

# **Continuous Quality Improvement in the Sharonville Fire Department**

John C Staker  
Lieutenant  
City of Sharonville Fire Department  
Sharonville, OH

A proposed research project submitted to the Ohio Fire Executive Program

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## CERTIFICATION STATEMENT

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## **ABSTRACT**

The Sharonville Fire Department has been conducting quality assurance on EMS calls for years. In years past the quality assurance was conducted in-house by command staff personnel and did not provide an avenue for medical directors to access electronic patient care reports. The Sharonville Fire Department does not comply with state recommendations, southwest Ohio paramedic protocol and contractual obligations in regards to the organization's peer review and CQI process.

The purpose of this descriptive research is to provide research based information to assist the administration to determine how to improve the Sharonville Fire Department's compliance of state recommendations, southwest Ohio paramedic protocols and contractual obligations for medical director involvement in the continuous quality improvement (CQI) process. A descriptive research method was used to answer the following research questions:

1. What are the emergency medical service continuous quality improvement requirements for SFD?
2. What are the requirements for involvement of the department's medical directors?
3. What are the advantages of medical director patient care report review?
4. What are the effective components of a Continuous Quality Improvement program?

A survey tool was used to solicit feedback from fire department leaders. The results of the survey indicate Sharonville is not providing the tools necessary for medical director access to electronic Patient Care Report (ePCR). The primary recommendation is to replace the current ePCR system employed by the Sharonville Fire Department and purchase a system that provides for all departmental needs.

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## INTRODUCTION

### **Statement of the Problem**

The Sharonville Fire Department does not comply with state requirements and laws, southwest Ohio paramedic protocol and contractual obligations in regards to the organization's peer review and CQI process. The Sharonville Fire Department has been conducting peer reviews on emergency medical services patient care reports for years; however, physician medical direction involvement in this process is absent and is not the driving force for a continuous quality improvement program (CQI). Medical direction input into the peer review process has been absent thus limiting focus on systemic issues that affect the entire organization.

A main component of EMS CQI is clinical indicator feedback. Clinical indicators are goals that are established by the medical direction staff and department administration to evaluate care that is being delivered in the field (Kallsen, 1993). For example, the percentage of successful intubation attempts is a common clinical indicator employed by many CQI systems. This information should be fed back to the care givers so they can understand how their performance compares to the established goals. A second primary component of EMS CQI is patient outcome follow-up. Patient outcomes are analyzed to determine the effectiveness of an EMS system. For example, cardiac arrest survival rates are a common patient outcome category used in juxtaposition with national data in order to determine the effectiveness of cardiac arrest care. A third primary component of EMS CQI is education. When a key clinical indicator or patient care goals are not being met, the department must complete an education process to improve the derelict conditions. These three components are not being completed at SFD in the current peer review system.

“CQI demands an integrated approach to quality, involvement, and education of the

entire organization, empowerment of frontline personnel to be active in the process of change, and commitment by management to expend energy and resources to effect necessary changes” (Kallsen& Stroh, 2005, p4).Direct involvement in the CQI process from the medical director allows the EMS organization to first achieve a level of authority that creates participation across agency boundaries (Holroyd, 1986).A main component in the formulation of goals and objectives is medical director patient care report (PCR) review. The system employed by Sharonville does not provide a sufficient avenue for medical directors to review patient care reports, thus creating a situation that potentially allows errors and compliance with clinical indicators to be overlooked.

In addition to Southwest Ohio paramedic protocols and ODPS recommendations, the contract established between the fire department and its medical director specifically assigns responsibility for the design and implementation of a CQI process to the medical director. This situation has not allowed this contractual obligation to be fulfilled by the medical director because the fire department does not have an ePCR system that allows medical director access.

### **Purpose of the Study**

The purpose of this study is to provide research based information to aid in making recommendations to the administration on the improvement of a CQI process within the Sharonville Fire Department.

### **Research Questions**

The following questions will be answered by this descriptive research:

1. What are the requirements for the emergency medical service continuous quality improvement process within the Sharonville Fire Department?
2. What are the requirements for involvement of the department’s medical directors?

3. What are the advantages of medical director patient care report review?
4. What are the effective components of a Continuous Quality Improvement program?

## **BACKGROUND AND SIGNIFICANCE**

The City of Sharonville Fire Department, located in Hamilton County, OH, is a progressive organization focused on customer service and patient satisfaction. The department staffs three fire houses on a three shift 24/48 hour rotation system with 67 paid firefighters (Mackey, 2012). The staff is comprised of a Fire Chief, an Assistant Fire Chief, a Training/EMS Captain, nine Lieutenants and 55 line personnel. The department has established minimum staffing at 12 and a maximum staffing compliment of 16. Three advanced life support transport units, two engines and one tower are staffed to provide service for approximately 3800 Fire and EMS calls per year and serve a population of 30,000 during the day and 14,000 in the evening. All firefighters are also required to possess an emergency medical certification and the department currently has 50 paramedics and 17 emergency medical technicians (Mackey, 2012).

The department's budget has been increasing for the past few years. The economic downturn of 2007 had a significant impact on the department's budget, but in 2010 the department began to see a gradual increase in tax revenues. In 2010, the department had total revenues of \$6.38 million dollars, followed by \$7.64 million in 2011 and \$7.32 million in 2012. The reduction in revenue during these years had an impact on the budget, but did not have a negative effect on the service level provided or department staffing. All units and stations were staffed at projected personnel levels. The department had few sources of income including income tax and EMS transport fees. The fire department's budget is a combination of EMS and fire related services therefore making it difficult to apply direct and in-direct costing for EMS operations alone.

The Sharonville Fire Department's medical direction team is an annual contracted service provided by University of Cincinnati Physicians Inc. Medical directors work through the

Emergency Medical Services Division, which is a subsidiary of University of Cincinnati Physicians Inc. The positions are staffed by a physician medical director, an assistant physician medical director, and a cadre of tertiary resources with varying responsibilities including research and pediatrics. The physician medical director is the medical director of record for the fire department; however, the assistant medical director completes most of the work required by the department. The assistant medical director is an Emergency Medical Service Fellow with University of Cincinnati Physicians.

All emergency medical service providers and departments in Hamilton County and some in the surrounding area operate under the auspices of the Southwest Ohio Protocol, which provides protocols for all levels of emergency medical care. There are 43 fire departments operating out of 109 fire stations in Hamilton County, Ohio that make use of the 2014 southwest Ohio paramedic protocol. The protocol is developed by the Southwest Ohio Protocol Committee; a subcommittee of the Academy of Medicine Emergency Disaster Services Committee. The administrative section of the Southwest Ohio Protocol details medical director involvement in quality assurance and peer review of patient care reports. Section A100, paragraph E, specifically details medical director involvement in quality assurance. Duties of the medical director include, “Assists the administrative head in developing and implementing a quality assurance program, including systematic audits, to include how problems are identified and corrected. The quality assurance program should include a review of run reports” (Academy of Medicine, 2013, p.7). The protocol further expands the medical director’s responsibility in accessing patient care reports in section A100, paragraph H. “An appropriate system, with a manual or computerized method to track patients, capable of access for review by the department medical director, shall be in place” (Academy of Medicine, 2013, p. 8).

While the current medical director is capable of fulfilling his responsibilities, the system does not permit access. According to the contract, the medical director is required to complete these duties, but the system employed by Sharonville does not permit the type of access needed to complete said duties. A breach of contract doesn't necessarily exist in this instance because a third party, the ePCR system, has built a roadblock between the fire department and the medical director.

