

**Regional STEMI Transfer Systems: the Mayo and NC RACE Experiences – Participant Questions**

January 28, 2010

**(1) Have any PCI hospitals had any ED physicians not wanting to get involved with patients being transferred from another non-PCI hospital or do the sending facilities contact the interventionalist directly?**

**LM** - It is the expectation that the ED physician and/or interventionalist at the PCI center accept all STEMI pts – so it has not been an issue.

**JJ** – ED physicians have provided great leadership in our system and an unwillingness to get involved is uncommon. One major concern of ED physicians involves accepting patients from another hospital without an available bed. Our PCI centers have agreements by cardiology and the hospital to accept, admit, and care for all transferred patients, regardless of bed availability, even if they turn out to have a different diagnosis than STEMI. Generally, the interventional cardiologist is the accepting physician.

The ED physician serves two or three major roles 1) in situations when the cath. lab is not yet ready, hold the patients until the lab has adequate staff (enough to run ACLS resuscitation), 2) briefly assess the patient on the way to the cath. lab, and 3) in some facilities where the ED receives the single call to activate the cath. lab, receive the call and initiate activation. We have sometimes encountered the opposite challenge with ED physicians wishing to fully evaluate all transferred patients, even when the lab is open and available and the diagnosis has been clearly made by the transferring hospital. In these situations, we have been able to convince the ED to limit their evaluations to either a brief review or allow the patients to “roll through” the ED. We have also had hospital attorneys review the matter from an EMTALA standpoint, with the guidance that STEMI patients receive their medical evaluation from the interventional cardiologist and do not need to stop in the ED, similar to a patient proceeding to labor and delivery or the operating room.

**CB** - In our system at Mayo, the regional STEMI patient is transferred directly to either the cath lab or the CCU and our ED is bypassed so we have not had to deal with this issue.

**(2) Can you estimate what percentage of AMI patients actually get to the cath lab? In other words, do the highest risk patients get to the lab, or are they less likely to get transferred and therefore miss the opportunity to benefit from PCI?**

**LM** - In the Cath Lab Activation registry 80% of the patients make it to the cath lab for Primary PCI – very few STEMI's are kept at outlying hospitals in NC.

**JJ** – We have not looked at this issue directly. We have seen a lowering of socioeconomic barriers for transfer, with greater improvements in transfer times for women and elderly.

**CB** - All of our STEMI patients eventually do go to the cath lab unless, they are DNR and refuse or they expire prior to or during transport. I would also have to say that our highest risk AMI patient are the ones that we target for needing to go to the cath lab most urgently.

**(3) Please describe the NC state registry is that through ACTION?**

**LM** - I'm not sure if you are talking about our state data which we track through the ACTION registry or our Cath Lab Activation registry – this is our own registry to track cath lab cancellations – we started our own because cancelled cases may not be MI's and therefore would not end up in the ACTION registry. 14 of our 21 PCI centers complete a template with data elements that is submitted once a month. We utilize this data to identify opportunities for improvement and generate monthly reports comparing PCI centers to NC as a whole.

**JJ** – All of our PCI hospitals enter data into the ACTION registry (when we first started, we used NRMI, but NRMI was closed and merged with ACTION in 2008). Data collection in ACTION is one of our requirements for PCI hospitals as the system cannot be improved without measurement, and ACTION represents the best national standard for STEMI system data. We have data use agreements with each hospital and NCDR to aggregate these data. We get a state report from NCDR that we use a benchmark for participating institutions. We also use individual hospital data to for improvement. We do not identify hospitals nor share individual hospital data beyond the submitting hospital.

**(4) Are there published absolute and relative contraindications for primary pci like there are for thrombolysis that we can provide to Emergency medicine for helping sort out who is a cath lab candidate? For example, CODE STEMI's being activated on DNR's or GI bleeders, etc**

**LM** - I'm not sure about absolute and relative contras – We track cancelled cases and look for opportunities to give feedback to our EMS agencies – if they call and cancel due to DNR and/or GI bleed or something similar – we provide that feedback – if it is occurring frequently – that is an identified opportunity to work together with your EMS system to improve the process and decrease cancelled activations due to DRN/gi bleed etc....

