





EMS System for Metropolitan Oklahoma City & Tulsa



1,100 square miles Population

- 1.6 million day

- 1.2 million night

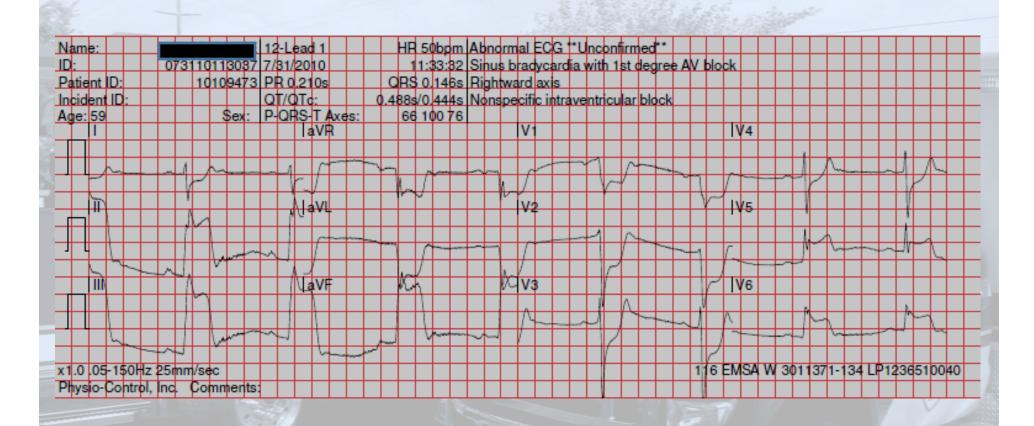
180,791 calls (2011)

134,503 transports (2011)

74% transports

















911 call to ED arrival













University of Oklahoma Statewide EMS 12-Lead ECG Survey

- Standardized IRB-approved phone survey
- 185 licensed EMS transport agencies
- 185 agencies data obtained (100% response)





EMS Services in Oklahoma



Legend

■ Ambulance Stations

Multiple EMS Services Overlap

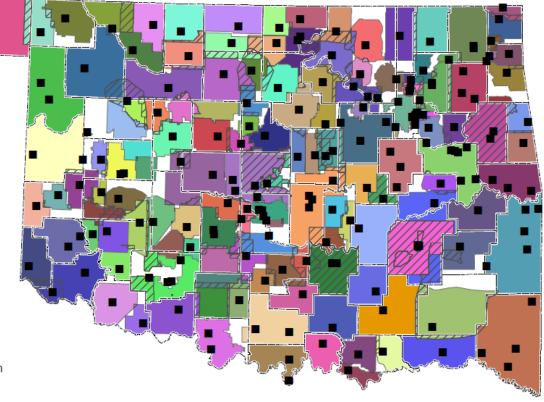
Counties

Notes: EMS Services are represented to the best of our knowledge as of May 2008. The Service Areas are depicted with a range of colors to distinguish their boundaries. The hatched symbols represent those areas with two or more EMS Services covering the area.

