Review Panel

• Alyson Kelleher, BSN, RN, CCRN
  • Chest Pain Coordinator at Froedtert Hospital

• Tom Thrash, BS, NRP
  • Battalion Chief of EMS at West Bend Fire Department

• Kenny Asselin, MBA, NRP
  • Captain/Critical Care Paramedic at West Bend Fire Department
Kenny Asselin has holdings in the following medical companies:

- Aveo Pharmaceuticals (AVEO)
- Digirad Corporation (DRAD)
- LTC Properties (LTC)
- Mallinckrodt (MNK)
- Medtronic (MDT)
- United Health Group (UNH)
<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Description of Measure</th>
<th>Rationale</th>
<th>Key Performance Indicator</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>EKG Time</td>
<td>Measurement of the time for first capable unit to acquire 12-lead EKG on patients diagnosed with STEMI</td>
<td>Early 12 lead EKG is necessary to identify STEMI</td>
<td>Will obtain a 12 lead ECG within 10 minutes of FMC</td>
<td>EMS Compass Initiative, AHA Guidelines</td>
</tr>
<tr>
<td>ASA Administration</td>
<td>Percentage of eligible patients with suspected STEMI who receive ASA</td>
<td>ASA may reduce morbidity and mortality with STEMI</td>
<td>ASA will be administered 95% of all eligible patients with STEMI</td>
<td>EMS Compass Initiative, AHA Guidelines</td>
</tr>
<tr>
<td>Pain Reduction for STEMI</td>
<td>Percentage of eligible patients who receive pain reduction</td>
<td>Analgesia may help lesson discomfort and improve outcomes</td>
<td>Pain reduction strategy (nitrate or analgesic) will be administered to 95% of all eligible STEMI patients</td>
<td>EMS Compass Initiative, AHA Guidelines</td>
</tr>
<tr>
<td>Scene Time</td>
<td>Measure of time from diagnostic EKG to departure to a PCI center</td>
<td>Minimizing scene time may deliver patient to prepared hospital and receive PCI sooner</td>
<td>Scene time will be &lt; 20 minutes for 95% of all STEMI patients</td>
<td>EMS Compass Initiative, AHA Guidelines</td>
</tr>
<tr>
<td>Destination</td>
<td>Measure of percentage of suspected STEMI patient transports to facilities capable of PCI/thrombolytic administration</td>
<td>STEMI outcomes are improved at specialized STEMI hospitals</td>
<td>Will deliver STEMI patients to STEMI hospital within 30 minutes of FMC 85% of the time</td>
<td>EMS Compass Initiative, AHA Guidelines</td>
</tr>
<tr>
<td>FMC to PCI</td>
<td>FMC to Reperfusion</td>
<td>Early reperfusion reduces mortality and morbidity</td>
<td>FMC to reperfusion will be &lt; 90 minutes on all STEMs identified in the field</td>
<td>EMS Compass Initiative, AHA Guidelines</td>
</tr>
<tr>
<td>D2D2B</td>
<td>Arrival at non-PCI hospital to reperfusion</td>
<td>Early reperfusion reduces mortality and morbidity</td>
<td>D2D2B will be &lt;120 minutes</td>
<td>AHA Guidelines</td>
</tr>
</tbody>
</table>

Goals of Cardiac Catheterization Lab
Basic Life Support vs Advanced Life Support

• Basic Life Support Unit
  • Staffing
    • Emergency Medical Responder (EMR)
    • Emergency Medical Technician (EMT)
    • Advanced Emergency Medical Technician (AEMT)
  • Skills
    • Bandaging and splinting
    • AED and non-visualized airway

• Advanced Life Support Unit
  • Staffing
    • Paramedics and Critical Care Paramedics
  • Skills
    • All basic life support
    • Cardiac interventions
    • Advanced airway and rapid sequence airway
    • Pain control medications
Paramedic Intercepts

