Medical Control Board
Office of the Medical Director

Annual Report from the Medical Director
Operational & Fiscal Year July 2010 - June 2011

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)-Basic, EMT-Intermediate, or EMT-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 D. Dixon, MD, FACEP – Chair – Hillcrest Medical Center (Tulsa)
Jeffrey Reames, MD, FACEP – Vice-Chair – Mercy Health Center (Oklahoma City)
Charles "Bo" A. Farmer, MD, FACEP – Secretary – St. John Medical Center (Tulsa)
32 years of continuous MCB Service ending November 2010
Thelma Peery, DO, FACOEP – Secretary - Southcrest Hospital (Tulsa)
Brent Barnes, MD, FACEP – University of Oklahoma Medical Center (Oklahoma City)
Paul Beck, MD, FACEP – St. Francis Hospital (Tulsa)
Mark Blubaugh, DO, FACOEP – Oklahoma State University Medical Center (Tulsa)
Jerry Brindley, MD, FACEP – Deaconess Hospital (Oklahoma City)
Charles F. Engles, MD, FACS – Neurosurgeon
Kurt Feighner, D.O., FACOEP – Edmond Medical Center
John C. Nalagan, MD, FACEP – Integris Baptist Medical Center (Oklahoma City)
Michael Smith, MD, FACEP – St. John Medical Center (Tulsa)

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, NREMT-P, 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 second 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, NREMT-P, FACEP – Medical Director
T.J. Reginald, NREMT-P – Director of Research & Clinical Standards Development
David S. Howerton, NREMT-P – Director of Clinical Affairs Western Division (Oklahoma City)
Jim O. Winham, RN, BSN, NREMT-P – Director of Clinical Affairs Eastern Division (Tulsa)
Tammy Appleby – Executive Assistant to the Medical Director

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. Ms. Appleby, retired from the United States Air Force as an E6, continues in her second year of work in the role of Executive Assistant to the Medical Director, responsible for OMD workflow logistics, organization, and spearheading additional service product lines.

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 the nearly 3,200 non-physician EMS professionals serving the 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 experience sudden, unexpected medical symptoms from relatively benign, though concerning pain to 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 every MCB meeting this year. In other words, every two months throughout the year additional clinical capabilities and care are being provided to the patients needing them most. This commitment to excellence in pre-hospital emergency care reflects the drive and energy of the MCB, Medical Director, OMD, leaders in affiliated fire departments and EMSA, and all field EMS professionals.

Key Advances in Medical Treatment Protocols

Cardiac Arrest – multiple specific cardiac dysrhythmia protocols (*Asystole, Pulseless Electrical Activity, Ventricular Fibrillation/Pulseless Ventricular Tachycardia, Cardiac Arrest and Cardiac Arrest Etiologies*) developed and/or reformatted to include International Liaison Committee on Resuscitation/American Heart Association guidelines released mid-October 2010. The MCB acted upon the issuance of these guidelines in November 2010, enabling effective use on February 1, 2011. Such rapid inclusion of the ILCOR/AHA guidelines in large, urban EMS systems in the United States is unparalleled.

Therapeutic Hypothermia – reducing exclusionary criteria to promote more frequent cooling therapy for post-cardiac arrest patients, that in turn promote better neurologic recovery.

Left Ventricular Assist Device (LVAD) – updating therapeutic intervention instructions for patients with newer generation devices surgically placed to compensate for a failing heart muscle. Integris Baptist Medical Center in Oklahoma City has established one of the highest volume LVAD implantation centers in the United States. This protocol was developed in partnership with subspecialists and their nursing clinicians to support increasing numbers of LVAD patients in the serviced areas. Specific areas of instruction include operation and correction of power supply issues, cardiac arrest treatments, and destination determination instructions.

Cardiovascular Emergencies – multiple protocols related to heart rate disorders and hypertension (*Bradycardia, Stable Tachycardia, Unstable Tachycardia, Hypertensive Emergencies*) developed and/or reformatted to include International Liaison Committee on Resuscitation/American Heart Association guidelines released mid-October 2010. The MCB acted upon the issuance of these guidelines in November 2010, enabling effective use on February 1, 2011. Such rapid inclusion of the ILCOR/AHA guidelines in large, urban EMS systems in the United States is unparalleled.

Altered Mental Status – empowering EMT-Basics to use oral glucose (sugar containing pharmaceutical) to treat hypoglycemia. Earlier treatment of hypoglycemia can be helpful in situations of longer EMT-Intermediate or EMT-Paramedic response.

Allergic Reactions – combining anaphylactic shock treatment into one protocol to promote its recognition and earlier treatment by EMTs and paramedics. EMT-Basics are empowered to utilize epinephrine auto-injectors for suspected anaphylaxis in order to definitively intervene in life-threatening allergies at the earliest opportunity.

