Chest Pain Continuous Quality Improvement (CPCQI)

Objectives: To determine whether electrocardiogram (ECG) transmission from remote locations for patients with symptoms of acute coronary syndrome (ACS) is feasible in our rural service area. Our primary outcome was successful transmission of a legible ECG to the emergency department (ED) from an ambulance. Secondary outcomes include door-to-balloon time for these ACS patients. **Methods:** We performed a prospective study of consecutive patients brought by emergency medical services (EMS) from a rural area serviced by our university-based ED with chest, jaw, or arm pain, syncope, or cardiac arrest, or who had a pre-hospital 12 lead ECG performed. We determined whether ECGs were successfully acquired and transmitted by EMS providers. We then assessed the ECG legibility, as determined by the ED provider. Time points including time to percutaneous coronary intervention for ST-segment elevation myocardial infarction were recorded. **Results:** Between February-April 2009 and September-December 2009, 379 patients with symptoms of possible acute coronary syndrome were brought by EMS to our ED. Of these eligible patients, 292 (77%) had at least one ECG performed in the field by an EMS provider. Of 498 ECGs (including 206 that were performed for other indications), 247 (50%) were transmitted successfully and 275 (85%) of transmitted and hand-delivered pre-hospital ECGs were legible. ECGs were viewed on average 16.7 +/- 15 minutes after first EMS contact with the patient. Of the 13 patients who received emergent percutaneous coronary intervention, in eight cases interventional cardiology was paged before the patient arrived at our ED, leading to a mean door-to-balloon time of 45 +/- 7 minutes for these cases. There were no false positive activations of the call team. **Conclusion:** Pre-hospital acquisition, transmission and utilization of 12 lead ECGs appears to be feasible. Improvements in acquisition and transmission of ECGs, along with rapid presentation of transmitted ECGs to the emergency physician, may improve door-to-balloon time in a rural setting.