



**Medical Control Board
Office of the Medical Director**

**Annual Report from the Medical Director
Operational & Fiscal Year July 2016 - June 2017**

Report Structure

Continuing with this year's Medical Control Board/Office of the Medical Director (MCB/OMD) Annual Report, based upon feedback from key government and EMS system leaders in metropolitan Oklahoma City and Tulsa, the content is structured for efficient and purposeful review of key activities accomplished by MCB physicians, the Medical Director, and OMD professionals.

Medical Oversight Design

The **Medical Control Board** is established by the Emergency Physician Foundations of Oklahoma City (Western Division) and Tulsa (Eastern Division). The Medical Control Board is comprised of eleven physicians devoting volunteer service to the patients served by the EMS system for metropolitan Oklahoma City and Tulsa and to the dedicated men and women rendering emergency medical care as an Emergency Medical Dispatcher, Emergency Medical Technician (EMT), EMT-Intermediate, Advanced EMT, or Paramedic. By design, emergency physicians constitute all positions on the MCB with the exception of one position designated to be filled by another physician medical specialist. The emergency physicians most typically represent the busiest emergency departments in the areas served by the EMS system. The following physicians served on the MCB during this operational and fiscal year:

Michael Smith, MD, FACEP – St. John Medical Center (Tulsa)

Chair

Chad Borin, DO, FACOEP – St. Anthony Hospital (Oklahoma City)

Vice Chair

David Smith, MD – Integris Baptist Medical Center (Oklahoma City)

Secretary

Roxie M. Albrecht, MD, FACS, FCCM – Trauma Surgery/Surgery Critical Care (Oklahoma City)

Russell Anderson, DO – Hillcrest Hospital South (Tulsa)

Mark Blubaugh, DO, FACOEP – Oklahoma State University Medical Center (Tulsa)

Brandon Boke, MD, FACEP – University of Oklahoma Medical Center (Oklahoma City)

Barrett T. Bradt, MD – Saint Francis Hospital (Tulsa)

Jeffrey D. Dixon, MD, FACEP – Hillcrest Medical Center (Tulsa)

John Nalagan, MD, FACEP – Mercy Hospital (Oklahoma City)

Keri Smith, DO – Integris Southwest Medical Center (Oklahoma City)

The MCB meets bimonthly to review a report from the President of the Emergency Medical Services Authority, a report from the Medical Director, standard of medical care advancements and/or revisions endorsed by the Medical Director, financial statements of the MCB/OMD, and new business brought before the MCB by any interested party.

The **Medical Director** is the day-to-day recognized clinical authority in the EMS system, serving as such between times the MCB is meeting. *Jeffrey M. Goodloe, MD, NRP, FACEP, FAEMS* is the Medical Director for all agencies receiving medical oversight from the MCB/OMD.

Beginning July 1, 2009, the MCB contracted with the Department of Emergency Medicine at the University of Oklahoma's School of Community Medicine for physician medical director services. Substantial benefits to the EMS system and its patients are achieved through this arrangement, bringing research and educational capabilities from the University of Oklahoma, its emergency medicine residency program, and its collegial network of medical professionals.

This year is Dr. Goodloe's eighth year as Medical Director for the MCB/OMD. For familiarization purposes, his biography can be found at the MCB/OMD website, okctulomd.com.

The **Office of the Medical Director** is comprised of the following professionals:

Jeffrey M. Goodloe, MD, NRP, FACEP, FAEMS – Medical Director

Curtis L. Knoles, MD, FAAP – Assistant Medical Director

David S. Howerton, NRP – Director of Clinical Affairs Western Division (Oklahoma City)

Duffy McAnallen, NRP – Director of Clinical Affairs Eastern Division (Tulsa)

Matt Cox, NRP – Director of Critical Care Analytics

Jamil Rahman – Director of Health Information Systems

Jennifer Jones – Executive Assistant to the Medical Director

Dinorah Rivera – Data Entry Specialist

Until March 3, 2017

OMD professionals work daily to assist public safety agencies charged with emergency medical services responsibilities to fulfill those according to the clinical care standards established by the MCB. Medical outcomes determinations, individual medical care review, personnel education, personnel credentialing, equipment/vehicle performance review and inspection are just some of the myriad activities performed in support of excellence in pre-hospital emergency medical care.

