath, cough, sputum production, coughing up blood, wheezing, and chest pain. Sometimes persons simply say that “they cannot get enough air.” To determine the cause of one of these symptoms or signs, a thorough medical examination is required.

When present, ask the person whether a physician is aware of the problem and whether the person is under treatment for the condition. Regardless of the answer, suggest that the presence of these symptoms warrants further discussion with the physician.

The following material provides further information on these symptoms. It is provided to assist the clinician in discussing the problem with the person. But remember, the principal goal is to convince the person to see a physician.

Irregular pulse. A new irregular pulse always requires evaluation. If, for example, it is a reflection of atrial fibrillation, the person has an increased risk of stroke. However, this is just one of many causes of an irregular pulse.

Cough, sputum production, and wheezing. Cough, with or without sputum production, is initiated when the lining of the respiratory tract is irritated and is by far the most common respiratory symptom. Cough is commonly caused by upper respiratory infections of a viral nature. Sputum associated with infection, especially of a bacterial nature, often is colored and thick and viscous. Brown, pink, or dark coloration may be due to blood. Bloody sputum may result from an acute infection, a chronic one (for example, tuberculosis), a tumor, blood clots in the lungs, and a lengthy list of other conditions that always require medical evaluation. In addition, cough may be caused by a medication, most commonly one recommended for the treatment of hypertension or congestive heart failure. Nearly all heavy smokers have a chronic cough. Other causes include pneumonia, bronchitis, congestive heart failure (CHF), mild asthma, and, rarely, tumors. People with asthma or chronic lung disease, such as emphysema, may also complain of wheezing, which is a sense of difficulty moving air, especially on breathing out, often associated with an audible sound. If new in onset or severe, it requires urgent medical attention.

Similarly an increase in sputum production or a change in the character of the sputum needs to be evaluated by a physician.

Chest pain. Chest pain always requires a thorough medical evaluation. The cause often, but not always, may be able to be determined by a detailed history and physical examination. Usually, however, one or more blood tests and perhaps a radiologic study or even an endoscopic study as well as an electrocardiogram are needed to confirm the diagnosis.

The typical pain of heart (ischemic) disease is a squeezing, gripping pain. It is often felt in the center of the chest, but may be noted in the throat, one or both arms, the jaw and lower teeth, or even the back. The pain may be associated with exertion or palpitations and may reoccur under similar circumstances. When mild it may barely be noticed or incorrectly attributed to indigestion. It may persist or it may be transient. There are many other causes of chest pain that may be confused with pain originating in the heart, including esophageal disease, a chest infection, a pulmonary embolism (blood clot lodging in the lung), dissection of the aorta (tearing of the wall of this artery), and arthritis in the neck or back. Chest pain therefore requires an immediate medical evaluation. It is of particular concern when new in onset or when becoming worse, increasing in frequency, occurring at rest, of prolonged duration (longer than 10 minutes), or when it is associated with other symptoms or signs such as light-headedness or difficulty breathing.

Syncope or blackout. Sudden collapse with loss of consciousness and spontaneous recovery (fainting or syncope) often is caused by a cardiovascular problem, such as a heart attack or an arrhythmia. Other common causes include a drop in blood pressure (hypotension) associated with blood loss, dehydration, a postural change, medications or a change in a medication, a cardiovascular reflex after coughing or a bowel movement, or after eating a meal. Episodes of dizziness or light-headedness or a syncopal episode always require referral to a physician. Suspect dehydration if the person is on a diuretic or has reduced his or her fluid intake.

Edema (swelling) of the ankles or legs. Swelling of the ankles or legs that can be indented by pressing with the finger can be caused by a number of medical conditions. Common causes include heart failure, venous disease, as well as liver or kidney failure. If of recent onset and associated with pain, it may be due to an infection or a blood clot in one of the veins. If new, painful, unilateral, or progressive, or if it extends above the ankle or there is oozing of fluid, referral to a physician is indicated.

Shortness of breath (dyspnea). Shortness of breath is one of the most common signs of cardiac or respiratory disease. A physician needs to be consulted if it is of recent onset; progressively severe; occurs at night requiring the person to sit or stand for relief; prevents a person from lying flat; or is associated with other symptoms such as wheezing, bloody sputum, or chest pain.

Palpitations. This term refers to an awareness of the heartbeat. Almost always this symptom is associated with a rapid or irregular heartbeat and requires evaluation. If it is recent in onset, fast, or associated with other symptoms such as syncope, feeling of faintness, or chest pain, a referral is urgent.

High blood pressure. An elevated systolic (≥ 140) or diastolic (≥ 90) blood pressure requires medical evaluation and treatment in most older adults. Any pressure > 200 should be referred immediately to a physician.

Low blood pressure. Any systolic pressure < 100 mm Hg, or any drop in systolic blood pressure of > 20 mm Hg when changing position from lying or sitting to standing, could cause syncope, a stroke, a heart attack, or another serious condition. It could be due to dehydration, blood loss, or a medication. This needs to be confirmed immediately with repeated measurements, and the person needs to be referred to a physician.

Signs of respiratory distress. There are a number of signs of respiratory distress that the health care professional should watch for. These include increased respiratory rate, cyanosis, intercostal indrawing, forward leaning posture, and use of accessory muscles.

- Cyanosis is blue skin around the nail beds and lips or elsewhere. It indicates a low oxygen level and therefore a poor respiratory or cardiovascular status. Cyanosis is not always a reliable sign in persons with darker skin color.
- Intercostal indrawing is the observation of intercostal spaces being "sucked" into the chest on inspiration. This is an indication of fatigue of respiratory muscles.
- Forward leaning posture is an attempt to maximize the efficiency of the respiratory system.
- Paradoxical breathing is observed when the abdominal area does not protrude on inspiration and may indicate weakness of the diaphragm, the main muscle of respiration.

Smoking. Smoking is a long-recognized cause of cardiac and pulmonary diseases. Ceasing to smoke even after decades of smoking is to be vigorously encouraged. One benefit, for example, is that the risks of postsurgical complications are reduced even a few months after stopping.

Exercise and education programs. Persons may be triggered for ADL or IADL interventions. [See ADL and IADL CAPs.]. Evidence is accumulating that persons with many cardiovascular, respiratory, and neurological impairments can respond in

a safe and efficient manner to training programs that are physiologically based. In addition to exercise, programs for persons with COPD include education, self-management training, and psychological support. The goal of the programs is to improve physical function and endurance and to teach the person to recognize early signs of an exacerbation in order to avoid emergency room and hospital visits.

Additional Resources

American College of Cardiology/American Heart Association Web site for guidelines: www.acc.org

Global Initiative for Chronic Obstructive Lung Disease (GOLD) Web site: www.goldcopd.com/ and more specifically the guidelines www.goldcopd.com/Guidelineitem.asp?l1=2&l2=1&intId=989

Hunt SA, Baker DW, Chin MH, Cinquegrani MP, Feldman AM, Francis GS, Ganiats TG, Goldstein S, Gregoratos G, Jessup ML, Noble RJ, Packer M, Silver MA, Stevenson LW. 2001. ACC/AHA guidelines for the evaluation and management of chronic heart failure in the adult: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1995 Guidelines for the Evaluation and Management of Heart Failure).

Miriam Hospital Physical Activity Research Center: www.lifespan.org/behavmed/researchphysical.htm

University of Rhode Island Cancer Prevention Research Center: www.uri.edu/research/cprc/transtheoretical.htm

<BOX BEGIN>

Authors

Iain Carpenter, MD, FRCP
Lewis Lipsitz, MD
Knight Steel, MD

</BOX END>