# Surviving MI

**AN ACC QUALITY INITIATIVE**

**Cardiology Presence Around the Clock**  
**Thursday, December 3, 2015**

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## How this webinar is organized

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Speakers

Richard Kovacs, MD, FACC
Professor of Clinical Medicine at Indiana University School of Medicine, and Clinical Director of the Krannert Institute of Cardiology

Susan Farkas, MD, FACC
Clinical Associate Professor of Medicine, University of North Dakota and cardiologist with Sanford Heart Center

Eric R. Bates, MD, FACC
Professor of Internal Medicine, University of Michigan

John E. Brush, Jr., MD, FACC
Professor of Medicine, Eastern Virginia Medical School and an interventionalist with Sentara Cardiology Specialists

Lower 30-Day Mortality Rates with these Seven Strategies

1. Evidence-Based Protocols and Processes in Place
2. Nurse AND Physician Champions
3. Creative Problem Solving Culture
4. Regular Case Reviews with EMS Providers
5. Cardiologist Presence Around the Clock
6. Dedicated Nursing Staff Assigned to Cath Lab
7. Pharmacists Involved With Care
How it all connects...

Success Metric

- Cardiologist presence around the clock

Assessment

- What type of cardiology expertise is available onsite 24/7 at your hospital?

Tool

- Strategies for Ensuring 24/7 Cardiology Expertise, Ideally On-Site

Questions Aligned with Metrics

Success Metric 5

Assessment Question

What type of cardiology expertise is available onsite 24/7 at your hospital? Select all that apply.

a. Interventional Cardiologist
b. Critical care physician
c. Intensivist
d. General Cardiologist
e. In-house cardiology fellow
f. Cardiac RN
g. No cardiology expertise
• 5,000 Hospitals
• 1,000 PCI Capable Hospitals
• 25,000 Board Certified Cardiologists
• 6,000 Board Certified Interventionalists
Let’s do the arithmetic

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Assuming 100% of Cardiologists taking 24/7 call and perfectly distributed geographically:
- 1:5 call to place a cardiologist in every hospital 24/7/365

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Surviving MI Webinar

Eric R. Bates, M.D.
Professor of Internal Medicine
University of Michigan

Conflict of Interest: None

EMS
Providers: 800
Regional Authorities: 65

Trauma Regions: 8

Receiving Hospitals: 47
On-site Surgery: 33
No On-site Surgery: 14

Referring Hospitals: 90
Plan/Do: The Case For Improvement

Round 1:
1. Single call activation
2. Pre-hospital activation
3. Standardize single page with Cath Lab team
4. Standardize ED and Cath Lab processes

Check/Act: Verifying Outcomes

Round 1:
- **Initial EMS changes:**
  - Pre-hospital activation:
    - Positive machine read AMI
  - Use same EKG pads:
    - EMS→ED→Cath Lab
  - Standard handoff to ED RN
    - Change stretcher, med box, …
  - Share results of patient impact with individual staff
Check/Act: Verifying Outcomes

Round 2: Once Round 1 Stabilized

• Screen all adult patients
• Added to Triage form
• Reduced Door to EKG
  – Education to get EKG 1st
    • Piloted 3 ways
  
81% Door to EKGs < 10 min

Check/Act: Verifying Outcomes

Round 3: Once Round 2 Stabilized

• Identification of key roles
• Identification of key duties: table first
• Mock trials to practice
• Fellow documentation for exclusion

Cath Team Stays
Check/Act: Verifying Outcomes

Round 4: Once Round 3 Stabilized
- Focus on getting EKG 1st
- Reduce patient contact to EKG
- Reduce positive EKG to ED notification
  - Give more time for Cath Lab and ED
- Real-time feedback/follow-up with staff from UofM to us to staff

Round 5: Once Round 4 Stabilized
1. Analyze and develop countermeasure to Activation that do not go to the Cath Lab

Activation that do not go to Cath Lab

- Increased overall # activation
- Increased % not sent to lab
Real-Time Monitoring and Problem Solving

- Recap e-mail is sent within 48-72 hours of case
- Outlines any issues that occurred for immediate follow-up
- Gives real-time feedback to staff
- Sent to EMS

On-going cross-departmental monthly meetings

Example Recap E-mail

Cath Lab Activation Algorithm
Surviving MI Webinar
STEMI Regionalization

John E. Brush, Jr., MD, FACC
Sentara Cardiology Specialists
Eastern Virginia Medical School
Norfolk, Virginia

D2B Success

![Graph showing Prehospital EKGs]

