Fast Tip 16.1 Nonpharmacological Treatment for Angina Pectoris

All the following strategies can help treat angina: decrease dietary fats, lower blood pressure, develop coping mechanisms for stress, exercise, decrease alcohol consumption, stop smoking, and decrease dietary sodium. If these changes do not improve heart function, nitrates may be prescribed.

If chest pain is caused by a skeletal muscle condition rather than by heart muscle problems, pain relievers such as nonsteroidal anti-inflammatory drugs (NSAIDs) may be effective. Be sure to teach patients to rule out heart problems (excluded as a diagnosis) before medicating chest pain with NSAIDs.

Anticoagulants, Antiplatelet, and Thrombolytic Medications

The clotting process is complex and has several stages that can be affected by different categories of medication. Anticoagulants interrupt the clotting process and ensure that blood flows smoothly through the vessels. Antiplatelet medications prevent platelets from clumping together to form clots. Thrombolytics dissolve clots that have already formed. Aggressive treatment of thrombolytic stroke with anticoagulants and thrombolytics (as well as antihypertensives, discussed later) can increase survival by increasing blood flow to the brain. Thrombolytics can also be used to prevent CVA and MI.

Anticoagulants and Antiplatelet Medications

Anticoagulants such as warfarin (Coumadin), heparin, and enoxaparin (Lovenox) prevent blood from clotting by interrupting the production of proteins called cofactors that work together in the clotting process. Vitamin K controls creation of these cofactors. Coumadin, which is taken orally, decreases the body's vitamin K levels and thus reduces clot formation. Heparin blocks the cofactors thrombin and fibrin from functioning to form clots. Exactly how Lovenox works is not clearly understood. It is believed that the drug attaches to one of the cofactors and neutralizes its effectiveness. Heparin and Lovenox are given by subcutaneous injection several times a day in patients at risk for developing **deep vein thrombosis (DVT).** DVT is the formation of a blood clot in a vein that is located deep inside the body. Most commonly, this occurs in the lower extremities. However, portions of a clot can break off and travel to the brain, heart, or lungs and can cause serious injury or death. Patients at risk are those that are on bedrest and those with fractures to the pelvis, obesity, recent surgery, and a family history of blood clots.

After surgery, a patient may develop DVT because of inactivity. Physicians may prescribe not only anticoagulants to prevent clots but also tight stockings that cover most of the leg. These stockings compress the veins and aid the smooth return of blood to the heart, even if the veins in the leg are weakened. These antiembolic stockings are usually prescribed in addition to, not instead of, medications.

Patients taking anticoagulants must have their blood monitored for safety to ensure it has the desired ability to clot. Too little of the medication and the patient is at risk for blood clots and embolisms; too much of the medication and they are at risk for hemorrhage. If a patient taking anticoagulants has a break in the skin or mucosal integrity, profuse bleeding can occur because the clotting mechanism is disturbed (Fast Tip 16.2).

Antiplatelet medications such as aspirin, ticlopidine (Ticlid), clopidogrel (Plavix), abciximab (ReoPro), eptifibatide (Integrilin), and Tirofiban (Aggrastat) prevent platelets from clumping together to form clots. Because aspirin is an over-the-counter (OTC) medication, patients may not understand its potency relative to interfering with clotting. Always ask a patient whether OTC medications, including aspirin, are being taken. Aspirin is showing promise in the survival rates of heart attack victims when the drug is taken when initial symptoms occur and in prevention of subsequent heart attacks when it is taken routinely following an initial heart attack (Drug Spotlight 16.1).