

Running head: PRIORITIZING EMERGENCY MEDICAL DISPATCH AND THE

Leading Community Risk Reduction

Prioritizing Emergency Medical Dispatch and the Impact on Resources and Service Delivery

Greg B. Marlar

Douglas County Fire District No.2

Roseburg, Oregon

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Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

Douglas County Fire District No. 2's (DCFD2) does not have a system for prioritizing EMS dispatches. The purpose of the research was to determine, through descriptive research, criteria for implementing an effective system for prioritizing EMS responses. The procedures included literature review and a survey of other fire agencies. Research answered what the standards in the industry were and what the benefits and risks of implementing a medical priority dispatch system were. Results showed that there were proven, established priority medical dispatch programs being utilized across the nation that could effectively be implemented in our jurisdiction. Recommendations included review of established programs being utilized in other Oregon dispatch centers, request bids for selected program, and secure funding sources for implementation.

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Introduction

Established in 1947, Douglas County Fire District No. 2 (DCFD2) began providing paramedic ambulance service in 1995 in conjunction with the local private provider Wilts' Emergency Service and Transportation (WEST). Together, these two agencies provide the majority of paramedic ambulance service for the central Douglas County, Oregon area including the City of Roseburg and surrounding communities. Several surrounding fire departments provide first responder response for those emergency medical services (EMS) calls. All emergency agencies are dispatched, through agreement, by the Douglas County Emergency Communications Center (DCEC). All calls for police, fire, and medical services within Douglas County come through the DCEC.

The problem is DCFD2 and surrounding emergency agencies do not have a system for prioritizing EMS dispatches. Inappropriate dispatches result in a depletion of emergency resources and citizens could suffer from delayed emergency medical response. The purpose of this research is to identify criteria for implementing an effective system for prioritizing EMS responses in the greater Roseburg area.

Nationally, EMS calls account for roughly 75% to 80% of fire departments call volume. For DCFD2 during 2004, 2005, and 2006, EMS calls accounted for 72%, 73%, and 75% of the total call volume respectively (Marlar, 2006). The concept of medical priority dispatch has been around for over 30 years. Clawson (1991) discovered that "The main objective of a priority dispatch system is to 'send the right thing to the right person in the right way at the right time'" (p. 11). This is not occurring today within the Douglas County dispatch system. The current system runs out of emergency resources on a regular basis.

Descriptive research techniques were used to answer the following research questions: (a) what are the standards in the industry for prioritizing EMS responses?, (b) what are the benefits and risks to implementing a system for prioritizing EMS response?, (c) what impact will implementing a medical priority dispatch system have on response times?

Background and Significance

DCFD2 is a fire protection district that was formed in 1947. DCFD2 is located in Douglas County Oregon, in a growing area that surrounds the City of Roseburg and neighboring unincorporated communities. DCFD2 has delivered paramedic ambulance service through an intergovernmental agreement (IGA) with MedCom Authority (MedCom) since 1995.

MedCom is an intergovernmental entity that provides the emergency ambulance services through a franchise agreement with Douglas County. The franchise agreement allows the provider to deliver the services themselves or to subcontract those services out to other providers. MedCom's franchise is for three ambulance service areas (ASAs) in the Douglas County area. ASA #4 includes the cities, town or unincorporated communities of Dixonville, Elagarose, Glide, Ideyld Park, Melrose, Oak Creek, Riversdale, Roseburg, Wilbur, Winchester, and Wolf Creek. ASA #5 includes the cities, town or unincorporated communities of Diamond Lake, Lemalo Lake, and Toketee. ASA# 7 includes the cities, town or unincorporated communities of Canyonville, Days Creek, Myrtle Creek, Riddle, Tiller, and Tri City. In total, MedCom covers approximately 2,600 square miles of urban, suburban and rural service area with an approximate population of 43,601 (U.S. Census Bureau, 2000). MedCom subcontracts the actual delivery of emergency ambulance services with DCFD2 and WEST ambulance. This system for delivery of emergency ambulance services has been in place since 1995. The majority

of communities listed above have fire department first responders that are dispatched along with the paramedic ambulance on the majority of EMS calls.

During 2005, DCFD2 and WEST responded to a total of 8,206 EMS calls, of those responses, they transported 5,666 (61.73%) to the hospital (Marlar & Mutschler, 2006). During 2006, DCFD2 and WEST responded to a total of 8,108 EMS calls, of those responses, they transported 4,926 (60.75%) to the hospital (Marlar & Mutschler, 2006). These call volumes do not include the additional non-emergency transports that WEST provides as well.

DCEC is the primary safety answering point (PSAP) for Douglas County. This means that all 9-1-1 calls in Douglas County come through this communications center. In 2006, DCEC answered over 18,083 fire and EMS 9-1-1 calls for service and 196,690 law enforcement 9-1-1 calls for service (K. Stahl, personal interview, April 18, 2007). They dispatch for the majority of all ambulance, fire and law enforcement agencies within the county. This includes approximately 31 agencies in total.

