

Ambulances Get New Life-Saving Tool

System gives physicians head start on angioplasty

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Medical experts have a phrase for a heart attack's effect: "Time is muscle." It means that every minute a coronary artery remains blocked, the heart muscle dies a little. Now some Louisville hospitals and emergency medical services plan to use a new system to expedite cardiac treatment.

Starting July 1, Louisville Metro EMS ambulance crews will be able to transmit a patient's electrocardiogram to three Norton Healthcare hospitals, allowing doctors to determine immediately whether a heart attack is occurring. Baptist Hospital East recently started a similar service.

The data can help doctors decide whether to skip the current regimen of emergency room tests, instead taking patients straight to a heart-catheterization lab for balloon angioplasty to open arteries. That could save up to 20 minutes, rescuing many from debilitating injury, if not death, doctors say.

"What we know is, time is absolutely critical," said Dr. Neal Richmond, director of Metro EMS. "Every minute that you continue to have a heart attack and don't do anything to abort it, you are going to lose 1 percent of your heart muscle."

And losing much heart muscle may result in a poorer quality of life, he said. "You could (not) be able to walk up the stairs of your home ... without having crushing chest pain and shortness of breath," Richmond said.

The new system, called Lifenet and developed by a division of the Minneapolis firm Medtronic, consists of software in ambulances that can transmit EKG readings over the Internet to a specially equipped hospital computer station. Norton paid \$100,000 to outfit about 80 EMS vehicles with the software and put receiving equipment in Norton Hospital and the company's Audubon and Kosair Children's hospitals.

Baptist Hospital East has had a Lifenet system for about two months, in a pilot program with Anchorage Fire and EMS.

The system has not been used yet because Anchorage hasn't had a heart-attack run, said Beth Polston, director of Baptist East's cardiovascular services. Several factors go into determining which hospitals patients are taken to, including their preferences, available beds and who's equipped to handle the apparent ailments. More common

Electronically sending EKG results from ambulances to hospitals isn't yet a widespread

practice but it is becoming more common, said Anthony Kramer, associate professor of emergency medical services at the University of Cincinnati. He said some Cincinnati-area hospitals adopted the technology about two years ago.

It takes advantage of the increasingly widespread availability of wireless broadband Internet connections to route patients' information to hospitals.

In three cities in Washington state, where it has been used for several years, the Lifenet system has gotten patients to catheterization labs much faster, said Rebecca Hammons, a clinical educator for Kadlec Medical Center in Richland, Wash. Last year, 59 percent received angioplasty within 60 minutes, a half-hour faster than the national target for such care. That was twice as many as in 2004, she said.

Some patients have bypassed emergency rooms altogether, their stretchers going straight to heart labs.

"In fact, it happened twice last week," Hammons said.
Getting it quickly

Not all heart attacks are treated with angioplasty, but opening a blocked artery within 90 minutes can cut the risk of dying by 90 percent. But a 2006 study found that only about one-third of patients got angioplasty that fast.

That led the American College of Cardiology to launch a national campaign to reduce "door-to-balloon" times — the interval between patient s' arrivals at hospitals and the moment their arteries are opened.

Since the campaign began, Louisville hospitals have gotten considerably faster in opening blocked arteries.

About 80 percent of Jewish Hospital's heart-attack patients get angioplasty within 90 minutes, said Dr. Lynn Simon, chief medical officer. At Baptist Hospital East the figure is 90 percent, Polston said.

And Norton Audubon Hospital says 100 percent of heart-attack patients met the 90-minute standard in recent months — about twice as many as a year earlier. The hospitals improved times by looking for ways to shorten each step along a patient's route — from the emergency-room door to the initial EKG, to paging a cardiologist and so on.

Techniques included timing steps with a stopwatch at Jewish to giving Audubon staff a report card on every heart-attack patient.

Lonnie Hess, 60, said everything went like clockwork when she came to Audubon in October with heart pain.

"Those guys are very good," she said. "They know their job."
Hess recalled having an I.V. placed in her arm and someone saying, "You're having it right

now," meaning a heart attack.

"And before I knew it I was in the cath lab and having an angioplasty," she said.

Hess later learned her arteries were so blocked that "the whole bottom of my heart was dark," she said. "I really shouldn't be here."

Despite fully meeting the 90-minute standard, Audubon wanted to cut times further. That led to the Norton-Metro EMS system, which local officials hope will become community-wide.

Polston said Baptist Hospital East would be interested in adding Metro EMS to its system. Jewish Hospital has had preliminary talks with EMS, Simon said. The hospital would need to buy \$20,000 in software to take part. Officials at Floyd Memorial Hospital in New Albany, Ind., are considering launching a system with one or more area emergency medical systems, hospital spokeswoman Cindy Stumler said.

"From a cost standpoint, this is a minimum investment for a great return," said Michael Esposito, Norton Healthcare vice president of cardiovascular and pulmonary services.

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