Gary L. Schaer, MD
Professor of Medicine (Interventional Cardiology)
Director, Cardiology Research
Chair, STEMI Advisory Committee – IL EMS Region XI
Rush University Medical Center
Chicago, Illinois
Disclosures

Gary L. Schaer MD

No disclosures to report
Where we were back in 2007

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New Class I Recommendations

2007 STEMI Focused Update Recommendation

Class I

1. STEMI patients presenting to a hospital with PCI capability should be treated with primary PCI within 90 minutes of first medical contact (see Figure 1) as a systems goal. (*Level of Evidence: A*)

2. STEMI patients presenting to a hospital without PCI capability and who cannot be transferred to a PCI center and undergo PCI within 90 minutes of first medical contact (see Figure 1) should be treated with fibrinolytic therapy within 30 minutes of hospital presentation as a systems goal unless fibrinolytic therapy is contraindicated. (*Level of Evidence: B*)

New Focus on Systems of Care

New Focus on Systems of Care

A comprehensive effort is the AHA Mission Lifeline program, a community-based national initiative to improve the quality of care and outcomes of patients with STEMI by improving health care system readiness and response to STEMI. The “Door-to-Balloon (D2B): An Alliance for Quality” campaign aims to improve the timeliness of primary PCI.

This committee continues to endorse the concept that faster times to reperfusion and better systems of care are associated with important reductions in morbidity and mortality rates in patients with STEMI. An underutilized but effective strategy for improving systems of care for STEMI patients is to expand the use of prehospital 12-lead EKG programs by EMS that provide advanced life support.

Systems of Care

Each community should develop a STEMI system of care following the standards developed for Mission Lifeline (AHA) including:

- Ongoing multidisciplinary team meetings with EMS, non-PCI & PCI centers
- A process for prehosp identification and activation
- Destination protocols for PCI centers
- Transfer protocols for non-PCI centers for appropriate patients

ACC/AHA 2009 Joint STEMI/PCI Guidelines Focused Update JACC 2009
Metro Chicago Heart Programs

Chicago Metro Area (2007)

City ~2.7 million
Total ~6.8 million

Heart Surgery Programs (adult)
Chicago 15
Chicago suburbs 31
NW Indiana 10
Total 54

PCI Hospitals - 93
Eleven EMS Regions

– EMS Medical Directors submit protocols to IL Dept of Public Health

-- Region 11 (City of Chicago) has 4 EMS medical directors
Challenges in Chicago - 2007

- EMS brings chest pain patients to nearest hospital
- No 12-lead capability on ambulances
- Complex bureaucracy
  - Mayor’s office
  - Chicago Fire Dept
  - Chicago Dept of Public Health
- Major fiscal constraints and competing priorities
- Large number of cath labs and interventional cardiologists with intense competition for heart patients
- Low hospital and operator PCI and STEMI-PCI volumes
- Five academic medical centers in metro Chicago
Priority #1: 12-lead EKGs!

- Mayor’s office – City of Chicago
- Grant applications
- Philanthropic sources
- AHA volunteers

2007-2009 – Frustrating, circuitous process
NO PROGRESS!
If you're struck by crushing chest pain in Los Angeles or Boston and call 911, an ambulance will bring equipment that can tell if you're having a "widowmaker" heart attack -- the most consistently deadly kind.....

That's how it works in many U.S. cities and many Chicago-area suburbs, from Aurora to Cicero to Waukegan.

**But not in Chicago.**

None of the Chicago Fire Department's 75 ambulances carries equipment that can identify "widowmaker" heart attacks, or STEMIs....

As a result, medical experts say, treatment is often delayed, increasing the chances that the patient will suffer permanent heart damage or die.
Chicago Political Leadership
Influence the Process
A Solution ($$) is Found!

May 20, 2012
Establish policy and procedures for 12-lead ECGs

Educational programs for EMS personnel (5000 paramedics)

STEMI Advisory Committee Established

- Makes recommendations to Region XI EMS Medical Directors
- Encourage representation for every hospital in Region XI (both STEMI-receiving and STEMI-referring) and border STEMI receiving centers
- Each hospital has one vote
- Agree on requirements to be a STEMI receiving center
Key Requirements for STEMI Receiving Centers

- Universal acceptance of STEMI patients REQUIRED (no diversion)
- Hospital must perform at least 36 primary PCI/yr OR at least 200 total PCI/yr
- Interventional cardiologist volume: \( \geq 11 \) primary PCI/year and \( \geq 75 \) total PCI/year (recommended but not required)
- Participate in the ACTION Registry-GWTG.
- Hospital must agree to ongoing quality review of data by STEMI Advisory Committee
- Maintain door to device \(< 90\text{min} \) at least 70% (increased to 75% 2015)
- Provide 24/7/365 cath lab team coverage with 30 minute maximum response time.
- Meet a geographical need as determined by the Region XI EMS Medical Directors Consortium.
May 15, 2012
Region XI STEMI System Activated
Chicago Tribune Update 6/2012

City ambulances now equipped to diagnose the severest of heart attacks so patients can be rushed to right hospital in time for lifesaving treatment.

