

ASP-CHEST FOUNDATION OF THE AMERICAN COLLEGE OF CHEST PHYSICIANS GERIATRIC DEVELOPMENT RESEARCH AWARD



AWARD RECIPIENT

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PROJECT

"UNDERSTANDING THE RELATIONSHIP BETWEEN SLEEP, CIRCADIAN RHYTHM, AND INTENSIVE CARE UNIT DELIRIUM"

MENTORSHIP TEAM

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Delirium is a frequent complication in elderly hospitalized patients. Incidence of delirium in the intensive care unit (ICU) is reported between 48% and 80% and typically develops between the second and third day of ICU stay. The elderly are particularly susceptible as risk factors for development include advanced age, chronic illness, dementia, and severity of illness. ICU delirium is associated with longer hospital stay, mortality, and the need for nursing home placement or institutionalization. Despite its enormous impact, the exact etiology of ICU delirium remains largely unknown but a relationship between alterations in sleep and the sleep-wake circadian rhythm is suggested based on previous smaller studies.

This research proposal can be divided into two categories:

1. Examining the relationship between circadian rhythm and delirium in older patients admitted to ICU.

Aging is characterized by changes in the circadian rhythm, controlled by the suprachiasmatic nucleus of the hypothalamus. The changes are primarily characterized by attenuation of the amplitude and phase advancement of the rhythm. Normal age-related changes may contribute to common sleep complaints seen in the elderly, but their role in the development of ICU delirium is not known. We hypothesize that the regularity and amplitude of circadian rhythms will be reduced in older patients with delirium compared to those without delirium. We will test our hypothesis by measuring melatonin, a marker of the underlying circadian rhythm.

2. Examining the relationship between the quality and quantity of sleep and ICU delirium in older patients admitted to ICU.

Poor sleep is common in ICU patients. Sleep tends to be severely fragmented with multiple arousals with an increased amount of time spent in "light" sleep compared to "deep" slow wave or "dream" rapid eye movement sleep. In addition, sleep tends to occur during the day in short periods rather than at night. The role of these changes in the development of ICU delirium is not known. We hypothesize that sleep quality and quantity will be reduced in older patients with delirium when compared to those without delirium. These findings of the study will provide data for further examination between sleep and medical outcomes in a geriatric population, specifically collection of longitudinal data on delirium, sleep, and circadian rhythms through the development of an innovative post-ICU continuing care clinic.

I am fortunate to have a mentoring team consisting of experts in the field of critical care medicine, geriatrics and gerontology, research methods, and sleep and circadian neurobiology. My long-term goal is to advance the prevention and treatment of delirium in hospitalized elderly patients. The ASP-CHEST Foundation of the American College of Chest Physicians Geriatric Development Research Award will grant me the platform to develop the necessary skills and to obtain direct mentorship from experienced researchers important for a career as an independent investigator.