All OMD directors are particularly experienced and gifted clinicians and administrative leaders, guided by admirable work ethic. Each has served this and other EMS systems in a multitude of responsibilities, beginning with field service and progressing to their current oversight duties.

Philosophy of Medical Oversight

The provision of emergency medical services is more than public safety in metropolitan Oklahoma City and Tulsa; it is a practice of medicine delegated by the MCB's Medical Director to over 4,300 non-physician EMS professionals serving over 1.5 million residents, workers, and visitors of the affiliated cities.

Just as an individual has right to access an educated, qualified, and credential physician providing progressive medical care in times of illness or injury, it is incumbent the EMS system serving metropolitan Oklahoma City and Tulsa provide educated, qualified, and credentialed EMS professionals authorized to deliver the finest pre-hospital medical care available. When an individual in this service area experiences sudden, unexpected medical symptoms from relatively benign, though concerning pain, to the extreme severity of cardiopulmonary arrest, he or she can rest assured individuals answering the call for help will be trained and prepared to address the

medical situation at hand. This cannot happen without up-to-date, progressive medical treatment protocols and accompanying education and training.

Beginning July 1, 2009, the MCB/OMD committed to bringing its medical treatment protocols to new standards, unparalleled amongst large, urban EMS systems in the United States. Significant numbers of protocols were added, updated, and/or reformatted consistently at MCB meetings this year as summarized within this annual report, including the innovative use of active compression/decompression CPR and double sequential external defibrillation for victims of sudden cardiac arrest. All MCB treatment protocols continue to follow the now MCB-recognized innovative, evidenced-based format. In other words, additional clinical capabilities and care are being regularly added and provided for the patients needing those most. This commitment to excellence in pre-hospital emergency care reflects the drive and energy of the MCB, Medical Director, OMD professionals, leaders in affiliated fire departments and EMSA, and all field EMS professionals.

Throughout the operational year, these MCB treatment protocols continued to be referenced and indexed by benchmarking EMS systems within the United States and even abroad. The patients of this EMS system can continue to rest assured they are receiving the very best in pre-hospital emergency medical care.

Key Advances in Medical Treatment Protocols

Dyspnea – Asthma – adding magnesium sulfate administration by Paramedics for severe acute asthma exacerbations.

Dyspnea – Brief Resolved Unexplained Event (BRUE) - Pediatric – updating Acute Life Threatening Event (ALTE) protocol to reflect latest evidence-based advances in this clinical presentation, defining both low-risk and high-risk situations.

Acute Coronary Syndrome – placing defibrillation pads in the setting of diagnosed ST Elevation Myocardial Infarction (STEMI) to reduce time to defibrillation if STEMI-induced ventricular fibrillation occurs.

Acute Allergic Reactions, Snakebites/Pit Vipers, Bee & Wasp Stings/Fire Ant Bites – addition of manual administration of epinephrine 1:1000 for EMT scope of practice for anaphylaxis. This addition was made with innovative educational products produced by OMD personnel and reflective of similar changes in multiple other US states. This change allows BLS agencies to save substantive monies that previously were spent on epinephrine auto-injectors.

Fever or Sepsis – added increased emphasis on field assessment for sepsis and increased use of intravenous fluids for suspected sepsis.

Scene Coordination – new protocol reflects the work of the Mission Task Time Workgroup that met for several months in this operational year, with leaders from OMD, AMR, and OKC and Tulsa Fire Departments. The contents of the protocol help to better coordinate all actions in patient care during response to the scene and once on scene through improved inter-agency

communications. The protocol's specified best practices will reduce typical scene times while simultaneously improving patient-focused communications and care and provider safety on scene.

Formulary – protocols updated throughout the year to ensure the formulary is consistent with all clinical treatment protocols, including national relabeling of epinephrine 1:1000 to 1mg/mL and epinephrine 1:10,000 to 0.1mg/mL.

Categorization of Hospitals – updating clinical care capability additions at multiple hospitals in the metropolitan Oklahoma City and metropolitan Tulsa areas.

