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Mission: Lifeline is the American Heart Association’s national initiative to advance the systems of care for patients with ST-segment elevation myocardial infarction (STEMI) and Out of Hospital Cardiac Arrest. The overarching goal of the initiative is to reduce mortality and morbidity for STEMI and OOHCA patients to and improve their overall quality of care.
Regional Rural Mission: Lifeline Grant Impact

- South Dakota 2010
- North Dakota 2011
- Wyoming 2012
- Rural Minnesota 2013
- Nebraska 2014
- Montana 2014
Mission: Lifeline Committee Structure

- Mission: Lifeline Taskforce Co-Chairs
- Mission: Lifeline Taskforce
- Mission: Lifeline Taskforce Quality Committee
- Mission: Lifeline Taskforce EMS Advisory Committee
- Mission: Lifeline Taskforce STEMI Hospital Advisory Committee
- Mission: Lifeline Taskforce STEMI Conference Planning Committee
Program Components

- EMS and Hospital Infrastructure
  - 12 L ECG Acquisition, Transmission, and Receiving Equipment
- EMS and Referring Hospital Education
  - Instructor Facilitated, On-line Self Directed, Webinar Opportunities
  - Stakeholder Committee and Taskforce Meetings
  - Regional Collaboration Opportunities
  - Statewide Conference
- Public Awareness
  - Earned and Paid Media Campaign
  - Community Event Toolkits
- Data Collection and Quality Improvement
- Model Sharing
Mission: Lifeline Events

Annual STEMI Conference

- Statewide Project Update
- Highlight MN Successes and Lessons learned
- Hear from local and national clinical experts
- Network with peers to advance collaboration
- STEMI Survivor Celebration
- Recognize STEMI System excellence and award achievements
- Free event with Continuing education credits for all levels of health care providers attending.
Mission: Lifeline SD (MLSD)
Into the Future: Lessons Learned: History

- Started as a concept after the release of the Mission: Lifeline program from the American Heart Association
- Do something that had not been done before
  - State wide 100% inclusive EMS/Hospital STEMI system (transmission and receiving)
- Mass distribution of equipment and training
- Data management and tracking linked to quality measures

Travis Spier, RN,NR-P, CCEMT-P
Director of Simulation,
Pre-hospital Care
and The AHA Training Center
Sanford Health
Aim of the Grant - EMS

- Conduct educational training for EMS agencies in the state over the course of the grant
  - First year – implementation of program
  - Second year – 100% of services
  - Third year – 50% of services
  - Fourth Year – 100% of services
- Focus on didactic and hands-on skills
  - Protocol for 12 lead acquisition and transmission
  - Knowledge of the underlying problem
  - Develop skills for acquiring and transmitting a 12 lead
Aim of the Grant

- Link the EMS agencies to the hospitals
  - 12 lead transmission
  - Continuity of care
  - Education
  - Data tracking and quality
- Combine Impact of Helmsley Grant Funded Activities
  - Mission; Lifeline
  - SIM-SD mobile simulation program
Infrastructure in Place

- SD currently has a monthly education program in place
  - 115 of the 124 ambulances receive two hours of monthly education in their community at no cost
    - 50 hospitals (7 PCI facilities)

- Covers the EMT refresher curriculum

- Touch over 10,000 participants per year

- Network of 65 instructors
Materials

- Deployed over 1400 textbooks to participants with online training tool
- Deployed over 1400 online Learn Rapid STEMI training programs
- Tracked textbook and key codes off of rosters
- Student handouts
- 12 lead protocol
- Skills evaluation form
- Device resource tool – three vendors
- Quick reference card
- Regionalized instructor mentoring
Train the Trainer

- Hand selected instructors from around the state in regionalized locations
- Paramedics on ALS services doing 12 leads
- Pre and post course assessment
- Location assignments
- Centralized training day to discuss the project, material, intent, style, expectations and potential pitfalls
- Contracted for material development
Deployment

