

# The Mobility and Impact of Frailty in the Intensive Care Unit



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## KEYWORDS

• Mobility • Frailty • Critically ill patients • ICU

## KEY POINTS

- Early mobilization and rehabilitation in ICU patients can reduce the incidence and duration of delirium, shorten ICU and hospital LOS, and lower hospital costs.
- Frailty can significantly compromise and impede the early mobilization of patients in the ICU and thus worsen the ICU course.
- Frailty refers to an increased vulnerability to stressors caused by the lack of physiologic reserves resulting from the age-associated accumulation of deficits in multiple organ systems combined with genetic, environmental, and physical insults.
- Early identification of frail patients and timely resource allocation and interventions to mobilize patient early in their ICU course help improve clinical outcomes and the quality of life.

## INTRODUCTION

In the United States, the geriatric population has significantly increased by 21% since 1980.<sup>1</sup> This is because of aging Baby Boomers and increased life expectancy rooted in advances in the standard of living and medical health services. In the United States, those older than the age of 65 now account for 14.5% (46.2 million) of the total population and by 2040, this percentage is expected to increase to approximately 20% (72.1 million).<sup>2</sup> Indeed, geriatric population is the fastest growing subset of the total population. Although the total US population has grown by 39% over the past 30 years, those segments older than 65 and 85 years have grown by almost 89% and 232%, respectively.<sup>3</sup>

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This rapid increase in the elderly population has a significant impact on the US health care system. In 2009 to 2010, for example, persons aged 65 and older made a total of 19.6 million emergency department visits. Their visit rate was 511 per 1000 persons and it increased with age.<sup>4</sup> As a result, older adults will most likely account for an increasing share of hospital and intensive care unit (ICU) use and costs in the coming years.<sup>5</sup> Because increasing age is associated with decreased physiologic reserves and frailty, this will result in admission of more frail patients to the ICU.<sup>6</sup> Pre-morbid frailty seems to be an independent but potentially modifiable factor associated with less favorable outcomes and greater health services use.<sup>7</sup> Moreover, critical illness leads to a catabolic state that further diminishes body reserves and contributes to frailty independent of age and prehospital functional status. Impairment of mobility is a common manifestation of illness in the frail individual and is therefore a sensitive marker of acute disease. It is one of the major components of frailty and channels the adverse events. Because early mobilization of patients in the ICU results in accelerated recovery and improvement in the functional status and quality of life, frailty can severely affect the mobility and ultimately impede the recovery. It is imperative, therefore, that health care professionals thoroughly understand the particular physiology of this population and the association of frailty and its impact on mobility in the ICU to properly care for them and improve clinical outcomes.

### **CHALLENGES IN THE CRITICAL CARE OF ELDERLY PATIENTS**

For several reasons, the management and care for critically ill elderly patients is far more challenging than their younger counterparts. With advancing age, the response of the body to any stress is diminished and a decline in the functional reserve limits the ability of elderly patients to recover from critical illness. Likewise, increasing age coincides with several comorbidities that can further complicate the primary problem. Furthermore, the immune and inflammatory responses are blunted in the elderly, which results in unreliable signs and symptoms, which can delay the diagnosis and management. Polypharmacy is also commonly encountered in the elderly populations and these drug interactions and masking of symptoms also pose a significant problem.

Similarly, treatment goals for elderly patients may be different than those for younger ones. It is necessary, therefore, for health providers to bear these things in mind throughout the care of such patients. Moreover, elderly patients display great heterogeneity because of each individual's particular physiologic reserve, which is, in turn, determined by several intrinsic host factors (ie, genetics, age, sex, dietary and environmental exposures, long-term patterns of physical activity, hormonal balance, and any pre-existing medical conditions).<sup>8</sup> In short, all of these factors contribute to the frail status of an individual, which increases morbidity and mortality after stressful events.

In the past two decades, as the general paradigm in medicine has shifted to the quality of health care services, it is clear that a better understanding of outcomes in frail and elderly patients admitted to the ICU can advance evidence-based health care and guide patients in making informed decisions about life and death.

### **AGING AND THE IMPACT OF COMORBIDITES**

The process of aging is characterized by the progressive and inevitable loss of function and functional reserve of organ systems and a diminished response of the body in times of physiologic and metabolic stress. This leads to a diminished capability of the body to adapt to changes and vulnerability to several chronic health problems and

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