Dispatch Research: Someone, Somewhere Needs to Know

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INTRODUCTION

In the late 1970s, a new and innovative idea emerged from the developing science of prehospital emergency medicine: Emergency Medical Dispatch raised its head as a positive and well-intentioned, albeit unproven, idea[1]. Focusing on sending the right response to the right person at the right time and in the right way,[2] Emergency Medical Dispatch has over the last 30+ years grown and developed into what many of us know and use today. Over the last 15 years, it has become increasingly evident that properly trained emergency medical dispatchers (EMDs) are a crucial link in the EMS chain of patient care[3,4,5,6] with bodies such as the American Heart Association formally recognizing the EMD as a "vital but often neglected part of the EMS system."[7]

Emergency Dispatch involves the use of structured questioning and instructions depending upon the complaint, thus removing individual interpretation and variation and resulting in consistent EMD prioritization and determinant coding output, regardless of call-handler, shift, etc. This in turn enables greater complexity in dispatching consistent, auditable, measureable, and appropriate resources to callers, the ability to more efficiently and effectively manage costs, and most important the ability to reach the sickest quickest with the right resources. Having followed a sometimes turbulent road, converting the disbelieving and saving many a life, the concept of Emergency Dispatch has gone from an idea to a process validated in many peer-reviewed journals[6,8,9,10] employed worldwide in varying forms and generally accepted as international best practice. It could also be suggested that Emergency Dispatch is emerging as an organization's duty — the duty to provide dispatchers with the tools they need to perform their role safely, competently, and effectively.[1]

For many, the move from a communication center staffed by experienced medical responders using their years of operational knowledge and "on the street" exposure to process, question, and triage calls from highly stressed, emotional and at times confused callers, to a process of trained individuals using structured protocols with scripted questioning sequences, repetitive persistence calming techniques, and quality management concepts, can be a traumatic and emotional change. After many years of employing "street professionals," the thought of having a civilian call-handler using a scripted and highly structured protocol, instead of freelancing and using the knowledge built up over many years, can be an emotional wrench. It may also lead the medical professionals to ask, "How can they do my job?" In truth the roles, responsibilities, and knowledge requirements of being "on the road" compared to "in the communication center" are very different. On the road face-to-face assessment is used, while in a control room, the non-visual art of telemedicine is practiced.

Implementing Dispatch protocols

We all rely on our memories: from shopping to traffic directions; from where we left our door keys to what our partners wanted for Christmas. The memory is a fascinating and wonderful thing, and many professions depend on a reliable memory. Some things, however, seem just too important, or dangerous, to leave to memory alone, especially at times of high pressure when lives are at stake. To paraphrase a saying used by the founder of the MPDS protocols: Would it do for NASA count-

down engineers to have to "remember" all of the checks on the space shuttle that are necessary to ensure a safe and uneventful lift-off?"

Many dispatch centers around the world have made the move to Emergency Dispatch with considerable success[6]. But 35 years after its the birth, there are still many communication centers in towns, cities, and countries world-wide that struggle to see the benefits, to acknowledge the many lawsuits arising from a lack of structured process,[1,2] and to embrace good consistent evidence-based practice[4,5,6,7,8].

Therefore, some of the most fundamental keys to further developing the science of Emergency Dispatching are pre- and post-implementation evaluations of new sites, looking at the impact the change has made, and producing short, published, informative papers[6,10,11,12] showing the impact, financial benefits, caller benefits, and safety associated with such use.

Quality Assurance and Quality Improvement

In order to continue to develop the new and emerging science of Emergency Dispatch, the subject needs to be given the same focus and priority as cardiac care, stroke intervention, and trauma management. The profession and the broader society need to accept Emergency Dispatch as an integral part of the chain of survival and patient care. The profession as a whole seems to have overlooked the previously mentioned AHA statement that emergency medical dispatch is a *"vital but often neglected part of the EMS system"* and has continued to act on instinct, gut feeling, and personal preference. Whatever the discipline, whatever the call, emergency dispatch is where the required intervention starts, be that medical, police, or fire, and be it a lifesaving intervention, recognizing a false call, or an individual requiring advice. This gateway to responding is the most under-researched aspect of EMS, yet it is probably the single most important aspect of "getting it right."

Yet in trying to "get it right," nothing can be measured unless we know the effectiveness with which the system in use is being used. Many organizations around the world believe that they know what they are delivering, but do they really? Within Emergency Dispatch there are just 117 Accredited Centers of Excellence out of over 3,500 users (personal communication with the IAED), which equates to fewer than 3% of users embarking on a recognized Quality Assurance Program. One reason for this apathy around quality assurance may be the perception that implementing and maintaining quality management forces up costs and by definition creates longer call handling times. Yet in truth, quality assurance (QA) will likely reduce associated costs[13] through reduced complaints[14], improved responsiveness to adverse incidents[13], and improved dispatching processes [6,15].

Implementation of Total Quality Management processes and long-term adherence to those processes are fundamental to good, evidence-based research in highlighting how the system performs, as opposed to group opinion. This difference has been well proven[6, 16, 17]. Without a quality management process in place, a change may increase complaints, create litigation issues, and adversely impact dispatching processes, all because of human variation causing the problem that led to a system change. By committing to an effective QA process, you have the tools at your disposal to identify your center's strengths, confront the challenges, and motivate your staff. You have the opportunity to evaluate your operations against defined standards, to remedy shortcomings, and to enhance the standard of care provided. QA isn't always palatable—it could be described as the cleaning supervisor's equivalent to looking under the house rug—but it underpins adherence to operational principles that greatly reduce risk and potential for error. It informs management of areas for development and improvement that result in a more responsive operation, one that detects and resolves causes of potential complaints before they occur. The use of a formal, effectively managed, and active QA process will also serve to assist in defense against lawsuits through the use of international best practice, organizational accountability, and documented interventions for non-adherence to defined processes.

