Two Hospitals-One Heart: World Class Heart Care through Multi-Disciplinary Collaboration

American Nurses Association
7th Annual Nursing Quality Conference
February 8, 2013
Session 206 8:30 am - 9:30 am

Susie Schnirker RN, BSN, CEN
Director of Emergency Services
Schneck Medical Center
Seymour, Indiana

Schneck Medical Center

- 97 beds
- Not-for-profit
- Facilities
  - Main Campus
  - 30,000 ED visits
  - State-of-the-Art Cancer Center
  - Outpatient Rehabilitation Center
  - Home Services
  - Family Care Centers

Objectives

- Describe the benefits of a collaborative approach to heart care
- Define measures to focus priorities for cycles of improvement

What is a STEMI

STEMI is an acronym meaning “ST segment elevation myocardial infarction,” which is a type of heart attack. This is determined by an electrocardiogram (EKG) test.

In a STEMI, the coronary artery is completely blocked off by the blood clot, as a result virtually all the heart muscle being supplied by the affected artery starts to die. During an acute STEMI seconds count!

There is a direct relationship between the amount of time a heart artery is blocked and the severity of the heart attack and odds of survival

- 1.5 million heart attacks occur in the US each year with 500,000 deaths
- A heart attack occurs every 20 seconds with a heart attack death about every minute.
- Heart attack is a leading killer of both men and women in the United States

Seymour, Indiana

Best in Class Door to Balloon (D2B) for ST-Elevation Myocardial Infarction (STEMI) Patients

STEMI is an acronym meaning “ST segment elevation myocardial infarction,” which is a type of heart attack. This is determined by an electrocardiogram (EKG) test.

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- A heart attack occurs every 20 seconds with a heart attack death about every minute.
- Heart attack is a leading killer of both men and women in the United States
**Development of "Code STEMI"**

**Purpose:**
Four Main Drivers Behind D2B Time Improvement

**Goal:**
Achieve best in class door to balloon times for patients suffering from ST-segment elevation myocardial Infarctions (STEMI) by working with our competitor hospital and local EMS to implement an ideal system of care to provide seamless transitions from each stage of care to the next. The American Heart Association and the American College of Cardiology recommend that the door-to-balloon time interval be no more than 90 minutes and under 120 minutes when the patient has to be transferred to another hospital.

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**Project Charter**

**STEMI IMPROVEMENT PROJECT**

**Project Charter**

Organizations: Schneck Medical Center, Jackson County EMS, Columbus Regional Health

Champions: Tammy Dye & Vicki Johnson

Process Owners: Matt Chandler, Susie Schnitker, Staci Glick, Julie Bailey & Dennis Brasher

Project: ED STEMI: Rapid Identification and Intervention

**Problem Statement:**
In quarter one 2010 our median door to balloon time was 167 minutes. The American Heart Association and the American College of Cardiology recommend that the door-to-balloon time interval be no more than 90 minutes and under 120 minutes when the patient has to be transferred to another hospital.

**Project Objective:**
The objective of this project was to create a process that allowed 100% of STEMI patients to be reperfused with a door to balloon time under 90 minutes.

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**SIPOC**

**Suppliers**
EMS Registration
Triage Nurse
Emergency Physician
Dispatch

**Inputs**
Transportation
12 Lead EKG
Doctor assessment
History
Physical Diagnosis
Handoff Communication

**Process**
1. Onset of symptoms
2. EMS Dispatch
3. 12-lead ECGs
4. Early Diagnosis
5. Transport to SMC
6. ED MD confirms diagnosis, pt stays in ambulance
7. Notify CRH/Activate Cath Lab
8. Transport to CRH
9. Cath Team receives patient from EMS
10. Patient treated

**Outputs**
Positive patient outcomes
PT & Family satisfaction
Accurate, timely information
Accurate, timely treatment
Door to Balloon time under 90 minutes

