

CHAPTER 9

HEART DISEASE SYMPTOMS

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INTRODUCTION

Each year about 500,000 people die from heart attacks. An additional 500,000 undergo coronary artery bypass surgery or balloon angioplasty for advanced heart disease. Early recognition and treatment of heart disease is vital to prevent some of these events. In cases of heart attack, it could save thousands of lives each year; in other types of heart disease, early

intervention is likely to be more effective than treatment begun after the disease has advanced.

There are basically seven classic symptoms of heart disease which, when recognized by simple observation and combined with an individual's age and family history of heart disease, can lead to an accurate and early diagnosis. (See Table 9.1.) Not all people with heart disease will experience symptoms, and in some cases symptoms that are suggestive of heart disease will be due to another cause. However, the presence of any of the symptoms discussed in this

Table 9.1
The Classic Symptoms of Heart Disease

| Symptom | Most common cause | What to do |
|--------------|--|---|
| Dyspnea | Altered heart function | See a physician |
| Chest pain | Coronary artery disease | Call a physician or go to an emergency room |
| Palpitations | Extra beats | Abstain from coffee, cigarettes, and get adequate rest. (If dizziness or chest pain accompany palpitations, consult a physician.) |
| Syncope | Heart rhythm disturbance | See a physician |
| Edema | Cardiac dysfunction and/or abnormalities of veins in lower extremities | See a physician |
| Cyanosis | Pulmonary insufficiency | See a physician |
| Fatigue | Lack of sleep | Get adequate rest |

chapter should serve as a possible early warning to seek advice from a physician.

DYSPNEA (SHORTNESS OF BREATH)

Dyspnea, a medical term for shortness of breath, may be the earliest and most common symptom of heart disease. Everyone experiences shortness of breath occasionally, so it is important to discern when it is appropriate and when it is not. It is normal for an individual to feel short of breath after heavy exertion such as running or walking up a flight of stairs, or after sexual intercourse. It is abnormal to experience shortness of breath after routine walking, walking a few steps, or while at rest. Thus, when dyspnea is inappropriate to the activity, it may be considered a symptom of heart disease or, in some cases, of another illness, such as asthma.

A change in symptoms is another sign that medical attention should be sought. Dyspnea should be of particular concern if it begins suddenly. The abrupt onset of dyspnea is often due to heart failure, whereas chronic shortness of breath is more likely to be a symptom of coronary artery disease or valvular heart disease or of another condition, such as chronic lung disease or emphysema.

Dyspnea, however, may not always be easy to recognize, because it is a subjective symptom; some individuals can experience inappropriate shortness of breath, yet be unaware of it or deny it, while others may appear to be breathing normally, yet feel short of breath.

There are three basic types of dyspnea that are generally investigated when a physician is making a diagnosis: cardiac, pulmonary, and functional (psychological).

Cardiac dyspnea generally occurs when the heart's pumping action has become weakened or something obstructs the free flow of blood through the heart into the blood vessels. Poor pumping quality can be due to weakened heart muscle caused by coronary artery disease narrowing of a valve between the heart's pumping chambers can also prevent blood from flowing from chamber to chamber. If too little blood is pumped forward with each beat there is a buildup of pressure in the lungs.

Diminished pumping quality creates shortness of breath because blood and fluids begin to back up. Pressure increases in the heart and ultimately in the lungs via the pulmonary veins. This added pressure

in the pulmonary veins results in a leaking of fluid from the bloodstream into the air sacs in the lungs. As the amount of fluid increases in the air sacs, breathing becomes more difficult. In addition, fluid may also back up into the lower legs, causing swelling.

With or without fluid accumulation in the air sacs, the buildup of pressure in the pulmonary veins also can cause the lung tissue to lose its suppleness and create the sensation of labored breathing.

Pulmonary dyspnea, or shortness of breath as a result of lung disease, is usually due to the narrowing or stiffening of the airways, which makes it physically difficult to get air in and out of the lungs. People with asthma or emphysema often experience pulmonary dyspnea; this may occur when engaging in movements that prevent the lungs from expanding properly, even such simple ones as bending over or getting dressed.

Distinguishing between cardiac dyspnea and pulmonary dyspnea is not always simple, but people with pulmonary dyspnea, whose lungs have lost their suppleness over a long period of time, tend to breathe more slowly and deeply, especially in moving air out of the lungs, whereas those with cardiac dyspnea tend to move air in and out of the lungs in short, shallow breaths.