**JJ** – STEMI cases for which the lab should not be activated (soon to be published by MissionLifeline AHA):

- 1) do not resuscitate status, 2) unwilling to undergo catheterization, 3) neither the patient nor their proxy are able to consent for the procedure, 4) severe dementia, 5) combative / uncooperative patient, 6) active bleeding, 7) severe comorbid or terminal illness.

**CB** - We use the same contraindications as JJ- above.

**(5) Can you share the QA tool for statewide Cath Lab Activation?**

**LM** – Yes. It is posted on the D2B website.

**(6) Can the EMS Training Program information be placed on the D2B website with the competency test?**

**JJ** – We leased this material from Tim Phalen, NREMT-P for all paramedics in North Carolina for 2 years. Subsequently, I believe one of the major ECG vendors purchased the course. You should contact Tim Phalen directly for more information at [tphalen@mac.com](mailto:tphalen@mac.com).

There are other courses available including the AHA Rapid STEMI ID

<http://www.americanheart.org/presenter.jhtml?identifier=3068550>

Finally, direct training of paramedics by cardiologists as part of case review and feedback was an invaluable exercise for both EMS and cardiology.

**(7) Is it possible to obtain a copy of the Rochester training program for EMS?**

**CB** - Our training program is a 4 hour interactive course that teaches paramedics to interpret 12 lead ECG and identify ST elevation myocardial infarction. I do not have anything available that I can post at this time.

**(8) What percentage of PCI hospitals have the ability to receive ECG transmissions?**

**JJ** – Only 1 of 21 PCI centers can reliably receive ECG transmissions from their predominant EMS provider (and in this system 30% of transmissions are dropped). For other hospitals, ECG transmission is possible in some cases (ECG vendor matches hospital system or fax capability available and cell service adequate). In our system, we mainly rely on paramedic interpretation, followed by machine interpretation (\*\* acute MI), with transmission being used for questionable cases.

**CB** - we do not transmit our ECGs for pre hospital activations. Our paramedics interpret the ECG and activate accordingly.

**(9) Do you have in-house cath lab staff coverage 24/7 or are they activated from home?**

**LM** - I only know of 1 of our 21 PCI centers that have in-house coverage 24/7 for cath. lab staff. The interventionalist is not in-house. All of our PCI hospitals give the cath team including the interventional cardiologists 30 minutes from page to be present in the cath lab.

**CB** - We do have an RN in house 24/7, who is part of the cath lab call team. The interventional physician and technical staff are not in-house. They are however expected to respond within 30 minutes of pager activations. In adverse weather situations we have staff stay at nearby hotels to minimize delays due to weather.

**(10) Could you explain what "auto launch" means for the helicopter?**

**JJ** – This is a term borrowed from the trauma system whereby a helicopter is launched to the site of severe trauma. A more appropriate term would be “paramedic launched.” In some rural counties, we have established protocols for helicopter transport from the field including designated landing zones (clear areas next to major roads, or helicopter pads next to rural hospitals), activation criteria (same as cath. lab activation including chest pain and ST segment elevation), patient “packaging” protocols, and backup plans in case of unsuitable flying weather. These are available in our system manual that will be posted on the D2B website. Helicopter support is generally most helpful for transport times greater than 45 to 50 minutes. For shorter distances, ground transport using local EMS is faster and more reliable.

**(11) Does Mayo own the Helicopter that they use to transport the transfers?**

**HT-** Mayo owns 4 helicopters. We also utilize 3-4 non-Mayo helicopters. The key is to have a central center that has access and controls all potential helicopters.

**JJ** – James Jollis, MD, FACC, Duke University Medical Center

**LM** – Lisa Monk MSN, RN, CPHQ, RACE ER State Project Leader ([lisa.monk@duke.edu](mailto:lisa.monk@duke.edu))

**CB** – Chris Bjerke, RN, B.S.N., Quality Improvement Advisor, Mayo Clinic College of Medicine

**HT** – Henry Ting, MD, FACC, Mayo Clinic College of Medicine