Heat Illness – advancing the concept of therapeutic hypothermia chilled normal saline for use in suspected heat stroke.

Cold Illness/Injury – reformatting of therapies for the range of cold illness/injury, with emphasis on supportive care.

*Electrical/Lightning Injur*y – emphasizing the utility of aggressive resuscitation after lightning strike injuries given high survivability for victims receiving prompt and intensive support, even in mass casualty situations.

Conductive Energy Weapon Injury – reformatting of information important in the management of individuals subdued with Taser™ weapons by law enforcement officers that require medical screening.

Burns – advancing the application of burn gel dressings (Water Jel™) utilized in professional motorsports to immediately and markedly reduce thermal injury.

Monitoring of Carbon Monoxide Poisoning – introduction of guidelines in use of the RAD 57/LifePak 15 carbon monoxide detection technologies for patients suspected of excessive carbon monoxide exposure.

Tactical Emergency Medical Services Protocols – introduction of multiple tactical medical support specific protocols in airway management, hemorrhage control, and pharmaceutical management. These protocols were developed from tactical protocols Dr. Goodloe crafted for systems in Texas and in cooperation with tactical paramedics in the EMS system that serve the Tulsa County Sheriff Office, Tulsa Police Department, and the Oklahoma City Police Department.

Seasonal Influenza Vaccine Administration – introduction of the abilities for paramedics trained in immunization administration to be able to vaccinate co-workers in their agency as well as employees of the city served by that agency. This protocol, approved by the MCB, required substantial stewardship by the Medical Director at the Oklahoma State Department of Health, ultimately gaining approval directly from the Commissioner of Health and being made a “role model” EMS flu immunization administration protocol available for EMS agencies to copy across the state of Oklahoma. By MCB/OMD forwarding this concept, public safety agency employees as well as other city employees are able to receive more timely and convenient flu vaccinations.

Non-Invasive Pacing – updated procedural protocol for utilization of transcutaneous pacing to treat symptomatic bradycardias.

Controlled Substance Handling & Documentation for Field Paramedics – introduction of newly organized policies to meet or exceed state and federal requirements for controlled substance pharmaceutical practices in EMS agencies.

Formulary – multiple protocols updated throughout the year to ensure the formulary is consistent with all clinical treatment protocols. Included updates to *Adenosine, Amiodarone, Aspirin, Atropine, Epinephrine, Fentanyl, Haloperidol, Lidocaine, Magnesium Sulfate, Midazolam, Morphine Sulfate, Naloxone, Nitroglycerin, Norepinephrine, Sodium Bicarbonate*.

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 last operational and fiscal year to accompany the Medical Treatment Protocols. Like the treatment protocols, this will continue to prove a multi-year project due to scope and nature of always advancing the practice of EMS medicine and its oversight.

Protocol Development and Distribution Policy – Further specification of protocol review and development timelines for presentation to the MCB and subsequent routing of approved protocols and policies to all affiliated agencies was accomplished in an ongoing commitment to promote all affiliated agencies receiving new standards of care information and being able to train on the information in consistent timeframes.

Camera Use Policy – explains the rules of taking photos of EMS care in action for educational and system promotions purposes, with specifications for HIPAA compliance and secure handling of images. The policy applies to MCB/OMD personnel.

Vehicle Response Policy – introduces a comprehensive set of emergency vehicle operation requirements for OMD Directors and the Medical Director that meet or exceed local, state, and federal emergency response vehicle operation requirements.

Radio Designators Policy – establishes radio call signs for OMD Directors and the Medical Director.

Professional Review Actions Policy – establishes how and when OMD Directors and the Medical Director are to be notified regarding clinically related incidents.

MCB/OMD Review of System Performance Parameters

Response Times – EMSA calculates and supplies MCB/OMD with monthly performance reports regarding response times by Paramedics Plus, the current 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.

Hospital-Initiated EMS Diversion Requests – Paramedics Plus 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 Paramedics Plus were personally reviewed by the OMD Directors, the Medical Director, and the MCB. All 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.

