
ICU Volume 9 - Issue 3 - Autumn 2009 - Cover Story

Process Control in Multiple Casualty Events

There are few places which could be considered immune to man-made or natural disasters, culminating in a Multiple/mass Casualty Event (MCE). Much has been written on the importance of preparedness for a MCE. However, a relatively neglected aspect in the MCE literature is that of in-hospital process control from patient admission to the trauma bay until their final admission to the ICU.

Background

A decade ago, Jerusalem was the site of recurrent MCEs related to the Israeli-Palestinian conflict. As the single level I trauma centre in greater Jerusalem, this gave us a rare opportunity to examine the effectiveness of our preparedness and process control in such events. We quickly realised the importance of process control and open communications. This was especially evident with communications between those running the emergency room / trauma bay and those responsible for the functioning of the operating rooms, imaging (specifically CT and angiography) and intensive care units. Clear communication protocols between these important areas are of key importance for the smooth processing of a multitude of severely injured patients and their successful outcomes.

Importance of Key Personnel

Our experience and subsequent analysis taught us the importance of having the most senior ICU manager present in the trauma bay/emergency room. Several reasons supported this decision.

The ICU representative can provide:

- **A Direct and Unbiased Assessment of Patient Quantity and Severity.** Of key importance is the direct impression on the magnitude of injury and problems faced by each patient. This is of key importance because much information may get lost in the chaotic phase of an MCE.
- **Important Input in Triage Decisions on the Placement of these Patients in the ICU, Intermediate Unit or Regular Wards.** Some patients may present with only minor injuries, but their mechanism of injury and current complaint may signal only the tip of an iceberg of problems to follow within minutes, hours or days.

Importance of Information Process

The information gathered or supervised by the senior ICU manager in the trauma bay bears directly on the subsequent movement of not only the patient in question but the reorganisation of other patient's placement in the ICU.

In fact, this information impacts the discharge policy of currently admitted patients to other ICUs or regular wards. It is important to realise that some patients being first directed to the operating rooms may arrive at the ICU several hours later, providing an extended time window for patient discharge or re-organisation.

Key senior personnel can also assist in decision-making regarding necessary interventions and serve to direct patient load between different parts of the ICU or other ICU's (Cardiothoracic, Neurosurgical, Medical) based on the acuity and the level of required interventions and treatments. Equally distributing patients based on these criteria is of key importance for nursing to be able to adequately care for all patients.

Patient Flow

To analyse patient flow we used two terms in relationship to the patient admission stage:

- **The latent phase** - the time from the occurrence of an MCE to the admission of the first injured at the trauma bay/ER.
- **The chaotic phase** - the time from first injured admission to the final clearance of the trauma bay/ER following an MCE.

Patient flow in the hospital during the chaotic phase is of major importance. During the latent phase a quick decision, based on official sources (police, fire brigade, etc.) and the media, must be made with regards to the magnitude of the MCE. This will reflect on the policy for ER and ICU evacuation. However, as the chaotic phase starts, the flow of patients is uni-directional in restricted areas (Figure 1). Injured patients never return to the ER/trauma bay after imaging or any other procedure. It is of key importance not to clog the ER / trauma bay with patients especially when, in many cases, a second wave of transfers will arrive, soon after the first wave, from secondary ERs in the area. Hence, patient flow is directed from the ER/trauma bay to imaging and from there to the OR, ICU or ward (Figure 1).

Furthermore, it is of key importance to identify, prepare and staff a-priori an area for the management of those patients that require augmented care but do not meet criteria for ICU admission. Preferentially, this area should be controlled or co-directed by ICU specialists and be in close proximity to the ICU. A possible option is utilising the post-anaesthesia care unit (PACU), as the nursing staff is amply trained for the care of unstable critically ill patients.

Conclusions

© For personal and private use only. Reproduction must be permitted by the copyright holder. Email to copyright@mindbyte.eu.

In any MCE, there is a massive influx of trauma patients followed shortly thereafter by a second wave of patients. This influx of patients is accompanied by a plethora of information (both vital and insignificant), which requires efficient processing and prioritising. In our experiences in a level I trauma centre, we have encountered a number of these events and amassed a great deal of knowledge on best practices. Of core importance is proper process control, which is ideally managed by a senior ICU manager who can assess the priorities and smooth transfer of patients and assist when necessary.

Continuous communication is also a crucial element within the departments and facilitates the efficient flow of patients from the ER / trauma bay through imaging, the OR and onto the ICU. The set-up and utilisation of an area for patients who need additional care outside of the ICU also assists in improving the uni-directional patient flow from the trauma bay. While MCEs can test the strengths of any hospitals' resources and organisational structure, the adherence to these simple process control guidelines can positively impact the outcome of the patients involved.

Published on : Mon, 21 Sep 2009