Introduction

Lower mortality due to STEMI is tightly and directly correlated with reduced time to reperfusion. The current national guidelines recommend 90 minutes from first medical contact to reperfusion. Given geographic constraints with proximity of a STEMI patient to a PCI center, the prehospital component of STEMI care is limited to scene time. As EMS identifies a STEMI and begins moving the patient towards PCI, preactivation of the cath lab can initiate a parallel process of readying the laboratory to reduce the time to device after arrival at the hospital. Fiduciary concerns make Prearrival activation of the cath lab controversial.

Methods

This was a retrospective review of prospectively collected regional cardiac systems committee process improvement data. All “Heart Alerts” from 2012 and 2013 were included. A true Heart Alert activation, for the purposes of this analysis, was prehospital notification and deployment of a device or reperfusion.

Data collection

The EMS electronic medical record alerts the PI committee of a Heart Alert. The prehospital data set is then matched to the hospital electronic medical record to identify PCI outcome. The activation delta was defined as time of cath lab notification minus patient arrival at the PCI center (i.e. cath lab activated before arrival the time delta is negative). The door to device is defined as EMS arrival at the emergency department to deployment. D2B data are presented as the time delta with respect to 60 minute goal time (i.e. a 50 minute D2B time is negative 10 minutes). Congruence was defined as both the cath lab activation time delta and meeting of the 60 minute goal time both negative or both positive. Non-congruent was defined as one of the time deltas positive and one negative.

Goal: The goal of this study was to determine the correlation of the prearrival activation of the cath lab with the PCI center meeting the 60 minute goal door to device time.

<table>
<thead>
<tr>
<th>Met Goal</th>
<th>Missed Goal</th>
<th>Total</th>
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<tbody>
<tr>
<td>Pre-activation</td>
<td>Post-Activation</td>
<td>Total</td>
</tr>
<tr>
<td>Met Goal</td>
<td>135 (75%)</td>
<td>61 (49%)</td>
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<tr>
<td>Missed Goal</td>
<td>46</td>
<td>63</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>124</td>
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The two-tailed P value equals 0.0003

Results

During the two year period studied, the region included 795 heart alerts, of which 502 were determined to be true activations. There were also 219 false activations, and 38 missed activations.

Of the true activations, 181 (59%) had prearrival activation, and 197 (64%) had D2B within 60 minutes. Of the prearrival activation group, 135 (75%) met the 60 minute goal time, and of the notification after arrival group (n=112) only 53 (44%) met the 60 minute goal time. Overall there was 70% congruence with 75% of the congruent pairs assigned to the prearrival-met goal group.

Conclusions

There was a high agreement with prearrival notification of the PCI laboratory with the meeting of the 60 minute goal D2B time. All organized STEMI systems of care should develop a mechanism where the EMS systems can initiate parallel process of transporting patient to the PCI center and the readying of the PCI laboratory and personnel.

Heart Alert Criteria

1. Patients with signs and symptoms of an Acute Coronary Syndrome (ACS) and
2. ST segment Elevation of 1mm or more in 2 contiguous leads