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Heart attacks treated faster

Project speeds care and saves lives

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More North Carolinians suffering the deadliest type of heart attack are receiving life-saving treatment faster through a unique statewide collaboration among paramedics, doctors and hospitals.

Twenty years of medical studies have shown that when a heart attack is caused by a blood clot blocking the patient's artery, clearing the vessel within 90 minutes saves lives. But too often that wasn't happening. Poor coordination of care caused delays.

Two Duke University cardiologists launched an ambitious effort to streamline care about two years ago. Sunday morning, at the annual meeting of the American Heart Association in Orlando, Fla., they reported that the effort has significantly sped up time to treatment. The results were also published in the online edition of the Journal of the American Medical Association.

Hospitals that provide emergency balloon angioplasty -- the preferred treatment to unclog arteries -- saw the percentage of patients receiving such care rise to 72 percent, up from just 57 percent, according to the study. The median "door-to-balloon" time fell to 74 minutes, down from 85 minutes.

Smaller hospitals that can't do emergency angioplasty improved the time to treatment with clot-busting medications. The median door-to-infusion time was 29 minutes, down from 35 minutes.

Treating patients with either balloon angioplasty or clot-busting drugs within 90 minutes cuts the risk of death from heart attack by 40 percent, said Dr. Christopher Granger, director of Duke Hospital's cardiac care unit and co-director of the improvement project.

Putting more responsibility for treatment decisions in the hands of first responders -- for example, by empowering even mid-level paramedics to diagnose heart attacks in the field -- and other changes helped eliminate needless delays.

"In some cases, paramedics called to mobilize the [heart catheterization] lab from the patient's living room," Granger said in an interview.

Before the project, patients' heart attacks often weren't officially diagnosed until they reached a hospital emergency room. Then it typically took even more time for a cardiologist to be called in to order treatment and several minutes more for the angioplasty team to assemble.

At UNC Hospitals in Chapel Hill, which participated in the improvement project, ambulances carrying heart attack patients now go directly to the heart catheterization lab, bypassing the lengthy process of bringing patients through the emergency room. Dr. George Stouffer III, chief of clinical cardiology at UNC Hospitals, said that one change saves at least 15 minutes.

Other changes are mundane: Emergency room nurses may now get patients ready for transport to the heart catheterization lab when the cardiologist is paged, rather than waiting until the specialist arrives.

It's the little things

"There were a lot of little things that, when you add them all up, created a big delay," said Dr. James Jollis, a Duke cardiologist and co-director of the improvement project.

Two-thirds of the state's hospitals, also including Duke University Hospital in Durham, and their county emergency medical services participated in the project. The effort was supported by a \$1 million grant from Blue Cross and Blue Shield of North Carolina.

Wake County already uses some of the strategies the project advocates to streamline heart attack care, such as having ambulances carry patients only to the county's two 24-hour cardiac care hospitals: WakeMed Raleigh and Rex Hospital. Paramedics in Wake County also transmit electrocardiogram readings directly to hospitals from the field, speeding diagnosis.

Wake will be part of the next phase of the effort, which is expanding to include all 100 of North Carolina's acute-care hospitals and the emergency medical services that cover them.

Collaboration was critical in speeding up care that required multiple organizations to work together, such as transferring patients from rural centers to larger hospitals that perform emergency catheterizations. The project saw the biggest improvements in transfer times.

Before the collaboration, the median time it took for a patient taken to a smaller hospital to be transferred to a larger facility was two hours. After weeding out unnecessary delays, the median transfer time fell 41 percent to 71 minutes.

In most cases, heart attack patients thought to be likely candidates for transfer are now kept on the ambulance stretcher with heart monitors instead of being admitted to their local hospitals. The local emergency room doctors confirm the diagnosis and start heart-

protective medicines. Once the receiving hospital gives the OK, the patient is whisked right back into the same ambulance and carried to the larger facility.

"We've had patients in and out in 10 minutes," said Dr. Kimberly Yarborough, medical director of emergency medicine at Person Memorial Hospital in Roxboro, about 30 miles north of Durham. She is also medical director of Person County EMS.

Yarborough said that before the project to speed up care, most patients seeking care for heart attacks at Person Memorial were treated with clot-busting drugs, even though emergency angioplasty was considered the best treatment. Transfers to Duke just took too long. Now, they go so smoothly that door-to-balloon times routinely clock in at 60 minutes.

Not all feeder hospitals are so close to an angioplasty center, though, and the median door-to-balloon time for transfer hospitals is still outside the 90-minute target. It fell to 106 minutes, down from 149 minutes.

Patients can help ensure they get the fastest treatment by calling 911 immediately if they experience heart attack symptoms such as chest pain and shortness of breath, Jollis said. About half of patients suffering heart attacks in North Carolina drive themselves to the emergency room or are brought in by someone else, which burns up precious minutes.

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