



BIOÉTICA

ICU Care at the End of Life

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Total health-care costs in the United States have reached an astonishing \$1.4 trillion, or 14% of the gross domestic product. Per capita spending is double that of other industrialized nations.¹ Yet, according to the World Health Organization, the United States ranks 37th of 191 countries in its overall health system performance, and 72nd from the viewpoint of disease-adjusted life expectancy.² A disproportionate share of the total health-care costs in the United States is attributable to the care of the elderly patient before their death. In 1999, inpatient expenditures for the Medicare fee-for-service population was \$90 billion, of which one fourth was accrued by descendants.³ Previous data have indicated that 40% of this expenditure occurs in the last month of the descendant's life.⁴ Furthermore, 60% of all intubations and tracheostomies are performed in Medicare descendants, and 39% of Medicare descendants are admitted to an ICU during their terminal illness.³

The technological advances that medicine has witnessed in the last few decades are no more apparent than in the ICU. Yet when used inappropriately, this technology may not save lives nor improve the quality of a life, but rather transform death into a prolonged, miserable, and undignified process. Life support technology is intended to provide temporary support for patients with potentially reversible organ failure and not a measure to conquer death. This implies that not all dying patients need to (or will benefit from) admission to an ICU. With the projected exponential increase in the number of elderly patients and the increasing burden of chronic disease, how best should we select which patients are likely to derive the most benefit from admission to the ICU? Obviously this is an ethically and emotionally charged task. We first begin with how to define "elderly." Elderly is often considered age of > 65 years. Yet, this will encompass a very large group of individuals of varying chronological and physiologic age. In studying whether age influenced decisions to withhold life-sustaining treatments, the Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments⁵ investigators chose to divide patients into five age groups: < 50 years, 50 to 59 years, 60 to 69 years, 70 to 79 years, and > 80 years. Regardless of how elderly is defined or divided, chronological age does not always correlate with physiologic age.

A systematic and dynamic approach that addresses patients' changing needs throughout the aging process is in order. With reference to ICU care, such an approach should focus on three facets: (1) customizing care for the elderly, (2) evaluating postdischarge quality of life and disposition status, and (3) educating the public regarding the important issues involved in caring for an aging population and the limits of life support technology.

Customizing Care

The elderly have physiologic derangements that are markedly different than their younger counterparts. This demands that care be customized so that therapies shown to be futile in this population are avoided and focus is placed on those therapies with suggested or proven benefit. Evidence for the need to customize therapy is clearly seen when diseases such as sepsis are examined. Sepsis remains a major challenge in the critically ill; with the addition of advanced age to the equation, the therapeutic approach becomes even more complicated. For example, although there has been a great deal of controversy regarding adrenal failure in sepsis,^{6,7} far less attention has been granted to studying the subpopulation of the elderly in this controversy. The importance of a physiologic difference based on age is supported in studies such as that by Rivers et al,⁸ in which it was shown that there is a high incidence of adrenal insufficiency among surgical ICU patients > 55 years of age. Ely et al⁹ looked at the treatment of older patients receiving drotrecogin alfa



(activated). Patients 75 years old treated with drotrecogin alfa (activated) had an absolute reduction in the 28-day mortality of 15.5% compared to placebo ($p = 0.002$). This compares to an absolute reduction in the 28-day mortality of 6.1% for the entire PROWESS (Recombinant Human Activated Protein C Worldwide Evaluation in Sepsis Study Group) cohort.¹⁰ In addition, older patients with severe sepsis had higher survival rates with drotrecogin alfa (activated) over a 2-year period ($p = 0.02$). The increased mortality reduction in the elderly may be explained by studies that have found that there are age-related changes in the systemic inflammatory response and coagulation that may increase disease severity among older patients who acquire severe sepsis.¹¹