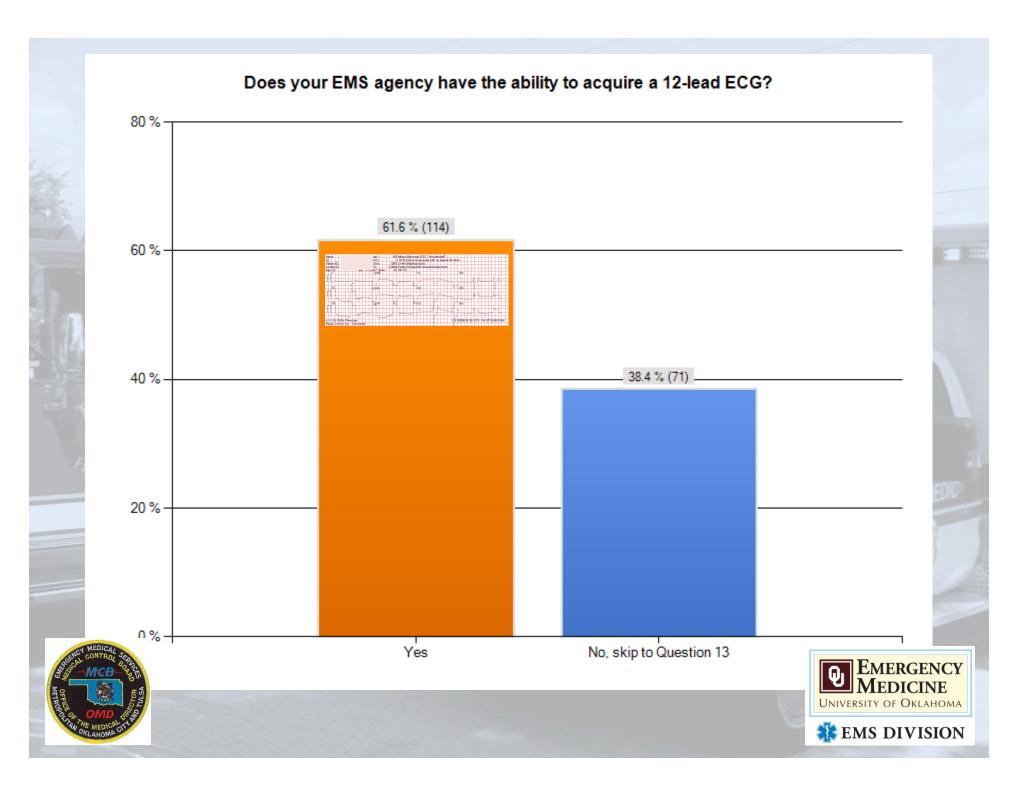
Data Source: EMS Division, Medical Facilities Service, Oklahoma State Department of Health (data were collected through mailed surveys and phone follow-up with the EMS Services).

