

Potassium pills, implantable device help heart-failure patients cope with summer heat

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Patients with heart failure engage in a delicate balancing act all year, taking care not to drink too much liquid because the weakened heart muscle cannot cope with excess fluid.

But what are they to do during those blast-furnace days of July and August?

Perspiration depletes the body of fluids and electrolytes, such as potassium, that are needed for proper heart function. The patient, who is typically also taking a diuretic to excrete excess fluid, then feels the need to drink more water. That in turn dilutes the concentration of electrolytes while raising blood pressure, putting more strain on the heart.

One possible strategy is taking potassium supplements - a practice that appears to reduce mortality, according to a new University of Pennsylvania study.

Another tool that may work for some is technology. The Food and Drug Administration recently approved a wireless implantable device so physicians can keep track of the pressure in their patients' pulmonary arteries.

As a condition that afflicts 5.8 million people in the United States and that is regularly among the leading cause of hospital admissions, <u>heart</u> <u>failure</u> will continue to draw the attention of drugmakers and device-makers.



And in hot weather, there is an even more basic coping strategy, said Neil Paulsen, 75, a heart-failure patient from Manasquan, N.J.

Slow down.

"I've been basically advised not to do anything strenuous outside if it's over 85 degrees," said Paulsen, a survivor of three heart attacks. "Up until a few years ago, I was mowing the lawn and doing things like that when it was 90 degrees."

Heart failure means the heart muscle has become weak and stretched out due to a <u>heart attack</u>, high <u>blood pressure</u>, or other conditions. The organ cannot keep up with the body's oxygen demands, so the patient may feel weak and out of breath. Fluid can build up in the internal organs and lower extremities, hence the need for many to take diuretics to increase urination.

The Penn potassium study looked at Medicaid patients from five states who were taking a "loop" diuretic - a common water pill named for the loop-like portion of the kidney upon which it acts.

The authors, from Penn's Perelman School of Medicine, used claims data to analyze the health outcomes of 180,000 patients who were prescribed potassium supplements as soon as they started diuretics. The patients were compared with an equal number who did not take supplements.

In those who took at least 40 milligrams of a loop diuretic a day, those who also took potassium were 16 percent less likely to die during the eight years that were analyzed, said senior author Sean Hennessy, an epidemiologist.

In those who took less than 40 milligrams of the diuretic, potassium



supplements did not have a statistically significant impact on the patient death rate, presumably because people who excrete less water do not have as much trouble maintaining their electrolyte levels. Potassium supplements also are available over the counter but are not subject to the same standards as the prescription variety taken by people in the study.

Potassium is essential for the electrical function of cells in the heart and elsewhere - hence the term electrolyte - but caution is in order, said Sumeet Mainigi, an Einstein Medical Center cardiologist who was not involved with the study. Too much potassium can throw off the heart's rhythm.

That is not a concern with most people on a regular diet, but potassium can build up in a person with kidney disease, said Mainigi, also an electrophysiologist.

Indeed, in the Penn study, the apparent protective effect of potassium supplements appeared to be confined to patients without kidney disease.

Mainigi, who said half of the patients in his practice were on potassium supplements, has high hopes for the new implantable device, which his hospital helped test before it won approval in May.

Called CardioMEMS HF and made by St. Jude Medical Inc. of Minnesota, it consists of a sensor implanted in the pulmonary artery to measure heart rate and pressure. The data are then transmitted wirelessly to physicians for review.

Ohio State University physicians who led device testing say the cost of the procedure is about \$15,000 - about the same as a <u>heart</u>-failure admission - and is approved for patients who have been hospitalized in the previous year.



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