

Cardiac MRI in the ER cuts costs, hospital admissions for chest pain patients

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A new study done by researchers at Wake Forest University Baptist Medical Center indicates that chest pain may no longer have to mean a hospital stay - there is another option for diagnosing heart-related chest pain that costs less and, in some cases, allows the patient to return home the same day.

"Every year, millions of people in the United States visit the emergency department (ED) because they are experiencing chest pain," said Chadwick D. Miller, M.D., M.S., an assistant professor of emergency medicine and lead author on the study. "A lot of those people end up being admitted to the hospital unnecessarily.

"To be able to either provide patients with the reassurance that their chest pain isn't related to a more serious cardiac problem and get them back home within a day, or to diagnose the cardiac problem more quickly and begin treatment, is really satisfying."

The study is currently featured online and is scheduled to appear in a future issue of the [Annals of Emergency Medicine](#).

Miller explained that nearly half of the approximately 6 million people in the country each year who visit the emergency department with possible cardiac-related chest pain are categorized as "non-low risk" upon initial consult, and are therefore admitted to the hospital for further testing and evaluation. This tendency to admit immediately, however, leads to an over triaging of patients, Miller said, because only a very small fraction of those admitted patients ultimately experience a serious cardiac event. Current treatment guidelines provide the infrequently used option of placing these patients with non-low risk chest pain in an observation unit, where symptoms are monitored closely and care is delivered based on predetermined care pathways, while more invasive diagnostic testing is postponed until

needed and there is an intense focus on efficiency.

"The over triaging and working up of people who don't ultimately have cardiac events leads to a lot of spending - about \$10 billion a year," Miller said. "That's a big deal. So, we started looking at how we can change the landscape of what is currently happening in the treatment of these patients."

For the study, researchers randomly assigned 110 ED patients with chest pain to either "usual care," involving admittance to the hospital, or care in an observation unit. Patients in the "usual care" group received a variety of tests typically utilized for diagnosing chest pain, including stress echocardiograms, cardiac MRI and cardiac catheterizations. For the patients in the observation unit arm, researchers brought in the use of cardiac MRI to provide diagnostics to an area that typically relies mostly on subjective decision-making by care providers.

Cardiac MRI has been used since the late 1990s at Wake Forest Baptist. Stress cardiac MRI testing has proven to be equally or more accurate than other stress testing options when evaluating people with [chest pain](#). However, this test is not commonly used in ED patients.

"We felt that the highly accurate test results, combined with the comprehensive information provided by cardiac MRI, would allow us to manage these more complicated patients safely and efficiently in the observation unit," Miller said. "In essence, we wanted to combine a highly accurate test with the increased efficiency of an observation unit to decrease cost while still delivering top-quality patient care."

The researchers followed the patients, recorded the cost of their hospital visits and checked back with them in 30 days to get information about any cardiac events since their stay. At the end of the study, they found that the observation unit patients

had lower cost at the hospital and most were able to be managed without hospital admission, while the nurse practitioners and physician assistants working those units under the guidance of an attending physician were still able to diagnose and prevent all cardiac events that might have occurred within 30 days of the hospital visit.

"This is probably one of the studies I'm most excited about being involved with," Miller said. "We were able to reduce cost, not miss any cardiac events and reduce hospital admissions at the same time. Lower costs for the [hospital](#) generally translate to fewer charges for patients and, even better, many of the patients who were seen in the observation unit were able to go home the same day.

"As we gain more knowledge and develop better technology, we are realizing that you can both decrease cost and maintain quality. This is a good example of such a case, where technology, because it is more accurate, helps us cut costs. It's a win-win situation."

Miller cautioned that a limitation of this study was the inability to determine whether the results were related to the cardiac MRI test, the observation unit care, or both. "The study examined the efficiency of a care pathway - cardiac MRI testing with observation unit care," Miller explained. "We are not able to determine whether our results are related to one of these components or their combination."

The researchers will next look to test this intervention at other medical centers and in a larger population to see if the results can be replicated before any changes to standard practice are made.

Provided by Wake Forest University Baptist
Medical Center

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