

# Enhanced External Counterpulsation (EECP)

CAN OFFER RELIEF FROM ANGINA AND HEART FAILURE

**E**nhanced External Counterpulsation (EECP) is a mechanical method to deliver extra blood to the heart. It can help reduce or eliminate angina—chest pains caused by coronary artery disease. The U.S. Food and Drug Administration (FDA) approved EECP for patients with angina in 1992, and the UVa Heart and Vascular Center has offered this service since 1999. This past June, the FDA approved EECP for congestive heart failure as well.

*EECP team members include A. G. Kfoury, M.D., FACC, medical director of the EECP program and a cardiologist with subspecialty expertise in heart failure, and Ellen Longmoore, CNMT, program coordinator.*

#### **For more information on EECP**

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## How Does EECP Work?

EECP uses compressed air to inflate three sets of cuffs that are wrapped around the patient's calves, lower thighs and upper thighs while he or she lies on the treatment table. The cuffs are inflated and deflated in sequence once during each heartbeat to squeeze blood up into the heart. ECG electrodes are placed on the patient's upper chest to identify the timing of the inflation/deflation sequence. Treatment sessions are for one hour, five days a week for seven weeks. Some patients may need additional treatment hours.

The treatment is called "external" because it happens outside the body. "Enhanced" refers to the equipment involved, which has been refined since the procedure was first developed in the early 1950s. "Counterpulsation" refers to how the procedure moves blood to the heart in between heartbeats, during the resting phase when the heart relaxes and fills with blood. This relieves pressure just before each heartbeat. Counterpulsation increases blood flow to the heart, lessens the heart's workload and provides more oxygen while also lowering the heart's need for oxygen. About 80 percent of the oxygen-carrying blood flow to the heart's muscle happens when the heart itself is at rest.

## EECP Can Help If You Have Angina

Angina affects more than 7 million Americans. It happens when blocked coronary arteries limit blood flow to heart muscle. Most of the time, it can be treated with bypass surgery, balloon angioplasty or medication. EECP might be able to help people who haven't gotten relief from or are not candidates for these methods. A recent report from the International EECP Patient Registry showed that EECP is effective in reducing angina episodes, reducing nitroglycerin use and increasing quality of life in about 75 percent of the more than 5,000 patients studied. These benefits usually last long after the treatment.

## EECP Helps If You Have Heart Failure

Heart failure happens when the heart cannot pump enough blood to meet the needs of other organs. Then fluid retention and other changes take place, and heart function gradually gets worse. The International EECP Patient Registry reports that EECP is safe and improves exercise capacity and quality of life in about 70 percent of heart failure patients who undergo treatment.

## Am I a Candidate for EECP?

You may be a candidate if you:

- Have symptomatic congestive heart failure
- Have chronic stable angina
- Have not received adequate response from angina while on medications
- Do not qualify or wish to be a candidate for invasive revascularization procedures - bypass surgery, angioplasty or stents
- Have had revascularization procedures without lasting relief from symptoms.



**EECP services from the UVa Heart and Vascular Center:**

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