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Functional outcomes after critical illness in the elderly

Mark D. Neuman, MD, MSc^{1,2,3} and Roderic G. Eckenhoff, MD¹

¹Department of Anesthesiology and Critical Care, Perelman School of Medicine at the University of Pennsylvania

²Department of Internal Medicine, Division of General Internal Medicine, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA

³Leonard Davis Institute for Health Economics, the University of Pennsylvania, Philadelphia, PA

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For older adults, critical illnesses carry substantial risks of death and functional disability. One recent cohort study found that 53% of critically ill adults aged 70 and older either died at 30 days after hospitalization or sustained new, significant declines in their ability to perform basic activities of daily living (1). These findings echo recent(2, 3) and historical studies(4, 5) that have shown a potentially profound impact of critical illness on the ability of those older adults who survive critical illnesses to maintain their independence in the months to years that follow. Writing three decades ago, the authors of one early study on functional limitations after critical illness noted that “physicians may consider treatment a medical success while, paradoxically, the patient and family may feel it a failure if overall function declines.”(4). In this issue of *Critical Care Medicine*, Nathan Brummel and colleagues(6) offer a thoughtful overview of available research characterizing the relationship between critical illness and the development of functional dependence among older adults. More importantly, they highlight potential strategies to improve functional outcomes of such illness among older adults.

Brummel et al. emphasize how efforts to describe, understand, and potentially improve functional outcomes for critically ill older adults have moved over time from the margins of discourse on critical care to become a central focus of investigation and clinical practice. This review also highlights just how elusive insights have been regarding the basic epidemiology of functional decline before and after critical illness. The authors reviewed 19 studies published over 30 years that examined independence in activities of daily living after treatment in an ICU; yet only nine of these studies examined patients’ pre-illness functional status, information essential for the proper interpretation of data on post-illness function(7).

Corresponding Author Address: Mark D. Neuman, M.D., M.Sc., Department of Anesthesiology and Critical Care, Perelman School of Medicine at the University of Pennsylvania, 423 Guardian Drive, 1119A Blockley Hall, Philadelphia, PA 19104, Office: (215) 746-7468, Fax: (215) 349-5078, neumanm@mail.med.upenn.edu.

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Of these nine, the majority relied on patient's own retrospective accounts of their prior functioning, rather than prospective objective assessments,(8, 9) raising concern of the potential for recall bias and limiting the ability of investigators to examine functional trajectories in detail.

More recently, investigators have been able to overcome some of these limitations by taking advantage of existing large longitudinal cohort studies that prospectively collected functional status data at one- or two-year intervals. Combined with the likelihood that subgroups will experience critical illness, this allowed examination of the impact of that illness on subsequent function. (2, 10) However, it was only this year that quantitative information on the prognostic significance of differing pre-ICU functional trajectories became available with the publication of research on outcomes after critical illness among participants in the Precipitating Events Project(1), a landmark prospective cohort study of 754 community-dwelling older adults that has included functional status assessments taken monthly for over 16 years.(11)

Brummel and colleagues highlight the ongoing need for research to characterize patterns and determinants of functional outcomes for critically ill older adults; yet they also provide a framework to help clinicians and investigators design and interpret interventions aimed at improving such outcomes.

The heterogeneity of geriatric patients(12), and geriatric syndromes more generally(13), represents a major theme in aging research. As Brummel and colleagues point out, the nature and trajectory of functional disability—as well as the implications of a critical illness for subsequent functional independence—may vary markedly between older adults. For example, individuals with few functional impairments at baseline, a critical illness may represent a crucial precipitating event that, if survived, may place this individual on an accelerated trajectory of functional decline and disability. However, such patients have a better likelihood of functional recovery than those with established patterns of progressive functional decline prior to their critical illness; in this case, an ICU admission may be one in a series of events leading to functional dependence and death.

By placing their discussion of post-ICU functional decline in the context of established models of the disablement process, Brummel and colleagues offer insight into the wide range of trajectories of functional disability that older adults may experience both before and after critical illness. As such, their review stresses the importance of conceptualizing functional disabilities after critical care not as isolated endpoints, but instead as progressive geriatric syndromes that intersect with, and are modulated by, critical illness.

The perspective offered by this review will help us understand which groups of patients are most likely to benefit in the long term from interventions aimed at limiting new functional deficits after critical illness. Such interventions may include those that focus on early physical and occupational therapy, routine delirium screening, and evidence-based sedation and ventilator management. For critically individuals who are already near the end of life even prior to their illness, the framework put forward here emphasizes the importance of effective prognostication and care planning to high-quality ICU care. Ultimately, by

stressing the extent to which critical illnesses may emerge as episodes within the broader context of aging, Brummel and colleagues remind us to include the perspectives of geriatrics and gerontology in order to make sense of the outcomes of critical illness in older adults.

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