Organisational crisis resource management: leading an academic department of emergency medicine through the COVID-19 pandemic

Nicholas Gavin , Marie-Laure S Romney, Penelope C Lema, John Babineau, Bernard Chang, Daniel J Egan, Christopher Tedeschi, Angela M Mills, David O Kessler

INTRODUCTION
In the midst of a surge of acutely ill patients, sirens blare, signalling the arrival of another critical patient to the emergency department (ED). The sound activates an internal script for the physician in charge as she plans for a resuscitation. It’s March 2020, in New York City (NYC), and we are here in the Department of Emergency Medicine at Columbia University, serving at the epicentre of the COVID-19 pandemic in the USA.

Emergencies are fundamentally chaotic, but the standard scripts and choreography learnt for patient stabilisation provide a road map for the orderly approach to managing that chaos. Collectively the principles of crisis resource management (CRM) are designed to help teams organise and coordinate efficient and effective care during an emergency.

CRM was derived from crew resource management which was developed to mitigate human factors in aviation safety. Crew or cockpit resource management was conceived in the 1970s in response to the Tenerife disaster and has subsequently become a standard training for aviators. Fundamentally, crew resource management is a structured approach to leveraging all resources in a time-sensitive situation in order to minimise errors and optimise performance. The primary foci of crew resource management training are (1) direct communication irrespective of hierarchy, (2) defined roles for leaders and followers, and (3) maintaining situational awareness.

In healthcare, clinicians have adapted this model, particularly in the fields of anaesthesiology and medical education and simulation, and promulgated the effective principles of CRM: leadership and followership, communication, teamwork, adaptability, resource use and situational awareness. This organisational framework allows for safe, effective care in high-pressure situations.

The COVID-19 pandemic arrived in NYC with great force and speed, swelling to over 130,000 confirmed cases in a little over a month. We saw historic increases in patient volumes and admitted four times as many critically ill patients as normal, causing unprecedented stress on our system. The speed, intensity and volatile nature of the pandemic’s arrival demanded a swift response to organise and coordinate our management of this crisis.

While there was no specific script for an event of this scale, our departmental leadership team created an organisational framework drawing from core CRM skills. CRM has traditionally been applied to microsystems, such as medical resuscitations or aviation emergencies. Adapting and applying the core principles of CRM at the departmental level helped our team remain agile and provided a road map for navigating the systemic chaos caused by the pandemic.

Our academic department is comprised of four New York metropolitan area EDs with a combined annual volume of 250,000 patient visits. Managing this crisis presented a unique challenge. We describe three basic CRM principles and how to apply them at an organisational level when responding to the current and future crises.

DESIGNATE LEADERSHIP AND ENSURE ROLE CLARITY
As our sick patient arrives, multiple microteams join to initiate care. She is gasping for air and her heart is beating rapidly. Our team leader steps in, managing the airway and ordering life-saving medications, while other team members carry out their individually prescribed roles. Clearly defined roles allow the designated team leader to delegate and distribute the workload while keeping the big picture in mind.

During the COVID-19 crisis, we expanded our departmental leadership team, creating new roles and shifting others as we identified needs. We organised teams and designated leaders to tackle the most dynamic needs: staffing, care standardisation, ED operations, external operations (eg, surge spaces and ambulatory care settings) and well-being. These new teams were empowered to make real-time decisions, much like the person in charge of a patient’s airway will position, suction and manage ventilation. Empowerment, of course, relied on a foundation of mutual respect and trust, understanding that everyone was functioning with best intentions using available information. Cultivating an atmosphere of open information exchange, help seeking and problem solving was the bedrock for our functioning as a team.

Our senior leadership team held nightly huddles to foster bidirectional recaps from each team and enhance global situational awareness. This daily touch point allowed the teams’ work to integrate,
and avoid duplication of efforts. It also facilitated efficient decision-making. Topics such as scheduling, normally done months in advance, were now a daily discussion to meet changing needs. We designated a leader to focus on staff redeployment and interface with other clinical departments to coordinate scheduling and optimal assignments. We appointed leaders to synthesise data from local, state and national sources to facilitate planning and anticipate needs. Designating our disaster preparedness director as the single point of communication proved critical to creating a shared mental model for the group as the deluge of communication coming from multiple sources was overwhelming.

**ANTICIPATE AND PLAN**

Our patient continues to struggle to breathe and we decide to intubate. Before intubating, we prepare a ‘backup’ plan. Whether that means additional advanced airway techniques or having additional airway specialists to assist, anticipating potential challenges before they happen, and calling for help early are vital to high-quality emergency care.

During our early response to COVID-19, we did not have the benefit of time for health system guidance and solutions for every problem encountered on the front lines. System-wide policies are broadly effective for standardisation but may take longer to implement given multiple stakeholder involvement. In this crisis situation, with increasing patient volumes by the hour, our departmental leadership team dealt with this challenge by enacting stabilising policies as we simultaneously ‘called for help’ from the health system.