Functional (or psychological) dyspnea is usually brought on by feelings of anxiety. In this case, breathing tends to be shallow and rapid, causing hyperventilation. This type of dyspnea may be even more dramatic than shortness of breath caused by mild heart failure. The most severe example is the shortness of breath that ensues after a panic attack. The dyspnea usually will go away with exercise or if the person takes slow, deep, controlled breaths or, if the dyspnea is extreme, holds the breath. Psychological dyspnea is often characterized by a sensation of difficulty in getting air in.

Even though this is a psychological rather than a cardiac condition it should not be ignored. When panic disorder is diagnosed, it can be successfully treated by a variety of means, including anti-anxiety drugs or talk therapy, or both.

Other major causes of shortness of breath include pneumothorax, pulmonary embolism, and paroxysmal nocturnal dyspnea.

Pneumothorax, or a collapsed lung, is a relatively uncommon condition that occurs when air escapes through a leak in one of the air sacs in the lung and builds up in the chest cavity. Its onset is sudden, it may not be accompanied by any other sign of heart or lung disease, and it is not necessarily a sign of

illness. It may occur spontaneously or as a result of injury. It is sometimes seen after heavy exertion in otherwise healthy athletes.

Pulmonary embolism, or a blood clot in the lungs, is a problem in people who are bedridden or recuperating from major surgery. It occurs more frequently after pelvic or hip surgery, because patients tend to be immobilized for a long period of time; lack of exercise limits the return of blood flow from the legs. Pulmonary embolism also may occur, usually within 48 hours, in people who have experienced a bone fracture.

Travelers should note that sitting for long periods of time in a car or an airplane can increase the risk of pulmonary embolism. Stopping the car periodically to move around and stretch or getting up and walking down the aisle at least once an hour on a cross-country flight lowers the risk by promoting blood flow to and from the legs. Pulmonary emboli (more than one clot) may also be found in persons with phlebitis or inflammation of the deep veins in the legs. A clot forms in the veins and is thrown off into the circulation system, ultimately getting trapped in an artery in the lung.

Paroxysmal nocturnal dyspnea is characterized by waking up short of breath after about two hours of sleep. It results from a transfer of fluid that accumulates in the legs during the day and is reabsorbed into the bloodstream at night. The result is an added workload on the heart and the buildup of pressure in the lungs.

CHEST PAIN

Pain in the chest is the second most common symptom of heart disease and may be due to angina, a heart attack, dissection of the aorta, or an inflammation of the lining of the heart called pericarditis, all of which are described below. (See box, “Possible Causes of Chest Pain.”) But not all chest pain is due to heart problems. Pain in the chest may originate from a variety of other structures in the chest cavity, including the aorta, the pulmonary arteries, the pleura (the lining of the lungs), the esophagus, or even the stomach. Other superficial causes of chest pain may be a pulled muscle in the chest wall, strained cartilage, irritated joints, or pinched nerves in the thoracic spine.

Chest pain may also occur when organs below the chest cavity become irritated or diseased, such as a

Possible Causes of Chest Pain

1. Coronary heart disease
2. Esophagitis
3. Gallbladder disease
4. Peptic ulcer
5. Hiatus hernia
6. Musculoskeletal pain
7. Cervical spine disease
8. Dissecting aneurysm
9. Pulmonary embolus and other lung disorders
10. Mitral valve prolapse
11. Pericarditis
12. Anxiety states

gallbladder that is blocked by stones, an ulcerated stomach, or an inflamed pancreas. Heartburn caused by stomach acid refluxing into the esophagus is also commonly confused with chest pain.

Although chest pain may have many different causes, people who experience it should always let their physician decide whether it is related to heart disease. Any steady, squeezing pain in the center of the chest that lasts for more than two minutes may be a symptom of heart disease and should not be ignored. Some people who have died from heart attacks might have been saved had they not delayed seeking treatment because they misinterpreted the pain or believed it would go away.

When a physician evaluates chest pain in a patient, he or she considers the quality of the pain, its duration, the precipitating factors, where it appears to be emanating from, and where it goes.