Currently, DCEC utilizes the 2002/2003 version of the State of Oregon's Department of Public Safety Standards and Training (DPSST) Systematized Pre-Arrival Instruction Protocols Oregon Emergency Medical Dispatch Cards. This system takes the dispatcher through a series of questions in order to narrow the caller's chief complaint into an appropriate emergency medical dispatch card. Once the appropriate card has been determined, key questions are asked and inputted into the dispatcher's computer aided dispatch (CAD) terminal in order to be dispatched. The call is then sent to be dispatched and the call taker continues to ask questions and give pre-arrival instructions to the caller. For potential life threatening events (airway problems, choking, cardiac arrest, child birth, etc.) algorithmic instruction cards are available to give step-by-step pre-arrival instructions. The DCEC has a ninety second standard to process the call for dispatch.

They then dispatch the appropriate fire department and ambulance based on pre-determined geographic locations and run cards set up in the CAD system. Once emergency responders are enroute, they are given any follow-up patient information. They are not told whether to respond with or without lights and siren (code 3). That decision is left up to the responding unit(s) (L. Jackson, personal communications, March 14, 2007).

With the current dispatch procedures that are in place, EMS calls are processed and given out to the emergency agencies to determine what resources to send and in what mode to respond. Not being the ones that communicates with the calling party, puts our responding agencies in a disadvantage by not having a standardized, systematic method to prioritize the EMS calls. This causes the EMS system to run low and/or out of emergency paramedic ambulances on a regular basis. It also places emergency personnel and the public at risk by having emergency apparatus responding to calls code 3 that may not warrant that level of response. With budgets being flat lined or reduced on a regular basis, agencies must find ways to more effectively manage the emergency resources in order to maintain response requirements to the public we serve.

This research project was completed in accordance with the applied research requirements of the Leading Community Risk Reduction (LCRR) course of the National Fire Academy's Executive Fire Officer Program (EFOP). In addition, this applied research will be used to specifically meet one of the critical attitudes for successful risk reduction as covered in the LCRR course. One of the critical attitudes covered was the need for the Executive Fire Officer (EFO) to be a champion in the process of community risk reduction. This is achieved by the EFO having a clear vision of the community and making that vision become reality (National Fire Academy, 2005). This author has become that champion within the community in regards to addressing the prioritization of EMS responses and delivery of services to the citizens.

This research is also directly linked to the United States Fire Administration's operational goals of being responsive to emergent issues that are affecting fire service delivery to the communities we serve. Resource management is a critical component in the delivery of emergency services to the public. Dispatching of emergency units appropriately, plays a critical role in reducing the amount of emergency vehicle collisions during response and in assuring that the caller gets the correct resources, in the correct manner, as quickly as possible.

Literature Review

The information obtained in this review of literature used research from other emergency service providers on the subject of prioritizing EMS dispatches and the affect on service delivery. The review for this project included: (1) a review of available data on what industry standards exist for dispatching medical responses; (2) system benefits and risks in prioritizing EMS response; and (3) impact on response time utilizing a priority dispatch system. This information was studied, evaluated and prioritized as to its value to the research project.

Industry Standards

Over the years, public safety agencies have done a fairly good job of educating the public to call 9-1-1 in the event of an emergency. Emergency dispatch centers are the first link in the chain of survival for any medical emergency call. A community's PSAP "is the most basic building block" of the emergency communications system (United States Fire Administration, 1997, p. 19). Emphasis is placed on medically validated protocols that should include both pre-arrival instructions, and a method to establish the priority and response configuration for every medical call received (United States Fire Administration, 1997). In 1990, the United States Department of Transportation mandated the development of a practice standard for emergency medical dispatch (Maher, 1999). Since that mandate, both the National Association of EMS

Physicians (NAEMSP) and the American Society for Testing and Materials (ASTM) have taken the position that emergency medical dispatch systems are the standard of care in the EMS dispatching industry (Clawson, Martin, & Hauert, 1994). In 1995, the National Highway Traffic Safety Administration (NHTSA) produced a series of texts and standards for EMD, providing a basic foundation for all EMD programs. The National Association of EMS Physicians (NAEMSP) (1989) lists as one of its statements in their position paper:

Dispatch prioritization is an essential element in any EMS system for it establishes the appropriate level of care including the urgency and type of response. Standard medically approved telephone instructions by trained EMDs are safe to give and in many instances are a moral necessity. (p. 163).

Currently, there are four national providers offering certification for their EMD systems and training programs: APCO Institute, Medical Priority Consultants via their National Academy of EMD, NCI, and Powerphone. Many other agencies have built their own modified versions of EMD protocols for use in their dispatch centers. These programs basically look at the severity of the patient's condition, based on their signs and symptoms, and classify them into a certain category. The degree of urgency is assigned a priority level of A through D (A being the least serious and D being life-threatening) and is linked to the response vehicle type dispatched and whether they respond with lights and sirens or not.

