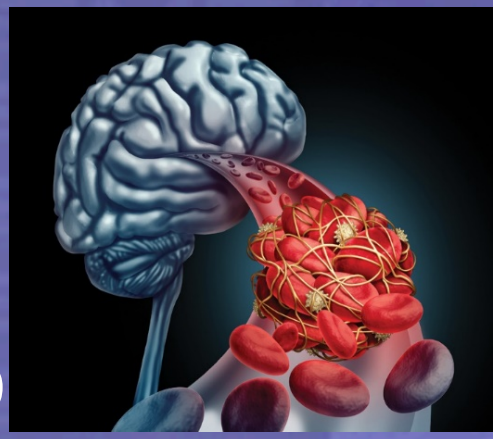
LVO'S LEAVING THE AREA…….



CHUCK MASON, M.D.

METROPOLITAN EMERGENCY MED SERVICES (MEMS)

LITTLE ROCK FIRE DEPARTMENT

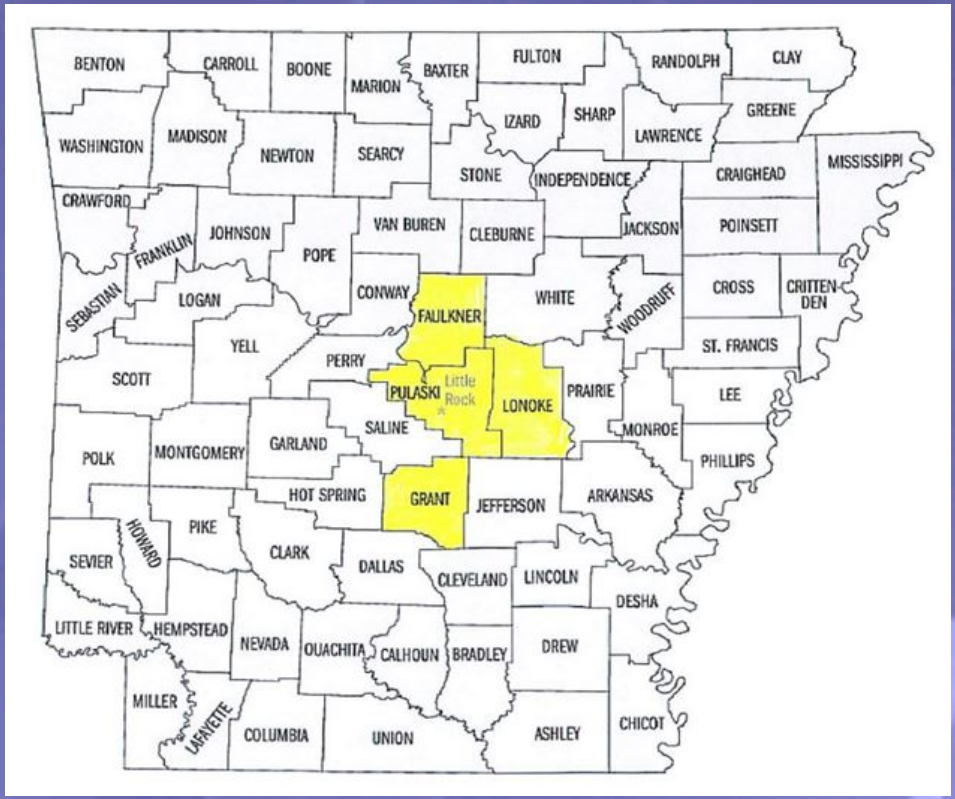
NORTH LITTLE ROCK FIRE DEPARTMENT

MAUMELLE FIRE DEPARTMENT

MEMS-Who we are

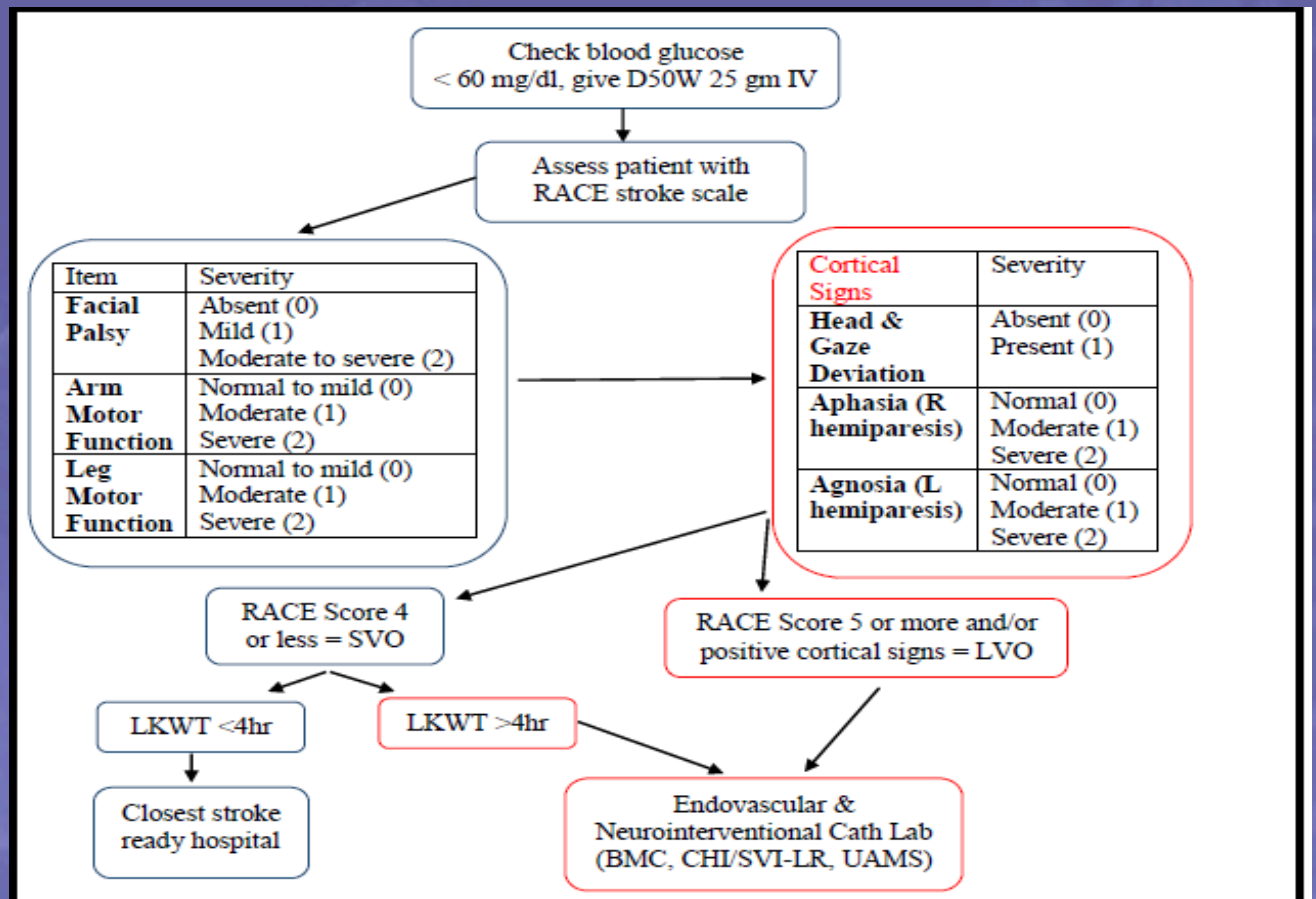
- Public Utility Model
- Little Rock, North Little Rock, surrounding
- 537,000 population
- >300 requests/day 225 Transports/day
- 259 field medics

MEMS covers 2200 square miles in the Central Arkansas area, including Pulaski County with the exception of Jacksonville, Grant County, Faulkner County, and parts of Saline and Lonoke Counties.



Hospital Capabilities

- 15 Adult Hospital destination Choices
- 13 stroke capable (Arkansas Stroke Ready Hospitals)
- State wide Stroke Telemedicine Services (ARSAVES)
- 3 Hospitals with Neuro-interventional capabilities (All located in Little Rock)
  - 1 Comprehensive
  - 1 Primary
  - 1 Primary (pending)



📖 Notes:

- If stroke score positive, notify receiving facility early from scene of "Code Stroke"
- Transport with head of cot in semi-fowlers, prepare to suction
- Oxygen as appropriate (Pulse Ox <95)
- Continuously monitor EKG, Pulse OX, and Capnography.
- Establish IV (2 IVs if possible – 1 for tPA, 1 for CTA contrast)
- **Onset of symptoms is defined as the last witnessed time the patient was symptom free or Last Known Wellness Time** (LKWT) (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when the patient was stroke free-"Wake up Stroke")

Stroke
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association | American Stroke Association®

Guidelines for the Early Management of Patients With Acute Ischemic Stroke : A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