EMS Diversion from Hospitals – updating historical diversion policy with addition of decision algorithm for EMS personnel and further detailing types of recognized diversion requests from hospitals. Additional information included as to expectations of time limits on diversion requests from hospitals.

Key Advances in MCB/OMD Administrative & Clinical Policies

Historically, most administrative actions of the MCB/OMD prior to July 2009 have been “management by memo” in structure. Over time as the EMS system has grown in size and structure, these memos have proven difficult to track, confusing in intent, dated in instruction, and while unintentional, contradictory in direction. In efforts to be more transparent in operation, clearer in administrative and clinically-related expectations, and to better support field professionals, the Medical Director specified creation of a MCB/OMD Policy and Procedural Manual in the 2009 – 2010 operational and fiscal year to accompany the Medical Treatment Protocols. Like the treatment protocols, this continues to prove a multi-year project due to scope and nature of always advancing the practice of EMS medicine and its oversight. During this operational year, the comprehensive manual of MCB/OMD policies & procedures was updated and available on the MCB/OMD redesigned website.

EMS Provider Credentialing Policy – comprehensive rewrite and restructure of historic policy. Added multiple levels of credentials and clarified requirements for initial credentials and re-credentials for all types/levels of clinical providers, clinical operational supervisors, continuous quality improvement leaders, and educators. In the latter category, creation of an OMD Instructor credential was included. An innovative transition to full credential policy was created for paramedic students in selected EMS education programs (eg. Tulsa Community College, AMR Oklahoma Paramedic School) so that the educational program required ambulance clinical can be dual-purposed as clearance shifts as well, further expediting the clearance of Paramedics to full clinical duty capabilities. This policy served as a basis for the National Association of EMS Physicians/National Registry of EMTs conjoint policy on Credentialing in EMS and is a policy that other EMS systems now benchmark.

Controlled Substances – review and revision of existing policy to meet and/or exceed all applicable regulations promulgated by the Oklahoma Bureau of Narcotics and Dangerous Drugs and the federal Drug Enforcement Administration, with specific additional control measures of agency-specific labeling of individual vials and vacuum sealing of all controlled substances.

Clinical Error Event Reporting – review and revision of existing policy to update contact information for OMD reporting and allowance of OMD to share relevant information regarding clinical errors with the appropriate compliance officer(s) at EMSA, per discretion of the Medical Director.

MCB/OMD Review of System Performance Parameters

Response Times – EMSA calculates and supplies MCB/OMD with monthly performance reports regarding response times by American Medical Response, EMSA’s contractor for clinical and clinically-related administrative services. All monthly reports supplied to MCB/OMD by EMSA were personally reviewed by the OMD Directors, the Medical Director, and the MCB. All reports indicate aggregate compliance with contracted response time standards. Fire departments, particularly the larger departments, such as Oklahoma City, Tulsa, and Edmond supply their response times for EMS-related calls on a monthly basis as well. These reports are personally reviewed by the OMD Directors and the Medical Director on a monthly basis. All reports indicate reasonable response time performances.

Response time allowance changes approved by the EMSA Board of Trustees that went into clinically operational effect on November 1, 2013 continued throughout this operational year. This specifically allowed for the historical 8:59 Priority 1 standard to be extended to 10:59 within the beneficiary cities. Priority 2 responses were also extended, specifically from 12:59 to 24:59, with notable cessation of red lights and sirens (RLS) use. Significant safety benefits of these changes were anticipated and observed during their fourth operational year, yet no clinical detriments in patients relatable to these response time allowance changes were noted by the Medical Director and OMD personnel.

Hospital-Initiated EMS Diversion Requests – American Medical Response calculates and supplies MCB/OMD monthly reports on the number of hospital-initiated EMS diversions their personnel encountered in ambulance transports. All monthly reports supplied to MCB/OMD by American Medical Response were personally reviewed by the OMD Directors, the Medical Director, and the MCB. The majority of reports indicate reasonably desirable control of diversion numbers by hospitals in the service area. In May of 2008, the MCB took action to reduce then-elevating numbers of hospital-initiated EMS diversion requests by instituting a protocol that allows paramedics to override such requests if the patient was clinically stable and had a pre-existing relationship with that hospital, its network, and/or a physician on its active or referring medical staff. The effects of that protocol, with revisions made this operational year, continue to show positive impact as the EMS system promotes patients receiving continuity of care for better clinical outcomes and fiscal stewardship.

