

Humans outperform machines at CPR
Columbus area was part of suspended 5-city trial for lifesaving devices
Sunday, November 13, 2005
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THE COLUMBUS DISPATCH

Man appears to have beaten machine.

An automated CPR machine wasn't faring as well as emergency responders in saving heart-patients' lives, so researchers halted a study in Columbus and four other cities.

Starting in June 2004, 16 Columbus ambulances and one each in Worthington and Upper Arlington traveled with battery-powered Auto-Pulse machines. The machines, approved by the Food and Drug Administration and used regularly in several communities, are designed to perform cardiopulmonary resuscitation in place of a person. Many expected them to be more effective than people.

The study was to compare survival in 1,850 American and Canadian patients, half of whom would receive CPR from the machine, which straps around the patient's chest. The other half would be treated in the traditional fashion, with paramedics and other emergency medical workers giving CPR.

But after nine months of study, which included 306 patients in the Columbus area, safety monitors alerted researchers: Fewer machine-treated patients were leaving the hospital alive.

"It was just the opposite of what we would anticipate happening," said Dr. Michael Sayre, an emergency physician at Ohio State University Medical Center and leader of the Columbus study.

Sayre and his colleagues shared the results yesterday at the American Heart Association's annual Scientific Sessions in Dallas.

The study included 1,071 patients; 767 of them were considered the "primary" group because their emergency calls related specifically to heart problems. In that group, 373 were treated manually and 394 with the machines. The study included people from suburban Pittsburgh, Seattle, Vancouver and Calgary.

Four hours after the initial call to 911, a similar number had survived — almost 25 percent of those who got CPR manually and more than 26 percent of the AutoPulse group.

The problem was how many of the 767 left the hospital alive. About 10 percent of those initially treated manually and less than 6 percent of those treated by machine lived to go home.

A spokesman for Zoll, the Massachusetts-based company that sells AutoPulse machines, declined to comment. But a statement issued Friday by Zoll CEO Richard

A. Packer said the trial was "disappointing because it was not completed." Packer called the results "inconclusive."

"We now better understand the challenges of such an effort, and we plan further research," he said in the statement.

Sayre said he had hoped that the consistent compressions delivered by the machine would beat people, who are prone to inconsistency and can tire during CPR.

"We really wish it would work," he said, pointing out that CPR rescues only a small percentage of heart patients.

There's no solid answer why the results came out as they did, but Sayre had some theories. Training might not have been sufficient, he said. Medics watched a video and trained with the \$14,000 machines, typically for a couple of hours, Sayre said. The problem with that theory is that outcomes should improve with experience, but the data show no learning curve.

Another possible explanation is that the time emergency responders must spend strapping a person into the machine and a subsequent delay in shocking them with a defibrillator was detrimental, Sayre said.

A more remote possibility is that the machine succeeded in circulating more blood and oxygen but that doing so was somehow harmful, Sayre said.

"There could be something going on that we don't understand."

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