Improving Door To Needle Time for IV Thrombolysis in Stroke

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• Early administration of IV tPA in acute stroke, improves patient outcomes.
• Door to Needle Time (DNT) for IV administration in acute stroke, has become an important quality metric.

Background

• In 2010 we reviewed the process and performance for IV tPA administration at The Johns Hopkins Hospital.
• A QI project was initiated to determine the barriers to achieving a DNT < 60 minutes.
  • Pocket card to record times for each task in the tPA process.
  • Greatest delay was in the time between the decision to treat and administration of the bolus.
• Other contributors:
  • Foley catheter insertion.
  • Blood pressure control.
  • Mixing tPA
• We instituted changes to our process Using Target Stroke best practices:
  • Brain Attack Team activation pre-hospital.
  • Pre-mixing of tPA.
  • Data feedback.
• We also instituted an expedited blood pressure management guideline, eliminated routine use of Foley catheter, created an incentive pin, and included DNT in the department’s safety dashboard.

Methods

Table 1. Door to Needle Time by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>DNT &lt; 60 min. (%)</th>
<th>DNT &lt; 45 min. (%)</th>
<th>Median</th>
<th>Adjusted (After 2012 per GWTG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 - 2010</td>
<td>5/43 (11.6%)</td>
<td>NA</td>
<td>80 min.</td>
<td>NA</td>
</tr>
<tr>
<td>2011</td>
<td>5/14 (35.7%)</td>
<td>NA</td>
<td>67 min.</td>
<td>NA</td>
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<tr>
<td>2012</td>
<td>11/28 (39%)</td>
<td>1/28 (3.6%)</td>
<td>67 min.</td>
<td>NA</td>
</tr>
<tr>
<td>2013</td>
<td>16/39 (41%)</td>
<td>3/39 (7.7%)</td>
<td>68 min.</td>
<td>8/13 (61%) m: 55 min.</td>
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<tr>
<td>2014</td>
<td>19/39 (49%)</td>
<td>7/39 (18%)</td>
<td>61 min.</td>
<td>9/10 (90%) m: 56 min.</td>
</tr>
</tbody>
</table>

Results

Figure 1. Door to Needle Time < 60 min. (%)

Figure 2. Brain Attack Cards

Figure 3. IV tPA use (IV tPA/total ischemic stroke %)

Conclusion

Efforts to reduce DNT are effective and create incremental improvement over time. The organization required to lower DNT, results in an increase of the number of patients treated. This may be a result of the greater efficiency needed to achieve fast administration of IV tPA, which in turn, improves recognition and decision making.

Our experience demonstrates that these gains are sustainable.