A continuing area of concern related to hospital emergency department patient saturation is EMS “bed delay” times. This time period begins when EMSA EMTs and paramedics arrive in an emergency department with the patient packaged on the stretcher and encounter no available beds in which to transfer the patient for ED care and extends to the time in which a transfer into a bed or chair occurs. The Medical Director advised the MCB of continuing concerns, stemming from prior analysis prepared by EMSA, supporting anecdotal experiences detailed in daily EMSA Field Operations Supervisor Reports that ambulances were being held, at times, over 1

hour at hospitals. The problem continues to be more prevalent in Tulsa than Oklahoma City, likely due to fewer hospitals serving its metropolitan area, though some improvements were noted throughout this operational year.

Trauma Priority & Destination Reports –American Medical Response calculates and supplies MCB/OMD monthly reports detailing the numbers and percentages of trauma patients by priorities (One, Two, or Three) and destinations. All monthly reports supplied to the MCB/OMD by American Medical Response were personally reviewed by the OMD Directors, the Medical Director, and the MCB. All reports indicate continuance of the following: 1) Priority One Trauma patients comprise <15% of traumas on a monthly basis, with most months seeing <10%. 2) Documentation supporting patients identified as Priority One Trauma is typically at or above 90%. 3) Destination for Priority One Trauma patients is appropriately selected at or above 98% of the time. Deviations from appropriate destination selection are reviewed with individual paramedics making those deviations.

Clinical Continuous Quality Improvement Agency Reports –American Medical Response and fire department EMS liaisons calculate and supply MCB/OMD monthly reports detailing the activities related to EMS in the respective agency. All agencies with EMT-Intermediates, Advanced EMTs and/or Paramedics regularly adhere to the requirements to supply these reports. Content is comprised of call types and volumes, airway management performance, cardiac arrest management performance, intravenous access performance, pharmaceutical utilization, and educational initiatives. All monthly reports supplied to the MCB/OMD by these agencies with advanced life support capabilities were personally reviewed by the OMD Directors and the Medical Director. These reports consistently reflect that agency personnel are meeting or exceeding the clinical expectations of MCB/OMD. Summary statements of these reports are either reported to the MCB by Dr. Goodloe and/or the full agency reports are available for review to any MCB physician at their request. Smaller, basic life support fire departments are varied in their reporting consistencies. OMD Directors and the Medical Director continue to work with these departments to facilitate timely and consistent reporting of their activities.

Cardiac Arrest Outcomes – The EMS System for Metropolitan Oklahoma City and Tulsa continues to achieve enviable outcomes in cardiac arrest. Whereas the national average for survival from out-of-hospital cardiac arrest (witnessed arrest, bystander CPR, and shockable cardiac dysrhythmia upon EMS arrival) has improved to nearly 13.6%, outcomes in Oklahoma City and Tulsa are multiple times this national aggregate performance.

Response Vehicle Inspections – OMD Directors continue to inspect new emergency medical response vehicles, such as fire engines and ambulances, to ensure correct medical equipment provisioning and condition. Few deficiencies are typically discovered and immediately corrected when found.

MCB/OMD Project Initiatives

Cardiac Arrest Outcomes Optimization Program (aka “50/50” Program) – Building upon the EMS system’s pattern of admirable success in aggressively resuscitating cardiac arrest victims, the MCB continued promulgated sophisticated resuscitation team dynamic protocol standards.

These standards detail optimal team role performances to maximize chest compression fraction time, reduce delays in timely defibrillation, and achieve coordinated efforts in lifesaving.