**Customers**
Patient
Family
Staff
Physicians
SMC, CRH, & JCEMS
Dispatch

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**DMAIC**

**DEFINE**
Identify scope of project & key stakeholders
Identify stakeholder requirements

**MEASURE**
Create data collection tool
Identify key measurements

**ANALYZE**
Gather and analyze data
Median D2B time = 167 Min

**IMPROVE**
Collaborate with CRH & Jackson County EMS
Identify & eliminate barriers to implementation

**CONTROL**
Implement monitoring method
Deploy results to all key stakeholders
Excellence Every Person, Every Time

- Project Impact on Key Stakeholders
  - **Patient**
    - Improved outcomes
    - Increase patient satisfaction
  - **SMC, CRH, & JCEMS**
    - Increase in clinical quality
    - Increase possibility for further collaborations
  - **Physicians & Staff**
    - Streamlined processes
    - Increased staff engagement

- Door to balloon times under 90 minutes (best in class)
- Address to balloon times under 120 minutes (best in class)
- Improved patient outcomes

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**STEMI Kaizen Event**

**ED STEMI Kaizen Event Agenda**

<table>
<thead>
<tr>
<th>Day 1 (September 27th, 2010)</th>
<th>Day 2 (September 28th, 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0830-0900</td>
<td>Training &amp; review of current data (SZ)</td>
</tr>
<tr>
<td>0900-1000</td>
<td>Future state process map</td>
</tr>
<tr>
<td>0930-1000</td>
<td>SIPOC</td>
</tr>
<tr>
<td>1000-1100</td>
<td>Break</td>
</tr>
<tr>
<td>1030-1200</td>
<td>Current state map</td>
</tr>
<tr>
<td>1200-1230</td>
<td>LUNCH</td>
</tr>
<tr>
<td>1230-1500</td>
<td>Implement improvements through 5S and system redesign</td>
</tr>
<tr>
<td>1300-1400</td>
<td>SWOT</td>
</tr>
<tr>
<td>1400-1415</td>
<td>Break</td>
</tr>
<tr>
<td>1415-1500</td>
<td>FMEA</td>
</tr>
<tr>
<td>1500-1630</td>
<td>Brainstorm of improvements</td>
</tr>
</tbody>
</table>

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**Goal: Door to Balloon Time <90 Minutes**

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**SWOT**

- **Strengths**
  - Chest Pain Center Accreditation
  - Engaged Stakeholders
- **Weaknesses**
  - No Cath Lab (Schnick Medical Center)
  - Variances in standard of care
- **Opportunities**
  - Develop partnerships with EMS & CRH
  - Standardize care every patient, every time
- **Threats**
  - Quality of care due to locums ED physicians
  - Loss of market share

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**Current State Process Map - EMS**

- Patient calls 911
- STEMI Responds
- STEMI declined
- Transports to SMMC
- Patient is transferred and placed in treatment room
- ED Physician assesses & directs patient to Cath Lab
- ED Physician contacts Indiantanls facility to transfer patient
- Facility receives patient
- Facility activates intervention – 5E
- Patient is transferred to Cath Lab
- Medical treatment

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**Goal: Door to Balloon Time <90 Minutes**

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**26.1 miles**
Desired State Process Map - EMS

- Patient calls 911
- EMS Responds
- Paramedic obtains EKG & activates Code STEMI
- Medical control activates Cath Lab
- Transports to SMC
- Patient is triaged in ambulance bay
- ED Physician contacts CRH cardiologist with additional information
- Patient intervention

