

Improving Emergency Department Door-to-ECG (Door-to-ECG) Compliance within 10 Minutes for Suspected ST Elevation Myocardial Infarction (STEMI) – A Quality Initiative

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Introduction

A definitive care plan for a patient with a possible ST Elevation MI (STEMI) depends on the findings from an electrocardiogram (ECG) carried out on arrival to the Emergency Department (ED). From a patient safety perspective, by adhering to the international standard of Door-to-ECG within 10 minutes, there is an improvement in the patients' chances of survival by providing timely access to reperfusion therapy. In 2014, only 63.4% of suspected Acute Coronary Syndrome (ACS) patients in our healthcare system received an ECG within 10 minutes.

Objectives

- To identify barriers to achieving compliance with the Door-to-ECG standard and implement a quality improvement initiative across all five EDs within our healthcare system.
- Achieve 25% improvement by September 2015 in Door-to-ECG time within 10 minutes in the ED for patients who meet the criteria

Key Metric

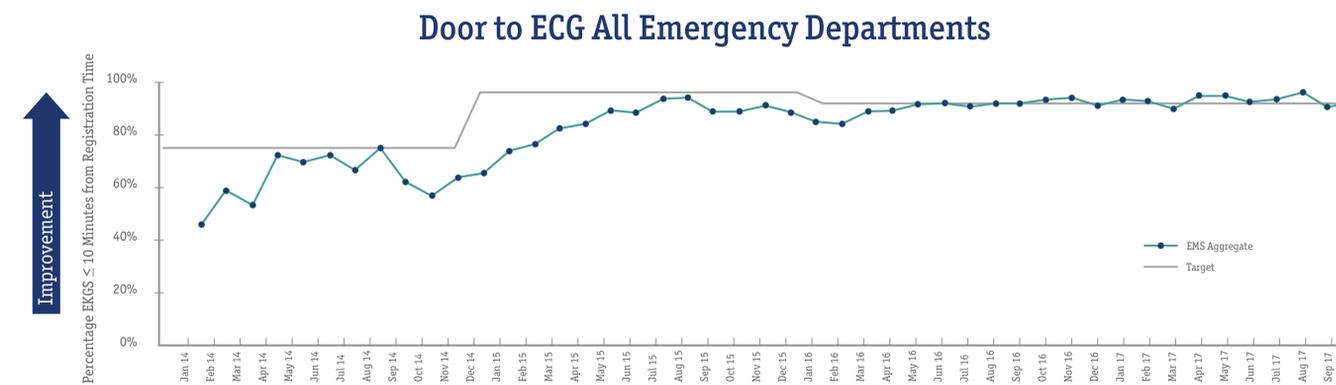
- All patients presenting with;
- chest pain \geq 18years
- abdominal pain \geq 65 years
- dizziness and weakness (ESI) Level 2 \geq 18 years who receive an ECG within 10minutes. (ESI: Emergency Severity Index is a triage acuity tool for assessing ED patients on arrival)

Findings

- 63.4% of patients who needed an ECG received one within 10 minutes
- The ED teams had not previously been involved in a science based patient safety focused project.
- Each of the core services (Information Technology, Clinical Engineering, Cardiovascular Unit, Clinical Laboratory Services) and ED nurses were working alone on the same process
- Process involved different technical steps depending on the unit.

Actions

- Walked the Door-to-ECG process through the patients' eyes with ED staff from Dhahran and the four district EDs
- Half day ED workshop with Dhahran and district multidisciplinary ED teams to identify barriers and develop action plans.
- Nursing education program on the management of ACS patients
- ECG technician road trip to the district EDs, standardizing ECG equipment and calibrations
- IT focus group session with Dhahran and district ED teams establishing formal communication pathways including monthly rounds in Dhahran and district units
- Developed an ED communication newsletter sent to all JHAH ED staff
- Established a communication network with ED teams organization wide
- Developed a list of common steps so each ED team follows the same process



Results

- By August 2015 94% of patients who needed an EKG received one within 10 minutes
- Improvement sustained: October 2017 compliance is 93.3% across all EDs
- Engaged teams in a science based patient safety project
- Opened lines of communication between core services
- Improved Door-to-ECG process flow
- Standardized ECG and function settings in all five EDs
- Standardized the ECG transmission process in all five EDs
- Enhanced interdisciplinary collaboration
- Technical staff workflow improved
- IT support network established
- The project was a positive learning experience for the ED staff based on post survey results

Challenges

- Testing the reliability and accuracy of the data
- Understanding how ECGs are processed and transmitted from the machine to the healthcare data system and how that system interfaces with the business intelligence (BI) report
- The scope and membership of the project had to expand to include the broader multidisciplinary team as we realised they were integral to the process.
- Organizing and coordinating five teams who reside in different geographical locations (Dhahran and Districts)
- Communicating with people from culturally diverse backgrounds
- Variance in the clinical and technical process across all five units.

Sustainability

- Implementation of control plans for ED and Cardiovascular Unit
- Monthly data review of the BI report and Healthcare data system by data management team
- Bi-weekly review of BI report by Clinical Nurse Educators with interventions as required
- Clinical Engineering conduct monthly rounds in Dhahran and all districts to check maintenance of equipment and to address any staff concerns
- IT Coordinator to provide support and handle technical issues.