Edward C. Jauch, Jeffrey L. Saver, Harold P. Adams, Jr, Askiel Bruno, J.J. (Buddy) Connors, Bart M. Demaerschalk, Pooja Khatri, Paul W. McMullan, Jr, Adnan I. Qureshi, Kenneth Rosenfield, Phillip A. Scott, Debbie R. Summers, David Z. Wang, Max Wintermark and Howard Yonas

on behalf of the American Heart Association Stroke Council, Council on Cardiovascular Nursing, Council on Peripheral Vascular Disease, and Council on Clinical Cardiology

Bypassing

- 157 medic identified strokes bypassed ASRH with patients meeting LVO criteria and went directly to IVR capable hospital
- 125 met protocol (over triaging)
- RACE 54% Accuracy
- 52 patients (38.1%) Dx Stroke
- 6 (11.5%) received Mechanical Thrombectomy
- 8 (15.4%) received tPA

LVO patients who stop at ASRH

2:88 hours

What are we learning?

- Stopping at ASRH with LVO delays treatment
- Over triaging
- More RACE scale training
- Consider a better LVO Assessment tool
- Feedback does improve performance

Thank you!

Chuck.mason@metroems.com

Balancing the Scales: Finding the LVO

Joseph Weber, MD, FAEMS
EMS Medical Director
Chicago West EMS System
Associate Professor of Emergency Medicine
Cook County Hospital, Chicago IL

