

Emergency Medical Service Responders Use Health IT to Improve Cardiac Care



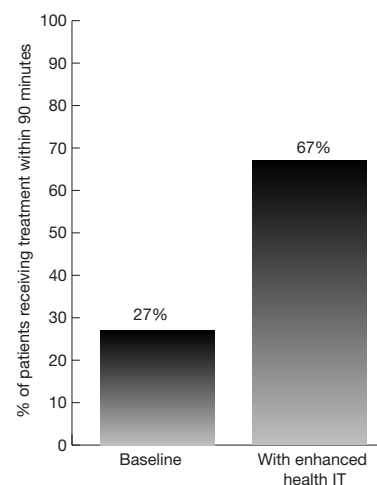
Heart attacks cause one out of every six deaths in the United States (Lloyd-Jones et al., 2010). These patients tend to be older and those with chronic conditions. Quick treatment significantly increases the chance of saving a patient experiencing a heart attack. In the community, ambulance-based emergency medical service (EMS) responders must consider a range of patient symptoms and characteristics to determine which treatment should be initiated and which hospital is best equipped to provide additional treatment. Failure to make the right decision and delays in receiving a needed life-saving procedure for heart attack, such as percutaneous coronary intervention (PCI), can be life threatening. To do PCI, providers at special hospitals inflate a slender balloon in the patient's arteries to help the blood flow more easily to the heart. Not all hospitals are equipped to provide this treatment, and for patients who must be sent on to a second hospital to receive recommended care, only 10 percent are treated within the American Heart Association (AHA) 90-minute timeframe (Antam et al., 2004; Chakrabarti et al., 2008).

EMS agencies in two Massachusetts communities worked with researchers on an AHRQ-sponsored grant to implement two health IT systems to improve cardiac care provided. A clinical decision support (CDS) software system used electrocardiogram (ECG) results and patient information entered into the system by paramedics to determine the probability that the patient was having a heart attack and, if having a heart attack, whether PCI or clot-busting drugs were appropriate. A Web-based reporting system integrated data manually entered by EMS agencies and hospitals to measure the quality of care provided to patients from the time they called 911 to the time they began receiving hospital treatment. EMS agencies reviewed reports produced from the system to evaluate the care provided by and develop educational materials for EMS responders. As a result of this project, there was a dramatic improvement in the quality of care provided: the percentage of heart attack patients receiving

treatment within the recommended 90-minute goal increased from 27 to 67 percent (Selker, 2008; Daudelin et al., 2010).

The technology is being implemented by other Massachusetts communities, and system developers have updated the technology to better serve patients. The Web-based reporting system is now connected to prehospital and hospital EMRs and has been expanded to monitor quality of care for all patients treated by EMS responders.

FIGURE 1. CDS TECHNOLOGY AND A WEB-BASED QUALITY REPORTING SYSTEM RESULTED IN A 150-PERCENT INCREASE IN THE NUMBER OF PATIENTS WHO RECEIVED TREATMENT WITHIN THE AHA-RECOMMENDED TIMEFRAME



Data from: Daudelin DH, Sayah AJ, Kwong M, et al. Improving use of prehospital 12-lead ECG for early identification and treatment of acute coronary syndrome and ST-elevation myocardial infarction. *Circ Cardiovasc Qual Outcomes* 2010 May;3(3):316-23.

Grant Title: EMS Based TIPI-IS Cardiac Care QI-Error Reduction System

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