The Sharonville Fire Department has employed an internet based electronic PCR reporting system, tablets and/or computers and paper run reports to document each patient interaction since 2006. In 2012, Sharonville purchased a new system to fulfill the needs of the entire organization, including record keeping for hydrants, inspections, etc. This system has not been fully implemented due to many software and hardware issues. The patient care report review by the medical direction team has been non-existent due to this program. The current system does not have the ability to allow back-end peer review of patient care reports. In order for any reviewer, including the medical director, to fully review a patient care report, he or she must complete the same steps as the author of the original report. The reviewer must examine 24 different webpages of information to complete the quality review of each report. If a rudimentary equation is applied by simply multiplying the number of runs by the amount of webpages necessary to complete the review of a call, the medical direction team would be forced to view 55,680 pages of information. The number of pages combined with the absence of a backdoor peer review system makes medical director input to the CQI process impossible.

The Sharonville Fire Department does not currently have a formal EMS CQI process. The department has not produced any written goals, determined appropriate patient outcome

indicators or published current outcome levels. A systemic review of the entire EMS system, including the structure, process and outcomes, has not been completed. The EMS Captain does complete a review of many calls, but feedback on patient care and implementation in training activities is not a product of the current system. An appropriate EMS training program cannot be developed if a system is not in place to determine educational needs of the organization. In the current training system, a generic series of lectures are delivered and required certification classes, such as advanced cardiac life support (ACLS) are completed. These classes have no direct correlation to the department's needs or shortcomings in the field. One of many outcome levels that should be monitored in a CQI system is the first time success rate for endotracheal intubation attempts. There is no mechanism in place to trigger didactic or laboratory sessions on endotracheal intubation because the first attempt intubation success rate has fallen below a predetermined and nationally benchmarked level. In order for a comprehensive review of outcomes, a system must be in place for the fire department command staff and medical direction team to review ePCR.

The fire department's current ePCR system has kept the examination of outcome levels from being implemented by the fire department and medical direction staff. As listed above, the medical direction staff is charged with designing and implementing a CQI program, providing patient care feedback and participating in a peer review feedback system. The medical direction staff is not able to fulfill the contract or obligations established in the Southwest Ohio protocol even though they are prepared and willing to participate. The physicians cannot determine outcome levels and develop educational programs to fit the specific needs of the fire department. The fire department also cannot closely examine patient outcomes and compare said outcomes to predetermined levels and system goals.

The fire department's decision to employ a specific ePCR program has made compliance with its contractual and protocol requirements difficult to achieve. For example, the Southwest Ohio protocol mandates "an appropriate system, with a manual or computerized method to track patients, capable of access for review by the department medical director, shall be in place" (Academy of Medicine, 2013, p. 8). The protocol also established the necessity of medical direction staff interaction with care providers, but the fire department's use of a specific ePCR system has eliminated the medical direction staff's ability to participate. The Sharonville Fire Department's ePCR system prohibits this type of access and until the department utilizes a different system, these contractual and protocol based responsibilities will not be fulfilled by the medical direction staff or the fire department administration.

### **LITERATURE REVIEW**

There are many definitions and terms used to describe quality systems in EMS organizations. Quality Assurance (QA), Total Quality Management (TQM) and Continuous Quality Improvement are three specific EMS related quality activities; all having a specific function within EMS systems. The National Association of Emergency Medical Service Physicians (NAEMSP) has published a significant amount of information regarding EMS quality systems, including system definitions. As published in the NAEMSP Journal of Pre-hospital Emergency Care, Polsky, Culhane, and McDowell (1997) define CQI as "the sum of all activities undertaken to continuously examine and improve the product and services delivered" (p. 326). A CQI system in EMS takes on the role of examining performance in the system to see where personnel and the system can improve (Polsky, et al, 1997). NAEMSP also quotes the Institute of Medicine's (IOM) concise definition of CQI. "CQI is the continuous measurement and analysis of processes and outcomes not only to address problems but also to maintain and

enhance good performance” (Moore, 1999, p. 326). Measurement of processes and outcomes is only one aspect of CQI systems in EMS.

Performance reporting is another significant aspect of a robust CQI program. The National EMS Management Association, in order to better understand EMS operations, listed the most important parts of performance reporting in an EMS CQI system. These fields didn’t represent the full list of important measurements in quality for EMS, but did help prioritize performance reporting (Moore, 2005). “In order of importance the measurements include: cardiac arrest survival, response time intervals, employee satisfaction, patient outcome, customer service, pain relief, time-to-defibrillation, refusals, scene time and a host of other measures including clinical, operational and financial categories” (Moore, 2005 p139). Performance reporting focuses mainly on outcomes reporting and basically evaluates the components of the system in a cogent manner to determine whether the intended outcome for the patient was achieved (Moore, 2005).

A good example of performance reporting in EMS field care is cardiac survival rates and developing an Utstein survival report for an organization in comparison with national data. In 2004, the Center for Disease Control (CDC), in collaboration with Emory University School of Medicine Department of Emergency Medicine, developed the Cardiac Arrest Registry to Enhance Survival (CARES) database, (CDC, 2011). The CARES registry “evaluates only Out of Hospital Cardiac Arrest (OHCA) events of presumed cardiac etiology that involve persons who received resuscitative efforts, including CPR or defibrillation” (CDC, 2011, p.1.). The database was developed to collect data about the effectiveness of OHCA care and determine outcomes based upon the OHCA patient receiving by-stander care versus care being delivered only after EMS has been summoned or arriving on scene. The Utstein report further separates the OHCA patients into three categories; unwitnessed arrest, arrest witnessed by a by-stander and arrest witnessed by EMS. Additionally, the Utstein dataset only includes patients in a defibrillation qualifying rhythm (ventricular fibrillation and

pulseless ventricular tachycardia) (CDC, 2011). In a 2011 report, the CDC published a study based upon data entered in to the CARES database. The Ustein subset of the report determined 21.6% of OHCA patients were pronounced dead in the field, 26.3% survived to hospital admission and the overall survival rate to hospital discharge was 9.6% (CDC, 2011).

This information is valuable in an EMS CQI system because it can guide the department's education and training. If the organization's overall survival rate to hospital discharge is less than the national percentage, the EMS organization can develop education that focuses on specific cardiac arrest issues. Comparison of this data can also help guide public education and training. In the same report, the CDC (2011) identifies only 3.7% of patients received care with an AED prior to EMS arrival and even though 36.7% of OHCA events were witnessed, only 43.8% of those patients received by-stander CPR. This type of detailed performance reporting can have a significant effect on EMS operations.

The Sandy Springs Fire-Rescue Department, located in central Georgia, used this data to illustrate the effects of the public education and the initiation of by-stander CPR and AED use. Since 2007, the Sandy Springs Fire has trained more than 4500 citizens in CPR and placed 145 AEDs throughout the city (IAFF, 2012). City leaders compared the OHCA data from the fire department with national statistics and found better than average results (IAFF, 2011). The city also improved dispatching capabilities and reduced the amount of time between the taking of calls and dispatching of response units (IAFF, 2011). This initiative, using national and local data to improve the outcome of OHCA patients is a direct result of using performance reporting as a basis to change the structure and process of an EMS system.

In a CQI system it's equally important to focus on the structure and process of the organization, in relation to patient outcomes. The structure of an EMS organization should be evaluated to determine its potential effectiveness. Structure is the characteristics of providers, tools and resources they have at their disposal, and the physical and organizational setting in which they

work (Donabedian, 1980). The structure is interrelated components that total the EMS system (Moore, 2005). A good example of examining structure is comparing the tools and equipment used by patient care providers in the context of improving patient outcomes. Determining the first attempt endotracheal intubation success rate is a common clinical indicator of an EMS organization's performance. Examining the tools and equipment used to intubate patients can help identify problems that contribute to a first attempt success rate that is below the predetermined goal. Equipment that is faulty or out of date may contribute to the unsatisfactory number and can help guide a patient outcome centered approach to purchasing new equipment. Structure is the framework of the pre-hospital EMS system upon which all other attributes, including process and outcomes, will be built (Moore, 2005).

