

INVITED COMMENTARY



How to Prepare and Protect Health-Care Teams During COVID-19: *Know Thyself*

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To paraphrase the Ebola therapy unit (ETU) mantra, health-care workers (HCW) should remind themselves:

*Who is the most important person in a pandemic?
... "I am..."*

How does one prepare and protect oneself during a pandemic? In this issue of *Neurocritical care*, Rajendram et al. [1] discuss the important topic of crisis resource management (CRM) in the COVID-19 pandemic. While there has been an explosion of COVID-19 basic, translational, and clinical science articles, few have touched on the fundamental cognitive psychology and organizational approach principles that protect health-care workers (HCW) during a COVID-19 surge. SCCM has provided preparedness statements and checklists, but these articles do not touch on other important principles covered in CRM [2–4]. The principles of CRM are pulled from various disciplines such as military triage, massive casualty/disaster management, flight industry, simulation, and behavioral psychology [2, 5, 6]. In retrospect, a discussion on CRM as it applies to neurocritical care is long overdue—especially in regard to fellowship and other training programs. While the authors primarily focus on stroke patient workflow in the COVID-19 pandemic for neuro-intensive care unit teams, the article is germane to other patient populations and complex patient care teams.

Why is CRM an important topic right now? Principles of CRM include situational awareness, triage and prioritization, role clarity, Kahneman's System 1 and 2 cognitive

heuristics and biases, cognitive overloading errors, and the process of debriefing to help create a learning system that is adaptable, sustainable, and safe [1, 2, 5, 6]. These are a foundational psychological approach to protecting HCWs from harm during the COVID-19 pandemic, and future pandemics.

These principles are important and will remain that way—because despite maximal efforts, patients with Ebola and COVID-19 (and future pandemics) will still die. And despite proper donning and doffing procedures for PPE, some HCW will contract illness. It is no surprise then that during the surges in New York and Italy, depletion of resources of PPE, personnel, or expertise was associated with higher rates of HCW infection [7]. Because the loss of a single health-care team member strains the entire system, CRM is needed to protect not only the HCW, but all of the patients they serve.

How do CRM principles help health-care teams in 2020 and beyond? First, CRM principles should build a strong foundation for high-performance teams based on trust [7, 8] and coupled with important psychological/physiologic needs as outlined by Maslow [9–11], and illustrated in Fig. 1. CRM principles build on a foundation of psychological/physiologic safety *first*; if HCW become sick, they become a burden to the system and change from a generator of resources to a consumer of resources. CRM requires a multilayered organizational approach for health-care teams to succeed [12].

We should also not forget that the SARS-Cov2 virus has claimed the lives of at least 700 HCW, and infected at least 156,000 [14] in the US thus far, which is sadly an underestimate. And we must consider a much larger secondary toll of psychological sequelae, such as post-traumatic stress disorder (PTSD) and financial pressures on HCW and their families [15]. Therefore, the authors work bespeaks the importance of fostering the right CRM cognitive framework [13] at the base of the

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CRM- Crisis Resource Management and High-Functioning Teams

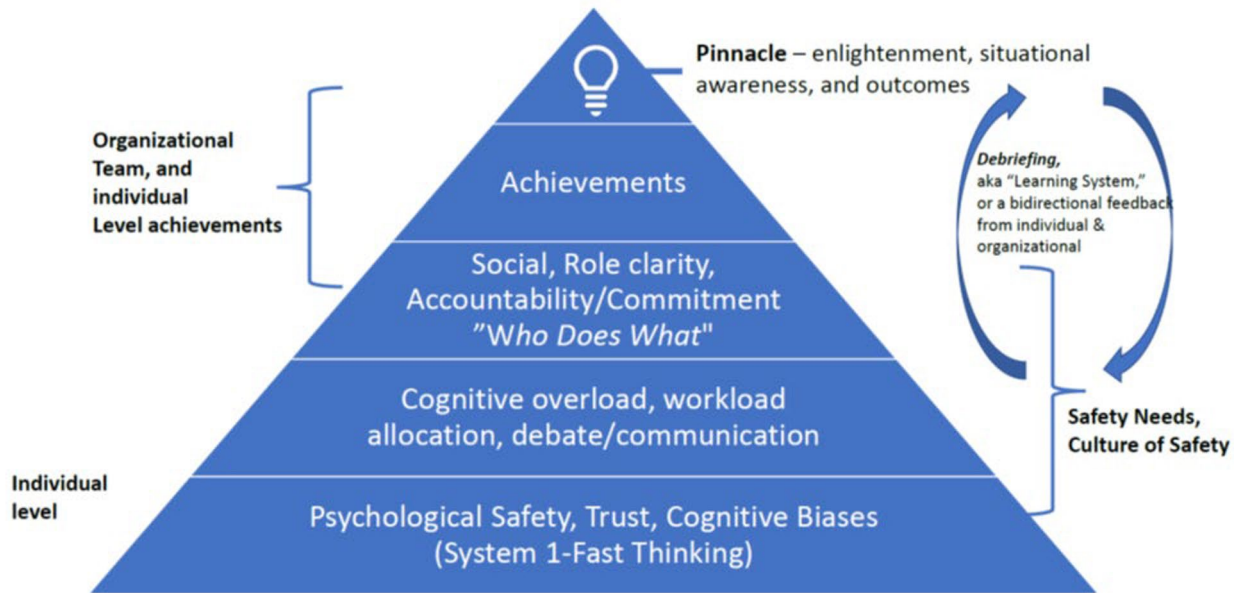


Fig. 1 A combined crisis resource management (CRM) pyramidal conceptual model synthesizing Maslow's hierarchy of needs, Lencioni's model of high functioning teams, and Kahneman and Tversky's thinking fast and slow. The foundation of the pyramid is based on base needs (Maslow) and psychological safety (Lencioni) as well as inherent reflexive System 1 thinking described by Kahneman. Intermediate levels build upon concepts in CRM such as cognitive overloading, communication, role clarity, workload allocation, and accountability. Higher-level achievements occur with progressively higher functioning teams, with the pinnacle or top of pyramid (light bulb) being situational awareness (CRM), enlightenment (Maslow), or goals and outcomes (Lencioni). Also this self-reflection or slower thinking is described as "System 2" Kahneman. System 2 thinking is slower and requires rest and time to think in contrast to System 1 which is more reflexive, more prone during sleep deprivation and when immediate stress is applied [13]

pyramid (Fig. 1) that leads to the genesis of high-performance teams [8, 11–13, 16, 17]. Ultimately, health-care outcomes are the byproduct of team performance and organizational health [8, 16], which is in turn is the product of individuals health [18, 19]. The authors share several useful CRM suggestions to protect neuro-critical care teams around a plausible scientific framework [18] that helps teams adapt and learn for the current and future pandemics.

So remember... Who is the most important person in a pandemic? You are...

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Conflict of interest

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