

ASK AHSC

ANSWERS TO HEALTH QUESTIONS

From The University of Arizona Health Sciences Center (AHSC) in Tucson

(EDITORS NOTE: February is American Heart Month)

Q My husband heard that flying causes blood clots that can lead to a heart attack. Is this true?

A Reports of blood clots caused by air travel are misleading. I am concerned about the increasing implication that the airlines are at fault and potentially liable for the “coach-class syndrome.”

Stories about potentially fatal blood clots developing during long flights have wrongly blamed coach-class seating conditions and not the underlying medical problems, which are rare. Millions of people fly each day. If the clots were due to sitting in coach class for prolonged periods of time, why wouldn't more people suffer from these complications?

Coach-class syndrome is the term used to describe the complications of thrombophlebitis (blood clots in the veins of the legs) and pulmonary embolism (blood clots breaking off from the legs and going to the lungs) as a result of long overseas flights.

The people who develop the complications suffer from a hypercoagulable state — that is, their blood clots more easily than normal, a condition that is worsened by the long periods of

inactivity and cramped legroom typical of long flights.

There's still a lot to learn about the condition, but we do know that hormone replacement therapy and smoking increase the risk of blood clots. A woman who smokes and takes birth control pills is 20 times more likely to develop a clot. Other factors have yet to be discovered.



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There are some tests that are helpful in identifying those with the condition, including tests for Protein S or Protein C deficiency, Antithrombin III, Factor V Leiden, lupus anticoagulant and Prothrombin II gene mutation.

We hope to one day be able to identify those at risk by genetic testing. Until then, as we tell our medical students, “a good family history is a poor man's gene test.”

Anyone with a history of thrombophlebitis or pulmonary emboli in their family should

postpone flying until they are tested for the hypercoagulable state and given anticoagulation medication, if appropriate.

—Gordon A. Ewy, MD, director, UA Sarver Heart Center, the University of Arizona Health Sciences Center, and chief of cardiology, UA College of Medicine, Tucson

Q What is chronic heart failure, and how is it treated?

A Heart failure is a progressive cardiovascular disorder in which the heart is unable to pump enough blood to meet the body's needs.

Those who suffer from it experience shortness of breath, fatigue or weakness. It affects more than 5 million Americans.

In a normal heart, the pumping of the four chambers is efficient and synchronized. But with chronic heart failure, the heart becomes enlarged and the heart muscle is weakened.

In some cases, the enlarged heart develops an electrical abnormality that makes the pumping action un-synchronized and inefficient.

Heart failure typically is treated with drug therapy alone. However, a new type of implantable pacemaker can “resynchronize” the contraction of the heart and improve the health of patients with chronic heart failure.

The new device is being studied as a treatment for patients with chronic heart failure at the UA Sarver Heart Center and nearly 80 other medical centers nationwide.

Patients selected for the four-year study will be randomized to one of three groups: optimal drug therapy; optimal drug therapy plus

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the pacemaker; or optimal drug therapy plus a pacemaker that also has a backup defibrillator in case the heart has an irregular rhythm or beats too fast. Both types of pacemaker, which are under study, are surgically implanted.

—*Peter Ott, MD, assistant professor of medicine, Department of Medicine, Section of Cardiology, UA College of Medicine, and director, Electrophysiology Lab, University Medical Center, Tucson*

NOTE: For more information about participating in the COMPANION study, call Tammy Struiksma, RN, (520) 626-2348.

Q My doctor thinks I may have a heart arrhythmia. What kind of test can tell for sure, and how can it be treated?

A Cardiac arrhythmias are abnormally slow or fast rhythms caused by a disorder in the heart's normal electrical activity. An estimated 4 million Americans suffer from them.

With conventional diagnosis methods, an electrophysiologist continuously moves a catheter around the inside of the heart, touching the walls, to find the source of the arrhythmia. The method can be inadequate in cases where the arrhythmia is short in duration or arises from multiple areas within the heart.

Complex heart rhythm irregularities now can be diagnosed with a new highly advanced system — called a “non-contact mapping system” — at University Medical Center, the only place in the state where the technology is offered.

With the new system, a catheter with a small balloon covered with 64 electrodes is

placed into a heart chamber and records the electrical signals coming from the heart walls. The system is called “non-contact mapping” because the catheter does not touch any of the walls of the heart.

The feedback is used to create a real-time, three-dimensional image of the inside of the chamber, showing the strength and movement of electrical patterns in the heart.

This system allows simultaneous analysis of more than 3,000 points inside the heart chamber. Standard technology typically analyzes only five to 10 points.

The display is similar to a Doppler radar weather map, with moving electrical currents shown in vivid colors as the arrhythmia travels through the heart. This allows identification of the area responsible for the abnormal heart rhythm and the site where catheter ablation can eliminate the abnormal heart rhythm. With ablation, a small amount of heart tissue is destroyed to eliminate or block the arrhythmia.

Although arrhythmias can be treated with medication and devices, ablation is the only cure.

—*Peter Ott, MD, assistant professor of medicine, Department of Medicine, Section of Cardiology, UA College of Medicine, and director, Electrophysiology Lab, University Medical Center, Tucson*

NOTE: For information about referrals to UMC's arrhythmia clinic, call Risa, (520) 626-6358.

Q I heard there's a new kind of exercise bike for people who've had heart attacks?

A A new kind of exercise machine to help frail seniors get stronger without the effort of

aerobic exercise or weightlifting was studied this past year at the UA Sarver Heart Center.

In the next few years we will see how this bike can help people recovering from cardiovascular and pulmonary illnesses, as well as heart transplants and heart attacks.

Our pilot study targeted people with sarcopenia, the muscle wasting that occurs with age.

This exercise device is unique in that it requires very little effort to use, but it results in very high forces across the muscles and bones. It is the magnitude (amount) of force that is critical to building muscle and bone.

The machine looks like a recumbent exercise bicycle, but it has a motor that moves the pedals backward. The rider tries to slow the backward movement by pressing against the pedals, which causes the muscle to act as a brake, such as when a person hikes downhill.

The activity feels like it's very low intensity. There is minimal or no increase in heart rate, and minimal or no increase in respiratory rate.

The study's 12 participants, whose average age was 78, all doubled their leg muscle strength and size and showed a slight increase in bone strength after using the bike three times a week for 11 weeks. They all greatly improved their balance, reduced their risk for falling, and had improved stair descent times -- important as falls often occur while descending stairs.

—*Stan L. Lindstedt, PhD, muscle biologist and Regents Professor of biology, and Paul C. LaStayo, PhD, assistant professor of physical therapy, Northern Arizona University (Both were on a yearlong sabbatical last year at the UA Sarver Heart Center, Tucson)*