Editorial

Prominent mass casualty incidents (MCIs) have increasingly dominated the news since the turn of the century and have served as constant wake-up calls for healthcare systems across the world. In the event of a major mass casualty event inundating hospitals with an unusually large number of severe injuries accompanied by an even larger number of 'treat and releases', are the hospitals in the affected area equipped to react and respond to the incident adequately? Do government agencies — fire departments, police departments, EMS (Emergency Management Services), OEM (Office of Emergency Management), etc — have easy access to real-time capacity data at neighbouring hospitals to efficiently distribute the large number of victims such that some of the hospitals are not detrimentally overburdened? Equally as important, are there cross-system/agency infrastructure as well as processes in place to allow for instantaneous realignment of personnel and material resources to enable hospitals to respond effectively, maximising the chances of saving as many lives as possible? Following the catastrophe of 9/11 in New York City (NYC), hospitals across the world have, unfortunately, been tested over and over again — the Boston Marathon bombings in 2013, the Paris attacks in November 2015, the bombings at the Ariana Grande concert in Manchester in May 2017, hurricane aftermaths and the recent terrifying mass shooting in Las Vegas that killed 58 and wounded more than 500 people. Many healthcare systems across the globe have reacted to these incidents by developing, training, drilling and refining emergency management and MCI response plans. While there have been considerable improvements in emergency preparedness across healthcare facilities over the years, some of the major gaps that still remain, as highlighted by recent events, point to issues that may be beyond individual hospitals' control.

Communication, as many emergency preparedness experts would agree, is an essential component of the response of any type of disaster. In the event of an MCI, EMS and OEM do not always have easy access to real-time information on bed or operating room (OR) capacities at hospitals located in the affected area. Ambulances/EMTs, who are the first responders, usually start sending patients to nearby hospitals and trauma centres before they receive any communication or instructions from OEM or any overarching entity supervising the response. The impact of this lack of information in real time is inundation of some of the hospitals with too many critical and/or moderate casualties. While many hospitals have elaborate volume surge response plans, hospitals in large population centres are often already operating at or near full capacity, and the activation of their surge plans may not suffice in vacating the required number of beds. Furthermore, depending on the type of disaster, hospitals and trauma centres are equipped with very different numbers of speciality beds, from intensive care unit (ICU) beds and vent beds to negative pressure rooms (eg in response to airborne pathogen outbreaks). The initial rapid assessment followed by accurate distribution of patients to different hospitals based on real-time knowledge of the hospitals' capacities increases the chances of patients receiving the appropriate setting or level of care and reduces the amount of rework needed later in transferring patients from hospital to hospital. There is a need for amplified coordination across first responders, OEM and local hospitals to streamline and improve communication and information

sharing (whether it be process or technology improvements), especially during the initial hour(s) of a disaster.

Across the United States, trauma centres are not all adequately stocked with the resources needed to respond to major MCIs. Even trauma centres located in major cities may not have the staffing and supplies needed to handle severe injuries beyond a certain number. For instance, a trauma centre with 15 operating rooms may not necessarily have the staffing to run all the ORs in response to a disaster or enough blood supply to do more than 2 MTPs (massive transfusion protocols) at a time. Such crippling resource constraints call for more government regulations and assistance in assessing these gaps, ensuring that these trauma centres are more adequately supplied with critical resources and in effecting processes that enable rapid mobilisations of the required resources to hospitals in response to an MCI.

There are regulations that determine the geographical distribution of trauma centres in the US. For countries that do not already have governmental guidance on the strategic locations of trauma centres, this is critical in helping to ensure successful responses to disasters. Compared with hospitals in metropolitan areas, rural areas face additional challenges as they often lack the staff and resources to respond to large-scale patient surges. Their geographical locales also add on a layer of delay even if resources are to be mobilised from neighbouring areas or cities. In addition to stringently regulated (and constantly reassessed) geographical distribution of trauma centres, there needs to be enhanced funding and support for more training and standardised expectations of MCI preparedness across healthcare systems.

Finally, as both the healthcare and the disaster realms have changed significantly over the years, responses to MCIs also need to be more flexible. Many ingenious solutions have been suggested in the literature and by experts but have not been widely adopted or considered just yet. Some of these include utilising mobile treatment vehicles to treat minor injuries at the MCI site (instead of sending all patients to hospitals indiscriminately), telemedicine and medical ambulance buses — larger vehicles designed and equipped to transport a much larger number of less severe injuries instead of exhausting the pool of ambulances available. These innovative approaches can mitigate the strains placed on hospitals during an MCI.

The United States has been slow to act on critical issues such as mental health and gun control, raising the spectre of increasingly frequent gun violence and mass shootings. Only by pushing for the rectification and closure of some of the gaps outlined above can the healthcare community hope for a faster and more adequate response from first responders and local agencies, along with hospitals, thereby increasing the victims' chances of survival in these unfortunate MCIs.

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