

Research Plan: Delirium as a Predictor of Cognitive Impairment in Older ICU Patients

Abstract:

The number of older patients requiring intensive care unit (ICU) care is increasing dramatically, and brain dysfunction is a major impediment to meaningful recovery after critical illness in this vulnerable population. Up to 80% of mechanically ventilated ICU patients develop delirium, a form of acute brain dysfunction associated with increased mortality. Also, survivors of critical illness face a 30%-60% risk of developing long-term cognitive impairment (LTCl), a manifestation of persistent brain dysfunction associated with reduced quality of life and significant societal costs. While significant advances have been made in the arena of delirium monitoring in critically ill patients, currently available diagnostic methods rely solely on symptoms of brain dysfunction and do not consider factors—such as etiology, mechanism, and severity—likely to play pivotal roles in determining a patient's risk for adverse outcomes (e.g., LTCl), prognosis, and response to preventative and therapeutic measures. Recent work by the candidate suggests that the etiology of critical illness (e.g., sepsis) plays a vital role in determining the impact of delirium on the development of LTCl. Utilizing a prospective cohort investigation, this proposal will test the central hypothesis that delirium in critically ill patients is a heterogeneous syndrome of brain dysfunction that can be characterized into clinically significant categories using clinical characteristics. The candidate will determine which clinically-defined categories of delirium in critically ill patients are associated with an increased incidence and severity of LTCl after critical illness (**Aim 1**). Furthermore, he will determine the impact of exposure to sedative and analgesic medications during critical illness on the incidence and severity of LTCl after critical illness in patients with clinically-defined categories of delirium (**Aim 2**). This work will pave the way for the study of preventive and therapeutic interventions by ensuring that such efforts can be focused on patients at highest risk.