Mission: Lifeline South Dakota Hospital and Pre-hospital Engagement, Training, Sustainability
Improving the System of Care for STEMI Patients

Update Year One Pre-hospital

Pre-hospital

- Seven EMS Association Districts
  - Rollout of Educational Presentation, Protocol, Checklist, Training Material
    - District 7 - Mobridge
    - District 6 - Rapid City
    - District 5 - Pierre
    - District 1 - Watertown
    - District 4 - Aberdeen
    - District 3 - Mitchell
    - District 2 - Sioux Falls
  - Train-The-Trainer - Paramedics doing 12 leads (27 total instructors primary/secondary)
  - 130 of 133 services received training (didactic and hands-on) over 1200 students
    - Three that did not receive training have a STEMI training program in place
  - STEMI class followed vendor training on 12 lead monitors
Update Year One Hospital

Hospital

• 50 hospitals (7 PCI not included)
  ◦ State was split as east river and west river facilities
  ◦ Two instructors
  ◦ Lesson focused on
    • Pre-hospital program
    • Pre-hospital implementation and use
    • Performing a 12 lead
    • STEMI assessment and clinical management
    • Lytic use and administration (TNK)
    • 12 Lead ECG interpretation
  ◦ 35 hospitals completed - over 300 participants - (nurses, mid-level, physician)
  ◦ Quarterly online web based sessions for hospital
Improving the System of Care for STEMI Patients

Year One Lessons Pre-hospital

- Comprehensive program for basic EMS providers
- Overwhelmed with textbooks and online training
- Increase the amount of time to practice performing 12 leads
- Delay in implementing transmitting capabilities
- Natural disasters delayed participation and program completion
- Low EMS call volume diminished number of 12 leads being performed
- No way to track total number of ECG being performed and transmitted in the state
- Increase confidence and commitment to perform and transmit ECG
- Need for EMS to call on phone or radio after ECG transmitted
- Current hardware and technology for next decade - Biomedical support
- Data transmission sustainability questions - cellular carriers
Year One Lessons Hospital

Hospital

- Inherent need for more ECG being transmitted to maintain skills in use of software
- Not all monitors are able to transmit into the receiving station software
- Physician acceptance of pre-hospital 12 lead
- Uncertainty of what to do with EMS 12 lead
- Concern about sustainability - ROI for low numbers
- Limitation of providers on-site to make diagnostic call
  - Use of technology to forward 12 lead to a MD or use of E-services for interpretation
- Describe several self-reporting chest pain patients
- Interest in statewide standardized order-set
- Location of receiving station in the facility
The Ideal EMS

In an ideal system:

• Ambulances are equipped with 12-lead ECG machines
• EMS providers are trained to:
  ° Use and transmit 12-lead ECGs
  ° Care for STEMI patients
  ° Provide feedback on performance and compliance with guidelines
• Standardized point-of-entry (POE) protocols define patient transport rules
• When there is STEMI, the cath lab is activated promptly
• Patients transported to a STEMI-referral hospital remain on the stretcher with EMS present pending a transport decision
• When “walk-in” patients present to a STEMI-referral hospital and require primary PCI, activation of EMS occurs
• Hospitals close the communication gap with EMS
Mission: Lifeline South Dakota

South Dakota

- Agencies have 12 lead monitors and are capable of transmitting to receiving hospitals
  - Limited areas in the state without data coverage
- Presented with an implementation protocol during year one training
  - Pain above the waist - proposed change to medical patient requiring EMS transport
- Hospitals are capable of receiving 12 lead ECG from EMS
  - Use forwarding capabilities or E-services for earlier diagnostic interpretation
- Optimize diagnostic timeline for interpreting 12 lead
- Optimizing transport arrangements of patient to a PCI facility
- Optimizing door to drug timeline when applicable
- Optimize community education on signs and symptoms of heart attack
- Optimize feedback loop between all entities involved in the case
- Optimize data collection
- Incorporate sustainability plan
EMS Continued Involvement

As SD moves forward with Mission: Lifeline, how does your organization want to be included or updated?

- Please include me on the Mission: Lifeline listserv
- Please include me on the list for conferences and professional education
- Please consider me for the task force
- I am comfortable with the current involvement
### STEMI Pre-hospital First 12 lead ECG

**Numerator** Pre hospital = Yes  **Denominator** Transferred From Outside Facility = No
AND First ECG obtained (Pre hospital, After 1st hospital arrival) - Source ACTION Registry-GWTG

Number of patients presenting with chest pain and number of pre-hospital 12 lead ECG performed

<table>
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<th>2011Q3</th>
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Pre-hospital Complaint Based Call Data

- January 1 to July 1, 2012 - Total EMS Calls reported to the South Dakota Department of Public Safety Office of EMS
  - 16,864 calls reported in EMStat software system
  - Possibility of over 11,000 ECG based on complaint based protocol
POE Protocol - “Time is Muscle”

Onset of symptoms of STEMI → Call 9-1-1 FAST → EMS dispatch → EMS on-scene
- Encourage 12-lead ECGs
- Consider prehospital fibrinolytic if capable and EMS-to-needle within 30 min

GOALS:
- Patient: 5 min after symptom onset
- Dispatch: 1 min
- EMS on scene: within 8 min
- EMS transport: Prehospital fibrinolysis: EMS-to-needle within 30 min

EMS transport: EMS-to-balloon within 90 min
Patient self-transport: Hospital door-to-balloon within 90 min

Hospital fibrinolysis: Door-to-needle within 30 min

STEMI-referral hospital (non PCI-capable)
STEMI-receiving hospital (PCI-capable)

Total ischemic time: Within 120 min*

* Golden Hour = First 60 minutes
Call to Action

Road to Ongoing Success in South Dakota

• Regionalized Paramedic Instructors continue supporting EMS agencies
• Ongoing mentoring from MLSD instructors to EMS and hospitals
• Regionalized resource for questions
• Vendor support and immediate feedback
• Local knowledge in product use and problem solving
• Ongoing EMS educational support through monthly EMS education program
• Local ownership of ongoing competencies and implementation
• Physician acceptance of pre-hospital 12 lead ECG
• Hospital and EMS working together on a regular basis for testing system
• Support from State EMS Office
• Community support of EMS and STEMI program
• Service recognition and success stories
• Improved data reporting by EMS into EMStat
Survey Results From EMS Agencies

- One of the best things that has happened for SD ambulances
- Help provide funding to buy equipment out of normal financial limits
- Many patient have bypassed the ER and went straight to the catch lab
- The 12 lead training that we received mad understanding STEMI easier
- It has given us the ability to provide our patients with the best care that they need in a rural community
- Continue to support ongoing training
- The level of confidence in our staff, It has improved our outlook in the public eye as well
Words cannot express our gratitude for this grant

The patient’s have benefited the most with the availability of a on-scene 12 lead

Thank you for giving us this opportunity to be better

At this time we are planning on keeping the transmitting portion. After the funds expire we will re-evaluate the costs of it

We try to use it on every run. We do not always transmit the 12 lead but usually run one for practice more than anything else

We plan to continue the training, and I have encouraged the EMTs to utilize the free web classes that are available

Thank you AHA and Helmsley Foundation.