Primary Stroke Center

2014: Endovascular Therapy

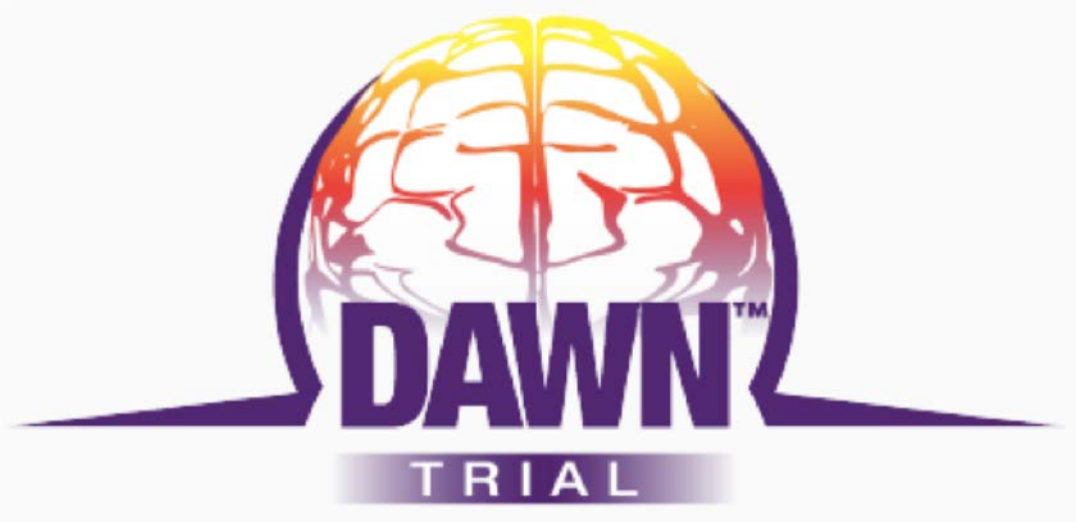
www.mrclean-trial.org

MR CLEAN

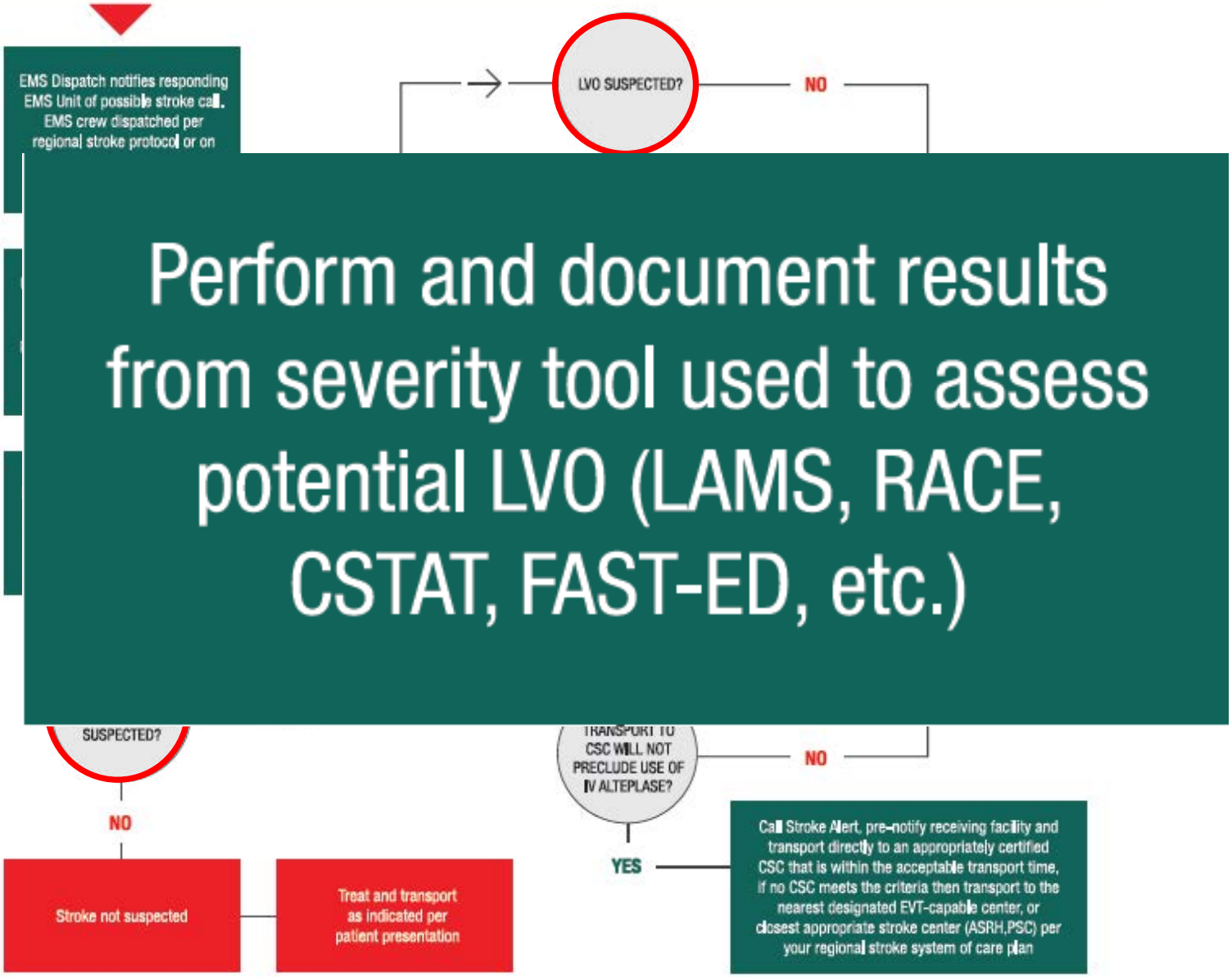
A Multicenter Randomized CLinical trial of Endovascular treatment for Acute ischemic stroke in the Netherlands

ESCAPE | REVASCAT | MR CLEAN | EXTEND-IA | SWIFT PRIME

2018: DAWN of a new ERA



SEVERITY-BASED STROKE TRIAGE ALGORITHM FOR EMS



Stroke Severity Scales:

- *C-STAT*
- *LAMS*
- *RACE*
- *PASS*
- *VAN*
- *FAST-ED*
- *EMSA*
- *SAVE*
- *3I-SS*
- *NIHSS* (multiple formats)

- Facial droop
- Arm weakness
- Speech
- Aphasia
- Level of consciousness
- Gaze deviation
- Neglect
- Visual fields
- Leg weakness
- Grip strength

2018

ORIGINAL ARTICLE

WILEY Acta Neurologica Scandinavica

Prehospital stroke scales and large vessel occlusion: A systematic review

S. Vidale[1] | E. Agostoni[1,2]

PREHOSPITAL STROKE ASSESSMENT FOR LARGE VESSEL OCCLUSIONS: A SYSTEMATIC REVIEW

William Krebs, DO, Travis P. Sharkey-Toppen, MD, PhD, Fern Cheek, AMLS, Eric Cortez, MD, Ashley Larrimore, MD, David Keseg, MD, Ashish R. Panchal, MD, PhD

AHA/ASA Systematic Review

Accuracy of Prediction Instruments for Diagnosing Large Vessel Occlusion in Individuals With Suspected Stroke

A Systematic Review for the 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke

Systematic Review Conclusions:

- NO PERFECT SCALE
- Most not derived or validated on EMS population
- Large range of sensitivity and specificity
- Implementation may require significant training burden on EMS

Future Directions: Stroke Severity Scales

- Tool should identify both LVO and need fo CSC
- Should be derived and validated on prehospital “possible acute stroke” population
- Should be easy for EMS providers to perform
- Should not require extensive training time

