

Treatment lowers temp, saves patients in cardiac arrest

December 30 2008, By Jennifer L. Boen

Nearly 200,000 out-of-hospital incidents of sudden cardiac arrest occur among U.S. residents each year. For every minute care is delayed, survival is decreased.

"We used to always think that when the brain didn't get enough oxygen, cells died, but we think now that it's more that the brain is stunned," said Dr. Matt Sutter with Emergency Medicine of Indiana. Sutter works at the Emergency Room at Lutheran Hospital in Fort Wayne, Ind., and is among a growing number of emergency doctors using a treatment called moderate therapeutic hypothermia to cool the body of a patient when sudden cardiac arrest is witnessed.

By cooling the body quickly to between 90 and 94 degrees Fahrenheit - normal body temperature is 98.6 degrees - the body's metabolic processes are slowed. Cellular breakdown and the release of toxic chemicals are stymied.

"The cooling slows the process, allowing injured, but not dead, cells to get healthy," Sutter said.

The treatment was first used at Lutheran Hospital in October 2006, when Eric Jones, then 45, was brought to the hospital by EMS after he collapsed at a Fort Wayne, Ind., fitness center.

"I had been running on the treadmill. When I exercise I tend to push myself pretty hard," Jones said. A fitness instructor began CPR and used

an automated external defibrillator, which the club had just purchased. Although his heart restarted, "I wasn't breathing on my own for about 10 to 13 minutes," he said. Emergency responders used a bag to force air into Jones, and he was taken to Lutheran, where doctors said his prognosis looked grim.

"I was posturing," which is a reflexive arching of the body due to lack of oxygen to the brain. "That was pretty scary to my family," said Jones, who is married and has three daughters. "The doctors actually told my wife that she should probably call all my siblings and my family and have them all come in." At the time, hypothermia for cardiac patients was a fairly new concept, and Lutheran had on order a device called the Arctic Sun, which pumps coolant into tubes within pads that are placed around the patient's body. Some methods of cooling the body involve putting the cooled saline into the femoral artery.

A target temperature is set on the control module, and the lowered temperature is maintained for 24 to 36 hours, on average, to allow the healing of the damaged or stunned cells in the brain. The same concept explains why people, particularly children, who drown in cold water have a greater chance of revival than if they drowned in warmer water.

Because Lutheran had therapeutic hypothermia protocols in place but not the Arctic Sun, Sutter used special cooling blankets to bring Jones' temperature down. He was kept sedated and his body slowly returned to normal temperature.

"My family was on pins and needles," Jones said, recalling how they waited hopefully but cautiously while the new treatment was used.

In just five days, he was home from the hospital. His main problem was short-term memory loss but that resolved in a few weeks. Doctors discovered the cardiac arrest was due to an electrical problem within his

heart, not the normal cause, which is blockage in an artery of the heart.

"I'm so grateful that they had the opportunity to use the cooling blanket on me," Jones said. Since April 2007, Lutheran has used the Arctic Sun on 28 patients, with good outcomes for many. Sutter cautions the treatment is not for patients whose cardiac arrest is not witnessed or who have other medical conditions that lead to the heart's stoppage. But several studies reported in medical journals show good outcomes ranged from 41 percent to 68 percent better for patients treated with hypothermia compared to those given normal supportive care.

Parkview Hospital in Fort Wayne is also now using Arctic Sun and for Mike Bechdol, 57, of Angola, Ind., it may well have made the difference between his celebrating the holidays this year with his family, fully functioning and alert, and not being able to talk and play with his children and grandchildren - or not even being here at all.

It was during hip replacement surgery Oct. 1 that Bechdol's heart suddenly stopped. Doctor's shocked it back into action and sent him to Parkview's ICU, where he was hooked up to the hypothermia equipment.

"According to my wife, I shaked and rattled and rolled," he said of the initial response to the quick cooling, although medication was used to relieve those effects. Like Jones, he had some short-term memory problems soon after, but today he says, "I'm amazed ... to think I was in a coma and brought back without any problems. When I did come out of it, my wife claimed I knew everybody. It truly could have gone the other way. I'm quite thankful." Mike GeRue is director of the neuroscience service line at Parkview Hospital, where hypothermia has been used on more than 50 cardiac arrest patients so far.

The treatment is also being used on traumatic brain injury and spinal cord patients in some hospitals. Parkview Research Center is considering

using it on stroke patients as part of a study, he said.

Buffalo Bills tight end Kevin Everett brought national attention to the treatment after it was successfully used on him following a spinal cord injury incurred during a September 2007 game.

"It's a really hot topic," Sutter said of the potential uses for hypothermia. The most gratifying news he hears from nurses, he says, is that "a lot of people are waking up who they never expected to wake up." lives LIVES To learn more For more information on therapeutic hypothermia, check out the American Heart Association's guidelines for its usage at tr.im/nscardio .

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