# CORONARY ARTERY DISEASE

Arteries are the blood vessels that carry oxygen rich blood to the body. Arteries that supply the heart muscle with oxygen rich blood are the coronary arteries. In coronary artery disease (CAD), there is a decrease or interference with the blood flow through the coronary arteries. Two conditions that result from CAD are angina pectoris and heart attack.

## ATHEROSCLEROSIS

**ATHEROSCLEROSIS or THICKENING OF THE INNER LINING** of arteries can occur in any artery. In atherosclerosis, deposits called plaques form blockages on the inside walls of the artery. This process narrows the arteries causing less blood flow through the blocked area. One way the body may compensate for the blockage is to develop collateral circulation. This is a process in which blood vessels near the blockage enlarge and send small blood vessels toward that area.

Another factor in coronary artery disease is vasospasm, a condition in which the walls of the artery suddenly tighten causing narrowing of the blood vessel. The result of vasospasm is the same as with atherosclerosis, decreased blood flow. Sometimes both atherosclerosis and vasospasm occur together.

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## ANGINA

ANGINA is the term used for chest pain that is caused by a temporary imbalance between the demand of the heart muscle for oxygen-rich blood and the amount that can be supplied due to CAD. This condition usually occurs during periods of increased demand such as:

- strenuous physical activity
- temperature extremes
- emotional upsets
- eating heavy meals

Symptoms of angina differ from person to person. However, the most common symptoms include:

- tightness, squeezing, pressure, pain or mild ache in the chest.
- sharp burning or cramping pain.
- ache in the neck, jaw, throat, shoulders or back.
- discomfort between the shoulder blades.
- indigestion or heartburn.
- difficulty in catching your breath.
- heaviness, numbness, tingling sensations, or pain in either arm.

Angina attacks are usually brief and will subside with stopping the activity and resting or taking a medication called Nitroglycerin. This medication dilates (widen) the coronary arteries that increase the blood supply to the heart.

Angina does not necessarily lead to permanent heart damage. In addition, angina does not mean that the person will have a heart attack although it is an indication that they are at increased risk because of the presence of Coronary Artery Disease.

## HEART ATTACK

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A heart attack (myocardial infarction) occurs when there is blockage, usually from a blood clot, of one of the coronary arteries already narrowed by atherosclerosis. Although the part of the heart muscle supplied by this artery or branch begins to die, this is a gradual process and early treatment can minimize the damage. This is why it is important that if you have symptoms of a heart attack that you get to an Emergency Room quickly. The area that is damaged is gradually replaced by scar tissue. The amount of tissue damage depends on where the blockage occurred, what part of the heart muscle was supplied by the blocked artery and the amount of collateral circulation present.

The symptoms of a heart attack can include chest pain that may be described as prolonged, squeezing or pressing. It may radiate to the shoulder, arm, neck or jaw. Unlike the chest pain associated with angina, with a heart attack the pain is usually more severe, lasts longer and not the result of increased activity or demand for blood flow. In addition, with a heart attack, the person may also experience:

- excessive sweating
- nausea and vomiting
- difficulty breathing
- anxiety

Unlike the symptoms of angina, the symptoms associated with a myocardial infarction are not promptly relieved by rest or nitroglycerin and if they are relieved will generally return. A comparison of angina and heart attack can be found in the resource section. In rare cases, the person who is having a myocardial infarction may not have symptoms and the diagnosis is based on abnormal electrocardiograms (EKGs) taken after the heart attack occurred.

## TREATMENT AFTER A HEART ATTACK

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**Treatment of a heart attack requires immediate medical care.**

The goal of treatment is to minimize the amount of damage, to prevent complications and to relieve pain. Upon your arrival in the Emergency Room with chest pain, you will be assessed and the doctor will prescribe treatment based on your individual needs.

Options can include:

- treatment with thrombolytics which are medications that break up a blood clot.

- coronary angiograms and possible angioplasty
  - a coronary angiogram is a procedure done to determine if the coronary arteries are blocked or narrowed. If they are, it may be possible to do an angioplasty in which a catheter with a balloon at the tip is positioned at the blockage. The balloon is inflated and the blockage is flattened to allow more blood flow.

- medical management
  - includes using medications to prevent further enlargement of existing clots, medications to dilate the coronary artery or to decrease the workload of the heart.

In addition to the above, treatment may include:

- oxygen to ensure adequate oxygen levels
- decrease physical activity to allow the heart to heal.