Time is Muscle. A Walk Through a STEMI
February 15, 2018

STEMI Presentation NMH
Present via EMS vs Private Auto (walk-in)

<table>
<thead>
<tr>
<th>EMS</th>
<th>Walk-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFD Encode - Report</td>
<td>Triage Red</td>
</tr>
<tr>
<td>12 lead faxed from field ED provider</td>
<td>Evaluation by ED RN</td>
</tr>
<tr>
<td>Review</td>
<td></td>
</tr>
<tr>
<td>Emergent activation of cath lab prior to arrival</td>
<td>12 lead ECG obtained/reviewed by ED provider</td>
</tr>
<tr>
<td>Pt arrives repeat 12 lead</td>
<td>Activation of cath lab/cardiology consult</td>
</tr>
<tr>
<td>Begin STEMI Checklist/prep for cath lab</td>
<td>Begin STEMI Checklist/prep for cath lab</td>
</tr>
</tbody>
</table>

NMHS timeline goals
Nebraska Methodist Hospital | Timeline goal
--- | ---
Door to ECG Time | <5 minutes (include current time not)
Door to Interpretation Time | <20 minutes (include current time not)
Door to Emergent cath Lab Activation | <30 minutes (include current time not)
Arrival to Cath Lab | <30 minutes (include current time not)

STEMI Presentation Women’s Hospital

<table>
<thead>
<tr>
<th>Walk-in</th>
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<tbody>
<tr>
<td>Triage Red</td>
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Women’s Hospital STEMI Transfer

<table>
<thead>
<tr>
<th>Nebraska Methodist Hospital</th>
<th>Timeline goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door to ECG Time</td>
<td>&lt;5 minutes</td>
</tr>
<tr>
<td>Door to Interpretation Time</td>
<td>&lt;20 minutes</td>
</tr>
<tr>
<td>Door to Emergent Cath Lab Activation</td>
<td>&lt;10 minutes</td>
</tr>
<tr>
<td>Call to Transport</td>
<td></td>
</tr>
<tr>
<td>Transfer from WH ED to NMH Cath Lab</td>
<td>&lt;30 minutes</td>
</tr>
<tr>
<td>American College of Cardiology (ACC) 2017 Guidelines</td>
<td>&lt;30MIN TO TRANSFER</td>
</tr>
<tr>
<td></td>
<td>&lt;120 min to PCI from initial presentation</td>
</tr>
</tbody>
</table>

EMS Field STEMI Activation

- OFD required to obtain 12-Lead ECG within 10min of arrival per 2017 protocols
- Transport Code 3 STEMI to closest hospital with emergency cath lab availability
- Transmit 12-Lead via fax to receiving hospital
  - Notify hospital staff when encoding of 12 lead and STEMI alert
- STEMI transmitted EKG from EMS read by ED physician and cardiology/cath lab personnel mobilized
NMHS Nursing Protocol

- Omnicell STEMI Kit
  - Nitro gtt and tubing
  - Aspirin
  - Plavix
  - Nitro tabs
  - Lopressor

Methodist Hospital

Time to go to the Cardiac Cath Lab!!

Cardiac Cath Lab Staff

- 11 RNs
- 5 Rad Techs
- 1 LPN
- RN Coordinator
- Service Leader
- Working Case Team
  - 3 members: 2 RNs and 1 Rad Tech

Providers

- MPC-Heart Consultants
  - 14 Cardiologist
    - 4 Interventional Cardiologist
    - 3 Electrophysiologist
    - 3 NPs and 1 PA
- Locations Covered:
  - Westroads Office
  - Outreach
    - Fremont
    - Red Oak
    - Plus many other sites

Procedures Done

- Heart Catheterization
  - Left
  - Right
  - Left and Right
- Coronary Angioplasty
- Coronary Stent
- Rotational Arthrectomy
- Insertion of:
  - Temporary Pacemaker
  - Intra-Aortic Balloon Pump
  - Code Freeze Catheter (Therapeutic Hypothermia)
  - CARDIOHELP system
- Electrical Cardioversion
**Answering The Call/Page…**

- Team on-call 24/7/365
- Group Page
- Response Times
  - Operator <= 5 minutes
  - In Person <= 30 minutes

**Cardiac Cath Lab 2**

**Where Oh Where is the CCL Now?**

- Cardiovascular Center
- Surgery Support
- CCL 1 & 2

**Time is Muscle**

<table>
<thead>
<tr>
<th></th>
<th>Internal Goal Times</th>
<th>National Benchmark Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door to Cath Lab</td>
<td>&lt;10 min</td>
<td>&lt;=</td>
</tr>
<tr>
<td>Activation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Door to Cath Lab</td>
<td>&lt; 30 min</td>
<td></td>
</tr>
<tr>
<td>Door to Balloon</td>
<td>&lt;=75 min</td>
<td>&lt;=90 min</td>
</tr>
<tr>
<td>1st Medical Contact to</td>
<td>&lt;= 90 min</td>
<td>&lt;= 120 min</td>
</tr>
<tr>
<td>Balloon</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Door To Balloon**

**First Medical Contact to Balloon**

[Graphs and data tables are visually represented in the images.]
Case Study

- 63 year old female
- Negative primary medical history
- Family HX CAD
- C/O: generalized chest pain/heaviness x30 minutes, SOB, nausea, and anxiety while shopping

Case Study ECG @ 1541

Case Study ECG @ 1556

Case Study Films

Pre PCI

Post PCI

100% LAD LESION

3.5 x 20

Case Study Time Line

<table>
<thead>
<tr>
<th>Event</th>
<th>Actual Time</th>
<th>Elapsed Time</th>
<th>Elapsed Time Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>911 Call</td>
<td>1530</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>First Medical Contact</td>
<td>1538</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>ECG Transmission</td>
<td>1541</td>
<td>3 min</td>
<td>&lt; 10 min</td>
</tr>
<tr>
<td>CCL Activation</td>
<td>1548</td>
<td>10 min</td>
<td>&lt; 10 min</td>
</tr>
<tr>
<td>Arrival at NMH</td>
<td>1553</td>
<td>15 min</td>
<td>--</td>
</tr>
<tr>
<td>12-Lead ECG</td>
<td>1556</td>
<td>3 min</td>
<td>&lt; 5 min</td>
</tr>
<tr>
<td>Arrival to Cath Lab</td>
<td>1600</td>
<td>25 min</td>
<td>&lt; 30 min</td>
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<tr>
<td>Balloon Inflation</td>
<td>1641</td>
<td>63 min</td>
<td>&lt; 75 min</td>
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</table>

REFERENCES

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