



STEMI NEWS

January 2010

Contra Costa STEMI System Performance 2009 Quarter 3

Performance Criteria	Performance Benchmarks	Contra Costa Performance
EMS* to Intervention (PCI) Median Time	<90 minutes (National)	74 minutes
EMS* Scene Median Time	<15 minutes (Local EMS)	12 minutes
911 Call to Intervention (PCI) Median Time	<90 minutes (National)	85 minutes
Door to first PCI Time with Field Activation	<60 minutes (National)	48 minutes
Percentage of Time Door to PCI < 90 minutes	> 75% of time (National)	100%
EMS* = First contact with EMS provider		

July 1, 2009 to September 31, 2009

Team STEMI: Our System One Year Later

"48 minute Median Door to Intervention with Field Activation"



Hard to believe but it has been over a year since we launched the Contra Costa STEMI System. The program has been an incredible journey filled with challenges and successes. Our STEMI System has matured into one of the leading "high performance" STEMI systems in the nation. Breaking performance records of STEMI programs that have been established for years longer than ours. This tremendous success has benefited the entire community as well as the many patients rescued from significant disability and death.

At the STEMI Oversight meeting this summer, stakeholders met to review STEMI System performance and re-commit to making it even better. Active ongoing performance improvement efforts are happening at each EMS provider agency and STEMI Center. Every paramedic in the system has received additional training focused on reducing false positive activations caused by artifact and patient factors that can fool the 12-lead devices into flagging a STEMI when it isn't.

"...one of the leading high performance systems in the nation."

Sutter Delta joined the STEMI Center ranks filling a vital demographic gap in our system. As this newsletter is written EMS is being notified of a door to intervention time of 25 minutes at John Muir Concord. Kudos goes to the Kaiser Walnut Creek STEMI Center which has distinguished itself with remarkable saves of critical STEMI patients in full cardiac arrest. System-wide our third quarter median door to intervention time of 48 minutes with field activation is 17 minutes better than our cumulative ED door to intervention time of 65 minutes, reaffirming the life saving contributions of field activation. In 2010 our stakeholders are exploring 12-lead transmission, and direct to cath lab intervention from the field enabling rapid interfacility transport for walk-in patients from non-STEMI capable hospitals. EMS congratulates both John Muir campuses for their Society of Chest Pain accreditation. EMS fully participated in the visits and was told we had some of the best metrics in the United States! Awesome praise indeed.

EMS would like to credit each individual involved in STEMI patient care because system performance reflects individual performance.

Congratulations and BE PROUD BECAUSE...

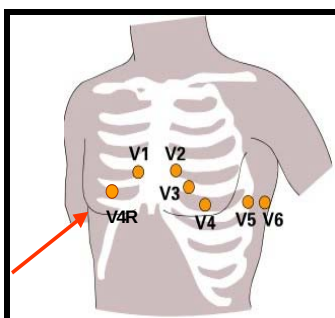
WE ARE TEAM STEMI!



Advancements in STEMI Management

by Dr. Barger EMS Medical Director

With use of 12-lead ECG, we can now determine more optimal treatment for some patients with chest pain, specifically those with inferior wall myocardial infarction who also have right ventricular infarction.



Inferior MI is usually caused by blockage of the right coronary artery or its tributaries, which supply blood to the inferior wall of the left ventricle. Depending upon the site of the blockage, the right ventricle (RV) may also be involved, perhaps 20-25% of the time with inferior MI.

So the first clue that a right-sided infarction is a possibility is when the ECG indicates a STEMI (**Acute MI** message) and ST-elevation is

present in the inferior distribution (II, III, and a VF). To check for right ventricular infarction, an ECG utilizing a V4R lead then needs to be done. This lead is placed in a similar place to V4, except on the right side. Presence of a 1 mm ST-segment elevation indicates RV infarction. The ECG needs to be manually labeled (because the monitor will not know this) and the patient's record should reflect the findings, most importantly if treatment is altered.

The importance of RV infarction is that when it occurs, the right-sided heart pump is affected, and delivery of blood through the lungs to the left side is impaired. Administration of nitroglycerin and morphine sulfate to patients with RV infarction may worsen the filling of the left heart, causing hypotension if not already existent, and our treatment guideline warns that these medications should not be given if a right ventricular infarction is detected. This is a reason that an ECG ideally should always be done before EMS administers NTG.

Patients with RV infarction may present with hypotension, distended neck veins (because the right-sided pump can't move the blood from the venous side), and clear lungs. Fluid boluses are often needed, and the fluid needs may be significant (more than 1 liter may be necessary). Fortunately, if patients survive this initial unstable period, they generally do well and do not have long-term problems with right heart dysfunction.

It is important to remember that not all inferior MI's are going to involve the RV, and that NTG and morphine are still reasonable treatments in these situations when the RV isn't involved. RV infarction is also not an issue with anterior or isolated lateral MI.

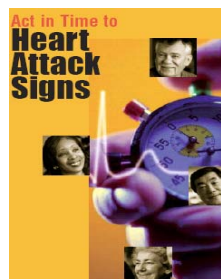
For all patients with chest pain, STEMI occurs in around 3-5%, and inferior MI is a little over half of these. RV infarction affects only a small proportion of the inferior MI's. So right ventricular MI is a rare occurrence, but because its treatment is so different than our usual care, we need to be looking for it using the V4R lead.

EMS Update Highlight! STEMI Activation

Just having the ***Acute MI Flag*** on 12-lead device is **NOT** enough to activate a STEMI Alert. Activate only if ECG is reasonably free of artifact in all 12 leads.

With alert let STEMI Center know if

- Patient has a pacer
- Suboptimal tracings
- Focal pattern of infarct seen or not



Public Education

"Act In Time!"

Over 50% of STEMI patients transport themselves to the hospital. Educate your friends, family and community that when chest pain occurs....**Act in Time and call 911.**

Contra Costa STEMI System Top Prehospital Improvement Goal! Get Rid of Artifact!

STEP I	• Check your own performance • Self review • Peer review • ED feedback
STEP II	• Review procedures • Get help from your trainers • Youtube.com: review Tim Phelan's outstanding 12-lead clips
STEP III	• Find a peer expert • Seek out "lessons learned" • Screen 12 leads for artifact and repeat as needed
STEP IV	• Practice skin prep! • Practice lead placement! • Control for patient movement!