Process is viewed as “the set of activities that goes on between the providers and the patients, including the management of both the technical and the interpersonal processes involved” (Moore, 2005, p. 124). In emergency medicine, including pre-hospital EMS, process is what is actually done when delivering or receiving care, including the care giver's activities (Moore, 2005). It's “the repeatable sequence of actions used throughout interrelated components of a pre-hospital EMS system to produce something of value” (Moore, 2005, p.4). A good example of examining process is detailing the dispatching process and determining its effects on patient outcomes. Some dispatch systems use a tiered provider system determined by the severity of the call and information received by the 911 call center. Other systems send six care providers on every dispatch regardless of the nature of the call. The Sharonville Fire Department only sends two care providers, one paramedic and one emergency medical technician, to every EMS call. In Sharonville's system, the need for additional resources is determined by the two initially dispatched responders. An in-depth review of the dispatching process can help fire departments decide what assets and the number and certification level of providers should initially be dispatched. The process evaluation within any pre-hospital EMS organization should be used to produce the increased value of patient outcomes (Moore, 2005).

A quality CQI program examines all three characteristics; structure, process and outcomes (Donabedian, 1980). Each item, although different, plays an equal role in the development and evaluation of a quality CQI process. If any organization chooses to implement such a system the evaluation of all three items against the organization's CQI goals should be included.

Kallsen and Stroh (2005) describe the critical process of setting goals after a reasonable consensus has been reached. Whether goals are called clinical or quality indicators, benchmarks or another term within CQI, the establishment of goals is a must for CQI systems (Kallsen & Stroh, 2005). An example of department goals and requirements for individual providers is a system already in place in King County, WA. The goal focuses on endotracheal intubation success and King County has a success rate approaching 99% overall (Copass, et al, 2011). In addition to a difficult and robust airway training model for the initial paramedic certification, a system is in place to mandate the amount of intubations received by each paramedic in a 12 month period (Copass et al, 2011). Field paramedics are required to successfully intubate 12 patients each year and those who are unable to complete all 12, report to the hospital operating room to fulfill the requirement (Copass et al, 2011). This is a difficult goal for many EMS organizations to replicate, but it has been very successful for King County for the last 30 years (Copass et al, 2011). Although organizational CQI goals can be driven by a diverse field of requirements and standards or field research, it's important each specific goal is negotiated and clearly articulated prior to being adopted (Kallsen & Stroh, 2005). It's easy to determine goals based upon the general consensus of organizational leaders, but a scientific approach to goal setting is necessary (Kallsen and Stroh, 2005). The goals should be based on patient outcomes and focus specifically on the path to improvement.

There are many federal, state and Non-Governmental Organizations (NGO) that drive standards and goal setting. A plethora of NGOs have tried to establish voluntary standards and

goals for EMS systems (Moore, 1999). The American Society for Testing and Materials (ASTM) produced F-30 Committee EMS standards; the Commission on the Accreditation of Ambulance Services (CAAS) authored the “gold standards” for ambulance services; and the Joint Review Committee on Education Programs for Emergency Medical Technicians and Paramedics reviews training programs which supposedly reach a higher level of excellence than non accredited programs (Moore, 2005).

There are also plenty of professional organizations that have developed standards and performance measures. The International Association of Fire Fighters (IAFF) and the International Association of Fire Chiefs have developed measures for fire based EMS systems (Moore, 2009). The National EMS Management Association has also developed a set of standards including cardiac survival rate, employee satisfaction and patient outcomes in addition to clinical requirements (Moore, 2009). Even though these programs provide excellent information for medical directors and fire departments, all of the programs are voluntary and lack the fortitude of federal and state laws and recommendations.

The State of Ohio has developed guidelines and laws to address quality among EMS providers. Amended Substitute House Bill #138 specifically addresses the need for medical direction leadership in the peer review process and performance improvement of an EMS organization. HB #138 requires EMS organizations to implement an ongoing peer review process to improve the quality and availability of EMS through a performance improvement plan (State of Ohio, 2000). The focus on medical direction is clearly defined in HB #138.

The Ohio Revised Code (ORC) section 4675.12, guidelines for care of trauma victims by emergency medical service personnel - conduct of peer review and quality assurance programs by emergency medical service organizations, provides specific direction for EMS organizations

in regards to peer review and quality assurance programs (ORC, 2000). The law instructs every EMS organization in the state to develop an ongoing peer review and quality assurance system of the department's design (OCR, 2000). The law also requires the organization specifically consider how to improve trauma care, especially in pediatric and geriatric patients (ORC, 2000).

“Medical direction participation is essential and important for the program's success” (ODPS, n.d., p. 2). Medical directors are responsible for the content of the program and lead the development of a performance improvement plan (ODPS, n.d.). He or she should set the direction of performance improvement by creating a focus on patient outcomes (ODPS, n.d.). The ODPS (n.d.) also instructs the medical direction team to establish clear statements that defines the department's goals, values and mission in relation to emergency medical care and the implementation of a peer review process. The use of medical direction in EMS is also a well-founded principle among many professional organizations.

In addition to protocols and state laws and recommendations, the contract established between the fire department and its medical director, detailed in Appendix A, specifically assigns the responsibility for a CQI process to be established and maintained. The medical director shall have authority over all clinical and patient care aspects of the EMS system or service. The primary role of the medical director is to ensure quality patient care. Responsibilities include involvement with the ongoing design, operation, evaluation and revision of the EMS system from initial patient access to definitive patient care (City of Sharonville, 2009, p3).

The contract further details the medical director responsibilities in reference to the CQI process. Section 4.3.7 requires the medical director to “develop and implement an effective program for continuous system and patient care improvement” (City of Sharonville, 2009, p4). Section 4.3.15 requires participation in a peer review and quality improvement program in

accordance with the Ohio Revised Code (City of Sharonville, 2009). Section 5, EMS Medical Directors' Qualifications, requires experience or training in the EMS quality improvement process (City of Sharonville, 2009). Section 6, Authority of Medical Director, requires the medical director to implement and supervise an effective quality improvement process to identify areas needing improvement, evaluate system controls, monitor performance and evaluate program impact (City of Sharonville, 2009).

During the search for a medical director in 2009, the Sharonville Fire Department published a list of criteria. The criteria served as a list of requirements the new medical director must meet in order to be considered for the position. It also helped the selection committee determine the most appropriate physician for the job. Two items specifically detail CQI requirements: shall be involved in the quality assurance process of all EMS calls and keeping up with protocol changes and training as needed (City of Sharonville, 2009). Both of these items are an integral part of the CQI process.

In a 2010 position paper published by the National Association of Emergency Medical Technicians (NAEMT), the use of medical direction in the quality improvement of an EMS organization is essential for effective EMS operations and care. NAEMT advises all EMS organizations, regardless of service type, to use medical direction oversight in the performance improvement process (JEMS, 2010). "NAEMT has long recognized the need for and importance of medical direction that provides strong clinical oversight in the establishment and maintenance of medically accepted standards for pre-hospital patient care" (NAEMT, 2010, p.1). The paper describes nine essential services that should be delivered by all physicians providing medical direction to an EMS agency. "Provision of feedback and input on patient care by EMS

practitioners and development and oversight of an objective performance improvement process” (NAEMT, 2010, p2) are two essential services that directly apply.

