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Traditional neurologic exams inadequate for predicting survival of cardiac arrest patients

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Traditional methods for assessing patients after cardiac arrest may be underestimating their chances for survival and good outcomes, according to a new study by University of Pittsburgh School of Medicine researchers now available online in the journal *Resuscitation*.

"The care of cardiac arrest patients has improved dramatically in recent years," noted lead author Jon C. Rittenberger, M.D., M.S., assistant professor of emergency medicine at Pitt. "Unfortunately, the neurological exams that are used to provide a prognosis for these patients appear inadequate, and it's time to re-examine their predictive value."

Cardiac arrest results in about 350,000 deaths each year. Currently, physicians assess pupil response, corneal reflexes and motor response to determine a patient's prognosis after resuscitation to restart the heart.

For this study, researchers retrospectively reviewed the neurologic examination findings for 272 cardiac arrest patients upon arrival at the hospital, 24 hours later and 72 hours later. Most of the subjects were men, and the mean age was 61. Most were treated with therapeutic hypothermia, which cools the body of a comatose patient to prevent brain injury and other organ damage.

The researchers found that 33 percent of the patients in the study survived, and 20 percent experienced a good outcome, defined as discharge to home or to an acute rehabilitation facility. The association between good outcomes and exam findings did not differ between those

treated with or without therapeutic hypothermia. Surprisingly, even those with poor motor examination scores on neurologic exams after 24 and 72 hours showed survival rates that were higher than what clinicians traditionally would have predicted.

The researchers looked specifically at the Glasgow Coma Score (GCS) motor response, both at 24 and 72 hours after cardiac arrest. Existing guidelines suggest that a GCS motor response of 3 or less is highly predictive of mortality. Rittenberger and his team found that survival was 17 percent at 24 hours and 20 percent at 72 hours for those with a GCS of 3 or less. When the investigators used a more conservative GCS motor response of 2 or less, the survival rate was 14 percent at 24 hours and 18 percent at 72 hours.

Consistent with existing guidelines, the researchers found that a lack of pupil or corneal response at 72 hours appeared to exclude survival or good outcome.

"The good news is that advances in care for cardiac arrest patients appear to be improving survival rates and positive outcomes," said Dr. Rittenberger. "In light of these changes, we need to re-evaluate and expand our tools for providing a prognosis to patients and their families."

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