In many communities across the nation dispatcher training is not even required by law (Griffiths, 2003). The National Academies of Emergency Dispatch estimates that today, less than 25 % of the U.S. population is being served by a fully integrated priority medical dispatch system (Griffiths, 2003). In contrast, the United Kingdom has more than 90% of its population served by this level of service. The exact number of U.S. EMS systems using emergency medical

dispatching is unknown. In 1993, it was estimated that 94% of dispatch centers run by EMS based systems use pre-arrival instructions. However, if the dispatch center was run by the law enforcement or a fire department, only approximately 70% use such instructions (Cady & Scott, 1993). In 1995 the ASTM adopted two practice standards dealing with emergency medical dispatch training. The first was certification and curriculum, and the second was emergency medical dispatch management and quality assurance (ASTM F 1258, 1995). As Zachariah and Pepe (1995) accurately summarized, “the emergency medical dispatcher is rightly viewed as the first First [sic] Responder, a trained certified professional, held to high national standards, and an important first link in the chain of emergency medical care” (p. 3).

Benefits and Risks of a Prioritized Medical Dispatch System

There have been many benefits realized from agencies implementing a standardized priority medical dispatch program within their communications center. Improved operational efficiencies through changes in response time performance requirements and tiered response systems are a big benefit. Many EMS systems across the country are experiencing an increase in demand for services, but due to budgetary constraints are finding it impossible to add personnel or equipment to their EMS system. Therefore, they are being required to meet this increased demand with the same, or in some cases, less resources. This has become a key factor in the decision to protect resources by prioritizing calls on the front end (Adams, 1989).

Griffiths (2003) found that systems no longer have the resources or ability to “send unneeded muscle in the form of speed and resources that don’t match the need” (p. 57). It is estimated that with over 25 million annual EMS responses, that generally only 5%-20% of those require paramedic level skills (Curka et al., 1993). Therefore, priority dispatch systems have been developed to keep paramedic resources available within the system for critical patients. It

has been shown that a paramedic does not have to be sent on every EMS call. In a tiered response system, you have both basic life support (BLS) units and advanced life support (ALS) or paramedic units. Without a priority medical dispatch system, both levels are generally dispatched to the EMS call regardless of the nature or severity. By utilizing a priority medical dispatch program fewer paramedics are required for staffing because fewer ALS ambulances are needed in the system. BLS units can be used on many of the initial responses prioritized by dispatch. This also allows for the ALS crew's response times to become shorter for other calls, due to their enhanced availability in the system (Curka et al.).

Liability has always been high for public safety systems. There is a variety of entities that share in this liability pool including counties, cities, fire and law enforcement agencies, ambulance providers, medical control agencies and dispatch centers to name a few. Over recent years, dispatch liability has become second only to EMS vehicle accidents involving EMS litigation (Maggiore, 2004). Dispatchers today have a very stressful job and every time the phone rings, it is the equivalent to somebody in a crisis. Jeff Clawson, MD, the designer of an EMS priority dispatch system has been an expert witness in a number of lawsuits involving dispatchers. He has generally shown that the dispatch error and problems could have been prevented with a priority dispatch system (Maggiore, 2004). In July 2001, a jury awarded \$2.7 million over a dispatch error in the city of Chicago. Within two months, the city was hit again with two more dispatch related verdicts, one for \$50 million and another for \$3.04 million (Maggiore, 2004). Maggiore (2004), who is a paramedic and a practicing attorney, makes a bold statement that "the public will not tolerate incompetence when they dial 9-1-1" (p. 160). Risk management departments must be involved from the start on the design and implementation of dispatch programs.

As these verdicts have shown, it is far less expensive to institute proven, protocol driven priority medical dispatch systems on the front end then to wait and pay out on the back end. Another liability component for dispatch centers has been not having the most current version of medical protocols. This is true whether they are utilizing a commercial program or an in-house protocol that has been developed. According to Jeff Clawson, MD “agencies have found themselves with their pants down when having to defend out-of-date protocols” (Griffiths, 2003, 58). Utilizing a standardized protocol, the medical dispatcher’s conduct will be far less susceptible to charges of careless judgment (National Association of Emergency Medical Services Physicians (NAEMSP), 1989). Fear of liability has prevented many agencies from delivering medical aid from a dispatch level. According to Jeff Clawson, MD, “There’s never been a lawsuit in the history of the world for practicing medical dispatch correctly” (Taylor & Wilson, 2003, p. 2).

Personnel and civilian safety is the most important safety concern for every emergency agency. Emergency vehicle collision rates are very high and pose a serious risk to emergency responders as well as the public. In fact, emergency vehicle accidents are the second leading cause of on-duty firefighter deaths (JEMS.com [JEMS], 2006). It has been estimated that as many as 12,000 emergency medical vehicle accidents occur each year in the US and Canada as a direct result of use of red lights and sirens (Clawson, 1991). Even more alarming is that it is estimated that the startling and confusing effect emergency units have on drivers causes up to 60,000 additional accidents that don’t physically involve the emergency vehicle (Clawson, 1991). It has long been tradition that when the bell goes off we have to respond with lights and sirens (code 3) to each and every call. Responses without lights and sirens have been shown to decrease the rate and severity of emergency vehicle collisions. Jeff Clawson, MD believes that

this risk can be reduced at the dispatch level, where calls are received and dispatched (Taylor & Wilson, 2003). Many critics claim that the use of red lights and sirens fails to save lives or significantly improve response times. Studies have shown that responding with lights and sirens can save an average of 43 seconds to 3.63 minutes (Taylor & Wilson, 2003). But quicker response times do not always translate into clinical improvements for the patient. Salt Lake City reduced their emergency vehicle accidents by 78 percent after implementing Clawson's priority dispatch system (Taylor & Wilson 2003). With the low percentage of life threatening calls, screening calls at the dispatch level is vital. Emergency units can be dispatched in an appropriate mode based on medically proven protocols utilized by dispatch.

