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NEUROCRITICAL CARE SOCIETY

INVITED EDITORIAL COMMENTARY

Is Post-Neurointensive Care Syndrome Actually a Thing?

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Over the past decade, clinicians and researchers in the general critical care community have increasingly recognized and written about "post-intensive care syndrome," or PICS. PICS refers to the physical, cognitive, and/or psychiatric worsening of a patient following an admission to an intensive care unit (ICU) and the experience of being critically ill. A classic PICS scenario is the patient suffering from a lengthy ICU admission for severe adult respiratory distress syndrome (ARDS) and sepsis who makes a "full" recovery from their illness in the traditional sense, yet struggles with their energy levels, ability to return to work, and their mood for a prolonged period of time after discharge and rehabilitation.

There has been increasing literature speculating on the multifactorial pathophysiology of post-ICU physical, cognitive, and mental decline; as well as teasing out what role prolonged exposure to the ICU environment itself may play into long-term psychiatric sequelae. However, the majority of studies and reviews regarding PICS have been published thus far by non-neurologists and non-neurointensivists. The reason for the neurocritical care community's relative lack of participation in developing the concept of PICS is likely simple: The syndrome is challenging to define as an independent entity among a population of patients with primary brain or nervous system injury. Consider the myasthenic patient with prolonged weakness, the intracerebral hemorrhage (ICH) patient with permanent cognitive deficits, or the hemispheric stroke patient with long-term depression. Because of how these patients' specific disorders inevitably drive their physical, cognitive, and mental disabilities far beyond ICU discharge, their situations are different from that of the recovering ARDS/sepsis patient without primary brain injury. Is it even helpful from either a clinical or research standpoint to label patients recovering from the neurocritical care illnesses above as suffering from "PICS?" Or does trying to discuss "PICS" among patients known to have primary neurological injury just generate confusion?

The review article by LaBuzetta et al. attempts to tackle the question of how best to discuss and approach PICS within the neuroscience ICU [1]. For those readers who may be new to the concept of PICS, the review summarizes existing work in the non-neurological literature characterizing the syndrome among patients admitted without primary brain injury. Understanding that much of the focus of neurocritical care studies is already on functional outcomes, LaBuzetta et al. dedicate an important portion of their review to surveying what is known about cognitive and psychological outcomes among survivors of neurologic diseases such as ischemic stroke, ICH, subarachnoid hemorrhage, and traumatic brain injury. The challenges of implementing strategies to improve long-term physical, cognitive, and mental well-being in the neuroscience ICU—challenges such as minimizing continuous sedation in scenarios where some sedation is nevertheless needed, obtaining frequent neurological examinations in patients who nevertheless need sleep, and mobilizing patients despite their severe disability—are all acknowledged.

The authors close their review with thoughts on how the neurocritical care community can be more involved in the study of PICS moving forward. Among their suggestions, one clear opportunity is for neurointensivists to not just walk away when a head computed tomography comes back negative but to play a larger role in

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understanding the pathophysiology of cognitive and psychiatric manifestations of PICS in patients without primary brain injury [2]. To do this requires building collaborations with medical and surgical ICUs to where these patients are generally admitted [3]. Having a better handle of exactly why diseases such as sepsis or ARDS, seemingly unrelated to the brain, might nevertheless lead to long-lasting neurologic injury could potentially lead to therapeutic insights that eventually apply to brain-injured and non-brain-injured patients alike. Along those lines, the authors also issue a practical call for more studies in which strategies developed to mitigate PICS in the non-neurological population—such as the ABCDEF bundle promoted by the Society of Critical Care Medicine—are applied to neuroscience ICU populations to understand how their efficacy in influencing long-term outcomes might or might not translate, regardless of the exact mechanisms by which such strategies might work.

In contrast to the confusion of attempting to define PICS for neurocritical care patients may cause, the concept of "PICS-F"—that is, long-term worsening psychological outcomes among *families* of critically ill patients, even for long periods of time following ICU discharge—is easier to apply to families of neurological and non-neurological patients alike [4]. The types of psychological outcomes that PICS-F encompasses—such as depression, post-traumatic stress disorder, and anxiety among families after leaving the ICU—are thought to be due in part to the shock of an acute hospitalization, the controlled chaos of the ICU environment, and to caregiver burden, all of which may be universal to some extent and impact any family regardless of the patient's exact disease.

While studying risk factors of and interventions for PICS-F is an area where general intensivists and neurointensivists can and should collaborate, LaBuzetta and colleagues close their review with the important concept that preventing PICS-F among caregivers may actually have important implications—not just for the well-being of families as an end to itself, but also for patient recovery, as patient recovery is inevitably impacted by caregiver health. As an example of a novel program aimed at alleviating emotional distress among patient/caregiver dyads in the neuroscience ICU, the authors mention the "Recovering Together" program being piloted at Massachusetts General Hospital, where patients and families participate together in a series of sessions (both before and after discharge) aimed that developing resiliency and interpersonal communication skills. Given the high potential for caregiver burden and long-standing psychological distress among families to impact physical, cognitive, and mental outcomes among patients (whether one wants to label these outcomes collectively as "PICS" or not!), the Neurocritical Care Society would likely be wise to consider supporting family-centered approaches into its upcoming strategies to "cure coma" as a unifying society-wide research mission.

Conflict of interest
The author is the leader for the upcoming Society of Critical Care Medicine Family Engagement Collaborative.

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