The American College of Emergency Physicians(ACEP) has also produced a policy resource and education paper establishing the policy for medical direction of EMS. “[Medical director] Responsibilities include involvement with design, operation, evaluation and ongoing revision of the system including initial patient access, dispatch, out-of-hospital care, and/or delivery to an emergency treatment facility” (ACEP, n.d., p 1). ACEP (n.d.) has also set standards to optimize out-of-hospital emergency medical services and physicians functioning as medical directors should, at a minimum, set and ensure compliance with patient care standards and develop and implement an improvement program. ACEP (n.d.) all but demands access to PCR by stating, in the position paper, that medical directors shall have access to all records in order to fully evaluate field personnel.

The Federal Emergency Management Agency (FEMA) has also developed guidelines for medical directors at all levels of an EMS organization. “Medical oversight and direction are essential to all EMS systems as they help to ensure the appropriate delivery of emergency medical care to those with medical needs” (FEMA, 2012, p. 19). FEMA identifies 12 qualifications or skills needed to become a physician medical director. Although all 12 qualifications are important to the EMS agency, one item applies directly to this research; involvement with quality improvement activities in all aspects of EMS delivery (FEMA, 2010). FEMA (2010) also lists the services physician medical directors should provide, including, medical related quality improvement. The medical director must be involved in the development of quality management performance objectives in order to evaluate an agency’s ability to meet its objectives (FEMA, 2010). This includes access to PCR for peer reviewing, which FEMA (2010) explicitly identifies in the checklist for new medical directors. Medical directors shall “establish a comprehensive bottom-up quality management

program that includes provider peer review activities with guidance by the medical director and explicit support from the agency's leadership" (FEMA, 2010, p. 59). Although peer review and medical director review of EMS patient care and charting, it only represents a portion of the overall CQI process. There are numerous benefits of medical director peer review.

Moore (2005) cites the role of any physician in an EMS CQI system is to primarily be a patient advocate. The medical director, according to Moore (2005), is responsible for developing standards unique to the organization, promoting education and evaluation of field personnel. The physicians can be intimately familiar with capabilities and limitations of the pre-hospital environment and knowledgeable of field personnel (Moore, 2005). Medical directors can be leaders within their organizations and help guide many aspects of the EMS organizations daily operating procedures and guidelines.

There is a significant amount of literature sources for detailing the needs of a robust CQI system within all EMS delivery organizations. The sources have a diverse origin, but all have an important message to deliver. During the review the researcher realized how much this topic has been studied and detailed by EMS and physician organizations. These sources have described the need to improve patient care by focusing on the entire EMS system. All sources have a common theme when building a CQI system; Direct involvement with the organization's medical director.

## **PROCEDURES**

To answer the research questions proposed, the researcher used several resources to gather the necessary data. The primary source was media in the form of electronic publications and journals, trade journals and state laws. If in the original search a document appeared with a close relationship to the researcher's problem statement, but the article didn't fit within the parameters set for the research, the references used in the creation of the original document were used to formulate additional searches, thus leading to additional information.

The second form of data that was used to develop the literature review was hard copy texts and journals. The continuous quality improvement library from the Cincinnati Fire Department was used to supplement the electronic data. The Cincinnati Fire Division has a robust CQI process with three employees, in addition to the medical direction staff, dedicated to the creation and evaluation of the department's CQI process. The CQI staff has collected a cache of texts associated with prehospital EMS delivery. Located in these texts are a series of empirical studies that define prehospital outcome measuring and CQI development.

The third form of data that was collected came from the Sharonville Fire Department records. A relatively quick search returned the medical direction contract and hiring criteria. Additionally, the department's year-end report to council was used to provide employee, run volume and staffing data.

A survey tool was used to solicit feedback from fire department leaders. The contracted medical director for the Sharonville Fire Department also serves as the lead medical director for 22 additional EMS agencies. All of these fire departments are being surveyed to identify CQI practices within organizations that contract with UC Physicians for medical direction. All agencies provide an advanced life support level of service. The departments vary in size, structure and call volume, but each is contracted with University of Cincinnati Physicians for medical direction.

The survey tool, located in appendix C, is a short questionnaire that was given to the leadership of all 22 EMS organizations. A four point Likert scale was utilized to rate the response for each answer. Individual paramedic and other EMS providers were not surveyed at this point. Further research may warrant the individual assessment of each provider. The survey focused on medical director access to patient care records and how the information is used to

develop the CQI process. A phone call, or in some cases an email, was made to notify the fire department of the survey prior to delivery. The phone call was made to the person who specifically controls CQI activities and is the department's medical director liaison. The survey was purposely blind and did not provide a location for any identifying department information. Also, the names of the individuals completing the survey were not requested. The survey was mailed with self-addressed and stamped envelopes for a quick completion and turn around. The results of the survey have been used to compare the City of Sharonville and its CQI program to other departments and standards described in the literature.

An interview was also conducted with five members of the medical direction staff. The questions are located in Appendix D. Five current physician medical directors were interviewed to discuss the current situation at the City of Sharonville and other contracted EMS organizations. The purpose of the interview was to gain insight on CQI programs and how the initiation of a robust program can improve the care delivered to customers.

## **DEFINITIONS**

Charting. (1.) The process of documenting information on ambulance call report (medical incident report). (2.) The interval required to complete the pre-hospital care report typically occurring after turnover of a patient at the receiving facility (Kuehl, 2002).

Emergency Medical Services (EMS). A collective term describing the many agencies, personnel and institutions involved in planning for, providing, and monitoring emergency care. Frequently refers only to pre-hospital care (Learner et al, 2009).

EMS system. The arrangement of personnel, facilities, and equipment for the effective and coordinated delivery of EMS required in the prevention and management of incidents that occur either as a result of a medical emergency or of an accident, natural disaster, or similar situation. EMS systems refer to the broad range of emergency care from that administered by the pre-hospital first responder to the treatment rendered in the intensive care unit (Learner et al, 2009).

Medical director. A physician who is responsible for the clinical oversight and patient care aspects of the EMS system. This position may include one person with divided task, such as training director, dispatch medical director, or quality medical director (Learner et al, 2009).

Medical oversight. Supervision by a physician of the medical aspects of an EMS system or agency and its providers. This includes the prospective, concurrent, and retrospective aspects of EMS and extends to various tasks such as quality management, hiring and education (Learner et al, 2009).

Patient care report. A written or electronic record of the assessment, treatment, and disposition of the patient or a record of a call for which no patient was encountered. Sometimes called patient call report or pre-hospital care report (Learner et al, 2009).

Quality assurance. The original organized method of auditing, evaluating and improving care provided within EMS systems (Kuehl, 2002).

### **LIMITATIONS**

A limitation of the study is the sample size of the survey. The survey was sent to 22 organizations representing 100% of the fire departments that contract with UC Physicians for medical direction. While the survey captured the necessary data from these organizations, the data does not represent regional, state or national trends or compliance. Further study on regional, state and national trends is warranted.

## RESULTS

The first survey was sent to fire departments that contract with UC Physicians to assess compliance with local protocols and medical director access to patient care reports. A second part of the survey assesses the departments' perception of medical director feedback and use of relevant cases to foment educational opportunities. 22 surveys were sent out with self-addressed and stamped envelopes and 19 were returned, which resulted in a 86% rate-of-return.

Question #1. How many personnel serve in your organization?

The first question of the survey was for general information about the size of the organizations being surveyed. The 19 departments that returned the survey represented a wide number of firefighters. The fewest number of fire department members was 24 and the largest is 775 uniformed personnel. When all departments are combined, the average number of personnel was 93. The Sharonville Fire Department (SFD) has 67 employees.

Question #2. How many years have you contracted with UC Physicians for medical direction?