The request for early system-level assistance involved many domains including human resources, supplies and information technology. There is always a lag for help to arrive and we plan for our care for a crashing patient knowing that some forms of help come sooner than others. We had to factor in system response times to simultaneously manage short-term, stabilising plans as well as long-term, definitive plans.

With the decision to cancel elective procedures, personnel were available for redeployment across the system. However, these providers had different skill sets requiring varying degrees of onboarding. We deployed those who could help immediately and knew our environment (eg, surgical subspecialists) while concurrently developing longer term integration of newer roles that required more planning (eg, palliative care physicians). As needs changed, so too did the tasks of the redeployed team. ‘Just-in-time’ training protocols were critical to orienting new providers in both our environment and virtual health response. These training protocols were standardised whenever possible and included job action sheets so as to provide clear expectations for the department and the deployed staff. All team members embraced the adaptability that the ever-evolving situation required.

We took advantage of drastically lower paediatric case volumes to leverage the skills of our paediatric emergency and general paediatrics physicians outside the paediatric hospital in our adult spaces while simultaneously increasing the upper age limit in the paediatric ED to shift patients to their space. Our adult emergency medicine physicians provided guidance to their paediatric colleagues in these settings through a combination of in-person clinical guidance, didactic presentations on adult management and phone consultations. We also leveraged our telehealth platform to initially expose paediatric physicians to care of adult patients with this novel disease. This eased the in-person evaluations when we needed support during surge.

With the daily rapid changes and the growing scale of the clinical tasks that front-line staff needed to perform, our incident commander, a newly developed day-to-day operations leader, worked to reduce cognitive burden on front-line staff by facilitating the flow between traditional and new spaces and real-locating resources. The entire operation was intentionally not ‘lean’. We aimed for a safe degree of redundancy in staffing and care spaces to meet the surging demand. We simultaneously strove to balance the mental and physical toll on our workforce by not overstaffing or changing schedules more than our anticipated needs demanded.

Needs shifted dramatically and often unpredictably throughout the crisis. The pandemic formed hot spots within different NYC communities, and communication with colleagues around the city was vital to help anticipate and plan. In the beginning, identifying care spaces for low-acuity patients with concern of viral infection was paramount. We created new care spaces in waiting areas and outdoor tents. Later, as critical care needs grew and public education and concern kept low-acuity patients away from the hospital, we identified designated space for critical care and palliative care within our ED.

**COMMUNICATE EFFECTIVELY**

Our patient is now stabilised, breathing on a ventilator and her heart is beating normally. Now we need to communicate with colleagues in the hospital for transfer of care, while locating and updating her family. Clear, concise messages are key to patient safety in this scenario.

We found that many of the core within-team CRM communication skills used during a resuscitation were applicable in organising and navigating the innumerable communications that were required during the crisis. CRM communication addresses a potentially disruptive situation by standardising communication patterns to facilitate ongoing team situational awareness through information seeking, sharing and creation of a shared mental model. The three C’s (cite names, clear instructions and closed loop communication) were effective tools for clarifying roles, agendas and follow-up action items on phone calls and even digital communications. Citing names and clear instructions can be used when asking for information and assigning tasks, for example, ‘Nick, please reply about the need for masks’ is more likely to get a response than a group text with a thin-air request ‘what do people think about our mask supply right now?’ When new team members arrive in a trauma room, it is important to pause and recap the situation for the team before moving forward together. SBAR (situation, background, assessment and response) is a useful mnemonic for rapid recaps. Throughout the COVID-19 pandemic response, ensuring that the entire team is up to speed proved critical to collective action and effectiveness.

Our leadership team organised daily huddles similarly to how a team would huddle in the middle of a resuscitation. For example, ‘We’ve performed CPR for 5 minutes, checked labs, what else should we be thinking about?’ followed by clearly citing names to solicit feedback from each team member. Our huddles served the dual purpose of reporting and seeking information with a deliberate outline to broadcast key messages and engage all participants to contribute possible solutions. The huddles enabled leaders to solicit blind spots, to regain situational awareness of each need and to achieve a shared mental model for moving forward as a team. ‘What else are we missing?’ was a question that bore many fruits throughout this crisis.
**SUMMARY**

CRM principles proved crucial both for the effective management of the acutely ill patient and for the successful navigation of the COVID-19 surge faced by our NYC department of emergency medicine. Our leadership team trusted that our training and use of the key CRM skills of leadership and role clarity, anticipation and planning, communication, and adaptability would enable us to perform effectively during this crisis. Sharing experiences and the key principles used in the fight against COVID-19 may allow others nationally and globally to better prepare for the crises of today and the future.

**Twitter** Nicholas Gavin @nickgavinmd

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**ORCID ID**
Nicholas Gavin http://orcid.org/0000-0001-6900-3953

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