- PCI w/ 90 mins
- Prehospital EKGs
- National Mean: 94.3%
Our Challenge

- Water barriers, tunnels, bridges, distance
- Different municipalities
- Different states
- Different hospital systems
- Different cardiology groups
- Different EMT systems
Private Practice Challenge

- Covering multiple hospitals, administrator’s demands, unrealistic demands of small hospitals.
- Large geographic distances, multiple call MDs
- Call coverage, call ratios, call back up, simultaneous STEMIs
- Changing to lytic strategy for outlying hospitals to address FMC to reperfusion times.
- Drip and ship strategies, protocols

Virginia Heart Alliance Coalition

- Working collaboratively to improve systems of cardiac care for the community

**The STEMI Bill of Rights**
- Right to STEMI protocols
- Right to rapid inter-facility transfer
- Right to prompt provider feedback
Tracking Transfer Times

- **PCI w/ 90 mins**
  - National Mean: 94.3%
  - Top 10: 100%
  - Median time to immediate PCI for STEMI (Non transfers in minutes)
    - National Mean: 61 min
    - Top 10: 48 min

- **Median time from ED to ED transfer**
  - Median time transfer ED to PCI at STEMI facility
    - National Mean: 109 min
    - Top 10: 81 min

Lytic Map
Lytic Protocol

Purpose:

• The purpose of this document is to create a protocol for consistent treatment and transfer of STEMI patient presenting to Riverside Shore Memorial Hospital, Southampton, Albemarle and Outer Banks Hospital.

• This protocol follows the recommendations of the 2013 ACC/AHA STEMI guidelines and the recommendation of VHAC

• The current guidelines have a CLASS I recommendation to administer thrombolytic therapy to STEMI patients if primary PCI cannot be performed within 120 minutes of first medical contact.

• To meet this guideline recommendation, given the logistical limitations, a “drip and ship” strategy will be used, unless contraindicated.

Debriefing Sheet
Implementation

• Sub dashboard to demonstrate performance based on Lytic map
• Nightingale performance
• Work with ED to hardwire door to EKG times
• STEMI regional education through SHH Learning Center

Regionalization
Cooperation
Buy-in
Measurement of FMC to Reperfusion
ML STEMI Accelerator Program
Cardiology Presence Around the Clock
Susan Farkas, MD, FACC
Clinical Associate Professor of Medicine, University of North Dakota
School of Medicine and Health Sciences
Governor, ACC/ND
Cardiologist, Sanford Heart Center
Fargo, North Dakota

North Dakota

• 68,976 square miles, with a 2014 estimated population of 739,482 people - 375,742 living in rural ND (USDA-ERS).
• According to the U.S. Census Bureau, 89.6% of the state’s population is white, 5.4% is American Indian & Alaska Native, and 2.9% is of Hispanic/Latino origin.
North Dakota Healthcare

- 55 certified hospitals (Kaiser, 2013)
- 36 hospitals identified as Critical Access Hospitals (Flex Team, 9/2015)
- 54 Rural Health Clinics (CMS, 2015)
- 4 Federally Qualified Health Centers provide services at 16 sites (NACHC, 2013)
- 6 “Big” hospitals in 4 major cities
Minnesota Healthcare

- 131 hospitals (Kaiser, 2013), 84 of which are located in rural areas (North Carolina Rural Health Research and Policy Analysis Center, 12/2008)
- 79 hospitals identified as Critical Access Hospitals (Flex Team, 9/2015)
- 88 Rural Health Clinics (CMS, 2015)
- 17 Federally Qualified Health Centers provide services at 74 sites (MNACHC, 2012)

Sanford Health

- Largest rural healthcare provider in the U.S.
- Largest medical facility in ND and SD
- Areas served: Iowa, Minnesota, Nebraska, Oklahoma, Ghana, Mexico, and California
- Number of employees ~ 30,000
- Hospital-clinic system ~ 450 beds
- 12 cardiologists
- 3-4 interventional cardiologists
- 6 non-invasive (including 2 invasive) cardiologists
- 3 electrophysiologists
- 2 cardiac surgeons
Sanford Health

Cardiology coverage during day (7:30 am – 5:00 pm)
- One non-interventional cardiologist on hospital service
- Two to three interventional cardiologists in cath lab

Cardiology coverage nights (5:00 pm – 7:30 am) and weekends – Take call from home
- One non-interventional cardiologist
- One interventional cardiologist

Patient Arrives in ED with Chest Pain

Obtain 12 L ECG
Goal Door to ECG < 10 min
- No need to repeat ECG if obtained by EMS shows STEMI
- If nondiagnostic, do serial ECGs if symptoms persist or worsen

Confirm STEMI
Activate Transport, & Call Tertiary Facility
Door to Transport Activation Goal < 15 min

Have Treatment & Transport Plan

Primary PCI
Door to Needle Goal < 90 minutes
- Door to Departure Goal = 30 min Ground
- Door to Departure Goal = 60 min Air

Fibrinolysis
Door to Needle Goal < 90 minutes
- Door to Departure Goal = 45 min Ground

Times listed are to be used as a goal. Actual times are subject to the treating physician orders.
How does it work?