The Need for Research

The accuracy of dispatch information, including coding, is strongly dependent on the EMD's compliance to the protocol[2]. A protocol can only be accurately studied, revised, and developed if it is followed as designed—if not, researchers are merely testing each individual's freelance questioning, thought process, and answer interpretation—and the center's overall findings are an amalgamation of the heterogeneous decision-making of the EMD corps as a whole. It is clear that non-compliance invalidates the reliability of such dispatch data and resultant studies' findings, outcomes, and conclusions.

This is a key issue when questions, complaints, and challenges arise from the front-end user—the EMD. Ask any call-handler what works and what doesn't, what they like and what they don't, and a list of research topics is instantly available identifying where we need to start to evaluate, including issues that affect the caller directly through the questions that are asked (or not asked), what terminology is understood (or not), what questions differentiate response types, and what impact changes have.

But life is not always about the clinical impact of the system or individual, or how good the system or individual is, nor is it about how much an individual knows. The are many factors which affect productivity or performance in a work setting, including somatic factors such as state of health, gender and age, psychic factors such as attitude to work, motivation, sleep deprivation and stress, and the nature of the work to be performed. These are all identified in one form or another as major factors predisposing to poor performance, human errors, and reduced accuracy and efficiency during shift work, generally arising from fatigue and disturbance of sleep due to the difficulties of sleeping during the day[18,19]. Compounding this, there is evidence that highlights that over successive shifts and/or increasing hours, both productivity and safety can be compromised.

Therefore, there is a need to analyze the impact that a structured, protocol-driven, clinical decision support tool has on the call-handling staff's decision making. There is a need to provide the caller with a balanced and equitable service regardless of day of week, time of day, or number of shifts worked. It is imperative that we, as a profession, understand and highlight any difference that may or may not exist between individuals freelancing and using their own individual knowledge across various aspects of practice so as to identify whether a structured protocol driven process actually avoids these pitfalls and maintains effectiveness and efficiency regardless of other influencing factors. At the moment we just do not know.

DISCUSSION

There are a number of systems and protocols available for use in emergency communication centers for call-handling, but few undertake transparent, peer-reviewed, and independently published research to lead and initiate change and allow the true evaluation of the process. In order to move Emergency Dispatch forward there is need for comparable, independent evaluation of the caller journey and subsequent response. With commercial products and various claims regarding trademarks and intellectual property, this may seem to be beyond the possible. But in the interest of the patient, the victim, the caller, and the public in general, as well as the typical expectations of a true profession, Emergency Dispatch must publish more material on how it works and how effectively it deals with the various call types.

If we are to publish more, then this must be done in a coherent, comparable, and open manner. Common sense would dictate that we must create a method of uniform data reporting for comparison, reporting, auditing and research, similar in nature to the Utstein-type template, to allow multiple studies to be compared together and used to drive change[20,21]. It would also be sensible to create templates for data collection such as that previously employed by the UK's DH ECPAG (personal communication).

Due to the general lack of research that exists in this field, papers do not have to be, and probably currently should not be, large studies looking at multiple variables. The best starting point is to look at the basics—simple areas where the users report that they "don't think this works properly." Some recent examples of this include revisions to specific questions within the AMPDS protocol to improve both sensitivity and specificity to the seriousness of patients having a seizure[22] or older papers such as looking at how we overcome barriers to delivering CPR[23]. The development of lots of little papers looking at specific areas as opposed to large scale studies will lay down a foundation to build upon and baselines to compare against at a later date, and enable faster revision of the process and release of new evidence-based protocols[24].

CONCLUSION

Emergency Dispatch is a fast moving, developing, and life-changing science, and therefore dispatch research needs a collective and coordinated approach with multiple users being aware of what is being studied and what questions are being asked. Users with similar aims or concerns can then join forces and produce specific responses from multiple sites, adding considerable value to the evidence. Once undertaken, the research, audit, or evaluation shouldn't remain gathering dust or sitting on a shelf. The dissemination and publication of these pieces of work allows others to learn your lessons, allows rapid development to take place, and provides a better overall service for the caller.

Emergency Dispatching allows the dispatcher to become the first, first responder — delivering care right at the point of call origin, be that CPR, childbirth, hemorrhage control, or airway maintenance. Emergency Dispatching takes control of the caller's "emergency." Thirty years in the making and almost 19 years after Claude Lenfant, M.D. Director of the National Heart, Lung and Blood Institute (US) stated that *"there is a paucity of research related to outcomes associated with Emergency (Medical) Dispatching,"* little has changed. He continued to say that *"only through evaluation research can the optimal EMD processes and protocols associated with specified outcomes be elucidated,"*[25] a statement that still rings true and needs to be heeded to ensure that this profession continues at pace. Emergency Dispatch is still a "New Science," a beacon of hope and deliverance for those in their time of need. Just as the ongoing development of areas such as cardiac care, stroke treatment, and trauma management are driven by evidence, so emergency dispatching must be.

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