West Bend Fire Department
Paramedic Intercept Program
• 115 paramedic intercepts in 2017
• Over 300 square miles in Washington, Sheboygan, Fond du Lac, and Dodge Counties
• SUV with 2 paramedics and ALS supplies
• $300 flat charge to responding department
• Cost savings due to shared service
Interfacility Transfers

West Bend Fire Department Paramedic Interfacility Transfer Program

- 421 interfacility transfers in 2017
- Emergent and non-emergent transfers
- Med unit with 3 paramedics
- Response times to St. Joe’s and transfer to Froedtert meet goals
Emergency Room Bypass Procedures

West Bend Fire Department and New Berlin Fire Department
- STEMI recognition
- Contact medical control
- Determination of transport time from the scene to Froedtert (greater than 30 minutes for cath lab activation)
- Medical control doctor contacts the access center
- Cath team activated
- Paramedic crew delivers patient directly to the cath lab
- Health care savings of several thousand dollars
St. Joe’s Arrival Procedure

St. Joseph’s Hospital ED Chest Pain/ACS/STEMI care

Patient arrival: ED walk in

- Patient
  - Complains of:
    - Chest Pain or discomfort
    - Pain in jaw, neck, arms or upper back
    - Shortness of breath
    - Diaphoresis
    - Lightheadedness

- ED tech
  - Quick Register Patient at front desk and call charge RN
  - Rooms patient

- RN/Tech
  - 1. ExG
  - 2. Vitalis
  - 3. Cardiac Monitor

- ED Provider
  - Diagnose & sign ExG
  - Perform history and physical exam

Patient in ED with NON-ACS symptoms evolves into possible ACS patient

Continue to Risk Stratification

STEMI Diagnosed by ED attending?

Yes

Initiate STEMI activation protocol

No

Continue to Risk Stratification

Patient arrival: EMS

- EMS EKG
  - EMS EKG sent?
    - Yes
      - EMS to transport to STH ED
    - No
      - STEMI Diagnosed by ED attending?
        - Yes
          - EMS to transport to STH ED
        - No
          - ED Provider
            - Admitting to quick Register Patient

- ED Tech/HUC
  - Patient Roomed

Patient

- Complains of:
  - Chest Pain or discomfort
  - Pain in jaw, neck, arms or upper back
  - Shortness of breath
  - Diaphoresis
  - Lightheadedness

RN/Tech

- 1. ExG
- 2. Vitalis
- 3. Cardiac Monitor

ED Provider

Note: provided as is. Appropriate for ED patient care. Not considered to be the basis of professional judgment, which is required, or to meet work practice standard. The provider can be held liable for the care rendered thereby. This document is not a substitute for clinical judgment. The provider assumes all responsibility for the care rendered thereby. This document is not intended to be used as a standard of care. It is not intended to be used as a clinical reference. This document is not intended to be used as a legal document.
St. Joe’s Arrival Procedure
Case Study #1 - Interfacility Transfer

- St. Joseph’s Hospital - West Bend on 12/03/2017
- 72 year old male
- Chest pain, left arm numbness, nausea, shortness of breath
- EKG, STEMI activation, heparin, aspirin, brilinta, chest x-ray
- West Bend Fire Department paramedic transfer
- En route to Froedtert in 23 minutes from patient’s time of arrival at ED
- Angioplasty with thrombectomy to 100% lesions in proximal and mid LAD
- Discharged home 2 days later
FROEDERT HOSPITAL STEMI REVIEW

Date: 12/03/2017
Portal of entry: SJH
72M with chest pain, left arm numb, nausea, SOB

<table>
<thead>
<tr>
<th>TIME</th>
<th>8:16</th>
<th>8:22</th>
<th>8:22</th>
<th>8:26</th>
<th>8:26</th>
<th>8:30</th>
<th>8:30</th>
<th>9:00</th>
<th>9:11</th>
<th>9:21</th>
<th>9:23</th>
<th>9:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERVALS</td>
<td>Arrive to ED</td>
<td>10 EKG</td>
<td>Door to EKG</td>
<td>Door to EKG</td>
<td>Door to EKG</td>
<td>Door to Cath</td>
<td>Treat Cath</td>
<td>Send to Cath</td>
<td>Cath to Cardiologist</td>
<td>Cardiologist to Cath Lab</td>
<td>Provide IV</td>
<td>Open Cath</td>
</tr>
<tr>
<td>Minutes</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>15</td>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>