Trauma Priority & Destination Reports – Paramedics Plus 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 Paramedics Plus 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 – Paramedics Plus 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 and EMT-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 6.4%, outcomes in Oklahoma City (29% for calendar year 2009) and Tulsa (46% for calendar year 2009) are several times this national aggregate performance. Calendar year 2010 data are being finalized at the time of this report, but are expected to be consistent with prior year's performance. Importantly, survivors of cardiac arrest in our area are most frequently able to return to their previous quality of life, neurologically intact and 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

OMD Emergency Response Vehicle Program – Continuing to build upon the positive impacts of seen by increasing the field presence of OMD Directors and the Medical Director, four emergency response vehicles were obtained and outfitted for use. Two vehicles are 2011 Ford Expeditions with the 4X4 basic government specification package, endorsed by EMSA and the Metropolitan Medical Response System (MMRS) for funding through the Oklahoma State Office of Homeland Security. The remaining two vehicles are a 2003 Ford Expedition and 2000 Ford Excursion both historically used by EMSA administrators and recently allocated for fleet disposition, until approved by EMSA administrators for OMD repurposing. The net effect is these four vehicles were obtained with minimal to no cost to the EMS system. Warning devices, audible and visual, and communications devices, such as fixed and portable radios and mobile data terminals, were either supplied by EMSA or gained through grant funding arranged by EMSA. Medical equipment for these vehicles as specified by the Medical Director was purchased from the MCB/OMD Clinical Development Fund. Careful and deliberate fiscal conservation remains a hallmark of the program. Vehicle insurance, fuel costs, and vehicle maintenance are budgeted in the annual funds allocated to MCB/OMD from EMSA general revenues and Fire Department Advance Life Support CQI Funds as approved by the city councils of Oklahoma City and Tulsa.

Initiating in November of 2010, numerous field responses have been made over the remaining months of this operational and fiscal year. Benefits have included real-time OMD Director and Medical Director on-scene clinical consultations with EMS professionals to assist in treatment plans, far greater ability to directly evaluate MCB standards of care contemporaneous with utilization, greater and more frequent interactions with field EMS professionals, greater ability to deliver individualized education, and far greater ability to create treatment protocols that better address challenges inherent in EMS medicine. Disaster prepositioning of OMD Directors and the Medical Director are routinely achieved in times of advancing weather concerns, such as tornadoes and severe thunderstorms.

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.

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 1,000 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. Version 12.1 of 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 and agreed to by the affiliated fire departments. All specific call type determinant codes were individually reviewed by the OMD Director of Research and Clinical Standards Development to evaluate for 5% or greater transport to hospital necessitating lights and sirens by paramedic judgment. If so, the determinant code was identified as requiring fire department response. This criterion is weighted toward patient safety, as the MPDS trigger for fire department response is at 10% or greater need for lights and sirens by historical database review of other systems using MPDS. An additional query was conducted to review if any cardiac arrests were discovered for a unique MPDS determinant code and if present, that code was also generally identified as requiring fire department response. Many, though not all, fire departments receiving medical oversight from MCB/OMD have

adopted these specifications into their response policies, with an effect of responding on approximately 65% of all EMS related calls received by the EMS system. OMD Directors and the Medical Director continue to work with fire departments awaiting further city-enabled dispatch abilities before adopting the clinical specifications from the MCB.

Strategic-Based EMS Blueprint Steering Committee Leadership – The Medical Director leads efforts in both metropolitan areas to meet with steering committees working from the strategic-based EMS blueprints for both Oklahoma City and Tulsa. Ongoing projects include better communications connectivity between fire-based and EMSA-based computer aided dispatching, on-scene conflict resolution training and implementation of best practices, and disaster medical response training.

Inclement Weather Temporary Alterations to Clinical Standards of Care – Winter 2011 brought significant snow and ice to both metropolitan areas. OMD Directors and the Medical Director created temporary alterations to clinical standards of care to enable continued EMS service to the highest acuity patients, while reducing responses to low acuity patients. The OMD Directors and the Medical Director were available 24/7 to monitor the EMS system performance, including being mobile to directly monitor performance abilities and being active participants in multi-agency conference calls throughout the duration of these winter storms. Due to the success of this program, the MMRS Administrator for Tulsa and the Medical Director were invited to the Federal Emergency Management Agency Urban Areas Security Initiative National Conference to present these decisions as "Best Practices" for EMS systems across the United States. Costs for the presentation were borne by MMRS, without direct cost to the EMS system.

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 Division of the Department of Emergency Medicine at the University of Oklahoma School of Community Medicine. These studies were consistently selected for presentation at the National Association of EMS Physicians Annual Meeting and Scientific Assembly. Costs for the presentations were borne by the OU Department of Emergency Medicine, without cost to the EMS system.

Directions for Operational & Fiscal Year 2010-2011

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 be a hallmark of intervention efforts over the coming year. The enemy of great results is very good results. Substantial energies will be devoted by all OMD professionals to personally teaching all 3200 field personnel proper chest compression technique and developing resuscitative practices that promote increasing the aggregate cardiac arrest (witnessed arrest, bystander CPR, and shockable cardiac dysrhythmia upon EMS arrival) survival from a system-wide 38% to over 50%. For an EMS system the size of Oklahoma City's and Tulsa's, this has been unequalled to date.

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. Better 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 this 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 can 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.