30% decrease in process steps

Narrowing the List of Opportunities

<table>
<thead>
<tr>
<th>Potential Failure Mode</th>
<th>SVD</th>
<th>DRC</th>
<th>BSS</th>
<th>Action(s) Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of clinical personnel at first contact</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>Change process to trigger nurse alert</td>
</tr>
<tr>
<td>Patient not seen on EKG</td>
<td>6</td>
<td>10</td>
<td>5</td>
<td>More checks on a routine basis</td>
</tr>
<tr>
<td>Shocks not heard on EKG</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>More checks on a routine basis</td>
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<tr>
<td>Busy</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>More rapid and accurate identification of critical patients</td>
</tr>
<tr>
<td>High census</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>More rapid and accurate identification of critical patients</td>
</tr>
<tr>
<td>Inadequate history</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>More rapid and accurate identification of critical patients</td>
</tr>
<tr>
<td>Poor judgment</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>More rapid and accurate identification of critical patients</td>
</tr>
<tr>
<td>Inadequate history</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>More rapid and accurate identification of critical patients</td>
</tr>
<tr>
<td>Late diagnosis</td>
<td>8</td>
<td>5</td>
<td>8</td>
<td>More rapid and accurate identification of critical patients</td>
</tr>
<tr>
<td>Misdiagnosis</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>More rapid and accurate identification of critical patients</td>
</tr>
<tr>
<td>Delayed DIO</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>More rapid and accurate identification of critical patients</td>
</tr>
</tbody>
</table>

Solution Development

1. Project Selection
2. Current Situation Analysis
3. Solution Development
4. Project Implementation & Results

Solution Development

- EMS performs 12 lead EKG and field activates one call process to cath lab for positive STEMI EKG’s
- ED physician and nursing team assesses and stabilizes patient in ambulance for transport to receiving facility
- Developed similar process for walk in STEMI patients
- Standardized equipment between all providers
- Data collection and rapid feedback to everyone involved in the process
- Collaboration & coordination of resources
- Mock code event to identify waste in process
- Training & education for Dispatch, EMS, SMC ED Staff, CRH ED Staff, Cath Lab Staff

Grant Application and Recipient:
Simulation for Improved Teamwork in Myocardial Infarction
SIM-FIT MI
An in situ Educational Initiative Tailored to Individual Hospital Needs
April 13, 2011
Taped and analyzed by The American College of Cardiology
Intended Benefits

- **Intended Benefits**
  - **Tangible**
    - Improve door to balloon times
    - Improve patient outcomes
  - **Intangible**
    - Increase stakeholder satisfaction with transition of care processes
    - Increase engagement of staff in the success of the initiative
    - Look for opportunities to collaborate on other initiatives

Data Pre-Implementation

- **EMS Arrival at scene or ED door to EKG**
  - Goal ≤ 19 Min
- **STEMI Indoor to Outdoor Time**
  - Goal ≤ 80 Min
- **Transfer time btw Non PCI & PCI Facilities**
  - Goal ≤ 56 Min
- **STEMI Door to Door Time**
  - Goal ≤ 159 Min

Project Selection

1. Project Selection
2. Current Situation Analysis
3. Solution Development
4. Project Implementation & Results

Implementation

Standardized Processes & Procedures

EMS/ED/Transfer Performance Measures
Data Post-Implementation

Faster TAT in every key process

- EMS Arrival at scene or ED door to EKG
  - Q1 (15 Min)
  - Q4 (6 Min)

- STEMI Indoor to Outdoor Time
  - Q1 (80 Min)
  - Q4 (17 Min)

- STEMI Door to Door Time
  - Q1 (159 Min)
  - Q4 (42 Min)

- Transfer time btw Non-PCI & PCI Facilities
  - Q1 (56 Min)
  - Q4 (23 Min)

Implementation - Confirmed Benefits

- Intended Benefits
  - Tangible
    - Improved door to balloon times
    - Improve patient outcomes
  - Intangible
    - Increase stakeholder satisfaction with transition of care processes
    - Increase engagement of staff in the success of the initiative
    - Look for opportunities to collaborate on other initiatives

- Faster TAT in every key process

Implementation

Goal:
Best in Class Performance

- Door to balloon times under 90 minutes.

Results

Door to balloon time 71 minutes (best in class for non-PCI facility), out performing hospitals that have a cath lab on site!

Results

Thank you for allowing me to share our story of how we have broken down barriers and worked together to put the people of our communities first in everything we do.

Contact Information:
Susie Schnitker RN BSN CEN
sschnitker@schneckmed.org

SCHNECK
better healthcare begins here