Thank you

jweber@cookcountyhhs.org

Escaping Perfection in EMS Stroke Care

Eagles XXI
Dallas, Texas – March 2019

Jeffrey M. Goodloe, MD, NRP, FACEP, FAEMS
Medical Director, Medical Control Board
EMS System for Metropolitan Oklahoma City & Tulsa
Professor & EMS Section Chief, Department of Emergency Medicine
University of Oklahoma School of Community Medicine
Medical Director, Oklahoma Highway Patrol

@drjeffgoodloe

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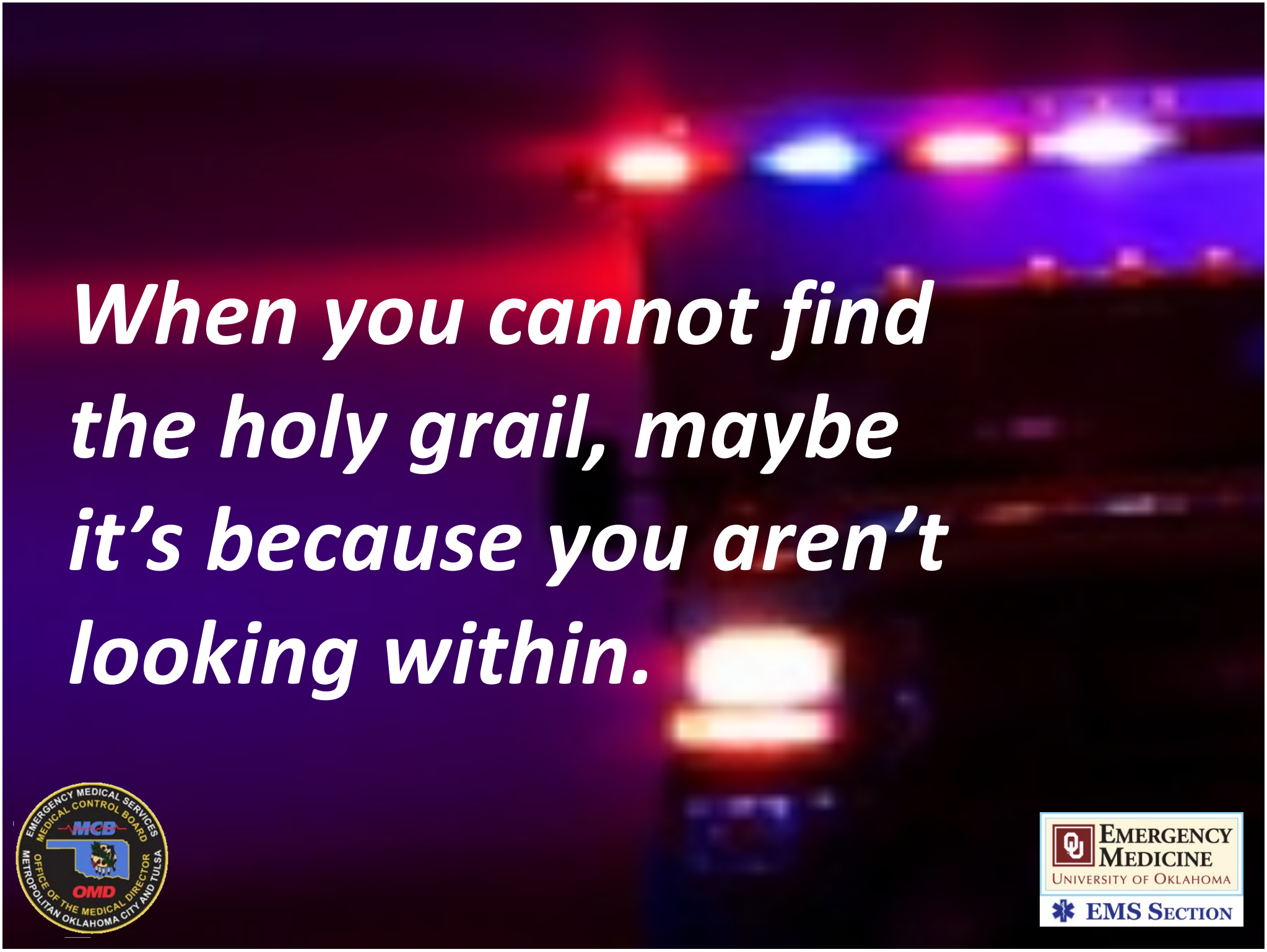
When you cannot find
the holy grail, maybe
it's because you aren't
looking within.