• EMS education deployed by EMS region (7)
• After device training by the vendors
• In conjunction of the hospital receiving systems
• Meets the BLS and ALS educational needs of the participants
• Majority of BLS volunteer services
  – Call volume of 10 to 500
  – Staffing numbers limited – 3 to 12, max 30
  – Training sessions between 6-10p
• Limited number of ALS services
  – Some services had 12 lead programs in place and opted out of the MLSD education program
Planning

- Recognize the knowledge base of the participants and services
- Understand the scope and current capabilities of the participants
- Understand the dynamics and politics at the service
- Understand that the implication is a possibility— not out of reach
Pitfalls of our plan

- Complex initial information and education plan
- Training occurring the first year
- Opposition to the program
- Fear of the request
- Device distribution and training
- New protocol
- Volume of training occurring in the first year
- Volume of device distribution and product training
- Low ambulance call volume and use
- Follow through from EMS to establish immediate communication with the hospital
Intent

• Knowing what to achieve and how to get there
• Working at overcoming the barriers

Exceed the level of knowledge expected

Level of education desired for this program

Starting point for basic EMT education
Sustaining the Project

• What we have in place to continue
  – Education
  – Funding
  – Interest
  – State wide committee work
  – Health system support

• What is being requested by participants in rural areas
  – Education
  – Referral system
  – Assistance and resources
• Cover anatomy and physiology of the heart
• Cover the basic evolution of a STEMI
• Cover the physiological consequences of a STEMI
• Discuss the importance of time
  – Acquisition, transmission, communication, recognition, treatment
  – Review the monitor features and use (follow-up from the vendor education)
• Discuss the role of EMS in managing a STEMI patient

• Discuss treatment standards

• Discuss the proposed protocol in addition to the current protocol

• Cover the purpose for doing a 12 lead ECG

• Cover lead placement
Ongoing Content

- Transmission of the 12 lead
  - Equipment, Process, Expectations, Communications, printout
- Hospital interaction and communication
- Hands-on training (monitor, lead placement, wires, transmission)
- Impact and importance of EMS in a STEMI
- 12 lead interpretation (samples and pictures)
  - I See All Leads and Posterior
Knowing how the heart works electrically and mechanically
Intervention plan for EMS
State BLS Protocol

- Out of hospital 12 lead
- Early notification of hospital
- Early activation of ALS
- O2, NTG, pain control
- ASA, Heparin
- Thrombolytic prescreen
- Thrombolytic given - none

Our goal is to decrease the door-to-drug/balloon time.

4 D’s of STEMI care  Door – Data – Decision – Drug
Three I’s of an AMI

- Injury – pathologic Q wave
- Ischemia – inverted T wave
- Infarct – ST elevation
Why this slide is the most important in the entire presentation
“A patient’s family wants their loved one to survive no matter what distance they are from the hospital.”

Kathy Lonski, NRP
QI Manager
F-M Ambulance Service
Fargo, ND
Team Effort

Who is the team??

Despite the recent gains, additional opportunities for improvement in D2B times remain. The most outstanding institutions are now regularly achieving times under 60 minutes through strategies including coordination with Emergency Medical Services and the collection and dissemination of a prehospital ECG. This level of performance may become the new standard.
Patient Care Goals

- Provide early identification of patient and early notification of the hospital for suspected cardiac ischemia or STEMI
- Utilize an assessment tool that may reduce the time from onset of symptoms to receiving definitive cardiac interventions at the receiving hospital
Getting BLS Involved

- 80% of ND Ambulance Services
- Most volunteer providers
- 12-lead a new skill
Concerns Voiced:

- What if I’m wrong?
- We’re just ambulance drivers.
- What if they don’t believe us?
Improving the System of Care for STEMI Patients

- BLS vs. ALS
- Ground vs. Air
- Pre hospital vs. Hospital

Inter agency communication
12 L ECG Transmission

- Transmit as soon as possible
  - Include cell number & patient identifier
- Communicate w/ ED that transmission is incoming
- Coordinate w/ ED to streamline care & prevent duplicating efforts
- Discuss equipment needs & concerns
• Always have a Plan A, B, and C in your back pocket!

