



**FOR MORE INFORMATION:**

Richard Linkul  
Oak Hill Hospital  
PH: 352-597-6383

**DE-MYSTIFYING OPEN HEART SURGERY**

*Heart Institute at Oak Hill Hospital brings advanced heart care to the community*

**Brooksville, Fla. – Dec. 15, 2005** – With the January 2006 opening of Heart Institute at Oak Hill Hospital, the 350,000 residents of Citrus and Hernando counties now have local access to the full continuum of advanced cardiac care, including open heart surgery. While the familiar term “open heart surgery” has been around for more than 50 years, most people don’t understand the specific techniques, risks and outcomes inherent to this lifesaving procedure...until you or someone you love undergoes an open heart procedure. Below is a quick education intended to demystify the surgery. You’ll discover what it means, how it works, what conditions are treated and who is providing the care.

First, consider what open heart surgery means--heart surgery in which the rib cage is spread open and a procedure is performed to fix or replace a heart valve or repair a coronary artery. One of the most common operations in the U.S., more than 65,000 open heart surgeries are performed in hospitals every year, and overall survival rates are high. The surgery was made possible by two major advances in medicine: the heart-lung machine, which supports the patient’s circulation while the heart is stopped, and body cooling techniques, which allow more time for surgery without causing damage to the brain.

**Mending an open heart**

Open heart surgery to repair hearts, valves and blood vessels actually encompasses a range of procedures from heart transplants to coronary artery bypass. Below are two of the most frequently performed procedures, now available at Heart Institute at Oak Hill Hospital.

**Coronary artery bypass:** You may have heard of this most common heart surgery by other names, including coronary artery bypass graft surgery (CABG), coronary bypass, or bypass surgery. All these refer to the same procedure, which involves sewing a section of vein from the leg or arteries of the chest or another part of the body to bypass a part of a diseased coronary artery which limits natural blood flow to the heart. This creates a new

route for blood to flow, so that the heart muscle will get the oxygen-rich blood it needs to work properly. During bypass surgery, the breastbone is divided, the heart is stopped, and blood is sent through a heart-lung machine. Unlike other kinds of heart surgery, the chambers of the heart are not opened during bypass surgery. When you hear single bypass, double bypass, triple bypass, or quadruple bypass, it refers just to the number of arteries that are bypassed and does not necessarily indicate severity of the heart's condition; rather, it indicates the extent of disease in the heart's system of incoming vessels.

**Valve repair or replacement:** Blood is pumped through your heart in only one direction. Heart valves play key roles in this one-way blood flow, opening and closing with each heartbeat. Pressure changes behind and in front of the valves allow them to open their flap-like "doors," called cusps or leaflets, at just the right time, then close them tightly to prevent a backflow of blood. Two of the most common kinds of valve problems needing surgery are stenosis and regurgitation. When the leaflets do not open wide enough and only a small amount of blood can flow through the valve, this results in stenosis--leaflets that thicken, stiffen, or fuse together. Surgery is needed to either open the defective valve or replace it with a new one. Regurgitation, also known as insufficiency or incompetence, occurs when the valve does not close properly and blood leaks backward instead of moving in the proper forward direction. Surgery is used to either tighten or replace the valve. Valves are replaced with either a biological valve made of animal or human tissue, or a mechanical valve made from materials such as plastic, carbon, or metal.

### **Inside the heart-lung machine**

Most open heart surgery requires the heart to remain still and the heart-lung machine allows the heart to rest while it does all the vital work for the patient's heart. The device, also called a cardiopulmonary bypass machine, takes over for the heart by replacing the heart's pumping action and by adding oxygen to the blood. The heart-lung machine carries blood from the upper-right chamber of the heart, called the right atrium, to a special reservoir called an oxygenator. Inside the oxygenator, oxygen bubbles up through the blood and enters the red blood cells. This causes the blood to turn from dark, which is oxygen-poor, to bright red, which is rich in oxygen. Then, a filter removes the air bubbles from the oxygen-rich blood, and the blood travels through a plastic tube to the body's main blood conduit, the aorta. From the aorta, the blood moves throughout the rest of the body. Specially trained technicians called perfusion technologists make sure that the heart-lung machine does its job properly during the surgery. Although the heart-lung machine can take over the work of the heart and lungs for hours, surgeons still try to limit the time that patients must spend hooked up to the machine.

### **Keeping it cool**

The other significant advance that makes open heart surgery possible is the development of cooling techniques that allows surgeons stop the heart for long periods of time without damaging the heart tissue. Cool temperatures avoid damage to the heart tissue by reducing the heart's need for oxygen. Cooling of the heart can be accomplished by either pouring cold salt water over the heart, or cooling blood as it passes through the heart-lung machine. The cooled blood then lowers body temperature as it reaches all of the body parts. After cooling, the heart slows and stops. Doctors frequently inject a special potassium solution into the heart to speed up this process and stop the heart completely, making it safe from tissue injury for up to four hours.

### **Teaming up to save your heart**

Open heart surgery requires a dedicated team throughout the procedure, experienced and highly trained. At Heart Institute at Oak Hill Hospital, the team is comprised of healthcare professionals, expert and credentialed at sister facility Regional Medical Center Bayonet Point, a nationally recognized leader in the treatment of cardiac and vascular disease.

Caring for your heart will be:

- The cardiovascular surgeon, the leader of the surgery team, who performs the key parts of the surgery
- The assisting surgeons who follow the direction of the cardiovascular surgeon
- The cardiovascular anesthesiologist who makes sure you get the right amount of medicine to make you sleep during the surgery, and monitors the ventilator, which breathes for you during surgery
- The perfusion technologist who runs the heart-lung machine.
- The cardiovascular nurses, who are specially trained to assist in heart surgery
- CV-ICU teams of nurses, technicians and clinicians who are trained specifically with the heart patient's recovery in mind.

For more information on open heart surgery or other matters of the heart, please contact Heart Institute at Oak Hill Hospital, 352-596-6632; in Citrus County at 352-628-6441. Visit our website at [www.oakhillhospital.com](http://www.oakhillhospital.com). Heart Institute at Oak Hill Hospital is located at 11375 Cortez Boulevard in Brooksville, Florida.

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