Some of the barriers to implementing medical priority dispatch systems include the cost of implementation and training, political resistance from law enforcement dispatch centers, and generalized resistance to change. Costs of implementation and training are frequently listed as an issue to implementing a medical priority dispatch system. Many times this is due to lack of education and understanding of senior managers on the benefits of the system and how it can improve the organization. Hundreds of thousands of dollars are allocated annually on fire suppression and law enforcement equipment and training that are rarely used. Medical priority dispatch systems continue to be passed over at budget time. Funding of technologies that might not be used is not in line with general public policy of creating the greatest good for the greatest number with public funds (Cady, 2001). It is perceived as easier and more politically correct to address service demands by investing in rolling stock resources rather than invest in systems that can improve upon the efficiencies of existing resources (Cady, 2001). Training costs have also been a reason given for not utilizing medical priority dispatch systems. Jeff Clawson claims that

it is an average of \$250 to train dispatchers to use his medical priority dispatch program in a three-day class (Taylor & Wilson, 2003).

Political issues often hinder implementation of medical priority dispatch systems in law enforcement run dispatch centers. This is often because the dispatch center is not in control of the EMS agency that is responding to the incidents (Maggiore, 2004). Law enforcement generally assigns calls to officers and allows them to prioritize their response. EMS responses can not be efficiently or effectively handled in this same manner. General resistance to change is another barrier to implementation of priority dispatch systems. Many dispatchers are comfortable with the way things work and do not see a need to change. Medical priority dispatch only works if followed correctly and exactly as set forth in the protocols. These programs are very stringent and do not allow for a dispatcher to skip steps or vary from the established questions and protocols. The days of hurry-up and “send the Calvary” to every call are over. Dispatch centers with medically approved, up-to-date protocols, and preplanned responses has become the new standard of care (Clawson, 1991). Priority medical dispatch systems actually go hand-in-hand with EMS. When a medical call is evaluated and prioritized by a certified EMD dispatcher, the standardization and consistency is comparable to the operating procedures that firefighters and paramedics follow (Clawson & Martin, 1990). Dispatch centers must make the change from medically trained freelancing to a protocol-driven process (Patterson, 2007). In order for dispatch centers to successfully change the way they do things, protocols must be sound and training, both initial and ongoing, is essential (Patterson 2007).

Response Time Impact

There has been a lot of discussion regarding the impact that priority medical dispatch systems have on response times. Critics believe that these systems delay the dispatch time

because of the questioning requirements of the dispatcher. Proponents claim that these questions add only marginal time to the dispatch and result in sending the proper resources in the correct mode making the overall system more efficient and safe. It is believed that only 5 to 10 percent of all medical calls are for life threatening emergencies (Clawson & Democoeur, 2004). With such low percentages of life threatening calls, priority screening is vital for system effectiveness. Overall the EMS culture of speed still permeates EMS, often to the detriment of dispatch (Griffiths, 2003). Clawson stated in a 1996 article in *JEMS* magazine that “In most medical situations, the time to dispatch should not be treated as a ticking time bomb [because] the majority of incidents are not escalating in any appreciable way, whether life-threatening or otherwise” (Griffiths, 2003 p. 56). Many EMS systems have recognized the ability of dispatch centers to reliably determine the need for different response times and have allowed these response time variations into contracted standards (Griffiths 2003). In dispatch centers that do not utilize priority medical dispatch systems, the call taker must decide not only if they should ask a question, but which question to ask next, and exactly how to ask it. Additionally, with the ability to ad lib and ask additional questions, the dispatch processing time and the decision making process can exponentially be increased (Clawson, 2006).

Utilization of a priority medical dispatch program actually can drop the response time to zero. Help is not delayed until arrival of first responders and can begin immediately with pre-arrival instructions given by the dispatcher. Clawson (1989) stated that, “In essence, the EMD is the ‘first’ first responder and through immediate action can effectively eliminate the deadly ‘four minute’ plus gap at the beginning of the response” (Clawson, 1989, p. 53).

Procedures

Descriptive research methodology was used to obtain information to identify criteria for implementing an effective system for prioritizing EMS responses in the greater Roseburg area. Research included a literary review of journals, DCFD2 documents, National Fire Academy Learning Resource Center (LRC), applied research projects related to priority medical dispatch utilization, internet and newspaper articles, and from a personal interview conducted by the author with a supervisor of the DCEC.

An electronic survey link was sent out to all Western Fire Chiefs Association (WFCAs) members. The selected members surveyed were derived from an email list provided by the WFCAs' administrative staff. A copy of the web based created survey is listed in Appendix A.