The second survey question was also designed to help establish a basic understanding of the organizations being surveyed. Question 2 identifies the number of years each fire department has been contracted with UC Physicians for medical direction. Of the surveys returned, the shortest contracted time was 1 year and the longest was 22 years. When all departments are combined the average is 10 years. SFD has contracted with UC Physicians for 5 years.

Question #3. This organization meets the continuous quality improvement standards set forth in the Southwest Ohio paramedic protocol or current protocol?

The third question asks the department to identify whether or not it's in compliance with the Southwest Ohio paramedic protocol. A four point Likert scale allows the person answer the

question without calculating department specific numbers or researching compliance. The results of this question are overwhelmingly positive with 18 of 19 respondents agreeing their department is in compliance with the Academy of Medicine Southwest Ohio paramedic protocol. As described in the text above, SFD is not in compliance with the Southwest Ohio Protocol in regards to EMS medical direction.

Question #4. This organization allows medical director access to electronic patient care reports?

The fourth question was a central question and problem associated with this research project. Medical directors need access to patient care reports in order to fully verify quality patient care. Access to medical records, especially electronic access if available, is critical to the EMS CQI process. In this question, fire departments were asked if the organization allowed medical directors to access electronic patient care reports. The response was unanimous with all respondents reporting their organization allows the medical director to have electronic access to patient care reports. SFD does not allow access to ePCRs by the medical direction staff.

Question #5. The medical director provides adequate feedback?

Question five assesses the department's opinion about the feedback received from the medical director. Feedback is a main component of EMS CQI systems by allowing the medical director to have contact with field personnel and providing insight, accolades or corrective action. Patient care feedback from the medical director provides the paramedic with an objective critique from the department's clinical expert. The response to this question was also positive with 18 respondents indicating they agree or strongly agree. Only one respondent believes his or her medical director should provide additional feedback.

Question #6. The medical director uses relevant cases within this organization to create continuing education?

Question six of the survey assesses the use of cases within the organization to develop future educational opportunities. A main component of CQI is using the department's own actions, responses, and past patient care to help guide future behaviors and protocols. The medical director in each department should be creating continuing education using these past experiences. The respondent from each organization uses question six to assess their medical director's use of relevant cases for continuing education. Overall, the responses were positive with 17 of 19 agreeing the medical direction staff uses relevant, department specific cases to form future educational opportunities. Two departments indicated the medical director does not use relevant cases. The Sharonville Fire Department also does not use relevant cases to facilitate the development of education.

Question #7. This organization would benefit from additional input from the medical director?

Question seven asks the departments to identify if they believe the organization would benefit from additional input from the medical director. The responses to this question are mixed with only 7 of the respondents indicating they would like to receive additional input for their medical director. There were five departments that disagreed with the question. Although the disagreement may signal a problem in many cases, the disagreement in this situation provides a semi-positive response potentially indicating the department is satisfied with the amount of input currently being received from the medical director. An additional survey would be needed in reference to this question in order to ascertain the reason for the negative response.

Question #8: Please describe any improvements you would like to see in a continuous quality improvement program.

Question eight is an open ended question that asks the respondent to provide any possible improvement to the CQI system in their organization. 12 respondents chose to provide some additional improvements.

- Time to sit down and have general discussions with the employees would lead to some great discussions. Something informal like a coffee hour, sitting at the kitchen table and have an open forum for questions.
- I would like for our medical director to have better access to our ePCR but that is an ePCR issue, not a medical director issue. Our ePCR is not good for [an] efficient CQI program.
- I disagreed on question seven. It would be difficult to receive additional input from our current medical direction team. One of the residents ride-a-long each month and provides training each month. We are in regular contact with a member of our medical direction team.
- Standardization in format, website to access audits completed by medical director or standard form for CQI.
- I would like to see more peer review of the EMS calls made by my department. I would also like to see more training and emphasis on PCR narrative writing. I would like to see us add drugs to our drug boxes for better patient care.
- The system [currently] set-up serves us perfect.
- More hands-on training

- We have recently started using Fire House Medic, a PCR based reporting software, that is cloud based. As a result we are just spinning-up the ability for our medical director to access and remotely do the QA/QI. Prior to this, we had to send copies of the PCRs for his review. We are anxious to see this process function in totality before attempting to make any additional changes.
- Actually rather pleased.... Recently transitioned from paper to ePCR that has a QA component.
- We are working on a new program. Staff have electronic reporting of communication variances, request for run review, etc. This program emails the chief, captain and medical director for submission and tracks responses. Need to have an ePCR randomly audit charts and send to medical director automatically. Currently, a committee of peers QA 100% of runs. Captain and medical director QA all refusals, STEMI, stroke, cardiac arrest and trauma alerts. Medical director picks a chief complaint and we pull those for the entire month for his review.
- More Guidance and quicker review from MD
- Better use of actual runs through CQI rolled into continuing education.

The second survey, located in appendix D, was sent to five UC Physician medical directors to gather input from their perspective. The lead medical director and the assistant medical director for the City of Sharonville were included in this survey. Their answers are represented in random order with the remaining three chosen for their expertise in the medical direction field. Five basic questions were asked in an open ended format. The questions and responses are as follows:

1. Describe the current continuous quality improvement program within the fire departments to which you provide medical direction.
  - Electronic run reviews based on preset criteria by the FD EMS officer that come to me for reviews with electronic feedback to crew members requiring acknowledgement. Previously, the IT system made this process complicated to the point where it was seldom done.
  - Most have an internally based CQI / chart review system. An EMS captain or chief reviews the majority of runs and refers interesting or concerning runs to the medical director. I try to review high risk runs such as codes and airways. Random review otherwise. All actions are taken on an individual case basis. Usually try to integrate reviewed runs into some form of case review lectures. Most importantly, I maintain a good relationship with the supervisors and the chief, to ensure ease of access and comfort with just send me an email or a call with any concerns.
  - Both departments have in house peer-driven CQI which handles the vast majority of reviews. Interesting or concerning calls are forwarded to the medical direction team.
  - BAFD has an electronic medical record system that allows off-site review. FPPD requires on-site review.
  - Highly variable. Some have well developed internet based systems that allow review from anywhere. Whereas some still require a paper review.
2. How can these programs be improved?

- Currently as we are in the early stages of a new CQI process, it will take time to reveal faults and gaps. I would like to see the ability to link to teaching modules in the future.
- Electronic PCR would be a big improvement at a couple of places. Universal PCR would be nice. More time in the day to personally review run reports would probably be the greatest benefit. More standardization of the process would be nice.
- FPFDD has plans to move to a different record system that will allow off-site review, which will be very beneficial.
- Movement to an appropriate internet-based electronic PCR

3. What situations present a roadblock to CQI within your departments?

- IT issues and confidentiality are always concerns. The perception of the CQI process by the providers is important. It needs to be viewed as constructive and part of the overall goal of process improvement. When it seems punitive or demeaning, then it loses effect and only serves to create animosity.
- Paper PCR makes the process very difficult, particularly for remote departments. I don't really have any departmental resistance issues or relationship issues. I also don't really have any responsiveness issues.
- Providing timely feedback to the crews is an omnipresent challenge. The BAFD system is not set up for conversation/case review. Having to be on-site for FPFDD creates a real hardship.
- Failure to complete the CQI loop with timely feedback to the providers
- Accessibility to medical reports

4. How can/does a robust CQI process benefit your department?
- It can reveal themes of knowledge gaps, failures to follow protocols, or misunderstandings. This provides excellent information to tailor monthly education sessions to meet ongoing needs.
  - Better patient care. Better medic skills and knowledge. Also provides pretty good legal coverage if and when something goes poorly.
  - CQI allows evaluation of the practices of the EMS providers and oversight of medical care. Deficiencies found in CQI feed the education system, and educational programs can be assessed through CQI review.
  - Provides feedback to providers so they can modify their practice of medicine.
5. What is your vision for the perfect CQI process?
- An easy to access program with bidirectional communication, the ability to link to specific educational resources, and confirmation of the completion of suggested activities.
  - 100% run review with referral, some mandatory, and some random medical director review. Good CQI data collection with analysis of the data and application to a dynamic continuing education process.
  - Real-time/near-time feedback allowing 360 communication, educational and practice improvement based, and easy for all parties to participate.

