

Study shows cost-effectiveness of 64-slice CT scanner in emergency department chest pain patients

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A recent study led by Rahul Khare, MD, emergency department physician and assistant director of operations at Northwestern Memorial Hospital, sought to determine the cost-effectiveness of utilizing a CT scanner to evaluate low-risk chest pain patients in the emergency room. The study results which are published in the July issue of *Academic Emergency Medicine* show that using a 64-slice CT scanner is more cost-effective than the current standard of care for evaluating and diagnosing this patient population, which includes an overnight stay in the observation unit and cardiac stress testing.

Chest pain is the most common emergency department complaint in patients 50 years and older, and has a variety of potential causes. A commonly missed and difficult to diagnose cause of chest pain is coronary artery disease. "When patients arrive to the emergency department with chest pain, my goal as an emergency physician is to identify any life threatening conditions and treat the patient promptly. Currently it is a challenge to identify chest pain patients with significant coronary artery disease in a timely and cost-effective manner," says Dr. Khare, who is also an Assistant Professor of Emergency Medicine at Northwestern University's Feinberg School of Medicine.

The 64-slice CT scanner is a relatively new technology and has shown to be very effective in diagnosing coronary artery disease. "Some have advocated the use of the CT scanner in the emergency department for low-risk chest pain patients as an alternative to stress testing. The CT scanner has the potential to become a first-line screening instrument, but before that happens, we have to evaluate whether or not the cost is associated with better patient outcomes," comments Dr. Khare.

Dr. Khare utilized a computer model with one standard patient, a 54-year old male, which is reflective of the average age and most prevalent gender of patients in the chest pain observation unit. The computer model looked at cost-effectiveness within three different risk categories; very low risk, low risk and moderate risk patients. It also evaluated the metric of quality-adjusted life years (QALYs), since failure to detect coronary artery disease can reduce life expectancy for patients.

For each group, the cost of using the CT scanner was lower than the cost of an observation unit stay and stress testing, and furthermore the QALYs, or life expectancies, were higher. This is largely due to the superior diagnostic test performance of the CT scanner, and the avoidance of the observation unit costs.

"There is relatively little data available with respect to the cost-effectiveness of this new technology, the 64-slice CT scanner, in low-risk chest pain patients in an emergency department setting. I'm hoping the results of this study help build the case for conducting a large randomized controlled trial in order to further the body of research," notes Dr. Khare.

"There is good evidence that the use of this technology will be the standard of care in the future, and we must determine if the benefit will outweigh the cost. This study shows that it does, and more importantly, that it may even be cost-saving in certain situations," comments Dr. Khare. He adds, "Ultimately, this new technology may be the best care for the patient by quickly telling the patient and the physician if the chest pain is due to a blocked coronary artery."

Source: Northwestern Memorial Hospital

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