**EKG**

**ANGIOGRAMS**

SJWB ED
EKG, STEMI activation, heparin, ass, briilinta, CXR

Cath Lab
Angioplasty with thrombectomy to 100% lesions in proximal and mid LAD

**Discharge Disposition**
DC home 12/05 16:53

Tiffany Voss, BSN, RN
Chief Nurse, Cardiology, Heart and Vascular Services
Phone: (262) 347-3479
Email: Tiffany.Voss@froedert.com
Case Study #2 - Paramedic Intercept

• Kewaskum Fire Department and Boltonville Fire Department (12/09/2016 17:39)
• 53 year old male
• Substernal chest pain rated 10 on a 0 to 10 scale
• Took aspirin prior to arrival of EMS
• KFD - 12 lead (unable to transmit), capped IV, 0.4 mg nitro sublingual
• WBFD (Called at 18:02) - 150 mcg fentanyl
• Contact medical control to bypass St. Joe’s
• Additional nitro, additional 50 mcg Fentanyl, 5 mg metoprolol x 2
• 62 minutes from contact to arrival at Froedtert (77 minutes from call)
Case Study #2 - Paramedic Intercept

• Emergency Department Care
  • Zofran, Brilinta, Heparin, Morphine

• Cath Lab Care
  • Drug-eluting stent - 100% lesion in the proximal right coronary artery
  • Mild ST elevation in lateral leads - intervention in the left coronary artery as well
  • Drug-eluting stent - 80% lesion in the proximal circumflex

• Discharged home 3 days later
# FROEDTERT HOSPITAL STEMI REVIEW

**Arrival Date:** 12/09/2016  
**Portal of entry:** Kewaskum FD intercept with WBFD  
**Sex:** M

### Temperature

<table>
<thead>
<tr>
<th>Time</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:59</td>
<td>97.59</td>
</tr>
<tr>
<td>17:54</td>
<td>97.56</td>
</tr>
<tr>
<td>17:53</td>
<td>97.61</td>
</tr>
<tr>
<td>17:52</td>
<td>97.60</td>
</tr>
<tr>
<td>17:51</td>
<td>97.58</td>
</tr>
<tr>
<td>17:50</td>
<td>97.57</td>
</tr>
</tbody>
</table>

### Internals

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>136/82</td>
</tr>
<tr>
<td>HR</td>
<td>72</td>
</tr>
<tr>
<td>Cr</td>
<td>0.78</td>
</tr>
<tr>
<td>BUN</td>
<td>13.64</td>
</tr>
<tr>
<td>Creatinine</td>
<td>1.04</td>
</tr>
<tr>
<td>glucose</td>
<td>98</td>
</tr>
<tr>
<td>WBC</td>
<td>15.73</td>
</tr>
<tr>
<td>Hgb</td>
<td>10.5</td>
</tr>
<tr>
<td>PT</td>
<td>17.75</td>
</tr>
<tr>
<td>INR</td>
<td>2.23</td>
</tr>
<tr>
<td>Platelets</td>
<td>250</td>
</tr>
<tr>
<td>Hct</td>
<td>35.1</td>
</tr>
<tr>
<td>Sodium</td>
<td>136</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.2</td>
</tr>
</tbody>
</table>

### EMS Care

- A.Fib, unable to take EKG. Bypass GJSWB, Nitro x4, Fentanyl, ASA PTA

### ED Care

- Zohran, Brittan, Hagan, Morphine

### Cath Lab Care

A drug-eluting stent was performed on the 100% lesion in the proximal RCA. Due to persistent mild ST elevation in lateral leads we decided to proceed with intervention to the LCx as well. A drug-eluting stent was performed on the 80% lesion in the proximal circumflex.

### Discharge Disposition

12/12/2016 15:29 dc to home