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Editorial

# Should every physician be ready to act as a community first responder?

Physicians are often called upon to provide first aid and emergency care outside the hospital setting. In the U.S., physicians are not uniformly equipped or empowered to handle these emergency situations without the support of hospital or emergency medical services (EMS) resources.

From civil unrest to natural disasters, current events have highlighted the need for healthcare providers to have basic life and limb-saving skills that can be used anywhere. In addition to the management of traumatic injuries, the COVID-19 pandemic has shown that large-scale, dynamic situations can require rapid deployment of physicians across specialties to support emergency rooms and intensive care units. One New York City hospital (U.S.A.), for example, reported using orthopaedic residents as "prone positioning teams" in its critical care units [1].

Another common out-of-hospital emergency setting is air travel. Most physicians have come to dread the announcement, "Is there a doctor on board?" It would seem much of this trepidation comes from the lack of self-confidence in being ready to handle the unexpected. A recent review of in-flight medical emergencies found that these events occur on nearly 1 out of every 600 flights [2]. The most common conditions noted were syncope or near-syncope almost 33% of the time, followed by gastrointestinal (15%), respiratory (10%), and cardiac complaints (7%) [2]. Do you feel prepared to assess, diagnose, and treat these potential emergencies if they were to present to you right now? What if it was a family member or friend? Do you feel adequately prepared to manage anaphylaxis, ocular trauma, dental trauma, or chest pain in a resource-poor environment?

The readers of Injury are committed to the care of the injured in this increasingly volatile, uncertain, complex, and ambiguous (VUCA) world [3]. This editorial starts a serious conversation about whether it is time to ensure that all physicians, regardless of speciality, have the ability (and confidence) to serve as advanced first responders when out-of-hospital emergencies occur in daily life, as well as during large-scale national and international crises. This need has been exemplified recently as healthcare systems around the world have become overwhelmed by COVID-19. Many questions need to be asked. Is there any evidence that it might work? What basic skills are needed for success? What are the next steps from here?

The German EMS system provides a good example of using physicians as first responders. Since the early 2000′s, it has dispatched specially trained physicians directly to the scene of polytraumas to conduct an initial assessment and provide prehospital care using an algorithm-based protocol called Prehospital Trauma Life Support (PHTLS) [4,5].

In 2018, Fukuda et al. looked at the one-month survival rates of nearly 4400 patients who suffered out-of-hospital cardiac arrests following blunt trauma sustained in motor vehicle collisions [6]. Their study aimed to assess whether patients had differing outcomes based on the type of healthcare provider that carried out their prehospital advanced life support (ALS). They found that those patients who received ALS from physicians were associated with significantly higher odds of survival than those patients who received either ALS or BLS (basic life support) from EMS personnel [6].

In addition to ALS and BLS training, there are many other useful training systems in which physicians can further hone their knowledge and skills as effective first responders. Commonly available courses focused on emergency care in the U.S. include cardiopulmonary resuscitation (CPR), Advanced Trauma Life Support (ATLS), and most recently, "Stop the Bleed." Each one of these courses was developed out of necessity.

Prior to the 1960′s, there were no widely accepted, evidence-based resuscitative techniques used to provide support to victims of out-of-hospital cardiopulmonary emergencies. After Drs. Kouwenhoven, Safar, and Jude built upon years of prior research and combined the techniques of mouth-to-mouth breathing and chest compressions, the system we now know as CPR was born [7,8].

ATLS was developed in the late 1970′s following a tragic plane crash in rural America in which Dr. James Styner and his children were badly injured and his wife was killed. As he watched with horror, he observed that the medical system in rural America was not prepared to handle trauma. Soon after, he began developing a protocol for the management of trauma in low-resource environments. ATLS was quickly adopted by the American College of Surgeons (ACS) and has since spread across the globe [9].

Following the Sandy Hook Elementary School shooting in Newtown, Connecticut, U.S.A. on 14 December 2012, the ACS formed a panel of experts to strategise a public safety response in the face of increasing gun violence in America, particularly in the realm of "active shooter" mass casualty incidents. On 2 April 2013, this panel of medical, law enforcement, and EMS experts met in Hartford, Connecticut, U.S.A. and developed the first of a series of guiding documents known as the "Hartford Consensus" [10,11]. These documents and the efforts made in response to them eventually led to the development of a bystander training course called "Stop

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the Bleed" which promotes a tourniquet-based response to prevent traumatic exsanguination [12].

Many law enforcement units in the U.S. also employ embedded physicians as Tactical Emergency Medical Support (TEMS) [13]. Further evidence for the value of highly trained first responders has come from the U.S. military's Joint Trauma System which developed a set of evidence-based prehospital guidelines in the mid-1990′s called Tactical Combat Casualty Care (TCCC) [14]. The concept of an embedded first responder proved to be highly effective in the Iraq and Afghanistan wars. TCCC-trained units achieved the lowest trauma fatality rates seen in modern warfare. In fact, TCCC was so successful on the battlefield that multiple organisations such as the Wilderness Medical Society, the National Association of Emergency Medical Technicians, and the Hartford Consensus advocated for its rapid adoption in American civilian trauma response [15,16].