Cardiac arrest resuscitation team dynamics continue to be reinforced during continuing education for all current EMS professionals in the system and are reviewed in focused detail during the orientation for all EMS professionals joining this system. Coordinated skill precision is further reinforced through individual feedback supplied to all EMS professionals involved in a specific resuscitation. Utilizing the CodeSTAT software platform, resuscitation care elements (chest compressions, ventilations, defibrillations) are analyzed by the OMD Director of Critical Care Analytics, annotated for clinical event accuracy, and then reported to the Medical Director, OMD Director of Clinical Affairs, and relevant agency CQI personnel to then be forwarded to the frontline clinical personnel actually performing the care analyzed. This feedback is essential in reinforcing excellent care provision and helping individuals make desirable modifications for future resuscitations. Essentially 100% of attempted resuscitations are formally annotated and most reviews are returned to CQI personnel within 72-96 hours to forward to front-line credentialed personnel.

The EMS system has shown abilities to produce approximately 30-40+% neurologically intact survival among victims experiencing a citizen witnessed, citizen CPR initiated, and EMS discovered shockable cardiac rhythm upon their arrival. While very good in its impact upon cardiac arrest survival, the MCB/OMD has stated a system goal of achieving 50%+ survival in the same patient types in both metropolitan Oklahoma City and Tulsa, thus the program's "50/50" description and our endless enthusiasm to achieve this goal in a multi-year progression program.

Coordinated Continuing Education – Prior to July 2009, OMD did not have consistent interaction and oversight of continuing education in the EMS system. The results, without a hub of coordination, have proven that agencies are pursuing disparate educational initiatives, resulting in educational message inconsistencies. While challenging to correct in short order, OMD began meeting with educational leaders in affiliated agencies willing to attend new educational forum meetings on a monthly basis. All affiliated agencies have been encouraged to send their EMS educational leaders to this forum. Work has progressed and educational materials are more consistently being created and shared for multi-agency use. The results will promote consistency in educational messaging and consistency in timing of education material distribution throughout the EMS system, thereby promoting better integration of treatment plans between fire-based and EMSA-based EMS professionals.

EMS Professional Credentialing Testing – OMD Directors, with oversight by the Medical Director, continued the practice of verification of clinical skills performance and knowledge base testing of all professionals on a biannual basis. Rewriting of all personnel credentialing written examinations was performed with direct involvement of the Medical Director. A computer-based testing platform is now operational and allowing for more efficient testing access and completion for EMS professionals and OMD professionals alike. Nearing the end of the operational year, well over 2500 professionals had successfully re-credentialed using this testing platform.

EMS System Promotion – Metropolitan Oklahoma City and Tulsa is blessed with the multitude of dedicated EMS professionals in its EMS system. Dr. Goodloe, with endorsement by the MCB, has continued a purposeful plan to better recognize the achievements of these EMS professionals. Academic writing, system-based research with outcomes presentations at scientific assemblies and acceptance of EMS conference speaking invitations are routinely conducted to promote this fine EMS system. The cumulative results advance the interests of patients, EMS professionals, and the cities within the service area. Specific actions in this realm included:

Department of Surgery, University of Oklahoma College of Medicine (Knoles)
Grand Rounds – The Practice of EMS Medicine

National Association of EMS Physicians 2017 Annual Meeting (Goodloe)
Advanced Topics in Medical Direction Pre-Conference
Presentation on Response Times & Reduction in Red Light & Sirens Use
Main Conference
Ask the Experts Panel

Journal of EMS (Goodloe, Knoles, Howerton, McAnallen, Cox)
Cover Article January 2017 – Progressive Resuscitation
Cover Article February 2017 – When is the Need for Speed?

EMS State of the Science XIX/”A Gathering of Eagles” (Goodloe)
Mission Task Time Efficiencies
Inversion of Diversion in EMS

EMS Today 2017/The JEMS Conference (Goodloe)
Update from the Eagles Panel – Inversion of Diversion in EMS
Renal Emergencies in EMS
Hematologic/Oncologic Emergencies in EMS
Active Compression/Decompression CPR
Ketamine in EMS Panel

EMS Medical Director’s Course 2017 – Norman and Tulsa locations (Goodloe)
Effective Medical Oversight in the Practice of EMS Medicine
Treatment Protocol Development
Medical Director-Driven CQI Programs