Instrument

The survey link was emailed to 1,823 members of the WFCAs. The survey asked the respondent to briefly describe their service area demographics, describe what impact prioritizing EMS responses had on their service area, describe what system benefits and risks in prioritizing EMS responses they had experienced, and what impact, if any, utilizing a priority dispatch system had on response times in their area. Of the 1,823 surveys emailed out, 564 were completed, for a return rate of 30.93%.

Personal Interview

A personal interview was conducted with Laurie Jackson, shift supervisor for the Douglas County Emergency Communications Center. The interview was conducted in person on March 14, 2007 and lasted approximately forty minutes. The questions asked of Ms. Jackson were intended to establish what the current practices and procedures for EMS dispatch were in place within the dispatch center.

Assumptions and Limitations

Most of the information found in trade journals and applied research papers from the LRC focused on the benefits of a medical priority dispatch system. There was not as much information found on the risks associated with the implementation or use of a medical priority dispatch system. There was not a lot of information available on the financial costs of implementing a medical priority dispatch system. Vendors had their established costs depending on the size of the dispatch center and the program components that the agency wanted to implement. Information on the cost of training and recertification was very vague and was dependent on the agency and what method they chose to use to meet training and recertification requirements.

A limitation to the study is that it was emailed to respondents through a fire chief's association that was primarily made up of western agencies. This was due to the ability to have this association agree to distribute the survey to its membership.

Another limitation to this study is that the survey was emailed to every member of the WFCFA. In many cases there were multiple members within one agency that completed the survey. In fact, 163 surveys were received from members within the same agency. These 163 surveys were eliminated from the results in order to prevent the data from being skewed. With these surveys removed, of the 1,823 surveys emailed out, 401 were used for analysis, for an actual analyzed rate of 21.99%.

Definitions of Terms

Intergovernmental Agreement (IGA) - a legal pact authorized by state law between two or more units of government, in which the parties contract for or agree on performance of a specific activity through either mutual or delegated provision.

Ambulance Service Area (ASA) – a geographic area which is served by one ambulance provider through a franchise.

Emergency Medical Dispatching – the reception and management of requests for emergency medical assistance in an EMS system.

Emergency Medical Dispatcher (EMD) – a specially trained safety telecommunicator with the specific emergency medical knowledge essential for the appropriate and efficient functioning of emergency medical dispatching.

Medical Priority Dispatch System– a medically approved system used by a dispatch center to dispatch appropriate aid to medical emergencies, which include: 1) systematized caller interrogation; 2) systematized pre-arrival instructions; and 3) protocols which match the dispatcher’s evaluation of the injury or illness type and severity with vehicle response mode and configuration.

Pre-Arrival Instructions – telephone rendered, medically approved, written instructions given by trained EMDs through callers which help to provide aid to the victim and control of the situation prior to arrival of prehospital personnel.

Basic Life Support (BLS) - a level of medical care provided by prehospital emergency medical services. Basic life support consists of essential non-invasive life-saving procedures including CPR, bleeding control, splinting broken bones, artificial ventilation, and basic airway management.

Advanced Life Support (ALS) - a level of care provided by prehospital emergency medical services. Advanced life support consists of invasive life-saving procedures including the placement of advanced airway adjuncts, intravenous infusions, manual defibrillation, electrocardiogram interpretation, and much more. Advanced life support certifications and licenses include emergency medical technician - intermediate (EMT-Intermediate) and paramedic.

Results

The survey (Appendix A) was used to answer these questions. Survey links were emailed out to 1,823 agencies. After duplicated agency's surveys were removed, there were 401 (21.99%) who responded. Not all the questions were answered by all respondents. Therefore, the responses did not always total 401.

1. What are the standards in the industry for prioritizing EMS responses?

Question 1 asked if the department provided EMS. 386 respondents (96.5%) answered that they did provide EMS services. Fourteen respondents (3.5%) answered that their agency did not provide EMS services and the question was skipped by one respondent. Respondents who answered no to question 1 were thanked for their participation and asked not to continue on with the survey.

Question 2 asked what type of EMS service did their agency provide. One hundred and twenty three respondents (32.8%) provided BLS 1st responder, 109 (29.1%) were ALS 1st responders, 160 (42.7%) were BLS & ALS 1st responders, 44 (11.7%) provided BLS transport, 86 (22.9%) provided ALS transport and 109 (29.1%) provided both BLS & ALS transport. Twenty-six respondents skipped this question.

Question 3 asked what type of organization manages the 9-1-1 center for their agency. Forty one (10.9%) respondents answered they dispatched in-house, 108 (28.8%) were dispatched by law enforcement, 20 (5.3%) were dispatched by private, third party agencies, 79 (21.1%) were dispatched by their County, 85 (22.66%) were dispatched by regional dispatch centers, and 42 (11.2%) answered that they were dispatched by other means. Twenty-six respondents skipped this question.

Question 4 asked what system their agency/dispatch currently uses to determine the level of EMS response. One hundred and sixty-five (44.0%) responded that they use Medical Priority Dispatch (Dr. Jeff Clawson's model), 11 (2.9%) used Association of Public-Safety Communications Officials (APCO) program, four (1.1%) utilized PowerPhone, 103 (27.5%) utilized an internal program or procedure, and 92 (24.5%) used some other type system ranging from a medical priority dispatch hybrid to none at all. Twenty-six respondents skipped this question.