Created: 07.17.2008

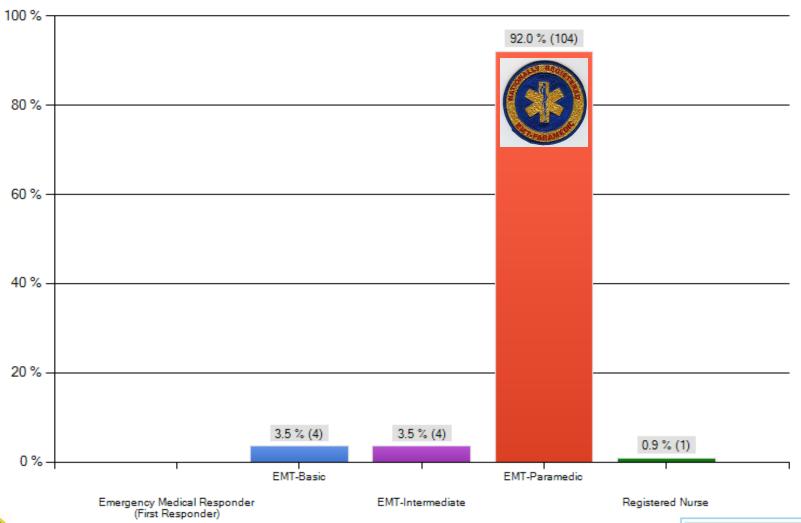






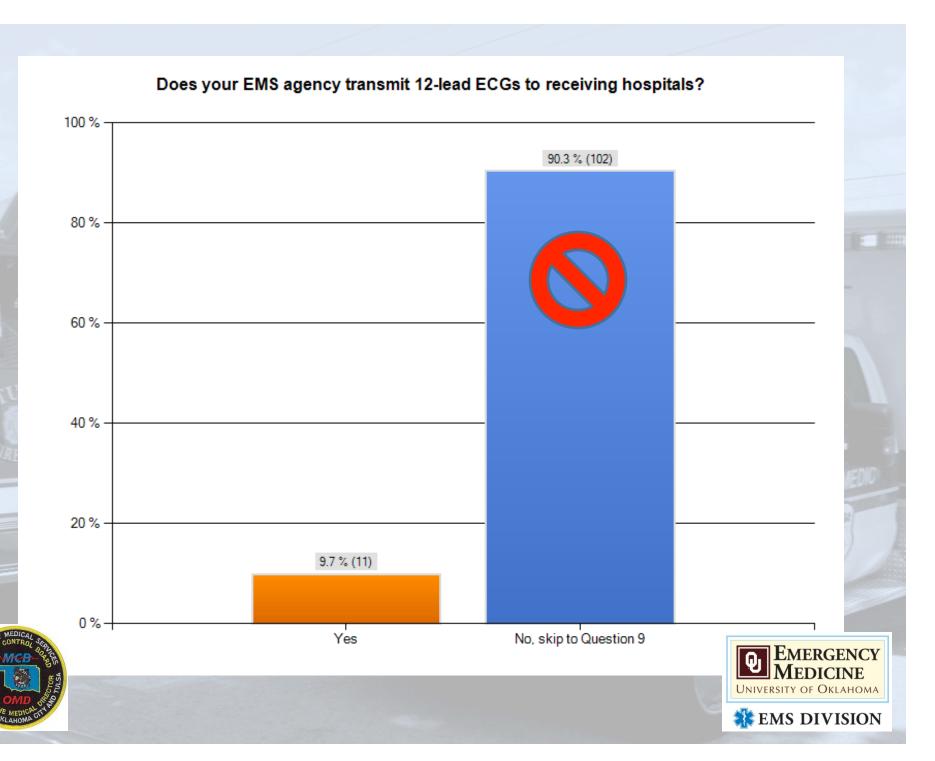


Which provider level most commonly applies the electrodes and obtains the 12-lead ECG?



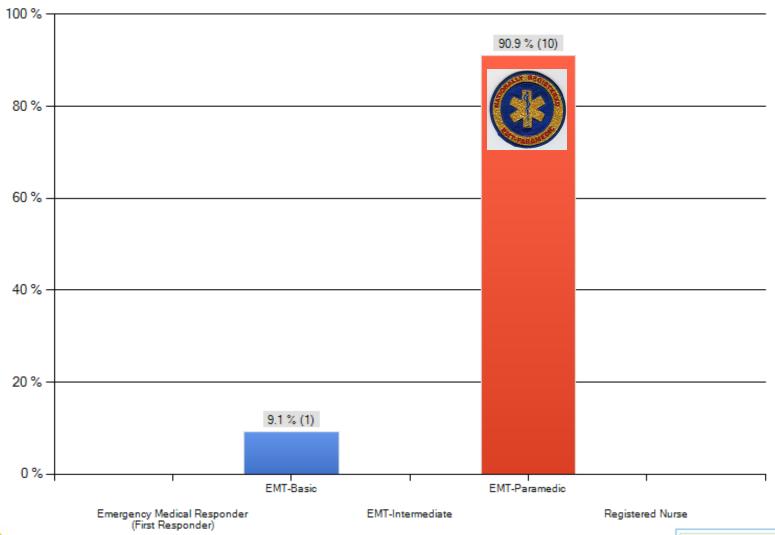






What mechanism(s) does your agency utilize to transmit 12-lead ECGs? 60 % 54.5 % (6) **LIFENET**° System 40%-27.3 % (3) 20%-9.1 % (1) 9.1 % (1) 0%-Data modem with Picture of 12-lead Fax modem with Uploaded to laptop/tablet monitor/defibrillator monitor/defibrillator taken and sent and sent via internet (e.g. LifeNet system) by cellular phone **E**MERGENCY MEDICINE (e.g. Dial-Up/Cell) University of Oklahoma **EMS DIVISION**

Which provider level most commonly transmits the 12-lead ECG?