EMS System for Metropolitan Oklahoma City & Tulsa – 2018 Activity

- 1,100 square miles
- Population
  - 1.7 million day
  - 1.3 million night
- 218,775 calls (+2%)
- 162,123 transports (+3%)
  - 74 % transports (+1%)

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Part of the “Rights” of EMS

- Right patient
- Right assessment
- Right diagnosis*
- Right treatment
  - Includes right transport modality
  - Includes right destination
- Right transition of care

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The Perfect Stroke Screen for EMS

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NATIONAL INSTITUTES OF HEALTH
FIRE DEPARTMENT
BETHESDA, MD
No matter how mu federal $$$$ is in yo ambulance…
T Rex is larger than it appears in side view mirrors
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EMS SECTION

The "TCB in a Flash" Stroke Screen

- What's "normal" neuro baseline for the pt?
- Anything "abnormal" from baseline?
  - Motor
  - Sensory (including vision)
  - Speech
  - Balance – ataxia, dizziness, vertigo
- When did normal → abnormal? (LKW?)
- Can we rapidly "fix" this?
  - Hypoglycemia? Post-ictal? If "No" then "GO!"

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EBM in 2017-18 EMS Stroke

- "Cincinnati Prehospital Stroke Scale Can Identify Large Vessel Occlusion Stroke"

- 72.7% if score = 3
- 34.3% if score ≤ 2 $p < 0.0001$

- Richards CT et al. PEC. May/June 2018;22(3)

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Never Can Get Enough "Cincinnati"

- "Prospective Prehospital Evaluation of the Cincinnati Stroke Triage Assessment Tool"
- C-STAT
  - 2 pts conjugate gaze deviation
  - 1 pt cannot do age or month AND both commands
    - eye closure or open/close hand
  - 1 pt cannot hold arm up for 10 sec before falls
- McMullan JT et al. PEC. July/Aug 2017;21(4)

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Never Can Get Enough "Cincinnati"

- "Prospective Prehospital Evaluation of the Cincinnati Stroke Triage Assessment Tool"

- NIHSS ≥ 15 77% sens; 84% spec
- NIHSS ≥ 10 64% sens; 91% spec
- LVO 71% sens; 70% spec
- CSC needed 57% sens; 79% spec

- McMullan JT et al. PEC. July/Aug 2017;21(4)

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Let's Go West Coast Style

- "Los Angeles Motor Scale to Identify Large Vessel Occlusion – Prehospital Validation and Comparison With Other Screens"

- LVO 72% accuracy
  - 76% sensitive; 65% specific
- CSC appropriate 72% accuracy
  - 73% sensitive; 71% specific
- "comparable or better" than other scales

- Noorian AR et al. Stroke. March 2018;49

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Does Anything Add Up Correctly?

- "Prehospital Stroke Assessment for Large Vessel Occlusions: A Systematic Review"
- 8 studies; total n=6787

- Sens 49-91%
- Spec 40-94%

- Krebs W et al. PEC. March/April 2018;22(2)

Conclusion

- "At this time, further evaluations must be done in the prehospital setting to determine the ease of use and true sensitivity and specificity of these scales in identifying LVOs."

- Krebs W et al. PEC. March/April 2018;22(2)

The "TCB in a Flash" Stroke Screen

- What's "normal" neuro baseline for the pt?
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EMS SECTION

Part of the "Rights" of EMS

- Right patient
- Right assessment
  - ***Trust your instincts. Instincts don't require "scoring" a pt.***
- Right diagnosis*
  - ***Make it briskly. Time is permanent nerve function.***
- Right treatment
  - Includes right transport modality
  - Includes right destination
    - ***Comprehensive Stroke Center – one that actually is!***
- Right transition of care
  - ***Early "stroke alert" and organized hand-off in CT***

