CHAPTER 4

Breathing Emergencies

A *breathing emergency* is any respiratory problem that can threaten a person's life. Breathing emergencies happen when air cannot travel freely and easily into the lungs. Respiratory distress, respiratory arrest and choking are examples of breathing emergencies. In a breathing emergency, seconds count so you must react at once. This chapter discusses how to recognize and care for breathing emergencies.

BACKGROUND

The human body needs a constant supply of oxygen to survive. When you breathe through your mouth and nose, air travels down your throat, through your windpipe and into your lungs. This pathway from the mouth and nose to the lungs is called the *airway*.

As you might imagine, the airway, mouth and nose are smaller in children and infants than they are in adults (Fig. 4-1, A–B). As a result, they can be blocked more easily by small objects, blood, fluids or swelling.

In a breathing emergency, air must reach the lungs. For any person, regardless of age, it is important to keep the airway open when giving care.

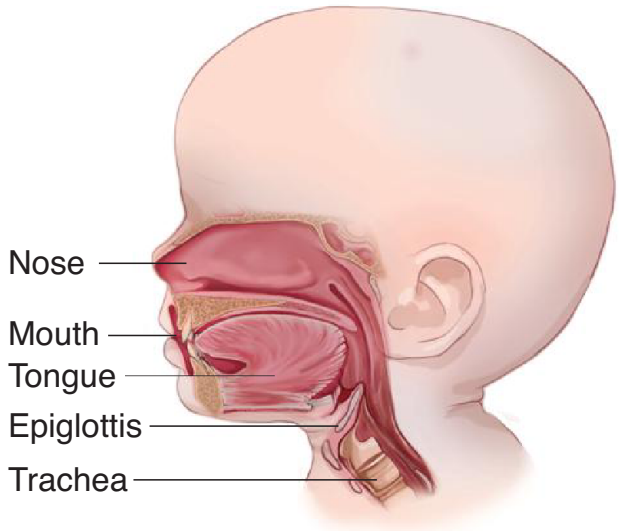

FIGURE 4-1, A *A child's airway*

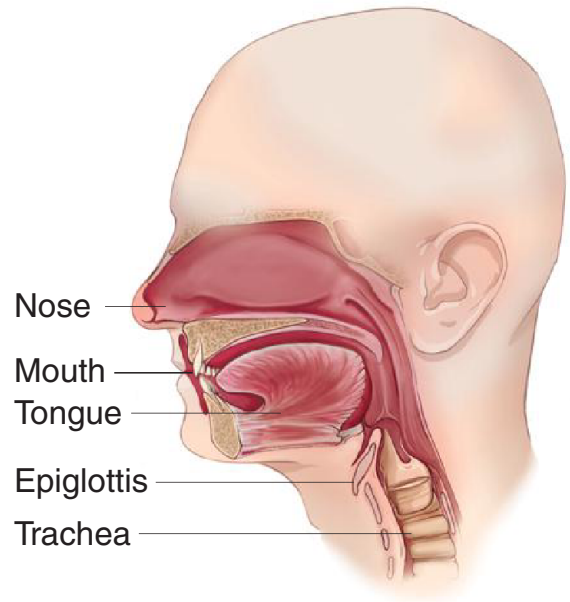

FIGURE 4-1, B *An adult's airway*

Once air reaches the lungs, oxygen in the air is transferred to the blood. The heart pumps the blood throughout the body. The blood flows through the blood vessels, delivering oxygen to the brain, heart and all other parts of the body.

In some breathing emergencies the oxygen supply to the body is greatly reduced, whereas in others the oxygen supply is cut off entirely. As a result, the heart soon stops beating and blood no longer moves through the body. Without oxygen, brain cells can begin to die within 4 to 6 minutes (Fig. 4-2). Unless the brain receives oxygen within minutes, permanent brain damage or death will result.

It is important to recognize breathing emergencies in children and infants and act before the heart stops beating. Frequently, an adult's heart stops working (known as *cardiac arrest*) because of heart disease. However, children and infants usually have healthy hearts. When the heart stops in a child or infant, it usually is the result of a breathing emergency.