## **DISCUSSION**

The literature review and the survey results have reinforced what has been known for some time; however, the specific reason for not complying with specific guidelines has not been easily recognizable. The department knows and understands the need for a CQI process within

the organization and the medical director clearly agrees, but the Sharonville Fire Department is still not within compliance with federal recommendations, state laws or local protocols.

FEMA developed guidelines for medical directors at all levels of an EMS organization stating, in part, medical direction is essential to ensure delivery of care to those in need (FEMA, 2012). The State of Ohio passed substitute house bill #138 which specifically addresses the need for medical direction leadership in the peer review process. The Ohio Department of Safety has also established goals and objectives for medical direction oversight in conjunction with House Bill #138. The Southwest Ohio paramedic protocol has very specific language requiring medical direction input in to the CQI system for each department. The department is also not in compliance with the contract established with the medical director.

The medical director's contract requires all of the processes within CQI to be completed. Said processes are listed within the job search criteria and executed contract. One responsibility directly correlates to the problem statement more than any other; being involved in the quality assurance process of all EMS calls. This process has not happened to date. The medical director survey results indicate how involved the physicians wish to be within their individual organizations.

When asked to describe their vision for the perfect CQI process some interesting answers were returned. For example, one physician wrote, "An easy to access program with bidirectional communication, the ability to link to specific educational resources, and confirmation of suggested activities." Another physician wrote, "Good CQI data collection with analysis of the data and application to a dynamic educational process." Two excellent answers in regards to the construction of a robust CQI program as described in the literature review.

The answers to survey question four also provided some excellent insight to the benefits of the CQI process through the eyes of the medical director. When asked how can, or does, a robust CQI process benefit your department, the medical director responded with answers also supported by the information contained in the literature review. “It can reveal knowledge gaps, failure to follow protocols, or misunderstandings. [CQI] provides excellent information to tailor monthly educational sessions to meet ongoing needs.” A second physician wrote, “CQI allows evaluation of the practices of the EMS providers and oversight of medical care.” These answers are directly supported by information generated by the NAEMSP and detailed in the Ohio Revised Code.

Two questions in the survey asked the medical directors to detail roadblocks or potential improvements in the program. An interesting pattern developed in these questions. All medical directors reported the electronic PCR systems as being difficult to use and causing problems with their associated departments. “IT issues” and “providing timely feedback to the crews is an omnipresent challenge” are two specific claims. A “real hardship” is created by the lack of remote PCR access and having to be inside the fire house in order to provide CQI and patient care feedback. When asked how these CQI programs can be improved, the medical directors again cited improvements in the PCR. Having the “ability to link to teaching modules” and a standardized electronic PCR were two improvement items cited. One physician is anticipating a move by his department to a new PCR system that will allow off-site access to CQI runs reports. The medical director survey closely mimics the same information on the fire department survey.

Question eight was an open-ended question that asked fire departments to describe any potential improvements in the organization’s CQI process. While reviewing the responses, the same pattern developed; problems with PCR and/or medical director access to PCRs. Fifty

percent of the respondents reported a problem or potential improvement with the organization's reporting system. Complaints such as inefficient ePCR programs and the lack of physician access are two common complaints from the fire departments and the medical directors.

A specific response was given on one survey that very closely describes the same situation the Sharonville Fire Department is currently experiencing. "I would like for our medical director to have better access to our ePCR, but that is an ePCR issue, not a medical director issue." The Sharonville Fire Department has been dealing with this exact problem. The department is aware of the need for medical director access as detailed in the job description and contract. The medical director wants access as detailed in the open ended survey responses.

## RECOMMENDATIONS

The EMS CQI system requirements for the Sharonville Fire Department have been detailed in the text above and although some aspects of the system are being fulfilled, the organization must implement additional requirements. The main component of this descriptive research has focused on medical director access and involvement in the CQI process. The literature describes this need and the Ohio revised code requires the process to take place.

The department's medical director is tasked with several requirements and continued involvement in the CQI process. The Sharonville Fire Department requires the medical director to be involved with the ongoing design, operation, evaluation and revision of the EMS system, from initial patient access to definitive patient care (City of Sharonville, 2009, p.3). Section 4.3.7 of the medical director contract requires participation in a peer review and quality improvement program (City of Sharonville, 2009). The benefits of having input from the medical director are recognized by many organizations including the American College of Emergency Physicians (ACEP), National Association of Emergency Medical Service Physicians (NAEMSP) and the National Association of Emergency Medical Technicians (NAEMT). "NAEMT has long recognized the need for and importance of medical direction that provides strong clinical oversight in the establishment and maintenance of medically accepted standards for pre-hospital patient care" (NAEMT, 2010, p1.).

After reviewing the literature, research and survey results, the need for medical director involvement in a peer review process is clear and must be implemented. Medical directors can be leaders within the respective fire departments and they can become intimately familiar with the capabilities and limitations of field personnel through the peer review of cases (Moore, 2005). A unique situation exists with the Sharonville. The overwhelming item that continues to

cause a dissonance between the fire department and the medical director, in regard to ePCR access, is the ePCR program.

As discussed in the background and significance section, Sharonville does not employ a program that allows the medical director to have the appropriate access to peer review PCRs. The program is built to be an all-in-one fire department system that has capability limitations in the in the EMS section, which has caused the bulk of this problem.

1. The main recommendation from this research is for the Sharonville FD to employ a comprehensive ePCR program that allows medical director access.

There are several programs that fit this recommendation. The author of this research does not endorse a specific program; however, any program that is purchased must first be field tested by paramedics, command staff and the medical director's office to ensure the function of the system.

2. The second recommendation derived from this research is to fully implement a robust CQI system within the Sharonville Fire Department.

The process should include the essential requirements detailed in the literature review. A fully functional process will review the structure, process and outcomes for the Sharonville Fire Department's EMS program. The process must also include the items described by the medical direction staff in their survey.

3. The third recommendation is bidirectional communication directly with the care provider must be established, maintained and mandatory.

The mandatory participation by EMS providers must be written into the department's policy so there is no attempt to ignore feedback. Direct feedback based upon the documentation in the ePCR is critical to having a positive and timely effect on future outcomes. To provide the

feedback, the medical director must have access via off-site ePCR review capabilities. Specific time for ePCR review should be allotted and tracked. This time should be reflected and detailed in the contract established between the fire department and the office of the medical director.

4. Recommendation number 4 is the CQI process should be standardized and placed in the department's standard operating procedures and be detailed in the medical director's contract.

The potential exists for a quick and unforeseen change with medical direction and/or fire department staff. The change in staff should not have an adverse effect on department operations. The standardization of the process should also contain specific parameters. For example, the percentage of ePCRs that must be reviewed each month and the number of cases used to develop education should be placed in writing.

The leadership of the Sharonville Fire Department has already begun to implement the findings in this descriptive research paper. Beginning in January of 2015, the Sharonville Fire Department will be transitioning to a new ePCR program called Safety Pad. Safety Pad is an EMS only program that utilizes table computers to chart patient data. The administrative side of the system allows the medical director to have access to ePCRs for CQI and direct feedback to patient care providers. This program fits the needs of the organization and complies with all State laws and recommendations and local protocol. The program will also allow the medical director to fulfill the requirements established in the fire department contract.