• 12-lead reads “Acute STEMI” w/cardiac signs & symptoms

• ALS request w/ST elevation of ≥1mm in 2 contiguous leads

• What if they look bad?
Where do we go?
How do we get there?

- Concerns about bypassing closer Critical Access Hospitals
- Where should the 12-lead go
- That it is going to be a long transport
Locally, Regionally and Statewide: Each area will be different
**PH (Pre-Hospital) STEMI ALERT Activation Criteria:**

*Goal: Identify STEMI, Alert receiving facility - do not delay transport*

Activate STEMI Alert when any one of the criteria met & signs & symptoms suspect of (AMI) acute myocardial infarction including chest discomfort as described with a duration of >15 minutes <24 hours

- 12 L trained ALS EMS recognize ST segment elevation of ≥ 1 mm in 2 contiguous leads with
- Confirmed Interpretation of STEMI by a Practitioner (Physician, NP, PA) by transmission
- ECG Monitor interpretative statement reads: “Acute Myocardial Infarction” & signs & symptoms suspect of AMI including chest discomfort

**Reminder:** For persistent symptoms obtain serial 12 L ECG’s every 10 minutes during transport

**Transport Time: 75 minutes**

Transport time < 75 minutes and total time from first medical contact (EMS at patient’s side) to PCI (PerCutaneous Coronary Intervention) FMC to PCI < 120 minutes. Notify medical control and consider transport directly to PCI capable receiving hospital for primary PCI.

- Activate STEMI Alert, transmit 12 L ECG as able, provide report to receiving hospital

**Transport Time: > 75 minutes**

Transport time > 75 minutes and estimated time from first medical contact (EMS at patient’s side) FMC to PCI > 120 minutes. Notify medical control and consider transport to the closest appropriate non-PCI capable referring hospital for possible fibrinolytic therapy and urgent transfer to a PCI capable receiving facility for reperfusion.

- Initiate fibrinolytic checklist per protocol
- Activate STEMI Alert, transmit 12 L ECG as able, provide report to receiving hospital
- Consider Air Transport

**Diversion Criteria:** If patient demonstrates instability and/or has any one of the following Diversion Criteria requiring ED evaluation proceed to closest appropriate hospital:

- Possible need of head CT or neurological intervention / Confusion
- Emergency intubation Immediate circulatory stabilization
- Chest trauma or MVC victims
- DNR Status
- Left Bundle Branch Block

(revised 3/2014)
**Obtain 12 L ECG with Initial Vital Signs:**  
*Goal:* First Medical contact to ECG < 10 min, Scene time: ≤ 15 minutes  
*to provide early identification and pre-hospital arrival notification for suspected myocardial infarction or STEMI.*

- Chest pain, pressure, tightness or persistent discomfort above the waist age in pts. ≥ 35 yrs. of age
- "Heartburn" or epigastric pain
- Complaints of “heart racing” (HR >150 or irregular and >120) or “heart too slow” (HR < 50 and symptomatic)
- A syncopal episode, severe weakness, or unexplained fatigue
- New onset stroke symptoms (< 24 hours old)
- Difficulty breathing or shortness of breath (with no obvious non-cardiac cause)  
ROS (return of spontaneous circulation) post cardiac arrest
- Recent Cocaine or Illicit drug use
Improving the System of Care for STEMI Patients

Determine Transport Destination

- **Transport time ≤ 75 minutes** and total time from first medical contact (EMS at patient’s side) to PCI (Percutaneous Coronary Intervention) **FMC to PCI ≤ 120 minutes**. Notify medical control and consider transport directly to PCI Capable Receiving Hospital for Primary PCI.

- **Activate STEMI Alert**, transmit 12 L ECG as able, provide report to receiving hospital

- **Transport time > 75 minutes** and estimated time from first medical contact (EMS at patient’s side) **FMC to PCI > 120 minutes**. Notify medical control and consider transport to the closest appropriate non-PCI capable referring hospital for possible fibrinolytic therapy and urgent transfer to a PCI Capable Receiving Facility for reperfusion.