Angina pectoris, or chest pain from the heart, which was first described by the British physician William Heberden more than 200 years ago, occurs because the heart muscle is not receiving enough oxygen to function properly. The heart, like any muscle, requires a steady and adequate supply of oxygen to expand and contract.

The heart muscle receives its primary oxygen supply from the coronary arteries. When these arteries become narrowed, usually because of cholesterol plaque formation, the blood supply, and thus the amount of oxygen, reaching the heart may be insufficient. When the heart muscle’s demand for oxygen becomes greater than the supply, which generally

occurs during exertion or moments of great anxiety, pain fibers in the muscle are stimulated and angina occurs. Most people describe the quality of angina as a pressure in the chest or as if the heart were being squeezed in a vise.

Common activities that increase the demand for oxygen and cause angina include jogging, carrying a suitcase while running to catch a plane, walking briskly up the stairs, and emotional engagements (such as a family argument or a dispute at work) that cause the heart to beat faster and the blood pressure to elevate. Oxygen demand also may exceed the supply after a big meal, when blood and oxygen are diverted from the heart to the stomach and intestinal tract. An easy way to remember the major causes of angina is to think of the so-called three Es: exercise, emotion, and eating.

The pain during angina may be confined to the center of the chest or may also radiate from the center of the chest to the shoulders and down the inside of the left arm. At times it can radiate to the jaw and be confused with a toothache. It generally lasts for two to three minutes and usually subsides when the person stops the activity and rests. When arteries are severely narrowed, angina may occur at rest or after only minimal activity.

Depending on the degree of the narrowing in the coronary arteries, the onset of angina after exertion may be rapid or delayed. The greater the narrowing, the more rapid the onset of angina and the longer it may persist.

A heart attack occurs when one of the arteries supplying blood to the heart muscle becomes completely blocked by a combination of the long-standing cholesterol plaque and a blood clot at the site of the narrowing. In most cases, the plaque has broken through the smooth lining of the artery and attracts sticky substances in the blood, called platelets and fibrin, which accumulate and form a clot.

The pain of a heart attack often radiates to the same areas as in angina, but it will be of longer duration than angina and it does not go away with rest. Although some heart attacks can be “silent” (occurring without pain), the nature of the pain is most often severe and may be accompanied by nausea, clamminess, sweating, and the feeling of great anxiety or dread. A heart attack may occur during heavy exertion, but it happens more frequently at rest. The most common time of day for a heart attack to occur is from 6:00 A.M. to noon.

Sometimes a panic attack can mimic a heart attack. This tends to occur primarily in younger people who have an anxiety disorder. Panic attacks also are more

likely to be experienced by women than by men. But whether the chest pain is of cardiac or psychological origin, any of the above symptoms in a person over 40 years of age warrants a phone call for medical care.

Dissection of the aorta is another cause of chest pain. This occurs when the major artery leading away from the heart undergoes a disruption in the inner layers of its lining. Blood enters between the layers, then is pushed along the length of the artery in a pulsing fashion that creates severe pain. Dissection most frequently occurs at the site of a ballooning out or weakening of the aorta and is called an aortic aneurysm. It is most often seen in elderly people with a history of high blood pressure, but it can occur at younger ages with rare medical conditions such as the Marfan syndrome, in which people characteristically are very tall, with long arms and legs. For example, there have been rare but unfortunate cases in which basketball or volleyball players have died suddenly from the Marfan syndrome.

The pain from a dissecting aneurysm may radiate from the front of the chest to the back, or outward from between the shoulder blades. Fainting may occur when blood flow to the brain is blocked, and stroke may occur when the carotid artery is blocked. The condition should always be treated as a medical emergency. It is fatal in more than 50 percent of untreated patients. Fortunately, this is rather rare.

Pericarditis can cause chest pain when the thin, smooth double membrane of the heart becomes inflamed. Both the heart and lungs are covered by this type of cellophane-like membrane. The pain is caused by friction as the two inflamed layers rub against each other with the normal movement of the heart. Pericarditis is usually the result of an infection with a virus, most commonly the Coxsackie virus Type B.

In the early stages, pericarditis may be difficult to distinguish from a heart attack. The diagnosis may be confirmed if a “rub” is heard with a stethoscope. This occurs as the two membrane layers rub together. Although it is less common, pericarditis may be caused by a chest injury, such as hitting the steering wheel of car in a traffic accident. A malignant tumor also can cause pericarditis when it invades the chest cavity. This is rare but may occur with lung or breast cancer, or with a lymphoma in the elderly. Tuberculosis, which is being seen more frequently in underprivileged populations and in people with the human immunodeficiency virus (HIV), also may cause pericarditis.

