

Hypothesis

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Hypothesis

Establishing a Medical Emergency Response Team: Moving the Fronts Forward

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Abstract: The Medical Emergency Response Team (MERT) is a specialized first aid team concept designed to respond to sudden-onset and natural disasters. The team consists of a specialized group of doctors and nurses, supported by regular training and specialized equipment, who can respond quickly to the scene of a disaster and provide first aid and initial treatment to the injured in collaboration with other departments. How to perform MERT work is a topic that requires multidisciplinary support and multi-departmental collaboration, which requires in-depth exploration and continuous experimentation. We believe that MERT can realize forward movement of the disaster emergency front, provide valuable buffer time and information support for hospital emergency work, and provide new ideas and solutions for disaster medicine.

Keywords: medical emergency response team (MERT); disaster; emergency medicine; first aid

Introduction

The concept of emergency response teams is not novel. Military and security organizations, such as police and fire departments, have established various emergency response teams to serve as initial responders to emergencies. Such teams are frequently equipped with the requisite equipment and weapons to address any unforeseen situations that may arise.

Medical support teams are indispensable components of safety at large events. For example, first aiders and volunteers at marathons are equipped with automated external defibrillators (AEDs) [1]. Similarly, the medical emergency support team that was prepared for the Beijing Winter Olympics is a case in point [2]. The inclusion of these medical teams ensured the availability of adequate medical support for the safe execution of the event.

Disaster and emergency medicine is defined by its unpredictability. Sudden disasters often challenge a region's medical system to a significant extent. When a disaster strikes, experienced first aid teams are essential to respond and engage in resuscitation efforts as rapidly as possible, with the objective of maximizing the potential to save lives and minimize injuries. Medical preparedness for emergencies is challenging, both in advance of and during sudden, large-scale events. There are several parallels with sudden public policing events. The measures implemented by the policing team to address emergencies include the establishment of various emergency response teams to facilitate the timely management of crises through the conduct of advance drills and combat readiness training. Similarly, in the medical field, the formation of specialized emergency response teams can be viewed as a strategy for preparing for potential future disasters. Here, we propose a novel concept: the establishment of a Medical Emergency Response Team (MERT).

MERT Conceptualization

The objective of establishing MERT is to provide rapid responses to all types of sudden-onset catastrophic events and natural disasters in collaboration with other teams engaged in first aid. This includes the provision of emergency medical rescue, treatment of the injured, and crisis management. In anticipation of large-scale disaster events, advanced staffing and equipment planning are conducted with the objective of ensuring that resuscitation work can be carried out within the first

time of a disaster and to provide advice and reserve preparation time for subsequent hospital admissions and resuscitation work.

MERT is a select group of young doctors and nurses from major hospitals who have undergone specialized training in emergency medicine. They are employed in hospitals that are equipped to respond to emergency first aid in a timely and effective manner. They undergo training and participate in drills. In the event of a disaster, they can respond as expeditiously as possible, traveling to the scene of the incident to provide first aid. In normal times, they engage in the daily medical work of the hospital at the same capacity as other colleagues do.

The MERT can be equipped with portable resuscitation equipment and medicines to cope with the complex environment of the disaster site and provide support for the initial treatment of first aid and the transportation of the injured. Furthermore, while first aid is being administered, establishing a temporary first aid station in a nearby secure area is advisable. This would enable the initial examination, assessment, and treatment of the injured, as well as the triage of those requiring further care.

Another crucial responsibility of MERT is to gather and summarize the condition of the injured at the disaster site and relay the initial treatment of the injured to the hospital by a team of medical professionals to assist the hospital in preparing for the implementation of first aid and resource deployment in advance.

MERT Advantages

The MERT was established with the intention that a significant disaster would necessitate the deployment of a substantial number of medical teams and the provision of appropriate emergency equipment to address both of these concerns. From the perspective of time, MERT members can be the first batch of young doctors on the emergency team to participate in the rescue, thereby reducing the deployment time. On the other hand, the portable equipment designed for MERT also enables doctors to perform initial resuscitation work in a timely manner. The trained team of doctors is also better equipped to provide initial care during the first aid phase.

Another advantage of MERT is that it allows for effective hospital preparation time. The current Emergency Medical Service System (EMSS) can be summarized into three distinct phases: activation, onsite resuscitation, and transfer to the hospital [3]. In everyday life, an EMSS is typically called upon to respond to incidents involving a relatively small number of patients, such as cardiac arrests and ordinary traffic accidents. These relatively minor emergency events do not affect the normal operation of hospitals or emergency centers. However, in the event of a significant emergency, such as a natural disaster or a major explosion, the number of patients requiring emergency care will be considerable, placing considerable pressure on hospitals to provide care within a short period of time [4–6]. The scheduling constraints of emergency personnel and equipment may become a limiting factor in the success of resuscitation efforts. Consequently, another significant objective of establishing MERT is to provide hospitals with additional time to respond to emergencies and to offer guidance and advice regarding subsequent resuscitation procedures within the hospital setting, which means that the emergency front has moved forward. The first-hand information provided by frontline doctors will assist hospitals in preparing for resuscitation in advance and enhancing their capacity to cope with the pressure of a disaster.

In conclusion, MERT has created new avenues for disaster medicine. It enables the first rescue teams to respond more rapidly and to provide more effective treatment on the scene, thereby advancing the front line of emergency work. It also provides a vital buffer space for the development of emergency care in hospitals and offers more possibilities for advanced mobilization and rational allocation of medical resources.

Further Improvements and Challenges

MERT can be regarded as a special force within the physician resuscitation team, and their technical and equipment support is of particular importance. Some medical devices, such as carrying support, outdoor emergency medicines, and portable examination equipment, require specialization. This necessitates the implementation of a robust logistics system and a well-designed management scheme. Additionally, the equipment utilized by MERT is not exclusive to the medical industry. Search and rescue equipment such as drones, emergency communication equipment, and other related fields can also be utilized by MERT. The advent of new scientific and technological advances has created a more expansive domain within which MERT teams can demonstrate their expertise. Importantly, there is a period of adjustment for both the equipment and the users. Additionally, the training of doctors on the MERT team requires careful consideration to ensure that it is conducted in a reasonable manner.

MERT is equipped with robust onsite operational and treatment capabilities. Consequently, it is imperative to devise meticulous onsite rescue procedures and standard operating procedures. It is necessary to develop a more appropriate classification of casualties, delineation of first aid priorities, and transfer arrangements for MERT. Furthermore, the standardization and ethical considerations of the rescue process must be addressed [7]. Plans for potential emergencies that may arise during the resuscitation process must be defined. This ensures that MERT team members are familiar with and able to execute these processes promptly and efficiently, with the objective of minimizing injuries, deaths, and disruptions.

In addition, disaster rescue is a multi-departmental issue, and MERT must collaborate with hospitals, firefighters, police, and other departments. This necessitates training in advance to ensure that MERT can fulfill its designated role in the event of an emergency. The aforementioned integration processes are contingent upon the coordination and support of various departments. This is also the challenge that the establishment of MERT must address. Consequently, the establishment of MERT is a protracted process that necessitates the collaboration of numerous departments. The evolution of MERT from its conceptualization to its pilot phase and subsequent realization is a complex and ongoing process that requires the active engagement and input of the majority of healthcare professionals.

Conclusion

We present a vision for disaster emergency medicine: the establishment of a specialized MERT. This initiative will require the support of multiple disciplines and sectors. The establishment of an MERT will facilitate the advancement of emergency care and provide novel concepts and insights into the development of disaster emergency care.

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