



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

**Annual Report from the Medical Director
Operational & Fiscal Year July 2014- June 2015**

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:

Jeffrey Reames, MD, FACEP – Mercy Hospital (Oklahoma City)

Chair & Board Member until January 2015

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

Vice Chair until January 2015; Chair since January 2015

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

Secretary until January 2015; Vice Chair since January 2015

Curtis Knoles, MD, FAAP – The Children's Hospital at OU Medical Center (Oklahoma City)

Secretary since January 2015

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

Jennifer Amen, MD, MPH, FAAEM – Hillcrest Hospital South (Tulsa)

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

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

Board Member since September 2014

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

Justin Fairless, DO – Saint Francis Hospital (Tulsa)

John Marshall, MD, FACEP – University of Oklahoma Medical Center (Oklahoma City)

Board Member until September 2014

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

Board Member since January 2015 (with prior MCB service)

David Smith, MD – Integris Baptist 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* 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 sixth year as Medical Director for the MCB/OMD. For familiarization purposes, his biography can be found in the MCB/OMD Annual Report from the Medical Director for Operational & Fiscal Year July 2009 – June 2010.

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

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

Sabina A. Braithwaite, MD, MPH, FACEP – Associate Medical Director

Hired in March 2014

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

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

Howard Reed, NRP – Director of Research & Clinical Standards Development

Tammy Appleby – Executive Assistant to the Medical Director

Ms. Appleby retired full-time from this position effective November 14, 2014.

Kathy Storm – Executive Assistant to the Medical Director

April-May 2014

Dinorah Rivera – Data Entry Specialist

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 nearly 4,200 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. 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

Cardiac Arrest – (Resuscitation-CPR, Resuscitation Team Roles, Asystole, Ventricular Fibrillation/Pulseless Ventricular Tachycardia, Pulseless Electrical Activity, Specific Causes of Cardiac Arrest) revised to include the latest science in lifesaving practices.

Specific initiatives were: a) decreasing chest compression rates from 120 per minute to 110 per minute and guided per metronome, based upon further research into optimal improved return of spontaneous circulation rates as detailed in Resuscitation Outcomes Consortium (ROC) research and post-hoc analysis by Minnesota Resuscitation Consortium. ROC is an American-Canadian research network, involving 11 major metropolitan area EMS systems, collaborating to answer some of EMS medicine's most compelling dilemmas in care options. b) adding the ResQPUMP for provision of manually-delivered active chest compression-decompression CPR. The EMS System for Metropolitan Oklahoma City and Tulsa is the first EMS system in the United States that adopted active compression-decompression CPR as a standard of care, within 48 hours of the device being approved by the FDA to improve neurologically intact outcomes from sudden cardiac arrest.

Revised changes collectively enable the EMS system to function beyond the International Liaison Committee on Resuscitation/American Heart Association guidelines that were released in mid-October 2010.

See also the detailed discussion of cardiac arrest care initiatives under the “MCB/OMD Project Initiatives” section.

Zoll Lifevest Wearable Defibrillator – new protocol to define emergency medical care measures relating to patients wearing this resuscitative device.

Implantable Pacemaker Management – additional care directives to reduce overpacing by limiting patient motion and to analyze for impending battery failure on ECG analysis.

Altered Mental Status – highlighting the option of using dextrose 10% intravenous infusions for hypoglycemia in all ages. With precarious peripheral vascular access (risk of extravasation of administered medication) and in time of dextrose 50% supply shortages, dextrose 10% is a wise option. Increasing numbers of EMS systems are adopting this same emphasis on use of dextrose 10%. Also, naloxone was added to the EMR/EMT scope of practice in situations of BLS fire department response to suspected opioid toxicity.

Glucometry – adding advisory information about accuracy of blood glucose determination in patients using certain peritoneal dialysis solutions.

Acute Allergic Reactions; Snakebites, Pit Vipers; Bee/Wasp Stings & Fire Ant Bites – epinephrine via autoinjector was added to the EMR scope of practice in situations of BLS fire department response to suspected anaphylaxis.

Hydrofluoric Acid – new protocol to define emergency medical management of hydrofluoric acid exposures.

Hemostatic Agents – extending age eligibility for tranexamic acid to 10+ years of age.

Formulary – protocols updated throughout the year to ensure the formulary is consistent with all clinical treatment protocols. Included updates to *Calcium Gluconate, Dextrose 10%, Epinephrine Autoinjector, Methylprednisolone, Tranexamic Acid.*

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

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.

Controlled Substances – comprehensive 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.

Non-transport Aftercare Instructions – comprehensive review and revision of existing aftercare instructions to help patients care for themselves in the situation of refusal of further EMS assessment, treatment, and/or transport.

Ebola Virus Disease Resources – In the fall of 2014, Ebola Virus Disease became far more than a theoretical concern to citizens of the United States. Extensive preparation and patient screening practices were deployed within the EMS System for Metropolitan Oklahoma City and Tulsa. Working closely with federal, state, and local public health authorities, national American Medical Response clinical operations personnel, and MMRS leaders, OMD issued several specific clinical operational guidelines designed to reduce initial exposure to EVD and contain any forward spread of patients with suspected and/or confirmed EVD. Given the highly contagious, highly serious, and highly mortal characteristics of EVD, substantial OMD time and efforts were afforded to these concerns.

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 second 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 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

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) remains at has improved to nearly 13.6%, outcomes in Oklahoma City and Tulsa are multiple times this national aggregate performance. For Calendar Year 2013, the Utstein Analysis completed by OMD resulted in 30.77% survival in sudden cardiac arrest victims witnessed to collapse, receiving bystander CPR prior to EMS arrival, and found in ventricular fibrillation/pulseless ventricular tachycardia upon first EMS system contact. While this reflects a drop from Calendar Year 2012 (42.6%), that year also represented the historic high in survival in the EMS system. Some further specifics from Calendar Year 2013: Total attempted resuscitations: 1271. Cardiac etiology of cardiac arrests were only 2/3rds of the total arrests. Encouraging points from Calendar 2013 analysis include: 1) of those patient witnessed to collapse and found by EMS in ventricular fibrillation/pulseless ventricular tachycardia, 50% received bystander CPR prior to arrival. This involvement of bystander CPR is much higher than in many locales in the US; 2) of the 24 Utstein criteria survivors, 22 were discharged from the hospital neurologically intact, able to return to their previous quality of life, enjoying family and work endeavors.

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 Research and Clinical Standards Development, 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.

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.

As an outgrowth of the EMS system's recognized cardiac arrest performance, the Office of the Medical Director worked collaboratively with AMR's National Director of Resuscitation Care, Ms. Lynn White, in organizing the second Oklahoma Resuscitation Academy, which was held in Oklahoma City in April. Attendees once again represented multiple US states and EMS systems. This 2-day symposium provided an excellent venue to review best practices in resuscitation care, CQI, and related research findings.

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. Extensive rewriting of all personnel credentialing written examinations was performed with direct involvement of the Medical Director. Work is progressing on creating a computer-based testing platform that will allow for more efficient testing access and completion for EMS professionals and OMD professionals alike.

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.

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.

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 2015-2016

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 adding active compression-decompression CPR once approved by the FDA.

The website for the MCB/OMD, active over the course of this operational year, is being further developed for utility by EMS professionals within the system as well as to aid other EMS systems benchmarking for clinical excellence. The provider credentialing testing program will also be accessible through this website.

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 enter Operational & Fiscal Year July 2015 – June 2016 convinced it will be the finest in the history of the MCB/OMD.