Functional, or so-called psychological, chest pain is more difficult to diagnose because in some cases

it may actually have a physical basis. This condition is being studied in a group of middle-aged women who experience chest pain but who are found after diagnostic tests to have normal coronary arteries. The new evidence suggests that a hormonal imbalance may contribute to the pain. Some doctors are calling this condition microvascular angina. Replacement estrogen therapy may be extremely therapeutic.

PALPITATIONS

Ordinarily, people are unaware of their heartbeat, and for good reason: The heart of an average person beats about 500,000 times per week.

Palpitation is the awareness of one's heartbeat and is often quite disturbing when it occurs. Physicians say it is one of the symptoms most likely to bring a patient to the office for an evaluation of heart disease.

Palpitations are different from the expected pounding one feels after exercise or heavy exertion. People who experience palpitations often describe the sensation as a fluttering-like a bird beating its wings in the chest—or a thumping, flip-flopping, skipped heartbeat, or a pounding in the chest or neck region.

The most common form of palpitation is not due to heart disease, but may simply be a heightened awareness of the heartbeat because of anxiety or tension. Palpitation is often experienced during a panic attack along with symptoms of tingling and shortness of breath caused by hyperventilation.

Palpitations also may be sensed in the presence of premature ventricular or atrial beats. The heart normally beats in a steady rhythm, like a drummer in a marching band. On occasion, an extra beat will occur prematurely and the regularity of the heart rhythm will be disturbed. This premature beat, as it is called, will be followed by a heavy beat, as if the heart were trying to catch up. This will be felt as an extra beat. Even though palpitations are most often not due to heart disease, they should always be brought to the attention of a physician if they happen repeatedly.

Palpitations not related to heart disease may be brought on by exercise, eating, emotions, smoking, drinking alcohol or caffeine-containing beverages, or taking certain prescription drugs.

Irregular or very rapid heartbeats, known as arrhythmias, may occur in people without heart disease but may also be indicative of cardiac problems. Ex-

tremely rapid heartbeats that occur without exertion are often due to conditions called *supraventricular tachycardia* or paroxysmal atrial *tachycardia*, indicating that the rapid heartbeat is originating in the upper, or atrial, chambers of the heart. Usually the individual feels well except for the palpitations, which are generally short-lived. Nevertheless, anyone who experiences a series of rapid heartbeats without exertion, especially when the condition persists more than a few minutes, should have a medical evaluation.

Most serious is a condition called ventricular *tachycardia*, which generally occurs in people with well-established heart disease. Here the arrhythmias originate in the ventricular, or lower, pumping chambers of the heart during ventricular tachycardia, the individual will often feel quite weak and short of breath because the amount of blood the heart is able to pump out is greatly reduced.

Frustrating to both patients and doctors is that palpitations often subside before they can be evaluated by examination. It is important for individuals to remember when they occur and how they feel. A Helter monitor examination or transtelephonic monitoring can often help diagnose otherwise elusive symptoms.

SYNCOPE (FAINTING SPELLS)

Syncope simply means fainting or the sudden loss of consciousness. Fainting usually results after the brain has been deprived of oxygen and blood for about ten seconds. Syncope can be caused by any number of conditions that result in the deprivation of oxygen and blood from the brain. (See box, "Causes of Faint-

Causes of Fainting

1. Low blood pressure
2. Carotid artery narrowing (stenosis)
3. Slow heart rate
4. After coughing (cough syncope)
5. During urination (micturition syncope)
6. Cardiac arrhythmias
7. Hypoglycemia (low blood sugar)
8. Aortic valve narrowing (stenosis)
9. Epilepsy

ing.”) The general causes of fainting include cardiac problems, diseases of the brain, and a variety of abnormalities of the arteries and veins that secondarily cause inadequate blood flow to the brain. Most commonly, it is caused by an abnormal reaction of the vagus nerve, which can temporarily cause a slow heart rate and a decrease in blood to the brain. This phenomenon, known as a vasovagal response or vasovagal syncope, can be caused by fright (as sometimes happens when donating blood), pain, or trauma.