No matter what the age of the person, trouble breathing can be the first signal of a more serious emergency, such as a heart problem. Recognizing the signals of breathing problems and giving care often are the keys to preventing these problems from becoming more serious emergencies.

If the injured or ill person is conscious, he or she may be able to indicate what is wrong by speaking or gesturing to you and may be able to answer questions. However, if you are unable to communicate with a

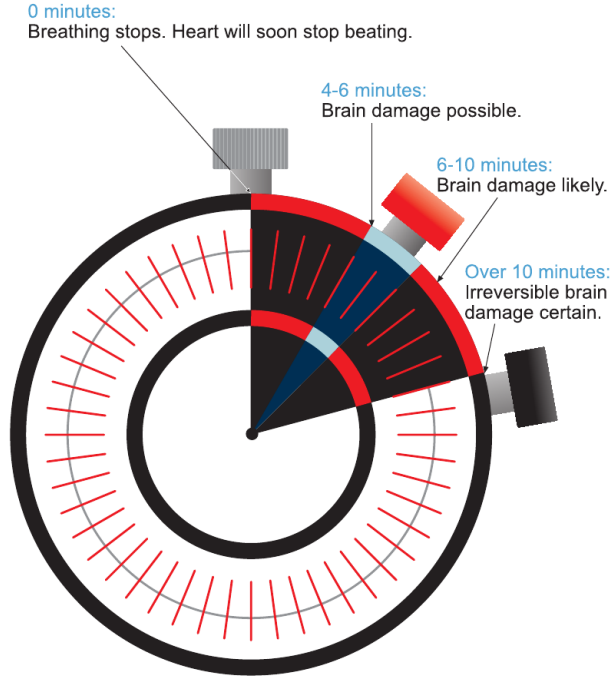

FIGURE 4-2 *Time is critical in breathing emergencies.*

person, it can be difficult to determine what is wrong. Therefore, it is important to recognize the signals of breathing emergencies, know when to call 9-1-1 or the local emergency number and know what to do until help arrives and takes over.

RESPIRATORY DISTRESS AND RESPIRATORY ARREST

Respiratory distress and respiratory arrest are types of breathing emergencies. *Respiratory distress* is a condition in which breathing becomes difficult. It is the most common breathing emergency. Respiratory distress can lead to *respiratory arrest*, which occurs when breathing has stopped.

Normal breathing is regular, quiet and effortless. A person does not appear to be working hard or struggling when breathing normally. This means that the person is not making noise when breathing, breaths are not fast and breathing does not cause discomfort or pain. However, it should be noted that normal breathing rates in children and infants are faster than normal breathing rates in adults. Infants have periodic breathing, so changes in breathing patterns are normal for infants.

You usually can identify a breathing problem by watching and listening to the person's breathing and by asking the person how he or she feels.

Causes of Respiratory Distress and Respiratory Arrest

Respiratory distress and respiratory arrest can be caused by:

- Choking (a partially or completely obstructed airway).
- Illness.
- Chronic conditions (long-lasting or frequently recurring), such as asthma.
- Electrocution.
- Irregular heartbeat.
- Heart attack.
- Injury to the head or brain stem, chest, lungs or abdomen.
- Allergic reactions.
- Drug overdose (especially alcohol, narcotic painkillers, barbiturates, anesthetics and other depressants).
- Poisoning.
- Emotional distress.
- Drowning.

Asthma

Asthma is the inflammation of the air passages that results in a temporary narrowing of the airways that carry oxygen to the lungs. An asthma attack happens when a trigger, such as exercise, cold air, allergens or other irritants, causes the airway to swell and narrow. This makes breathing difficult.

The Centers for Disease Control and Prevention (CDC) estimate that in 2005, nearly 22.2 million Americans were affected by asthma. Asthma is more common in children and young adults than in older adults, but its frequency and severity is increasing in all age groups in the United States. Asthma is the third-ranking cause of hospitalization among those younger than 15 years.