Safety Pad does not ensure the secondary recommendations above will be completed. It's imperative the secondary recommendations are completed to fully institute a necessary CQI system within the Sharonville Fire Department.

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## APPENDIX A

### INDEPENDENT CONTRACTOR AGREEMENT FOR PHYSICIAN MEDICAL DIRECTOR FOR CITY OF SHARONVILLE FIRE DEPARTMENT

This agreement, made and entered into on the dates indicated below, by and between City of Sharonville hereinafter referred to as "The City" and Dr. Donald Locasto, MD, hereinafter referred to as "Contractor" or "EMS Medical Director"

WHEREAS, The City has determined that it is necessary and advisable to retain the services of a physician as a medical director to assist the City to meet its obligations under the Ohio Revised Code for implementation of peer review, quality assurance programs, and other requirements designed to improve the quality of services provided by the The City of Sharonville Fire Department; and,

WHEREAS, The City proposes to retain the EMS Medical Director as an independent contractor to provide oversight and counsel in delivery of the emergency medical services ("EMS") provided by The Sharonville Fire Department in basic life support and advanced life support situations, and this agreement sets forth the responsibilities of The City and the Contractor for such services.

NOW, THEREFORE, in consideration of the mutual promises contained herein, the parties agree as follows:

#### **Section 1 Appointment:**

The City hereby appoints the Contractor as Physician Medical Director of The Sharonville Fire Department EMS program, to meet its statutory obligations under the Ohio Revised Code, which statute is incorporated herein by reference. The Contractor hereby accepts the appointment.

## Section 2

### 2.1 Effective Date, Term, and Renewal.

This contract shall be effective July 1, 2009 and shall have an initial term of one year. This contract shall renew automatically on January 1st of each subsequent year for successive terms of one year, until terminated as set out below.

### 2.2 Method of payment.

The EMS Medical Director shall be paid monthly for services rendered as set forth herein. Each monthly payment will be made by the City Auditor upon approval by the Department of Fire and EMS. The City shall not be responsible for any other charges except as provided for herein or as otherwise agreed to by The City. The EMS Medical Director, as an independent contractor, shall be solely responsible for payment of any payroll taxes, withholding, deductions, and estimated payments for taxes and other obligations.

### 2.3 Termination by Either Party

Either party may at any time without further cost, penalty or obligation, terminate this agreement by giving 90 days notice in writing to the other party. Such notices shall be made by certified mail to the addresses set out below. In the event of termination, the EMS Medical Director shall be compensated for services performed to the reasonable satisfaction of The City up to the effective date of the termination. In the event that the EMS Medical Director fails to fulfill the terms and conditions of the contract to the reasonable satisfaction of The Fire Chief, The City may withhold payment as an alternative to termination or cancellation of the contract, may terminate the contract, and/or may seek any right or remedy available at law or in equity. In either event, The Fire Chief will notify the EMS Medical Director and the Safety Service Director of the reasons for such action and of the conditions precedent to the issuance of payment.

### 2.4 No Assignment

The contract cannot be assigned or transferred by the EMS Medical Director, in whole or in part, without prior written consent of The City.

### 2.5 Amendments

Any and all changes to the terms and conditions of this Agreement shall be in writing and signed and agreed to by both The City and the EMS Medical Director.

## 2.6 Compliance with Law

The EMS Medical Director shall comply with all applicable statutes, ordinances, regulations and rules of the Federal Government and The State of Ohio, which are applicable to the performance of the contract and expenditure of funds.

## 2.7 Insurance

The EMS Medical Director, at his sole expense, shall maintain professional liability insurance coverage with minimum liability limits of \$1 Million per occurrence, and shall provide written proof to The City, without demand and therefore, that all such coverages are in effect at the time this agreement is executed, and upon each successive renewal.

## 2.8 Conflict of Interest

No officer, employee or agent of The City who exercises any functions or responsibilities in connection with the planning and carrying out of this agreement, nor any immediate family member, close business associate, or organization which is about to employ any such person, shall have any personal financial interest, director indirect in the EMS Medical Director's Position, or the contract and shall take appropriate steps to ensure compliance.

## Section 3. Payment

The City agrees to pay the EMS Medical Director for services provided as Medical Director, and as an independent contractor with the Sharonville Fire Department per their proposal section 9.3 under compensation, the sum of \$1,000.00 per month. Payments shall be on or before the last day of each month during the term of this agreement, for a total annual contract amount of \$12,000.00 commencing with the month of July 2009. In the event of unforeseen circumstances which would require additional hours outside this agreement, the EMS Medical Director shall be compensated at the rate of \$100.00 per hour. Such additional hours shall be approved in writing by both the EMS Medical Director and the City prior to the additional hours being worked.

## Section 4

The EMS Medical Director for The City of Sharonville Fire Department, as an independent contractor, agrees to provide services to the City as follows:

### Medical Director-Operations

#### 4.1 Summary of Responsibilities:

The medical director shall have authority over all clinical and patient care aspects of the EMS system or service. The primary role of the medical director is to ensure quality patient care. Responsibilities include involvement with the ongoing design, operation, evaluation and revision of the EMS system from initial patient access to definitive patient care.

4.2 Reports To  
Fire Chief / Departmental Command Staff

4.3 Principle Duties and Responsibilities

- 4.3.1 Serve as a patient advocate in the EMS system.
- 4.3.2 Set and assure compliance with patient care standards including communications, dispatch and medical protocols
- 4.3.3 Develop and implement protocols and standing orders under which pre-hospital providers function
- 4.3.4 Develop and implement the process for the provision of concurrent medical direction
- 4.3.5 Ensure the appropriateness of initial qualifications of pre-hospital personnel involved in patient care.
- 4.3.6 Ensure the qualifications of pre-hospital personnel involved in patient care are maintained on an ongoing basis through education, testing and credentialing.
- 4.3.7 Develop and implement an effective quality improvement program for continuous system and patient care improvement.
- 4.3.8 Promote EMS research
- 4.3.9 Maintain liaison with medical community including, but not limited to, hospitals, emergency departments, physicians, pre-hospital providers, nurses.
- 4.3.10 Interact with regional, state, and local EMS authorities to ensure that standards, needs and requirements are met and resource utilization is optimized.
- 4.3.11 Arrange for coordination of activities such as mutual aid, disaster planning and management, and hazardous materials response.
- 4.3.12 Promulgate public education and information on the prevention of emergencies.
- 4.3.13 Assist in the maintenance of medical knowledge levels appropriate for an EMS medical director through continuing education.
- 4.3.14 Assist in the development of the curricula for EMS training, schedule speakers and instructors for continuing education sessions.
- 4.3.15 Participate in peer review and quality improvement programs as provided in section 4765.12 of the Ohio Revised Code.
- 4.3.16 Active participation with the organization in the following programs
  - a. Conducting performance improvement programs
  - b. Conducting education programs
  - c. Conducting protocol updates and review

Section 5: EMS MEDICAL DIRECTORS QUALIFICATIONS

- 5.1 Possession of a valid Ohio medical license to practice medicine or osteopathy.
- 5.2 Active in the emergency care of patients.
- 5.3 Familiarity with design and operation of pre-hospital EMS system.
- 5.4 Experience or training in medical direction of pre-hospital emergency units.