Syncope is considered a potentially serious symptom, although most of the time it has a benign cause. For example, Victorian ladies who swooned when overwhelmed by a great emotional event did not have a serious underlying disease.

The most common cardiac cause of syncope is an irregular heartbeat or arrhythmia, especially a type of arrhythmia called heart block. This condition is characterized by an extremely slow heartbeat that results in an inadequate blood and oxygen supply being pumped to the brain. Very rapid heartbeats (usually more than 150 beats per minute) also can cause the heart to pump inefficiently, sending an insufficient amount of blood to the brain.

Syncope also maybe due to an obstruction in the blood vessels in the neck that carry blood and oxygen to the brain. A very narrowed valve leading out of the heart may prevent adequate blood from reaching the brain; this also can cause syncope. Or a heart attack may result in fainting when the heart muscle becomes severely weakened and stops pumping temporarily. This is not, however, a common symptom of heart attack.

When fainting occurs frequently, it maybe due to a narrowing of the carotid arteries, which serve as conduits for blood and oxygen to the brain. Less common, and generally less serious, is fainting that occurs with a condition resulting from an overactive carotid sinus reflex. This occurs when a person turns his or her head and activates the reflex, which temporarily slows the heart rate and decreases blood pressure.

Some people can experience syncope after standing still, especially with the knees locked for long periods of time, as do soldiers standing at attention, or people at a cocktail party in a hot room, or singers standing in a church choir. Blood pools in the legs, leading to an inadequate blood flow to the heart and then to the brain. In younger people, this is probably only a temporary condition that can be relieved by changing posture, moving the legs around, or sitting down.

Fainting can also be caused by an abnormal metabolic condition, such as occurs when a diabetic patient takes too much insulin. If an individual's blood sugar levels fall too low, the blood may not be able to carry enough oxygen to nourish the brain.

Micturition (urination) syncope is a form of fainting that typically occurs in the middle of the night in elderly men with prostate problems. This happens when blood flow is temporarily diverted from the brain as the individual stands from a reclining position or when he must bear down in order to urinate. This is not common, but should be considered before a lot of tests to look for more serious problems are scheduled.

Other noncardiac causes of syncope include hyperventilation, hysteria, and epilepsy.

E D E M A

Edema is a swelling or puffiness of tissue around the ankles, legs, eyes, chest wall, or abdominal wall. The swelling is due to retention of water or lymph fluid in the cells of the tissue. Technically, edema is classified as a sign, rather than a symptom, because it is physically observable. For example, a sign of a broken arm is severe swelling, while the symptom is pain.

Edema is a common sign of heart disease. The site of edema serves as a signal for several different problems with the heart. If the muscle of the right side of the heart is weakened and the pumping quality is diminished, edema may be noted in the abdomen or legs as pressure builds behind the right heart.

Swelling that occurs in the ankles in the evening after standing during the day may indicate that an individual is retaining salt and water, which maybe the result of right-sided heart failure. (If the left side of the heart is weakened, pressure will build in the pulmonary veins, then the lungs, and also lead to dyspnea, but not edema.) This may also be the result of gravity in people who are sedentary; the lack of exercise results in blood being retained in the lower legs and not returning to the heart. Individuals with varicose veins and other abnormalities in the veins of the lower extremities may develop ankle edema as well.

A second major cause of edema is kidney disease, sometimes called nephrotic syndrome. This means the kidney is not getting rid of salt and water adequately and allows fluid to buildup in the body.

Edema may also be caused by liver disease. Albumin, which is made by the liver, is a vital protein

in the blood that keeps fluid from escaping from the blood vessels into the surrounding tissues. Liver diseases, such as cirrhosis caused by alcoholism, affect the production of albumin and cause edema.

At times, edema may result from an allergic reaction to substances such as foods, insect venom, or drugs such as the ACE inhibitors, which are used to treat heart failure or high blood pressure. This syndrome is sometimes called angioneurotic edema. It may be characterized by local hives or swelling at the site of a bite or sting, or by a generalized systemic reaction that includes swelling around the eyes and swelling of the tissues of the throat, leading to asphyxiation. Fortunately, this symptom is rare.

Edema also may result secondarily from interference with the lymphatic system. This occurs sometimes in women who have undergone surgery for breast cancer that included removal of the lymph nodes in the axillas or armpits. Similarly, cancer that has spread to the lymphatic system may lead to swelling of the arms or legs.