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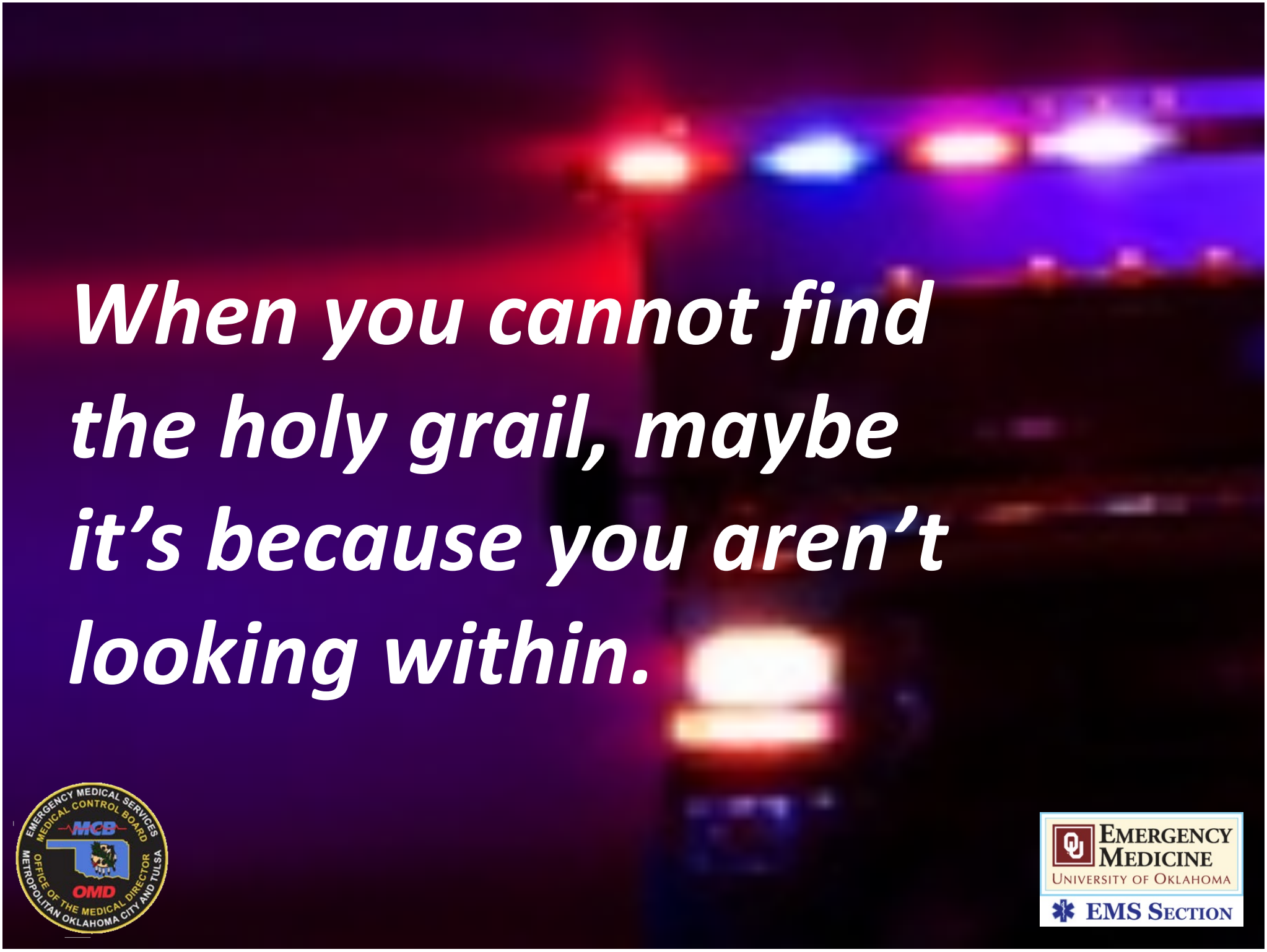
When you cannot find
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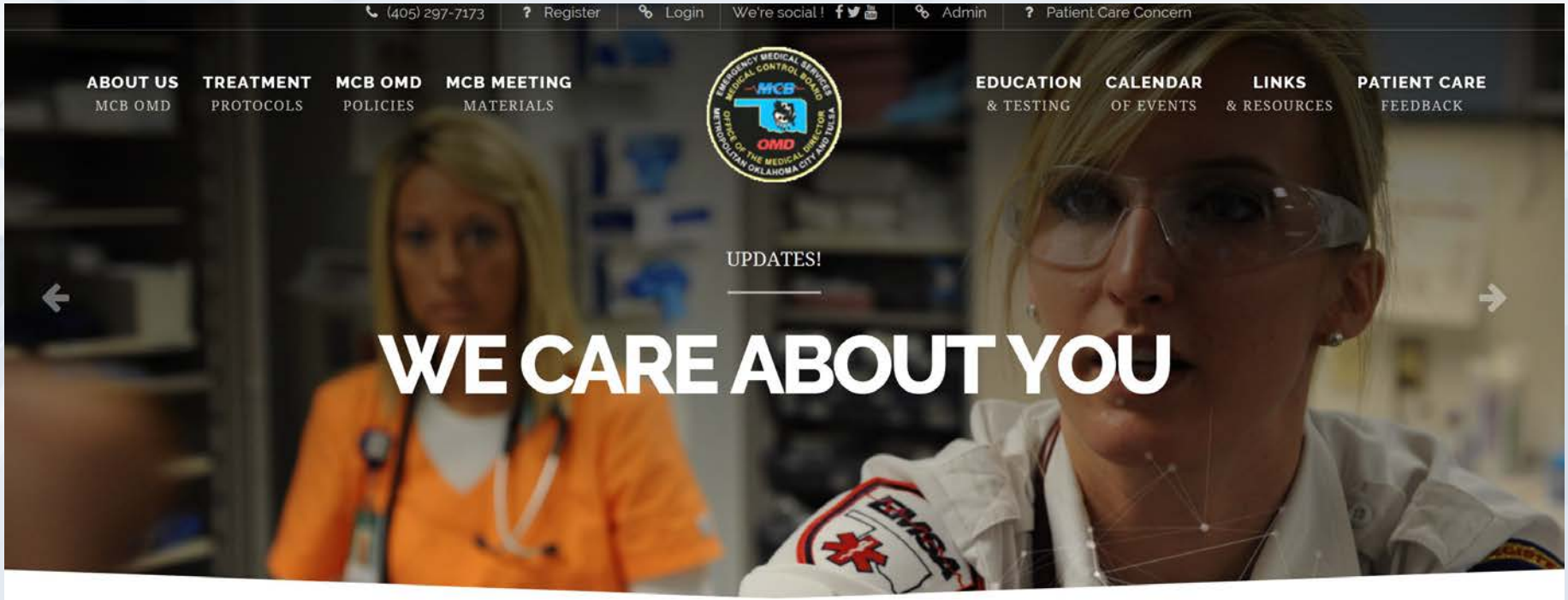
okctulomd.com