The Role of the EMT-Basic in ACS? **II.6 ACUTE CORONARY SYNDROME** TREATMENT PRIORITIES EMERGENCY MEDICAL DISPATCH EMD 3 in 5 minutes of patient contact **EMT-BASIC** 1) Vital signs ADVISE REST & COOL ENVIRONMENT EMT-INTERMEDIATE 3) ECG rhythm (when EMTP present) ADVISE ASPIRIN (ASA) SELF-ADMINISTRATION (if applicable) ADVISE NITROGLYCERIN (NTG) SELF-ADMINISTRATION **EMT-PARAMEDIC** 5 in 10 minutes of patient contact 3) 12 lead ECG 4) NTG or fluids (BP/Inf. MI?) 5) Repeat vital signs EMT-B GENERAL SUPPORTIVE CARE OBTAIN VITAL SIGNS O2 VIA NC or NRB AS APPROPRIATE APPLY CARDIAC MONITOR/OBTAIN 12-LEAD ECG (when available) TRANSMIT 12-LEAD ECG TO RECEIVING EMERGENCY DEPARTMENT ASA 324 mg CHEWED BY PT (hold if taken < 6 hours or contraindicated) ASSIST NTG SELF-ADMINISTRATION 0.4mg (hold if Sys BP ≤ 100 mmHg) EMT-I IV NS TKO if Sys BP > 100 mmHg IV NS 250cc BOLUS if Sys BP ≤ 100 mmHg TREAT ANY CARDIAC ARRHYTHMIAS/SHOCK BY THE RESPECTIVE PROTOCOLS ANALYZE 12-LEAD ECG NOTIFY RECEIVING HOSPITAL IMMEDIATELY IF STEMI TRANSPORT ASAP PER DESTINATION PROTOCOL OBTAIN/ANALYZE RIGHT-SIDED 12-LEAD ECG *ACUTE INFERIOR WALL INFARCT? **ACUTE RIGHT VENTRICULAR INFARCT?** SYSTOLIC BP > 100 mmHg? DOPAMINE DRIP IF SYSTOLIC BP < 120 mmHg, IV NS 250 cc BOLUS 5-20 mca/ka/min IV NS 250cc BOLUS (if no pulmonary edema) *** NTG 0.4 mg SL. EVERY 5 MIN REPEAT UNTIL IF SYSTOLIC BP > 100 mmHa SYS BP > 100 mmHg (if no pulmonary edema) BP > 100 mmHg ACUTE INFERIOR INFARCT INDICATED BY ST SEGMENT ELEVATION IN AT LEAST IF PT STILL HAVING ACS SYMPTOMS **E**MERGENCY 2 OF THESE 3 LEADS: II, III, aVF. MORPHINE SULFATE 2mg SLOW IVP MAY REPEAT EVERY 5 MIN **ACUTE RIGHT VENTRICULAR INFARCT TO A TOTAL OF 10mg INDICATED BY ST SEGMENT ELEVATION IF SYSTOLIC BP > 100 mmHg AND PT STILL HAVING ACS SYMPTOMS IN AT LEAST 2 OF THESE 4 LEADS: V3R, V4R, V5R, V6R. University of Oklahoma ***DO NOT GIVE NTG TO PATIENTS TAKING VIAGRA OR LEVITRA WITHIN 24 HOURS OR CIALIS WITHIN 48 HOURS **EMS DIVISION** WITHOUT ON-LINE PHYSICIAN CONSULT