Edema is nearly always considered abnormal and a potential sign of disease. However, there is probably no cause for concern when edema occurs on a hot day when an individual has consumed a generous amount of water and salty foods. It also is not uncommon for the ankles and feet to swell somewhat during late pregnancy and in travelers who have been sitting for a long period of time.

CYANOSIS

Cyanosis is the bluish discoloration of the skin and mucous membranes. It is caused by too little oxygen-carrying hemoglobin in the blood that flows through the capillaries. The discoloration usually is most apparent in the fingernail beds and around the lips. Like edema, cyanosis is more a sign of heart disease than it is a symptom. Most people are familiar with cyanosis from historical accounts of the so-called royal blue bloods of England. A common and familiar type of cyanosis is that which occurs when an individual has been outside in the cold for too long.

There are two primary types of cyanosis: central cyanosis and peripheral cyanosis. The first type, from which the term “blue blood” originated, is due to an inherited form of heart disease. In central cyanosis, there is an abnormal mixing of venous blood with arterial blood. Venous blood is normally bluish in color because it is carrying little oxygen, having given

up its oxygen to the tissues. Arterial blood is red because it has become enriched with the oxygen inhaled through the lungs.

Central cyanosis generally occurs when the venous and arterial blood are mixed together in the heart, either because of a congenital opening between the left and right sides of the heart or because of a genetically defective heart in which there is a common mixing chamber. It may also be a result of advanced lung disease, such as emphysema, which prevents arterial blood from absorbing enough oxygen.

Peripheral cyanosis is the type commonly caused by exposure to cold temperatures. This occurs when the body attempts to conserve heat for vital organ functions by constricting the capillaries of the skin and slowing the blood flow. The body tissues respond by removing excessive amounts of oxygen from the capillary blood. Peripheral cyanosis can occur in anyone following exposure to the cold, but may also occur in people with diseased arteries.

The two types of cyanosis are generally easily differentiated by their observable signs. People with peripheral cyanosis display the bluish discoloration only on skin surfaces, primarily the fingers, cheeks, nose, and outer areas of the lips. The color returns when the areas are warmed. Those with central cyanosis also display discoloration around the conjunctival of the eyes and inside the oral cavity, including the tongue.

In addition to the congenital defects that characteristically cause central cyanosis, it can also be the result of severe heart disease and cardiogenic shock—shock caused by the heart’s failure to pump adequately.

FATIGUE

While fatigue is a common complaint of patients with heart disease, it is also a very elusive and subjective symptom—a common symptom of many physical diseases as well as depression. Basically, cardiac-related fatigue will be of recent onset. The individual will begin the day with a relatively normal energy level, then become increasingly tired through the day to the point of exhaustion. This is because the heart muscle has become weakened and lost its ability to pump enough blood and oxygen for the body to function normally.

Fatigue associated with the diminished pumping ability of the heart is often described by individuals

STEPS IN MAKING A DIAGNOSIS

as weakness or heaviness of the legs. Such individuals also tend to eat poorly and may develop malnutrition. This type of fatigue may occur with or without shortness of breath.

Heart disease patients also may experience fatigue because of their medications. Fatigue maybe noted in about 10 percent of people on blood-pressure-lowering drugs.

Other physical causes of fatigue include anemia and most major chronic diseases, including hypothyroidism, diabetes mellitus, and lung disease.

People who feel tired when they awaken and remain tired throughout the day with little variability are more likely to have a psychological disorder than heart disease. Fatigue is a major and common symptom of undiagnosed depression. It may also occur temporarily in people who are under a lot of stress or who simply have not been getting enough sleep.

Finally, there is some good news for healthy elderly individuals who experience fatigue because they chronically wake up too early in the morning. New research on sleep/wake cycles is showing that early-morning awakening, which generally means waking up at around 4:00 A.M. and being unable to return to sleep, is a common finding in the elderly. Because these people may find it impossible to go back to sleep, they often will feel fatigued in the early evening and be ready for bed by 7:00 P.M. Researchers have discovered that aging can set the normal biological clock back by several hours. Experiments in resetting the biological clock with timed exposures to light and dark are now proving successful in reducing fatigue. When heart disease and psychological problems have been eliminated as a cause of fatigue in older individuals, a referral to a sleep center may be of benefit.