  - **Initiate fibrinolytic checklist** per protocol
  - **Activate STEMI Alert**, transmit 12 L ECG as able, provide report to receiving hospital
  - Consider Air Transport.

**Diversion Criteria:** If patient demonstrates Instability and/or has any one of the following Diversion Criteria requiring ED evaluation proceed to closest appropriate hospital:

- Possible need of head CT or neurological intervention / Confusion
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- DNR Status
- Left Bundle Branch Block
**Treatment Recommendations**

- **BLS & ALS**
  - Administer **O2 starting at 2 L/Min per nasal cannula**, titrate as needed to maintain SpO2 > 92%
  - Obtain Systolic/Diastolic blood pressure (BP) in both arms
  - Administer **Chewable Aspirin 324 mg** by mouth
  - Administer **Nitroglycerin Sublingual 0.4 mg** every 5 minutes up to 3 doses if chest discomfort present and SBP > 100. Check BP prior to each administering dose. Hold if SBP < 100 mm HG. Hold All Nitrates if Erectile Dysfunction medication taken within 36 hours.

- **BLS only**: Request ALS Intercept per local protocol

- **ALS Only**
  - Establish large bore **IV access - Normal Saline 500ml KVO**, Establish a second IV Line as time allows.
  - **Clopidogrel (Plavix) 600 mg** by mouth if transferring for PPCI at PCI Capable Receiving Facility
  - **Heparin IV Bolus 70 Units/kg IV, max 5,000 Units** if transferring for PPCI at PCI Capable Receiving Facility
  - Establish a **Nitroglycerine IV Drip** if chest discomfort is unrelieved. Initiate @ 5 mcg/min & titrate in increments of 5mcg/min to maintain a systolic BP of 100 mm/Hg or greater. Hold Nitrates if Erectile Dysfunction medication taken within 36 hours.
  - Administer **analgesia** as needed for discomfort per protocol
**Documentation Reminders:**

- Provide Copy of EMS Run Sheet with Report to RN or MD
- If STEMI/AMI alert is provided to the hospital, document the time.
- Provide a Printed Copy of Pre-Hospital 12 L ECG with Report to RN or MD

**Patient Care Goals:**

- Provide early identification of patients and early notification of the hospital for suspected AMI or STEMI.
- Utilize an assessment tool that may reduce the time from onset of symptoms to receiving definitive cardiac interventions at the receiving hospital.
- Prepare patient for immediate transport with indicated medications administered en route to hospital. Attempt to limit the scene time to the shortest time possible.
AHA Mission: Lifeline EMS Best Practice Goals

1. All patients with non-traumatic chest pain, ≥ 35 years, treated and transported by EMS who get a pre-hospital 12-lead electrocardiogram
2. All STEMI patients transported directly to a STEMI receiving center, with first (pre-hospital) medical contact to PCI time ≤ 90 minutes directly or ≤120 minutes for transfers
3. All lytic eligible STEMI patients treated and transported to a referring hospital for fibrinolytic therapy with a door to needle time ≤ 30 minutes

AHA Mission: Lifeline EMS Reporting Measures:

1. Time from symptom onset to EMS dispatch
2. Time from EMS dispatch to vehicle arrival at hospital door
3. All STEMI patients treated and transported to a referring hospital for fibrinolytics therapy should have a Fibrinolytic Checklist completed to identify contraindications to lytic therapy.
4. All suspected AMI/STEMI patients treated and transported by EMS should receive a 12-lead ECG
5. All STEMI patients with a pre-hospital identified STEMI call for field activation of a STEMI Alert at receiving hospital
Solutions

- Communication & Feedback

- Further training & development w/medical directors and CAHs

- Performance Improvement

- It only takes one…
• Celebrate positives & wins

• Focus on opportunity for education instead of attributing blame
Thank you

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