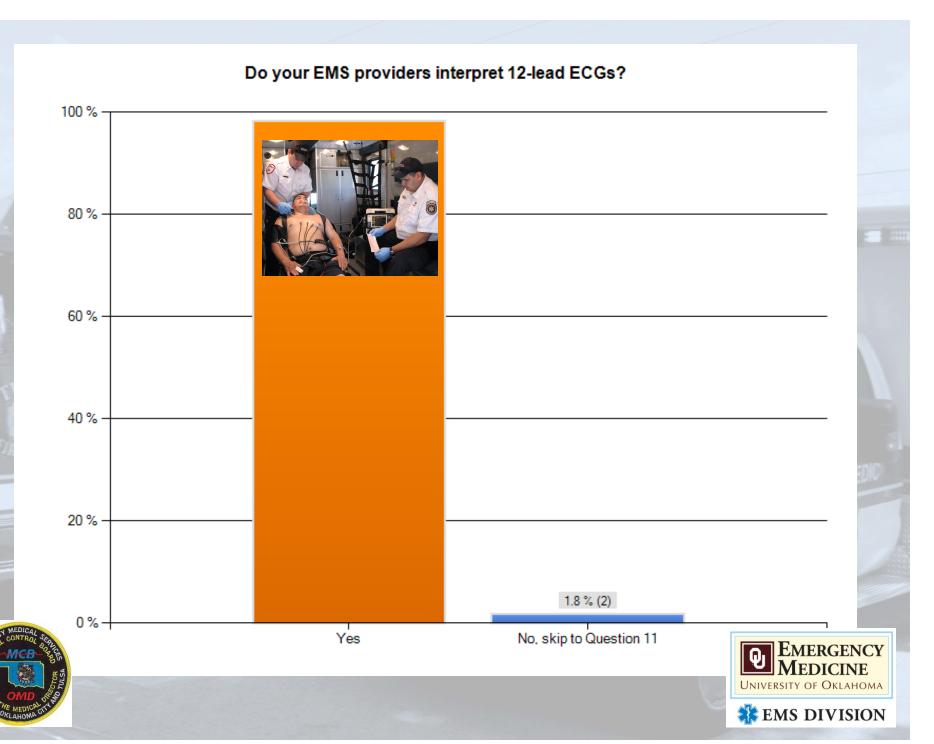
The Role of the EMT-Basic in ACS

EMT-B

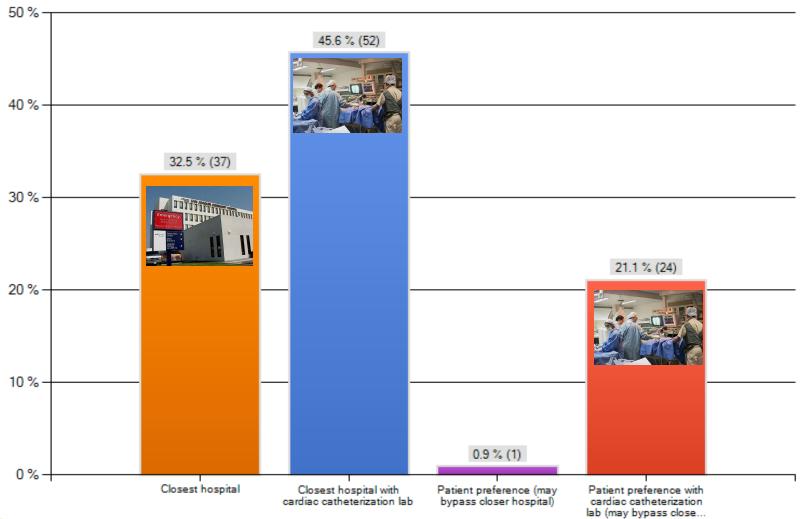
GENERAL SUPPORTIVE CARE OBTAIN VITAL SIGNS O_2 VIA NC or NRB AS APPROPRIATE APPLY CARDIAC MONITOROBTAIN 12-LEAD ECG (when available) TRANSMIT 12-LEAD ECG TO RECEIVING EMERGENCY DEPARTMENT ASA 324 mg CHEWED BY PT (hold if taken < 6 hours or contraindicated) ASSIST NTG SELF-ADMINISTRATION 0.4 mg (hold if Sys BP \leq 100 mm Hg)







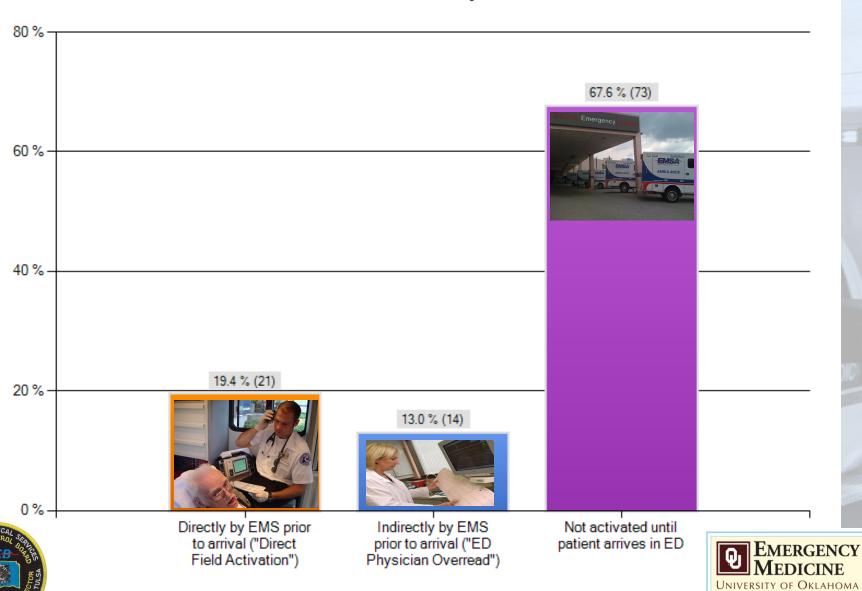
If an ST elevation myocardial infarction (STEMI) is suspected on the 12-lead ECG, where does your EMS agency most commonly transport the patient?