You often can tell when a person is having an asthma attack by the hoarse whistling sound that he or she makes while exhaling. This sound, known as *wheezing*, occurs because air becomes trapped in the lungs. Trouble breathing, shortness of breath, tightness in the chest and coughing after exercise are other signals of an asthma attack. Usually, people diagnosed with asthma prevent and control their attacks with medication. These medications reduce swelling and mucus production in the airways. They also relax the muscle bands that tighten around the airways, making breathing easier. For more information on asthma, see Chapter 10.

Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD) is a long-term lung disease encompassing both chronic bronchitis and emphysema. COPD causes a person to have trouble breathing because of damage to the lungs. In a person with COPD, the airways become partly blocked and the air sacs in the lungs lose their ability to fill with air. This makes it hard to breathe in and out. There is no cure for COPD, and it worsens over time.

The most common cause of COPD is cigarette smoking, but breathing in other types of lung irritants, pollution, dust or chemicals over a long period also can cause COPD. It usually is diagnosed when a person is middle aged or older. It is the fourth-ranking cause of death in the United States and a major cause of illness.

Common signals of COPD include:

- Coughing up a large volume of mucus.
- Tendency to tire easily.
- Loss of appetite.
- Bent posture with shoulders raised and lips pursed to make breathing easier.
- A fast pulse.
- Round, barrel-shaped chest.
- Confusion (caused by lack of oxygen to the brain).

Emphysema

Emphysema is a type of COPD. *Emphysema* is a disease that involves damage to the air sacs in the lungs. It is a chronic (long-lasting or frequently recurring) disease that worsens over time. The most common signal of emphysema is shortness of breath. Exhaling is extremely difficult. In advanced cases, the affected person may feel restless, confused and weak, and even may go into respiratory or cardiac arrest.

Bronchitis

Bronchitis is an inflammation of the main air passages to the lungs. It can be acute (short-lasting) or chronic. Chronic bronchitis is a type of COPD. To be diagnosed with chronic bronchitis, a person must have a cough with mucus on most days of the month for at least 3 months.

Acute bronchitis is *not* a type of COPD; it develops after a person has had a viral respiratory infection. It first affects the nose, sinuses and throat and then spreads to the lungs. Those most at risk for acute bronchitis include children, infants, the elderly, people with heart or lung disease and smokers.

Signals of both types of bronchitis include:

- Chest discomfort.
- Cough that produces mucus.
- Fatigue.
- Fever (usually low).
- Shortness of breath that worsens with activity.
- Wheezing.

Additional signals of chronic bronchitis include:

- Ankle, feet and leg swelling.
- Blue lips.
- Frequent respiratory infections, such as colds or the flu.

Hyperventilation

Hyperventilation occurs when a person's breathing is faster and more shallow than normal. When this happens, the body does not take in enough oxygen to meet its demands. People who are hyperventilating feel as if they cannot get enough air. Often they are afraid and anxious or seem confused. They may say that they feel dizzy or that their fingers and toes feel numb and tingly.

Hyperventilation often results from fear or anxiety and usually occurs in people who are tense and nervous. However, it also can be caused by head injuries, severe bleeding or illnesses, such as high fever, heart failure, lung disease and diabetic emergencies. Asthma and exercise also can trigger hyperventilation.

Hyperventilation is the body's way of compensating when there is a lack of enough oxygen. The result is a decrease in carbon dioxide, which alters the acidity of the blood.

Allergic Reactions

An *allergic reaction* is the response of the immune system to a foreign substance that enters the body. Common allergens include bee or insect venom, antibiotics, pollen, animal dander, sulfa and some foods such as nuts, peanuts, shellfish, strawberries and coconut oils.

Allergic reactions can cause breathing problems. At first the reaction may appear to be just a rash and a feeling of tightness in the chest and throat, but this condition can become life threatening. The person's face, neck and tongue may swell, closing the airway.

A severe allergic reaction can cause a condition called *anaphylaxis,* also known as *anaphylactic shock.* During anaphylaxis, air passages swell and restrict a person's breathing. Anaphylaxis can be brought on when a person with an allergy comes into contact with allergens via insect stings, food, certain medications or other substances. Signals of anaphylaxis include a rash, tightness in the chest and throat, and swelling of the face, neck and tongue. The person also may feel dizzy or confused. Anaphylaxis is a life-threatening emergency.