Response Configurations – When a caller dials 911 with a medical complaint in metropolitan Oklahoma City or Tulsa, that complaint is able to be coded into one of approximately 1,200 condition acuity determinants established within the Medical Priority Dispatch System (MPDS), a proprietary medical dispatch software system. MPDS is the most widely utilized such system in developed countries around the world and is supported by evidenced-based medicine. MPDS has been adopted by the MCB in specifying clinically appropriate utilization of fire response resources, while attempting to keep as many resources available in service for highest acuity medical responses and non-medical roles (fire suppression, hazardous materials, specialized rescue, and training). The design is to promote the usually closest fire apparatus is available for

response to the scene of particularly serious, time-sensitive medical emergencies, such as cardiac arrest, unconsciousness, or gunshot wounds to the chest or abdomen. The criteria utilized to determine whether fire response was selected has previously been agreed to by the affiliated fire departments. During this operational year, in scheduled and ongoing analysis, the Medical Director and OMD personnel conducted further review of each MPDS code for EMS system response configuration and priority for ambulance response.

Community Response Team (Tulsa) – OMD, represented by Duffy McAnallen, led and supported a consortium of public agencies in Tulsa to collaboratively form a multi-agency, multi-disciplinary resource team to address individuals accessing the EMS system at notably high frequencies for non-acuity/non-medical needs. Tulsa Fire Department’s EMS Office, Community Outreach Psychiatric Emergency Services (COPES), and Tulsa Police Department are integral parts of this program, moving from beta testing of concept to active presence in Tulsa. Early indications reflect positive impact for the individuals served in this program and anecdotal reduction in accessing police/fire/EMS services for predominantly chronic mental health related conditions.

Research Leadership and Support – The Medical Director and the OMD Directors led and participated in multiple scientific studies throughout the year conducted by the EMS Section of the Department of Emergency Medicine at the University of Oklahoma School of Community Medicine.

Directions for Operational & Fiscal Year 2017-2018

The upcoming year will be filled with continuation of the multitude of projects identified in this report as well as additional advancements and revisions to clinical standards of care. Cardiac arrest resuscitative care will continue to be a hallmark of intervention efforts over the coming year, with anticipation of completing formal research into the early impacts of adding active compression-decompression CPR.

Further technical abilities via the MCB/OMD website, okctulomd.com, will be sought for ease and utility of use by EMS professionals within the local system as well as those EMS systems around the world that utilize the EMS System for Metropolitan Oklahoma City and Tulsa as a reliably evidence-based practice of EMS medicine. Increasing numbers of personnel within the system are achieving their credentials via the online portal didactic testing system and this is progressively becoming the method of didactic credentialing testing by OMD.

Additional strategic planning, including regional EMS system medical oversight collaborations and benchmarking, will occur within the coming operational year to continue to build upon service to organizations comprising the EMS System for Metropolitan Oklahoma City and Tulsa, EMS professionals within those organizations, and the patients we collectively are honored and humbled to serve.

In sum, this past operational and fiscal year has seen tremendous energies and enthusiasms evident from MCB/OMD. Similar commitments and enthusiasms have been mirrored by many of the EMS leaders and liaisons in affiliated agencies. Continued effective working relationships

between affiliated agencies and MCB/OMD have resulted in the two achievements that matter most:

1 – High quality EMS clinical care for the spectrum of acute illness and injury patients.

2 – Determined, agency-neutral support for the EMS professionals providing high quality EMS clinical care.

During the 2010-2011 operational year, the Medical Director adopted the following philosophy of his Seattle counterpart:

On Achieving Success

“There is no ‘silver bullet.’ There is just hard work”

Michael Keyes Copass, MD.

This sentiment continues to be found in prominent position upon every desk at which work is performed by the Medical Director, the OMD Directors, and the Executive Assistant to the Medical Director. It will remain in such places throughout Dr. Goodloe’s tenure as the Medical Director, serving as a constantly visible reminder of the expectations in meeting the incredible trust afforded to MCB/OMD by the patients we serve.

Hard work, focused enthusiasm, and the relentless pursuit of optimal clinical care and outcomes continue to advance both the science and art of EMS medicine in the EMS System for Metropolitan Oklahoma City and Tulsa. We again enter the coming year, Operational & Fiscal Year July 2017 – June 2018, convinced it will be the finest in the history of the MCB/OMD.