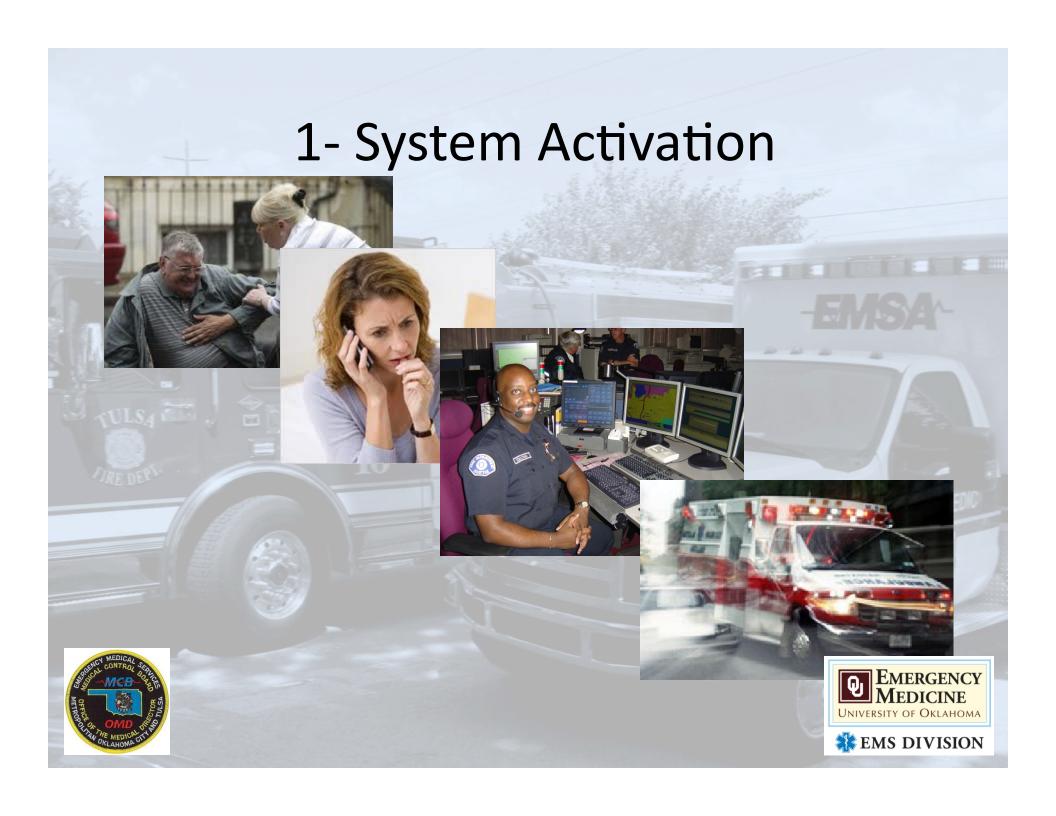


For suspected STEMI patients transported to hospitals with cardiac catheterization lab ability, how is the lab most commonly activated?