Question 5 asked if their agency used a tiered EMS response (send different types and amounts of EMS resources based on need). Two hundred and sixteen (57.6%) agencies did use tiered EMS response, and 159 (42.4%) of the respondents did not use a tiered EMS response. Twenty-six respondents skipped this question.

Question 6 asked if their agency uses a priority medical dispatch system for dispatching EMS calls. Two hundred and five (54.7%) responded that they did use a priority medical dispatch system, and 170 (45.3%) responded that they did not utilize a priority medical dispatch system. Twenty-six respondents skipped this question. . Respondents who answered no to question 6 were thanked for their participation and asked not to continue on with the survey.

2. What are the benefits and risks to implementing a system for prioritizing EMS response??

Question 8 asked what benefits have your agency realized with the use of a medical priority dispatch system. One hundred and thirty three (70.7%) respondents answered better utilization of resources, 111 (59.0%) responded increased personnel and public safety by reducing responses with lights and sirens, 81 (43.1%) responded that it allowed the ability to use a tiered BLS and ALS response, 49 (26.1%) answered a decrease in liability risks, 125 (66.5%) responded a standardized approach to dispatches, 56 (29.8%) responded the ability to maintain paramedic ambulances. Two hundred and thirteen respondents skipped this question.

Question 9 asked of the benefits listed, which one has had the greatest impact on your agency. Seventy-eight (41.5%) answered better utilization of resources, 30 (16%) answered increase in personnel and public safety by reducing response with lights and sirens, 16 (8.5%) responded the ability to use a tiered BLS and ALS response, 3 (1.6%) answered decreased liability risk, 35 (18.6%) responded in standardized dispatches, 10 (5.3%) answered in maintaining paramedic ambulances availability within the system, 12 (6.4%) answered that this question was not applicable to them, and 4 (2.1%) answered “other” benefits. Two hundred and thirteen respondents skipped this question.

Question 10 asked what drawbacks have your agency seen with use of a priority dispatch system. Sixty-six (36.3%) answered an increase in call processing time, 5 (2.8%) answered a increase in liability risks, 6 (3.3%) answered a decrease in call volume for 1st responders or paramedic ambulances, 25 (13.7%) answered dispatch center not wanting to utilize the program, 55 (30.2%) answered the on-going training requirements, 24 (13.2%) answered the cost requirements of the system, 41 (22.5%) answered that this question was not applicable, and 38

(20.9%) answered “other” drawbacks ranging from too strict system requirements to under and over triage of calls. Two hundred and nineteen respondents skipped this question.

Question 11 asked of the drawbacks listed, which one had the greatest impact on your agency. Fifty-two (28.7%) responded that an increase in call processing time, one (0.6%) answered an increase in liability, 4 (2.2%) answered a decrease in call volume for 1st responders or paramedic ambulances, 11 (6.1%) responded the dispatch center not wanting to use the program, 29 (16.0%) answered the training requirements, 12 (6.6%) answered the costs of the program, 47 (26.0%) answered that this question was not applicable to them, and 25 (13.8%) answered some “other” drawback being the greatest impact on their agency. Two hundred and twenty respondents skipped this question.

Question 13 asked if your agency currently uses a priority dispatch system, had you previously worked under a different EMS dispatch system. One hundred and four (57.8%) responded that they had worked under a different EMS dispatch system prior to going to a priority medical dispatch system, and 76 (42.2%) responded that they had not worked under a previous EMS dispatch system before using priority medical dispatch. Two hundred and twenty respondents skipped this question.

Question 14 asked those respondents that did operate under a different dispatch system prior to utilizing priority medical dispatch, which dispatch system would they recommend. One hundred and thirty one (72.8%) responded that they preferred the priority medical dispatch system, and 3 (1.7%) responded that they prefer their previous EMS dispatch system. Ten (5.6%) responded that they preferred neither system. Thirty-six (20%) responded “other” to the question. Two hundred and twenty-one respondents skipped this question.

3. What impact will implementing a priority medical dispatch system have on response times and are the costs associated with having a priority dispatch system worth it?

Question 7 asked if your department uses a priority dispatch system, has your agency seen a change in dispatch call processing time (the time it takes for the dispatcher to take the call and dispatch a unit). Ninety-eight (49.5%) responded that they have seen no change in call processing time, 68 (34.3%) responded that they have seen an increase in call processing time, while 32 (16.2%) responded that they have seen a decrease in call processing time. Two hundred and three respondents skipped this question.

Question 12 asked if the costs associated with the implementation and maintenance of a medical priority dispatch system has been worth it to their agency. One hundred and thirty six (75.1%) responded that the costs have been worth it for the medical priority dispatch system, and 6 (3.3%) answered that the costs have not been worth it. Forty (22.1%) answered “other” to this question with answers ranging from too soon to tell to other agency pays for system. Two hundred and twenty respondents skipped this question.