These two studies suggest that we are in need of a better understanding of the impact that critical illness has in the elderly, that subgroups of elderly patients may derive added benefit from treatment in an ICU, and that severity of illness, prior health status, and admitting diagnosis may be more important determinants of outcome than age alone.¹² Furthermore, it is likely that these factors interact with the genetic makeup to influence outcome.¹³ We are in the midst of an explosion of genetic research. The availability of individualized therapy for the elderly may soon be based on our increased understanding of the molecular and genetic basis of disease.¹⁴ The continuing advancement of knowledge in areas such as single nucleotide polymorphisms will lend itself to the development of prediction models and customized therapy based on genetic analysis.¹⁵¹⁶¹⁷

Incorporating Postdischarge Needs Into ICU Care

Early incorporation of anticipated postdischarge functional status and the needs of survivors can improve the delivery of care by setting realistic goals for the elderly patient's care while in the ICU, and preventing adverse outcomes after discharge. In this issue of the CHEST, Rady et al (see page 1583) focus on intensive care for octogenarians and specifically address the issue of posthospital discharge status. We believe that this is an important area for which intensivists should have a better understanding. Although severity of illness has been found to be associated with increasing ICU length of stay and ICU resource use,¹⁸ the influence of ICU and patient characteristics on discharge needs and postdischarge functional and health status have not been fully examined.²⁰ Intensivists must treat older patients with a knowledge of their prior level of functioning and expected outcome and level of functioning once discharged from the ICU. If it is anticipated that a patient is going to require a long-term care facility with a high level of care, it is financially prudent to discharge the patient to a facility capable of handling the patient's needs. In this manner, multiple readmissions, unfortunate outcomes, and unrealistic expectations by families while the patient is still in the ICU can be avoided.

In terms of preventing adverse outcomes, the management of ICU-associated delirium in the elderly is a prime example of where the adequacy of treatment has a direct effect on outcome and postdischarge care. Delirium occurs in up to 60% of older hospitalized patients, and is the most frequent hospital complication in these patients.²¹ Ely et al⁹ evaluated the confusion assessment method instrument in patients receiving mechanical ventilation and found that in this cohort, delirium occurred in 83.3% during their ICU stay and persisted in 10.4% of patients at hospital discharge (unpublished data, June 2004). In a cohort of 118 elderly medical ICU patients, 70% had delirium during

hospitalization and delirium occurred in 40% of patients in the post-ICU period.²² Baseline dementia was an important risk factor for the development of delirium. Elderly patients with delirium may not be treated appropriately in the ICU or are being prematurely discharged.¹⁴

Educating the Public

Perhaps the most neglected realm of the care of the critically ill elderly patient lies in the education of the public as a whole. In contrast to other countries, ICUs in the United States are open to any patient, regardless of prognosis.²³ While critical care societies have developed policy positions on appropriate ICU care, patients and their families remain uncertain about the role of critical care services at the end of life.²¹ Furthermore, although it seems logical that as a society, we should "plan in advance," one study²⁴ that interviewed elderly people showed that they were resistant to planning in advance for the hypothetical future, particularly for serious illness when death is possible but not certain. A recent study²³ showed that three fourths of a general population of respondents to a survey ($n = 78$) were prepared to shorten healthy life for better end-of-life care. However, in multivariable analyses, respondents who were older, nonwhite, or had children traded significantly less time, whereas those who did not perceive the ICU to be a caring environment traded more time. The authors concluded that the considerable interperson variation highlights the importance of soliciting individual preferences about the end of life.²⁵

Therefore, since end-of-life care itself is expensive and could offer



no real cost savings,²⁶²⁷²⁸ we strongly advocate a better initiative by the profession to educate the public regarding not only end-of-life care, but also planning for decision making in the event that further care is considered futile. We propose that this education be disseminated on a large scale in order to overcome the reluctance of society as a whole to address this important issue. We hypothesize that further education of the public would itself relieve some of the cost burden, as some individuals would opt not to pursue care in the ICU under prior specified conditions if they viewed it as a service to society. In summary, there is no doubt that we are an aging society with an increasing burden on health-care dollars. In the United States, we have been reluctant to "ration" ICU care based on chronological age alone, and studies such as those by Rady and colleagues suggest that this reluctance may be warranted. Therefore, we recommend customization of care based on age, comorbidities and anticipated outcomes. However, society, with education from the medical profession, must gain a wider acceptance of the futility of ICU care for particular subgroups of patients.