

Neurocritical Care Research Network Proposal – Executive Summary

This executive summary provides an overview of the Neurocritical Care Research Network (NCRN) Curing Coma proposal submitted in 2019. The summary focuses on overall themes regarding the proposal in order that readers might appreciate the overarching goals of the project. Review of the entire proposal and budget is encouraged in order to provide more substantive information regarding background, goals, organizational structure, deliverables, and financing of the proposal that is not contained in this executive summary.

Purpose – The NCRN proposal represents over two years of strategic planning. Research is identified as a top priority for the Neurocritical Care Society (NCS) and concerns were raised about a lack of cohesion and direction across neurocritical care science. The overall goal of this proposal is that NCS will “own the science” of neurocritical care, not in the sense of possession but rather in the sense of responsibility for leading an organized way to address important unmet areas of need. NCS is uniquely positioned to lead this because of its multidisciplinary membership that is directly involved in all aspects of neurocritical care from scientific hypotheses to patient care implementation.

The Grand Challenge - The most daunting and common challenge in neurocritical care is the patient with altered consciousness. Attempts to improve “altered” patients have focused principally on separate treatment of specific types of brain injury/dysfunction rather than primarily on common pathways that could lead to treatment. The importance of conquering a Grand Challenge consistently emerged in strategic planning. Given the unifying importance of alteration in consciousness and cognition and the major gaps in current management, “Curing Coma” was chosen as the theme. This theme should be considered as encompassing the breadth of cognitive dysfunction and altered consciousness faced by neurocritical care patients. Success will depend on involvement of all regardless of whether they are primarily researchers, clinicians, or trainees. This is analogous to the “moonshot” where everyone from the president to the janitor was committed to working together for the grand challenge of putting a man on the moon.

Organizational Structure – Rather than a single traditional clinical research network structure, NCRN is envisioned as a set of distinct modules (e.g., Data Science, Investigator Toolkit, Engagement, Implementation Science, and others). Each module addresses a critical area needed to “cure coma.” The development of a “Curing Coma Community” will be essential to sustained success and there is a place for all in this community. A Scientific Advisory Council will oversee scientific direction towards the grand challenge. However, it is expected that the overall project will be lengthy and that scientific breakthroughs may arise from unanticipated collaborations and sub-projects. Thus, the NCRN project focuses on developing the infrastructure and the community that will synergize towards “curing coma” rather a single method such as clinical trials or observational data. Some research will be conducted from within NCRN and some will involve external investigators engaging NCRN. The structure must facilitate this two-way exchange and allow NCRN to leverage new scientific opportunities.

Timeline – This is an enduring project that will likely last 10 or more years. The proposal is broken up into immediate (year 1), intermediate (years 2-3), and long-term (years 4 and onward) periods. Each with distinct plans and deliverables delineated.

Financing – Fiscal sustainability will be key. NCS will provide initial seed funding, with plans for grant support, philanthropy, and industry collaboration over time. The modular approach allows for scalability based on funding availability.