Another lesser known training course, Advanced Wilderness Life Support (AWLS) was developed in partnership between the Wilderness Medical Society and the University of Utah in 1997 [17]. This course was designed to prepare licensed medical professionals to deal with medical emergencies encountered in low-resource, austere environments including wound management, patient evacuation, prolonged exposure to extreme heat or cold, altitude sickness, and dive medicine [17].

Many orthopaedic surgeons serve on the sidelines during sporting events to render medical care to the injured athlete as needed. Whilst most orthopaedic surgeons are comfortable managing musculoskeletal injuries (which are involved in over 70% of on-field evaluations), these are not the only medical emergencies that occur [18].

Some orthopaedic surgeons have attended courses designed specifically to bridge the gap between what is encountered in their everyday practices and the most common out-of-hospital emergencies team physicians may be called upon to manage. In the past 20 years, the American Academy of Family Physicians, American Academy of Orthopaedic Surgeons, and American College of Sports Medicine have released consensus statements on sideline preparedness that team physicians must be equally ready to respond to non-musculoskeletal issues including cardiopulmonary, neurological, dental, and ocular emergencies [19].

A 2017 study of orthopaedic residents acting as team physicians showed that whilst residents' confidence in managing musculoskeletal sideline injuries grew consistently over the five years of their training, their confidence in managing other serious on-field medical emergencies such as commotio cordis, concussion, dehydration, heat injury, and ocular injury did not [18]. The conclusion of this study was that the provision of additional training for these physicians was the most desirable solution [18].

Is the development of a similar "community emergency response" course designed to enhance the abilities of any physician regardless of speciality indicated? What are the steps needed to make this happen? Whilst there are many challenges surrounding the use of physicians as first responders, certain concerns rise to the forefront. For example, the American legal system complicates the delivery of medical care in the U.S., which can drive the practice of defensive medicine and inflate the cost of care. Although there are "Good Samaritan" laws such as the Aviation Medical Assistance Act which provides liability protection for a healthcare professional during in-flight emergencies, many American physicians are concerned about being sued for medical malpractice if they were to provide emergency care that is out of their normal scope of practice or is not up-to-date [20].

Additional pushback from physicians might occur because it adds further responsibilities and training requirements to their current practice. Furthermore, many physicians may not react positively if their participation were made mandatory. Many ultra-specialists are not commonly involved in treating trauma and other acute, immediately life-threatening illnesses, which raises the question if they would be equipped to handle these situations even with ongoing interval training. Would it be most prudent for some specialties to be excluded? If so, would this invite undue stigmatisation from colleagues and other medical stakeholders?

Perhaps a list of specific life-long medical competencies that doctors must maintain regardless of speciality should be created. It has been recommended that every physician should be able to deliver a baby, splint a fracture, and perform CPR in an out-of-hospital setting (Andy Pollak, MD; personal communication, 22 November 2019). One of the potential ways that this could be achieved is through the development of a system in which specialists without regular inpatient or critical care responsibilities can spend one week or more per year rotating in the ICU or ED to keep their skills sharp.

In a similar vein, community EMS field rotations could be another viable training option. One potential community-level benefit of having healthcare providers augmenting EMS services as advanced first responders in this fashion is the potential for improved patient outcomes following physician-led prehospital care as noted by Fukuda et al. [6] Other benefits of this model could include increased community engagement and improved public perception of physicians similar to other first responders such as firefighters [21].

A tiered approach for the training frequency may also be useful to maintain these perishable skills. Studies have shown that without regular practice and feedback, physicians quickly lose skills and knowledge after receiving training in systems such as CPR, BLS, ATLS and Advanced Cardiac Life Support (ACLS) [22]. Specialists in fields such as radiology and ophthalmology, who do not have regular inpatient or critical care responsibilities, may need to undergo training on a shorter interval in comparison to emergency medicine physicians, hospitalists, or trauma surgeons who may use these skills and knowledge more often.

Taking all of this into consideration, what would next steps look like? Such an initiative would be a major undertaking. It could occur on a global scale with international leadership and regional, national, and local operational control to manage societal and geo-political nuances. Perhaps it is time for another multidisciplinary consensus panel to create a training system that reinforces straightforward, hands-on skills (e.g., ATLS, "Stop the Bleed", CPR, simple airway management) for healthcare providers to use on the scene as a bridge to EMS responses.

A significant number of potentially preventable deaths occur each year due to lack of bystander intervention prior to EMS arrival [23–25]. Although this phenomenon points toward a need for more medical training of the population level in general, widespread training for the public is a topic for another day. An easier hurdle to overcome may be empowering healthcare providers to help augment this need at the community level. We believe the time is now to answer the question, "Should every physician be ready to act as a community first responder?"

## Declaration of Competing Interest

The authors have no conflicts of interest to report.

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