Some people know that they are allergic to certain substances or to insect stings. They may have learned to avoid these things and may carry medication to reverse the allergic reaction. People who have severe allergic reactions may wear a medical identification (ID) tag, bracelet or necklace.

Croup

Croup is a harsh, repetitive cough that most commonly affects children younger than 5 years. The airway constricts, limiting the passage of air, which causes the child to produce an unusual-sounding cough that can range from a high-pitched wheeze to a barking cough. Croup mostly occurs during the evening and nighttime.

Most children with croup can be cared for at home using mist treatment or cool air. However, in some cases, a child with croup can progress quickly from respiratory distress to respiratory arrest.

Epiglottitis

Epiglottitis is a far less common infection than croup that causes severe swelling of the epiglottis. The epiglottis is a piece of cartilage at the back of the tongue.

When it swells, it can block the windpipe and lead to severe breathing problems. Epiglottitis usually is caused by infection with *Haemophilus influenzae* bacteria.

The signals of epiglottitis may be similar to croup, but it is a more serious illness and can result in death if the airway is blocked completely.

In the past, epiglottitis was a common illness in children between 2 and 6 years of age. However, epiglottitis in children has dropped dramatically in the United States since the 1980s when children began routinely receiving the H. influenzae type B (Hib) vaccine.

For children and adults, epiglottitis begins with a high fever and sore throat. A person with epiglottitis may need to sit up and lean forward, perhaps with the chin thrust out in order to breathe. Other signals include drooling, difficulty swallowing, voice changes, chills, shaking and fever.

Seek medical care immediately for a person who may have epiglottitis. This condition is a medical emergency.

What to Look For

Although breathing problems have many causes, you do not need to know the exact cause of a breathing emergency to care for it. You do need to be able to recognize when a person is having trouble breathing or is not breathing at all. Signals of breathing emergencies include:

- Trouble breathing or no breathing.
- Slow or rapid breathing.
- Unusually deep or shallow breathing.
- Gasping for breath.
- Wheezing, gurgling or making high-pitched noises.
- Unusually moist or cool skin.
- Flushed, pale, ashen or bluish skin.
- Shortness of breath.
- Dizziness or light-headedness.
- Pain in the chest or tingling in the hands, feet or lips.
- Apprehensive or fearful feelings.

When to Call 9-1-1

If a person is not breathing or if breathing is too fast, too slow, noisy or painful, call 9-1-1 or the local emergency number immediately.

What to Do Until Help Arrives

If an adult, child or infant is having *trouble breathing*:

- Help the person rest in a comfortable position. Usually, sitting is more comfortable than lying down because breathing is easier in that position (Fig. 4-3).

FIGURE 4-3 *A person who is having trouble breathing may breathe more easily in a sitting position.*

- If the person is conscious, check for other conditions.
- Remember that a person having breathing problems may find it hard to talk. If the person cannot talk, ask him or her to nod or to shake his or her head to answer yes-or-no questions. Try to reassure the person to reduce anxiety. This may make breathing easier.
- If bystanders are present and the person with trouble breathing is having difficulty answering your questions, ask them what they know about the person's condition.
- If the person is hyperventilating and you are sure whether it is caused by emotion, such as excitement or fear, tell the person to relax and breathe slowly. A person who is hyperventilating from emotion may resume normal breathing if he or she is reassured and calmed down. If the person's breathing still does not slow down, the person could have a serious problem.

If an adult is unconscious and *not* breathing, the cause is most likely a cardiac emergency. Immediately begin CPR starting with chest compressions. If an adult is not breathing because of a respiratory cause, such as drowning, or drug overdose, give 2 rescue breaths after checking for breathing and before quickly scanning for severe bleeding and beginning CPR.

Remember, a nonbreathing person's greatest need is for oxygen. If breathing stops or is restricted long enough, a person will become unconscious, the heart will stop beating and body systems will quickly fail.

If a child or an infant is unconscious and *not breathing*, give 2 rescue breaths after checking for breathing and before quickly scanning for severe bleeding and beginning CPR.