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Journal Report
04/05/2004

Number of breaths given during CPR may be linked to survival

DALLAS, April 6 – Researchers have identified a factor that may improve cardiac arrest survival rates according to a first-of-its-kind study of paramedic responses reported in today’s rapid access issue of *Circulation: Journal of the American Heart Association*.

Researchers found that some ambulance crews giving cardiopulmonary resuscitation (CPR) exceeded the American Heart Association’s recommendation of 12 to 15 breaths per minute when treating cardiac arrest victims.

“The overall survival rate in the United States from cardiac arrest is about 5 percent,” said lead author Tom P. Aufderheide, M.D., professor of emergency medicine at the Medical College of Wisconsin in Milwaukee. “Excessive ventilation may be contributing to that poor outcome.”

The observational study included 13 cardiac arrest victims. Examining data from the first seven patients, the researchers found the average maximum ventilation rate was 37 breaths a minute, roughly 250 percent to 300 percent greater than the rate the American Heart Association recommends. After a CPR retraining program was instituted, the average ventilation rate for the next six patients dropped to 22 breaths per minute.

He suggested one solution might be to use a system that flashes a light every five seconds to let a rescuer know when to deliver another breath of oxygen.

During CPR, the chest is compressed, which increases pressure inside it and forces blood out of the heart and into the rest of the body. On the upstroke, the chest expands, which creates a slight vacuum inside. The body needs this vacuum for blood in the veins to return to the heart most efficiently. Without it, not as much blood returns to the heart.

“The decreased return of blood to the heart reduces the blood going out of the heart, and that may decrease the effectiveness of CPR.” Aufderheide said.

“Medical directors of all systems—all professional rescuers, including EMTs, nurses, doctors, respiratory therapists and anyone else who would do CPR as part of their profession—need to get this message: Do not hyperventilate,” he said.

Although the small study focused on cardiac arrests in only one city, the researchers strongly believe that hyperventilation could occur nationwide.

As a result of their findings, the authors urge that all hospitals and

emergency medical services assess whether hyperventilation is a problem in their units. If it is, they suggest reducing ventilation during CPR to 12 breaths a minute.

Co-authors are Gardar Sigurdsson, M.D.; Ronald G. Pirralo, M.D., M.H.S.A.; Demetris Yannopoulos, M.D.; Scott McKnite, B.A.; Chris von Briesen, B.A., E.M.T.; Christopher W. Sparks, E.M.T.; Craig J. Conrad, R.N.; Terry A. Provo, B.A., EMT-P; and Keith G. Lurie, M.D.

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