



## **White Paper: Effective Staffing of Emergency Medical Calls**



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## **Introduction**

The study of effective staffing for fire suppression has been well documented by many agencies including the National Institute of Standards and Technology (NIST). These studies have proven the increased efficiencies and effectiveness of a one person, two person, three person or a four person engine company. Unfortunately the study of effective and efficient staffing for Emergency Medical Services (EMS) is not as well documented. The days of the “Ambulance Driver” are long gone. Today’s EMS providers are highly trained, skilled medical professionals and the advancements in EMS over the past two decades have given pre-hospital providers greater diagnostic tools and equipment that help us better diagnose and treat serious, sometimes fatal medical problems.

This White Paper will demonstrate the need for effective staffing on the scene of medical emergencies beyond the initial Ambulance crew. In order to achieve quicker scene times and more efficient and effective patient care, it is necessary to have enough trained medical personnel in order to perform other ancillary functions not directly related to the patient, such as, carrying equipment into the scene including medical bags, drug boxes, cardiac monitor, stretcher, stair chair, etc. All of this equipment is needed in order to treat and extricate patients with serious medical conditions. When the paramedics on the scene of a medical emergency are bogged down with carrying equipment and focusing on the extrication of the patient the potential exists that patient care may suffer and important details of the patient’s medical condition and history may be missed.

## **Problem**

An insufficient amount of trained EMS providers at the scene of certain types of medical calls will delay treatment, extrication and transport of a patient from the scene. Depending on the nature of the call and the significance of the injury or medical condition this delay in transport could cause further complications for the patient.

Depending on the complexity of the extrication and the size and weight of the patient, the potential for injuries to EMS providers are also increased. “The injury rates for EMS workers are higher than rates reported by DOL for any industry in 2000.” (Maguire et al, 2005) According to a position paper written by the American Ambulance Association (AAA) on the transportation of morbidly obese patients, “Morbid Obesity is a serious disease process, in which the accumulation of excessive fatty tissue interferes with, or injures the bodily organs, causing life-threatening health problems. Weight charts consider a person morbidly obese when at least 100 pounds heavier than recommended.” (AAA). According to the Journal of the American Medical Association “More than one-third of adults and 17% of youth in the United States are obese”. (JAMA)

The patient's medical condition and treatment modalities will also determine the need for additional EMS providers on scene. Other on scene challenges such as the difficulty of the extrication from the scene, i.e. stair chair or scoop stretcher after considering the patient's weight, in addition to the on scene conditions such as the living conditions in a home or office, i.e., hoarding, narrow hallways, tight staircases, decaying building construction, weather conditions such as snow, ice, rain, etc. have an effect on the amount of work that a two person EMS crew can actually perform while still effectively treating a patient's medical problem.

Another layer of the emergency medical call that is not frequently discussed, although important in managing a scene is the handling of friends or family members. Depending on the nature of the medical emergency if there are friends or family members present, even if it is just one or two, it can escalate the anxiety and the excitement of a particular scene. Although medical professionals are used to dealing with emergencies on a daily basis, the average citizen is not. Stress levels can get high and even the best intentioned family members can often make the scene of a medical emergency more stressful than it needs to be. With the proper amount of EMS staffing on a medical call, the patient and the family can both be handled simultaneously therefore ensuring that care and transport will not be delayed because of the presence of friends or family.

## **Background**

A simulated emergency call for "chest pain" was staged in a single family residential home. Every attempt was made to make this simulated call as realistic as possible. For the purposes of this study we had no outside interference or challenges that are often present on the scene of an emergency call. There were no friends or family present; EMS crews faced no extrication challenges such as the use of a backboard or scoop stretcher, no broken or decayed stairs, no egress issues, no weather conditions, no hoarding like conditions and no narrow hallways or staircases. The patient was a middle aged male, average size weighing 182 lbs. and 5'10 in height. We ran the simulated chest pain call three separate times. We used the same two EMS providers as the "primary" responders on all three of the calls for consistency. The primary responders consisted of a Paramedic and an EMT-Basic.

The first call was handled with two EMS providers. The second call was handled with the same two EMS providers and we introduced a third EMS provider in a "chase" or "fly car". The third call was the same two EMS providers and a two person engine company for a total of four EMS providers. For consistency the same Paramedic took the lead on all three calls and used the same treatment protocols in each of the three calls.

## **Outcome Measures**

The four person EMS crew was able to achieve an on scene time of six minutes and fifty five seconds (6:55) from on scene to transport opposed to a two person EMS crew that had an on scene time of fifteen minutes and thirty five seconds (15:35) from on scene to transport. A reduction of nine minutes and twenty seconds (9:20). The three person EMS crew achieved an on scene time of seven minutes and fifty seconds (7:50). A reduction of eight minutes and twenty five seconds (8:25) from the two person EMS crew. As you can see, by doubling the size of the EMS crew from two to four members we were able to gain more than 100% efficiency in the on scene time.

Scene times -           4 person EMS crew - 6 minutes, 55 seconds – (6:55)  
                              3 person EMS crew – 7 minutes, 50 seconds - (7:50)  
                              2 person EMS crew – 15 minutes, 35 seconds - (15:35)

## **Solution**

Calls for medical emergencies should be screened using Emergency Medical Dispatch (EMD) procedures through the Public Safety Answering Point (PSAP). Based on the information provided to the dispatchers, additional EMS providers should be sent to the scene of medical emergencies when available to assist the primary EMS crew on Advanced Life Support (ALS) calls, or those calls that it is likely that the treatment modalities will dictate the need for additional EMS providers on scene. If additional EMS providers are not immediately sent to the scene based on the nature of the call and EMD information, EMS providers on scene should be conducting a rapid assessment to determine whether additional personnel are needed and call for them early in the incident.

## **Conclusion**

As it was stated by Dr. Marc Restuccia, an Emergency Room Physician at the UMASS Medical Center University Campus in Worcester MA, and Medical Director for the Auburn Fire Rescue Department, “when you have the augmented crews either with the extra person or the full engine, you’ve got the Paramedic basically focused on the patient. He or she is not distracted by things like having to set up the stair chair or get equipment; they can focus entirely on the patient. They can get a better history that way and reassure the patient. They’re not being interrupted to do other things. It means they’re not going to forget critical parts of the history because all they have to do is take care of the patient. They don’t need to do any of the ancillary stuff so that’s actually a tremendous benefit for both the patient and the treating Paramedic”.

It has been shown through this study that a three or four person EMS crew on a medical emergency significantly reduced on scene times and improved the efficiency of the crew. A three or four person EMS crew created an opportunity for better focus and attention on the patient by the primary EMS provider, increased safety of the crew and the patient, and eliminated the need for one of the EMS providers directly dealing with the patient on a two person crew having to retrieve the necessary medical, extrication and transport equipment to treat and package the patient.

## **References**

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## **Related Links**

Haigh, A. Craig, (2013). Staffing: Are We Telling the Right Story? Retrieved from <http://www.fireengineering.com/articles/2013/11/staffing-are-we-telling-the-right-story.html>

Firefighter Safety and Deployment Study: Report on EMS Field Experiments. Retrieved from [https://www.iaff.org/tech/PDF/EMS%20Nist%20Report\\_LORES.pdf](https://www.iaff.org/tech/PDF/EMS%20Nist%20Report_LORES.pdf)