- Chest Pain Protocol Flow Chart is posted in every ND ED
- One Call nurse receives phone calls 24/7 (dedicated number)
  - Patient's EKG is faxed to One Call Nurse
  - Nurse e-mails EKG to the on-call cardiologist (alerted to incoming e-mail via text message)
  - On-call cardiologist determines if STEMI is present
  - If ST elevation is present, the on-call interventionalist, cath lab nurse, and charge administrator also receive the EKG
- On-call cardiologist decides whether thrombolytics will be used (factor to consider: helicopter availability on site)
- If patient is in the ED or is a walk-in, ED or clinic physician will discuss patient case with on-call cardiologist
Zone 1 hospitals:
- 75 mile radius from Sanford Fargo
- 120 min D2B time
- Helicopter transport arranged within 10 min
- Leave the ED within 30-40 min

Zone 2 hospitals:
- Radius greater than 75 miles
- Thrombolytics used within 30 min
- All Zone 2 will be transferred

Zone 1 - How does it work?

- Patient calls 911, local EMS arrives
- Closest hospital may not have cath lab
  - For many patients, they are in the D2B primary PCI area if they don’t stop at the closest hospital
- EMS transmits the EKG automatically to One Call nurse and emailed to the hospital with cath lab
  - ECG then sent to on-call cardiologist and interventionalist simultaneously
- Cath lab called in/activated by the One Call nurse
Zone 2 - How does it work?

- 911 call
  - EMS arrives and finds the closest ED hospital (outside of primary PCI circle)
- EKG faxed to One Call
- Physician to physician discussion and decision about thrombolysis made
- Transport arranged independent of results of thrombolysis
- EMS continually updates One Call with changes in patient status
On Arrival at Sanford – How does it work?

• Upon arrival to ED, if patient still experiencing pain and EKG changes are present after thrombolytic administration, then cath lab team activated
• Non-interventionalist makes the decision and manages the patient throughout hospital stay
  – One Call informed to contact the cath team and interventionalist

Sanford ED - How does it work?

STEMI Presents to Sanford ED

• One Call contacts the team, while simultaneously cardiologist on call is paged
• Both interventionalist and non-interventionalist take call from home but come in when paged; all on-call cardiologists arrive in-house in ≤ 20 min
• If there is a cardiac arrest, with an unresponsive, intubated patient, the on-call in house Intensivist will also be at the bedside (hypothermia protocol)
In-House at Sanford – How does it work?

In-house STEMI or NSTEMI/USA

• In-house Rapid Response Team evaluates patient and contacts cardiologist (hospital service or on-call after hours)
• On-call cardiologist receives EKG at home through One Call email
• On-call cardiologist activates cath lab through One Call
  – One Call contacts team and interventionalist

Sanford - How does it work?

• Standardized approach to antiplatelet therapy
  – Choice of DAT is based on availability in the ED
• The cath lab team gets updates and ETA while the cath lab is being readied
• The cath lab team does not stay in house but does not live farther than 20 min away
• For night calls, interventionalist comes to the hospital immediately
  – does not live farther than 20 minutes away (no traffic)
  – in bad weather, they stay in the hospital
  – may stay in hospital if it is busy
• Noninterventionalist
  – does HPI
  – arranges family care and orders
  – makes management decisions in coordination/consultation with the interventionalist
  – follows patient until discharge
Sanford - How does it work?

At Discharge
• Patient leaves hospital with discharge meds
• Patient or family picks up free antiplatelets (1 month supply) from pharmacy

ECG/Echo service available 24/7
• Studies can be read, discussed with referring provider as need be, and reported promptly using home computer or handheld devices

Next Steps
1. Have a quality improvement team available
2. Complete online self-assessment at CVQuality.ACC.org/SurvivingMI
3. Use the Assessment results to identify success metrics to improve
4. Implement at least 2 strategies or tools
5. Share your story online
6. Post to the listserv
Surviving MI
AN ACC QUALITY INITIATIVE

Please submit your questions for the moderated question and answer session.

SurvivingMI@acc.org
CVQuality.ACC.org/SurvivingMI

The Quality Improvement for Institutions program combines the ACC’s NCDR data registries with toolkits and proven hospital-based quality improvement initiatives like Hospital to Home, the D2B Alliance and Surviving MI.