Acute Coronary Syndrome Presentation:

Rural Emergency Department and EMS Considerations

John M Gallagher, MD
EMS System Medical Director
Wichita/Sedgwick County Kansas

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• Conflicts:
  – None but looking

• Disclosures:
  – Vice-Chair of the NAEMSP Standards and Practice Committee
  – Medical Advisory Committee of the Kansas Board of EMS
Objectives

• “Discuss the barriers of STEMI care and the decisions that need to be made in a rural and EMS environment.”

This is NOT a review of the science
My REAL Objectives

• The participants will:
  – Become a bit uncomfortable
  – Disagree and be a little pissed off
  – Question their own practices and policies
  – Worry that they might be doing the wrong thing
  – Get defensive

  – And in the end, think critically about our work
Walk with me…

“Close enough. Let’s go.”
The Issues

- 911 activation
- Who to send
- On scene/enroute tasks for EMS
- Destination/Intercepts
- 12 Lead Transmission/Interpretation
- Referring Hospital tasks
- Transfer arrangements
- Receiving Center Variability
Just to get us started…

- You’re in the middle of a case while working in a small referral center with one doc and two nurses about 45 minutes from a receiving center.

I’ll catch you up to speed…
GET TO THE CHOPPA!

DO IT NOW!
What are our objectives?
What are our objectives?

- Make Diagnosis
- Start treatment
- Get to definitive care
- Safety
- Efficiency
- Accuracy
What are our objectives?

- Make Diagnosis
- Start treatment
- Get to definitive care

- Safety
- Efficiency
- Accuracy
Get to Definitive Care
Get to Definitive Care

• What are your thoughts?
• What are the options?
• What threatens to screw up the plan?
• What info do we need to pick a plan?
Who ya gonna call?
Get to Definitive Care

Who Ya Gonna Call?
Get to Definitive Care

That's your final answer??
Lets do another one

• List the tasks that the ED team has to do in order to get this patient started and out the door
ED Tasks

• The Doc:

• Nurse/Tech/Staff:

(Get out a sheet of paper…and borrow a pencil from one of the prepared kids)
ED Tasks

• The Doc:
  – Make Dx
  – Communicate to team
  – Tell patient (family)
  – Write orders
  – Destination decision
  – Transport decision
  – Doc to Doc call
  – Transfer certification
  – Transport PCS
  – Write chart

• Nurse/Tech/Staff:
  – Register patient
  – Triage
  – Perform EKG
  – Start IV
  – Give meds
  – Transfer packet
  – Package patient
  – Hand off to EMS
  – Nurse to nurse call
So we’re starting to get it…

• Lets try a hard one
Lights and Siren?
Lights and Siren?
Lights and Siren?
Keep ‘em comming

Receiving Center
Variability
Keep ‘em coming

• Receiving Center Variability
What do we agree on?

• ASA is good
• Cath is good
What do we disagree on?

- **Heparin**
  - [Bolus and drip] or [Just drip]
  - [Bolus with max dose] or [Full weight based dose]

- **Ticagrelor, Plavix, or neither**

- **Morphine for pain**
  - Morphine found to increase mortality in NSTEMI (CRUSADE), not studied in STEMI

- **Beta-Blocker**
  - Oral, IV, none
  - What about inferior distribution?

Variability between facilities (and even individual docs) prevents these issues from being addressed in protocols.
What are we starting to question?

• Time to cath lab

Results:
“Despite improvements in door-to-balloon times, there was no significant overall change in unadjusted in-hospital mortality or in risk-adjusted in-hospital mortality, nor was a significant difference observed in unadjusted 30-day mortality.”

(numerics omitted)
And my favorite…

What do we agree on that doesn’t make any sense?
The beginning of time
I’ll explain…
I’ll explain...
The Issues

• 911 activation
• Who to send
• On scene/enroute tasks for EMS
  - Destination/Intercepts
• 12 Lead Transmission/Interpretation
  - Referring Hospital tasks
• Transfer arrangements
• Receiving Center Variability
911 Activation / Who to Send

• How many ambulances are in your system?
• What’s the time frame between first responders and the ambulance?
• What are the practice levels of your various provider levels?
911 Activation / Who to Send

• 17 y/o female with no history and no drug use calls 911 for chest pain for one hour.
  – What is likely wrong with this girl?
  – What would your system send?
## Emergency Medical Dispatch

### 10 CHEST PAIN (NON-TRAUMATIC)

#### KEY QUESTIONS
1. Is s/he **completely alert** (responding appropriately)?
2. Is s/he **breathing normally**?
   a. **(No)** Does s/he have **difficulty** speaking (crying) **between** breaths?
3. Is s/he **changing color**?
   a. **(Yes)** Describe the color change.
4. Is s/he **clammy** (cold sweats)?
5. Has s/he ever had a **heart attack** or **angina** (heart pains)?
6. Did s/he take any **drugs** or **medications** in the **past 12 hours**?
   - **Cocaine** (or derivative)
   - **Medications**

#### POST-DISPATCH INSTRUCTIONS
a. I’m sending the **paramedics** (ambulance) to help you now. **Stay on the line** and I’ll tell you **exactly** what to do next.

b. **(≥ 1 + D-1, 2, 3)** If there is a **defibrillator** (AED) available, send someone to get it **now** in case we need it later.

c. **(Patient medication requested and Alert)** Remind her/him to do what her/his **doctor has instructed** for these situations.