The right equipment

Most Chicago ambulances now have devices that can detect the most severe heart attacks, known as STEMI. In these attacks, a major artery carrying blood from the heart is completely blocked.

- The STEMI-detecting device, called a 12-lead EKG, records the heart’s electrical activity in a dozen locations.
- Paramedics in ambulances can use them to identify STEMI patients whom they can transport directly to a hospital that can treat STEMI attacks.

300,000
Americans experience STEMI heart attacks each year

1,500
Chicagoans experience STEMI heart attacks each year

By Julie Deardorff
Tribune reporter

Chicago’s Brian Thies was at home when his chest suddenly turned into crushing chest pain. Inside the ambulance, paramedics quickly determined he was suffering from the deadliest type of heart attack, an aptly named “widow-maker.” The ambulance took him directly to Rush University Medical Center, where a specialized team was expecting him in the catheter lab. Just minutes after the call to 911, Dr. Cliff Kavinsky opened Thies’ right coronary artery, which was 100 percent blocked. Every minute counts during a widow-maker, when blood flow is cut off in a major artery leading to the heart.

Until recently, Chicago ambulances lacked a key piece of equipment used to diagnose the most severe heart attacks, technically known as STEMI. But thanks to creative thinking and good health officials, most of Chicago’s 75 ambulances now carry the devices, called 12-lead electrocardiograms or EKGs.

Diagnosing a widow-maker in the field — rather than at the hospital — can speed up treatment and dramatically improve a patient’s chances of survival. Not all hospitals have specialized teams that can treat STEMI. Around the clock, so it’s essential that these patients are taken directly to one that does. The new monitors also allow paramedics to alert the hospital that a STEMI case is on the way, giving the staff time to marshal resources.
Additional Steps

• Establish STEMI subcommittee leadership

• Require STEMI receiving centers to fund EKG modems and LifeNet base stations, permitting pre-hospital transmission and STEMI activation

• Create working group for quality assurance

• Analyze Action Registry data quarterly using “blinded” data; communicate concerns to EMS medical directors
First Medical Contact to Device
Median Time (minutes)
Direct Presentation, Arriving via EMS

1. FMC to Door
2. Door to Arrival at Cath Lab
3. Arrival at Cath Lab to Device Activation

Site labels and the corresponding number of patients eligible for at least one time interval are displayed on the x-axis.

Bars are not displayed when there are no patients eligible for at least one time interval. Additionally, specific time intervals without any eligible patients are not plotted.
Does implementing 12-lead increase FMC to door?

FMC to Arrival = 24 mins
Door to Cath Lab = 37 min
Cath Lab to Device = 22 min
83 min FMC to Device

Time from FMC to door did not increase, meaning the addition of ECG acquisition did not increase on-scene times for EMS

Richards, CT et al. *Circulation* 2014
## Awards

### CHICAGO HOSPITALS

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<tr>
<th>Hospital</th>
<th>2015 Award</th>
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<tr>
<td>Northwestern Memorial Hospital</td>
<td>Gold</td>
</tr>
<tr>
<td>Advocate Illinois Masonic Medical Center</td>
<td>Bronze Plus</td>
</tr>
<tr>
<td>Resurrection Medical Center</td>
<td>Bronze Plus</td>
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<tr>
<td>Mt. Sinai Hospital</td>
<td>Bronze</td>
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<tr>
<td>Swedish Covenant Hospital</td>
<td>Bronze</td>
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### MISSION: LIFELINE EMS AWARD

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<tr>
<th>Hospital</th>
<th>Award</th>
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<tbody>
<tr>
<td>Chicago Fire Dept</td>
<td>Silver</td>
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### SUBURBAN HOSPITALS

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<tr>
<th>Hospital</th>
<th>2015 Award</th>
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<tbody>
<tr>
<td>Advocate Christ Medical Center</td>
<td>Gold</td>
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<tr>
<td>MacNeal Hospital</td>
<td>Gold</td>
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<tr>
<td>West Suburban Medical Center</td>
<td>Bronze</td>
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Out of Hospital Cardiac Arrest with Return of Spontaneous Circulation (ROSC)

- Partner with IL Heart Rescue to ↑ OHCA saves
- CARES registry (all hospitals must participate)
- Develop and implement cooling protocols: Who to cool, when to cath, when to stop
% of Therapeutic Hypothermia and Survival
Cardiac Arrest “Hot Spots”
• Implementation of a STEMI system of care in Chicago required the efforts of many stakeholders, creative funding for 12-lead ECGs and participation from 34 hospitals.

• After three-years our STEMI system continues to improve through the cooperative relationship with local cardiology leaders, the Chicago Fire Dept., EMS Medical Directors, participating hospitals and the AHA.

• Paramedics are consistently seeing FMC to door times of <30 minutes.

• New focus: OHCA with ROSC transported to SRC’s for hypothermia and PCI.