EMS DIVISION





2 – Event Data Capture



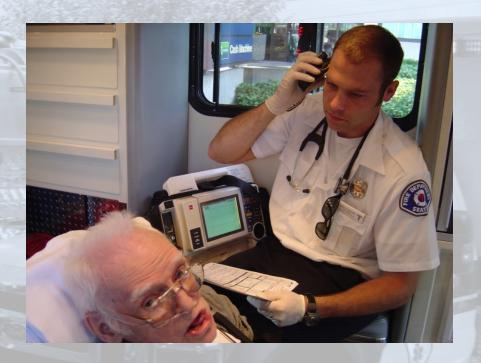






3 – Event Data Communication

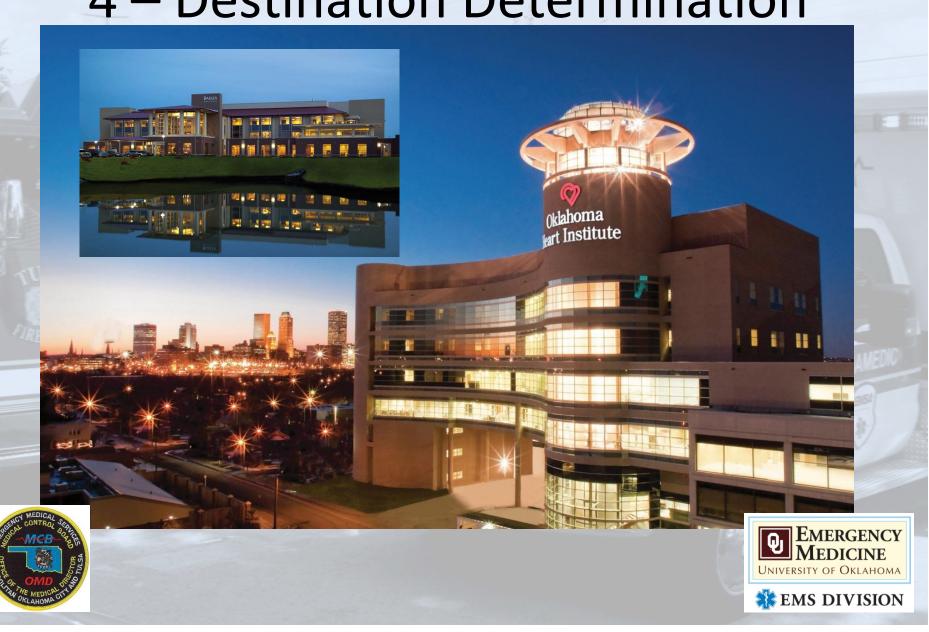




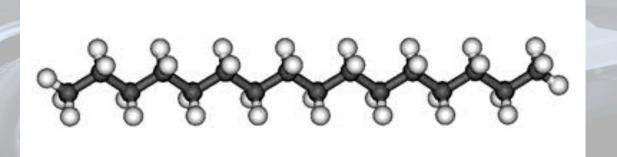








The Most Critical EMS Chemical for STEMI







5 – STEMI Definitive Care



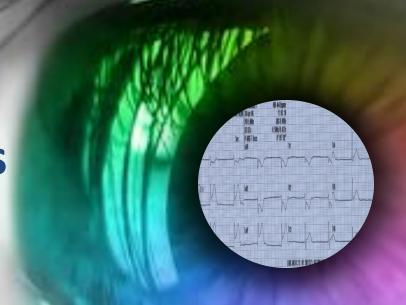




EMS: STEMI Vision 20/20

Where are we headed?

5 Summary Points







1. Enthusiasm for clinical outcomes (and analysis of those outcomes) will transcend organizations, time intervals, & geographic boundaries. Electronic data archiving and manipulation must support meaningful impact studies.





2. The literature guiding us will change....so must we.

American Journal of Emergency Medicine (2011) 29, 437-440



ELSEVIER

The American Journal of Emergency Medicine

www.elsevier.com/locate/ajem

Brief Report

Transmission of 12-lead electrocardiographic tracings by Emergency Medical Technician−Basics and Emergency Medical Technician−Intermediates: a feasibility study [☆]

Howard A. Werman MD a,b,*, Robert Newland EMT-Pc, Brad Cotton EMT-P, RN, MDc





Werman et al Findings

- 55 EMT-Basics or EMT-Intermediates in rural Ohio
- 89/90 (99%) pts with correct lead placement
- 89/90 (99%) pts with successful ECG sent
 - No change in scene time
- 85/89 (95.5%) sent ECGs "readable diagnostic quality"







4. Regional STEMI networks are essential in saving time.
EMS will play increasingly critical roles in developing and maturing these networks.





5. The 2020 STEMI will be treated as a system response, not a passage "down the chain" of agencies and events. EMS will be better recognized for its integral role within the system.