- **Stay on the line with caller** if her/his condition seems unstable or is worsening.
- **Utilize the Aspirin Diagnostic & Instruction Tool** – if authorized by local Medical Control and the patient is alert and ≥ 16 years old.

#### INEFFECTIVE BREATHING and Not alert

<table>
<thead>
<tr>
<th>LEVELS</th>
<th>DETERMINANT DESCRIPTORS</th>
<th>CODES</th>
<th>RESPONSES</th>
<th>MODES</th>
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<tbody>
<tr>
<td>D</td>
<td><strong>Not alert</strong></td>
<td>10-D-1</td>
<td>10-D-2</td>
<td>10-D-3</td>
</tr>
<tr>
<td></td>
<td><strong>DIFFICULTY SPEAKING BETWEEN BREATHS</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>CHANGING COLOR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Clammy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td><strong>Abnormal breathing</strong></td>
<td>10-C-1</td>
<td>10-C-2</td>
<td>10-C-3</td>
</tr>
<tr>
<td></td>
<td><strong>Heart attack or angina</strong> history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cocaine</strong></td>
<td>10-C-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Breathing normally ≥ 35</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td><strong>Breathing normally &lt; 35</strong></td>
<td>10-A-1</td>
<td></td>
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911 Activation / Who to Send

- What can your First Responders do for this girl?
- What can your BLS providers do?
- ALS providers?

Is your crew going to go screaming down the road with lights and siren running?

Are they going to give this girl an aspirin?
911 Activation / Who to Send
911 Activation / Who to Send

- What can your First Responders do for this guy?
- What can your BLS providers do?
- ALS providers?

This thought process answers the Intercept question too!
911 Activation / Who to Send

• If this is how you feel, raise your hand.
On scene / Enroute Tasks

• One more time…..What can EMS do?
On scene / Enroute Tasks

- ASA
- EKG
- IV start
- Nitro
- Morphine
- Heparin/Plavix
- Pressors
- Transport
On scene / Enroute Tasks

- ASA
- EKG
- IV start
- Nitro
- Morphine
- Heparin/Plavix
- Pressors
- Transport
Last one!!!

EKG Interpretation/Cath Lab Activation

<table>
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<th>LOT No: B10472</th>
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<tbody>
<tr>
<td><strong>HR 52 bpm</strong></td>
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<tr>
<td><strong>Abnormal ECG Unconfirmed</strong></td>
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<tr>
<td><strong>20:06:40</strong></td>
</tr>
<tr>
<td><strong>/// MEETS ST ELEVATION MI</strong></td>
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<tr>
<td><strong>QRS 0.112s CRITERIA ///</strong></td>
</tr>
<tr>
<td><strong>0.426s/0.412s Sinus rhythm</strong></td>
</tr>
<tr>
<td><strong>4° 95° 94° Rightward axis</strong></td>
</tr>
</tbody>
</table>
EKG Interpretation/Cath Lab Activation

• EKG Interpretation
  – Paramedic interpretation
  – Computer interpretation
  – Transmission (Physician interpretation)

• What does your system do?
  (Mine does the first two)
EKG Interpretation/Cath Lab Activation

• What’s good enough for cath lab activation?

(Why?)
Bringing it all together…

• As we build STEMI systems, there are a whole mess of cause and effect relationships we need to consider.
If you bring up these issues with people who think they are doing everything right, they’re gonna get mad at you and say that you’re an idiot.
If we keep sending all levels of EMS to every call

we will not have resources available for the next patient who needs us
If we focus only on First Medical Contact, we will be treating STEMI's in different clinical timeframes and will cloud our data.
Cause and Effect 4/8

**Cause**

If we write overarching protocols and mandate that everyone follows them

**Effect**

sub standard care will occur in areas with unusual geography or unique circumstances
Cause: If receiving hospitals continue to demand different treatments than each other

Effect: Patients will receive different care depending on destination and the referring hospital staff will have to delay patient care to talk with accepting staff.
If we ask our EMS crews to “load and go” when they detect a STEMI,

we need to be prepared that traditional EMS tasks might not get completed prior to arrival at the hospital.
Cause and Effect 7/8

**Cause**

If we don’t allow field activation of the cath lab (and bypass of the ED)

**Effect**

our actions will show others that we don’t believe in a “minutes count” mentality
...and last but not least...
If we continue to come together and work on the hard issues

we will improve outcomes and SAVE LIVES!!!
Questions?

John M Gallagher, MD
Emergency and EMS Physician

JGallagherEMS@Gmail.com