Discussion

The survey results revealed that more than 95% of the agencies surveyed provided EMS services to their community. Of those agencies that responded, more than half (54.7%) are using some form of priority medical dispatch. This revealed a higher rate than the National Academies of Emergency Dispatch found. They estimate that less than 25 % of the U.S. population is being served by a fully integrated priority medical dispatch system (Griffiths, 2003). Of those agencies surveyed using a priority medical dispatch system, 48% were using some nationally recognized commercial priority medical dispatch product, with 44% of those using Dr. Clawson’s Medical

Priority Dispatch system specifically. The literature review showed that many of the dispatch centers are changing to nationally recognized systems as a result of the ASTM adoption of both the certification and curriculum standards for emergency medical dispatch, and the emergency medical dispatch management and quality assurance standards (ASTM F 1258, 1995).

Both the survey results and literature overwhelmingly supported the benefits of utilizing a priority medical dispatch system to determine EMS responses. Standardized dispatch, better utilization of resources, and improved personnel and public safety from reduced use of lights and sirens were the three highest benefits identified by survey respondents. Since 1990, the Department of Transportation has mandated the development of a practice standard for emergency medical dispatch (Maher, 1999). Since that mandate, two leading organizations, the NAEMSP and the ASTM have taken the position to establish that emergency medical dispatch systems are the standard of care in the EMS dispatching industry (Clawson, Martin, & Hauert, 1994). Prioritizing calls on the front end is the key factor in the decision to protect resources (Adams, 1989). It is imperative that we reduce the unnecessary use of lights and sirens with emergency vehicle accidents being the second leading cause of on-duty fire fighter deaths (JEMS.com [JEMS], 2006). Reducing the risks of emergency vehicle collisions can be greatly increased by reducing the use of lights and sirens response. Jeff Clawson, MD believes that this risk can be reduced at the dispatch level, where calls are received and dispatched (Taylor & Wilson, 2003). Clawson's own agency in Salt Lake City reduced their emergency vehicle accidents by 78 percent after implementing his priority dispatch system (Taylor & Wilson 2003).

The survey results showed that an increase in call processing time was one of the biggest potential drawbacks to a priority medical dispatch system. This is not surprising since the literature shows that the culture of speed still permeates EMS, often to the detriment of dispatch

(Griffiths, 2003). It is hard to argue with the research that continues to show that only 5 to 10 percent of all medical calls are for life threatening emergencies (Clawson & Democoeur, 2004). Therefore, a slight increase in time on the front end may actually benefit the entire EMS system and citizens on the back end. Utilization of a priority medical dispatch program actually can drop the response time to zero. Help is not delayed until arrival of first responders and can begin immediately with pre-arrival instructions given by the dispatcher. Clawson (1989) stated that, "In essence, the EMD is the 'first' first responder and through immediate action can effectively eliminate the deadly 'four minute' plus gap at the beginning of the response" (Clawson, 1989, p. 53). Survey results actually showed that 65.7% of the respondents actually saw no change or a decrease in call processing time utilizing a priority medical dispatch system. These results were supportive of what the literature review was showing above.

The survey results showed that slightly more than half of the agencies who currently use a priority medical dispatch system used a different system prior to the implementation of priority medical dispatch. Of those agencies, 72.8% responded that they preferred the priority medical dispatch system over their previous system. Priority medical dispatch systems actually go hand-in-hand with EMS. When a medical call is evaluated and prioritized by a certified EMD dispatcher, the standardization and consistency is comparable to the operating procedures that firefighters and paramedics follow (Clawson & Martin, 1990). Dispatch centers must make the change from medically trained freelancing to a protocol-driven process (Patterson, 2007). In order for dispatch centers to successfully change the way they do things, protocols must be sound and training, both initial and ongoing, is essential (Patterson 2007).

The results of the survey and literature review provided a confirmation as to the direction DCFD2 and surrounding agencies need to pursue. It is obvious that there are proven, nationally

established priority medical dispatch systems in place that would enhance our current EMS response system. It was also apparent that priority medical dispatch systems are the national standard of care and EMS systems not utilizing these programs are inherently open to an increased level of liability.

This author believes that there are proven, established solutions available that would allow DCFD2 and surrounding emergency agencies to implement an effective system for prioritizing EMS responses in the greater Roseburg area.

Recommendations

Based on the information gathered in this applied research project, this author does not believe that DCFD2 and the surrounding agencies are being dispatched by the most efficient means available. As a result of the data collected, this author recommends to take the tried and proven method and implement a fully integrated medical priority dispatch system into the Douglas County Emergency Communications Center.

Recommendations for DCFD2 and other surrounding emergency agencies dealing with the prioritization of EMS responses include:

1. Select a priority medical dispatch program that has been developed by a nationally established company that has a medically based sound foundation.
2. Have Douglas County Emergency Communications Center officials visit and evaluate some of the existing Oregon dispatch centers already utilizing one or more of the nationally established priority medical dispatch programs.
3. Research the preferred program(s) available and share information and preferences with local emergency responder agencies for their input.

4. Request bid(s) from companies based on the Douglas County Emergency Communications Center's configuration needs for product, installation and training of personnel.
5. Explore funding sources for program purchase. Possible sources include Douglas County general fund, user agencies, and/or grant opportunities. Once funding sources are identified, assure funds are budgeted and secured in current or future budgets.
6. Establish an implementation timeline that allows the dispatch center and emergency responder agencies to update their procedures and protocols regarding EMS response.