- 5.5 Experience or training in the pre-hospital emergency care of the acutely ill or injured patient.
- 5.6 Experience or training in the instruction of pre-hospital personnel
- 5.7 Experience or training in the EMS quality improvement process
- 5.8 Knowledge of EMS law and regulations
- 5.9 Knowledge of local mass casualty and disaster plans
- 5.10 Complete the National Association of Emergency Medical Service providers (NAEMSP) medical directors course, the Ohio American College of Physicians (ACEP) medical directors course, or other equivalent course approved by the State Board of EMS.
- 5.11 Complete a board eligible/board certified residency program in emergency medicine or submit verification of EMS medical director experience and verification of performance improvement programs or training to the board of EMS

## SECTION 6: AUTHORITY OF MEDICAL DIRECTOR

- 6.1 Recommend certification, recertification and decertification of non-physician pre-hospital personnel to the appropriate certifying agency.
- 6.2 Establish, implement, revise, and authorize system-wide protocols, policies and procedures for all patient care activities from dispatch through triage, treatment and transport.
- 6.3 Establish criteria for the level of initial emergency response. (e.g., Basic EMT, Advanced EMT, Paramedic)
- 6.4 Establish criteria for determining patient destination
- 6.5 Ensure the competency of persons who provide medical direction to pre-hospital personnel.
- 6.6 Establish the procedures or protocols under which non-transport of patients may occur.
- 6.7 Require education and testing to the level of proficiency approved for the following personnel within the EMS system: Basic EMT's, Intermediate EMT's, Paramedics, EMS instructors, educational coordinators.
- 6.8 Implement and supervise an effective quality improvement program to identify needed areas for improvement, evaluate system controls, monitor performance indicators and re-evaluate system impact.
- 6.9 Recommend the appropriate actions for removal of medical care duties for due cause, using an appropriate review and appeals mechanism.
- 6.10 Set or approve hiring standards for personnel involved in patient care.
- 6.11 Set or approve standards for equipment used in patient care.

## SECTION 7 MEDICAL DIRECTOR TIME REQUIREMENTS

- 7.1 NAEMSP Membership and annual attendance.
- 7.2 Eight hours per month (as a minimum) riding along with EMS crews.
- 7.3 Conduct one – 2 hr training session one each of the 3 unit days per month
- 7.4 Post incident reviews immediately following incident while doing grid time based on a pre-determined structure or format.
- 7.5 As part of a QA/QI program, retrospective run reviews (During grid time if time permits)

- 7.6 Annual practical testing for EMS personnel actively involved in the treatment of patients (Participate and Oversee)
- 7.7 Administrative time per month (8-10 hrs), QA/QI, meeting attendance, policy, procedures to be inclusive with ride along time.
- 7.8 Recommended meeting attendance
  - I. Pre-Hospital Care Operations
  - II. Regional Physicians Advisory Board Meetings (Quarterly)
  - III. Medical Director meeting bi-monthly with medics.

Section 8 (Notices):

Any notices required under this agreement shall be addressed to the parties as follows:

**TO THE CITY:** Fire Chief Ralph Hammonds  
 Sharonville Fire Department  
 11637 Chester Road  
 Cincinnati, Ohio 45246

**TO EMS MEDICAL DIRECTOR:** Donald Locasto, MD  
 Dept of Emergency Medicine- EMS Division  
 231 Albert Sabin Way  
 PO Box 670769  
 Cincinnati, OR 45267-0769

Upon any change of address or other mailing information, each party agrees to notify the other in writing of such change.

IN WITNESS WHEREOF, the parties hereto have executed the foregoing Agreement in duplicate on the dates indicated below.

## **APPENDIX B**

### **Criteria for a new Medical Director for The Sharonville Fire Dept.**

This criteria shall serve as a guide to assist in the selection of a new medical director.

\*The candidates shall be an ER Physician

\*The candidates shall be employed at a hospital we transport to regularly.

\*The candidates shall be responsible to assist in the pre-employment testing of all paramedics.

\*The candidates shall assist in any promotional exams given within the paramedic program.

\*The candidates shall be involved in the quality assurance program of all EMS runs.

\*The candidates shall be responsible for keeping up with Hamilton County Protocol changes and training on any changes as needed.

\*The candidates shall recommend to the Fire Chief, for final approval, any equipment used by EMS personnel in the field.

\*The candidates should attend as many departmental EMS training sessions as possible.

\*The candidate has the option and is encouraged to ride with any Sharonville EMS unit of their choosing.

\*The candidates should be available to The Sharonville Fire Department on call for questions that arise whenever possible.

## **APPENDIX C**

### **Medical Director Contracted Departments**

1. How many personnel currently serve in your organization?
2. How many years have you contracted with UC Physicians for medical direction?
3. This organization meets the continuous quality improvement standards set forth in the Southwest Ohio Paramedic Protocol:
  - a. Strongly Agree
  - b. Agree
  - c. Neither Agree or Disagree
  - d. Disagree
  - e. Strongly Disagree
4. This organization allows medical director access to electronic patient care reports:
  - a. Yes
  - b. No
5. The medical director provides adequate patient care feedback:
  - a. Strongly Agree
  - b. Agree
  - c. Neither Agree or Disagree
  - d. Disagree
  - e. Strongly Disagree
6. The medical director uses relevant cases within this organization to create continuing education:
  - a. Strongly Agree
  - b. Agree

- c. Neither Agree or Disagree
  - d. Disagree
  - e. Strongly Disagree
7. This organization would benefit from additional input from the medical director:
- a. Strongly Agree
  - b. Agree
  - c. Neither Agree or Disagree
  - d. Disagree
  - e. Strongly Disagree
8. Please describe any improvements you would like to see in a continuous quality improvement program.

## APPENDIX D

### **Medical Director Survey**

1. Describe the current continuous quality improvement program within the fire departments to which you provide medical direction.
2. How can these programs be improved?
3. What situations present a roadblock to CQI within your departments?
4. How can/does a robust CQI process benefit your department?
5. What is your vision for the perfect CQI process?

**APPENDIX E**

**EMS Training Agencies**

<b>Agency</b>	<b>Physicians to be interviewed</b>
<b>Cincinnati Fire Department (CFD)</b>	<b>Dr. Don Locasto – Sharonville, CFD</b>
	<b>Dr. Dustin LeBlanc – Sharonville, CFD</b>
<b>Blue Ash Fire Department</b>	<b>Dr. Jason McMullan – Blue Ash, CFD</b>
<b>Colerain Fire Department</b>	<b>Dr. Dustin Calhoun – Bethel, CFD</b>
<b>Sharonville Fire Department</b>	<b>Dr. Hamilton Schwartz, Pediatric Physician – CFD, Children’s Hospital</b>
<b>Secondary Training Agencies</b>	
<b>Evendale Fire Department</b>	
<b>Reading Fire Department</b>	
<b>Tertiary and Specialty Training Agencies</b>	
<b>BTWTFD Group</b>	
<b>Bethel-Tate Fire Department</b>	
<b>Washington Township Fire Department</b>	
<b>FP Group</b>	
<b>Forest Park Fire Department</b>	
<b>Green Hills Fire Department</b>	
<b>The Dale Group</b>	
<b>Glendale Fire Department</b>	
<b>Springdale Fire Department</b>	
<b>West Group</b>	
<b>Mt Healthy</b>	
<b>North College Hill</b>	
<b>M Group</b>	
<b>Montgomery Fire Department</b>	
<b>Mariemont Fire Department</b>	
<b>Isolated Single Departments</b>	
<b>Crosby Township Fire Department</b>	
<b>Deer Park-Silverton Joint Fire District</b>	
<b>Delhi Township Fire Department</b>	
<b>Liberty Township (Butler County)</b>	
<b>Lynchburg Fire Department</b>	
<b>Oxford Township FD</b>	
<b>Ross-Millville Township</b>	