A LITTLE ABOUT OMD

The Medical Control Board and its Office of the Medical Director for the Emergency Medical Services System for Metropolitan Oklahoma City and Tulsa is committed to:

* researching, crafting, and promulgating evidence-based EMS medical treatment protocols that achieve optimal patient outcomes
* educating, training, credentialling, and supporting EMS professionals so they may deliver excellent out-of-hospital emergency medical care in an empowered, progressive environment
* making an impactful, positive difference for citizens and visitors experiencing medical emergencies in the cities we serve
* working productively and collaboratively with medical professionals in the cities we serve
* operating with truthfulness, transparency, unquestionable ethics, and with a tangible sense of responsibility and humbleness in service to others

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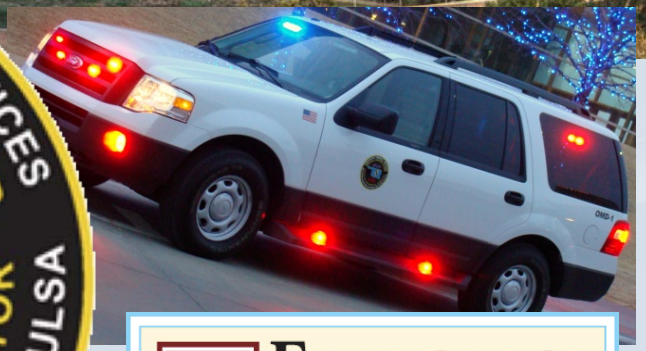

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TULSA FIRE DEPARTMENT
PROTECTING LIFE, HEALTH, PROPERTY & ENVIRONMENT
EST. 1900

FIRE RESCUE EMS
OKC
EST 1889

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Contact Info:
jeffrey-goodloe@ouhsc.edu
Office of the Medical Director
405-297-7173
@drjeffgoodloe

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E. Stein Bronsky, MD

Chief Medical Director

Colorado Springs FD

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to Solve Stroke Care in Rural America

BLAST RESOLVE

COMMUNICATION
Ubiquitous
Seamless (WIFI, Cellular, Satellite)
Reliable
High Quality
24/7
To/From moving vehicles
Modest hardware footprint
Patented

EXPERTISE
World-class Neurology
Delivered in the ambulance
Real-time

wireless communications

Benefits

- No need to have specialty providers
- Protocol Development in line with Existing
- Tailored Logistical Planning
- Scalable Deployment

Benefits

- Cuts down on false negative
- Cuts down on false positives
- Creates integrated system of care
- Sustainable, scalable margins
- Extensible to additional use cases


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MEDIC-16
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COLORADO

Initial Markets

Phase I

- Colorado
- Georgia
- South Dakota

Phase II

- Idaho
- Utah
- Kentucky
- Alaska