These recommendations would allow our EMS system to utilize our current resources more efficiently and effectively. A priority medical dispatch system would take any guess work out of the hands of the dispatcher and allow all EMS calls to be screened in the same format every time. Following medically driven algorithmic protocols would assure that each call is screened and categorized properly to assure the correct pre-hospital response and response mode.

By implementing these recommendations, the safety of the citizens and emergency personnel will be greatly enhanced. Responders will not be responding to calls with lights and sirens that do not warrant an emergency response. Everyone that calls 9-1-1 will always get a response, but they will get a response that is medically prudent based on their condition. Implementation of these recommendations would also be beneficial in reducing everyone's liability when it comes to EMS calls. Anyone can bring a lawsuit forward, but having a nationally recognized program, that has been established as the standard of care, provides a solid foundation of protection for the dispatch center and responding agencies.

Other agencies that are looking at implementing a priority medical dispatch program must understand that there are many issues that need to be addressed. Change is a big challenge

in the emergency services arena, especially in dispatch centers that are managed by law enforcement entities. This author believes that change is good and that through education and persistence all parties can be brought together on the same page. In today's world with all of the challenges emergency response agencies are facing, Clawson (1991) sums it up best that we need to “send the right thing to the right person in the right way at the right time” (p. 11).

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Appendix A

Applied Research Project Survey

How have other departments dealt with prioritizing Emergency Medical Services dispatches and what impact has it had on their delivery of service

Name of your Fire Department_____

Name, telephone #, and email address of person completing this questionnaire (if further information or clarification were needed) _____

_____ Square miles of service area

_____ Number of stations

_____ approximate number of citizens in your service area

1. Does your department provide Emergency Medical Services (EMS)?

- a. Yes
- b. No

If you answered NO to question #1, thank you for your participation in this survey, please do not continue on to question #2

2. Does your department use a tiered EMS response (send different types and amounts of EMS resources based on need)?

- a. Yes
- b. No

3. What type of EMS service does your department deliver?

- a. BLS 1st responder
- b. ALS 1st responder
- c. BLS & ALS 1st responder
- d. BLS transport
- e. ALS transport
- f. BLS & ALS transport

4. What organization manages your 911 center for your department

- a. Your own
- b. Law Enforcement
- c. Private Third party
- d. County
- e. Other_____

5. **What system does your department/dispatch use to determine the level of EMS response?**
 - a. EMD (Dr. Jeff Clawson's model)
 - b. APCO
 - c. PowerPhone
 - d. Internal Program/ Procedures
 - e. Other_____

6. **Does your department use a priority dispatch system for dispatching EMS calls?**
 - a. Yes
 - b. No

7. **If your department uses a priority dispatch system, have you seen a change in dispatch call processing (time the time it takes from the dispatcher to take the call and dispatch a unit)?**
 - a. Increase in time
 - b. Decrease in time
 - c. No change

8. **Which of the following benefits has your department realized with the use of a priority dispatch system? (Check all that apply)**
 - a. Better utilization of resources
 - b. Increased personnel and public safety by reducing code 3 (lights & siren) responses
 - c. Ability to use a tiered BLS and ALS response
 - d. Decreased liability
 - e. Standardization of dispatches
 - f. Maintain Paramedic ambulances availability within the system
 - g. Not applicable
 - h. Other_____

9. **Of the benefits listed which one has had the greatest impact to your department?**
 - a. Better utilization of resources
 - b. Increased personnel and public safety by reducing code 3 (lights & siren) responses
 - c. Ability to use a tiered BLS and ALS response
 - d. Decreased liability
 - e. Standardization of dispatches
 - f. Maintain Paramedic ambulances availability within the system
 - g. Not applicable
 - h. Other_____

10. **Which of the following drawbacks has your department seen with the use of a priority dispatch system? (Check all that apply)**
 - a. Increased liability
 - b. Increased call processing time

- c. Decrease in call volume for 1st responders or paramedic ambulances
- d. Dispatch center not wanting to use or follow program
- e. Training requirements
- f. Cost requirements
- g. Nota applicable
- h. Other_____

11. Of the drawbacks listed which one has had the greatest impact to your department?

- a. Increased liability
- b. Increased call processing time
- c. Decrease in call volume for 1st responders or paramedic ambulances
- d. Dispatch center not wanting to use or follow program
- e. Training requirements
- f. Cost requirements
- g. Nota applicable
- h. Other_____

12. Has the costs associated with the implementation and maintenance of a priority dispatch system been worth it to your department?

- a. Yes
- b. No
- c. Other_____

13. If your department uses a priority dispatch system, did you work with a different EMS dispatch system prior to implementing a priority dispatch system?

- a. Yes
- b. No

14. If you answered yes to question #10, comparing the two systems that were in place at your department which would you recommend?

- a. Priority Dispatch System
- b. Previous dispatch system (please name)_____
- c. Neither

15. If you have any additional comments or information that you would like to provide relevant to this topic, please feel free to do so.

16. If you would like a copy of my Applied Research Project when completed, please provide the method you wish to receive it

- a. Email
- b. US mail
- c. None