

Study suggests physicians wait longer for brain recovery after hypothermia Rx in cardiac arrest

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Heart experts at Johns Hopkins say that physicians might be drawing conclusions too soon about irreversible brain damage in patients surviving cardiac arrest whose bodies were for a day initially chilled into a calming coma.

The chilling, known as therapeutic hypothermia, is one of the few medical practices known to improve brain recovery after sudden heart stoppages, with brain recovery usually assessed three days after the incident. The therapy, recommended in American Heart Association treatment guidelines since 2005, is thought to work by slowing down the body's metabolism, delaying the brain's need for oxygen until the heart, lungs and kidneys can recover.

Senior study investigator and cardiologist Nisha Chandra-Strobos, M.D., says large, multicenter studies will be required before experts can definitively suggest changes to current standards of care. However, early indications are that "we may need to be much more deliberate in allowing the brain to recover before adjudicating on the neurological benefits of therapeutic hypothermia, as there is obviously more variability in patient response to treatment than previously thought.

"It is definitely a clinical situation about which we have much more to learn in order to maximize care for our cardiac arrest patients," says Chandra-Strobos, a professor at the Johns Hopkins University School of

Medicine and its Heart and Vascular Institute, where she also serves as director of cardiology at Johns Hopkins Bayview Medical Center.

Reporting on a study of 47 men and women treated for cardiac arrest at Johns Hopkins Bayview, lead study investigator and internist Shaker Eid, M.D., says their results "show that people who have been immediately treated with hypothermia are more likely to wake up and are taking longer to wake up, as opposed to those who do not receive such treatment.

"Hypothermia patients are showing initial signs of renewed brain activity five and sometimes even seven days after suffering cardiac arrest," says Eid, who is scheduled to present the team's findings Nov. 13 at the American Heart Association's (AHA) annual Scientific Sessions in Chicago.

"Physicians and family members may need to wait longer than the traditional three days before making irrevocable decisions about brain function recovery and possible withdrawal of care," says Eid, an assistant professor at Johns Hopkins. The Johns Hopkins study is believed to be the first timeline analysis of neurological recovery after hypothermia treatment in victims of cardiac arrest.

"An obvious concern in light of these results is that we may be withdrawing support prematurely in selected patients," says Chandra-Strobos. "The concern is valid; however, our clinical and study experience are re-assuring since most patients are observed and treated more than seven days." The average length of stay at Johns Hopkins Bayview for such patients is 13 days, which she says is more than adequate to allow for neurological recovery.

The chilling and coma therapy itself typically lasts less than 24 hours, and patients are slowly weaned off powerful sedatives and simultaneously warmed up to a normal body temperature of 37 degrees

Celsius. Experts say that if an ambulance reaches an arrest victim shortly after they have collapsed, the patient can be chilled in the hospital emergency room or in the intensive care unit within a few hours to the desired temperature -- 33 degrees Celsius -- using a combination of cold intravenous solutions and "ice blankets," suits, vests or helmets.

Not all victims of [cardiac arrest](#), they caution, are candidates for therapeutic hypothermia. According to Eid, the treatment works best when emergency personnel are by the side of the patient at the time of actual collapse and can start immediate CPR and restart the heart, usually with a combination of drugs and sometimes electrical shock from a defibrillator. The treatment is also more effective, he says, in such people if their initial collapse was brought on by an electrical disturbance in the heart, what is known as a ventricular fibrillation rhythm. More than 300,000 cardiac arrests occur outside of hospitals each year in the United States, with less than 8 percent of victims surviving their medical crisis with brain function intact, a statistic Chandra-Strobos calls "pitiful."

In the new study, the Johns Hopkins researchers monitored the 47 men and women treated with and without [therapeutic hypothermia](#). More than half died in the hospital. However, survival rates were higher for those whose bodies were chilled than for those who were not. In seven survivors treated with hypothermia, more than half remained comatose three days after sedation was withdrawn, with only a third showing signs of renewed brain activity. By the fifth day, the numbers were reversed, with more than half showing signs of waking up and only a third remaining comatose. And after a week, one-third were fully alert and awake, while half showed signs of brain function returning.

This contrasts, the researchers say, with the 13 other survivors who were not candidates for therapeutic [hypothermia](#). Almost half were immediately alert upon resuscitation, while the majority, 80 percent

showed signs of [brain](#) awakening by day three, as commonly expected.

Experts say current neurologic evaluation guidelines, in place since 1985, state that by day three, decisions can be made about whether or not to withdraw care in the absence of renewed [brain activity](#).

Provided by Johns Hopkins Medical Institutions

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