

Commentary

Oncoming tides in the Age(ing) of Aquarius

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Published: 15 May 2009

This article is online at <http://ccforum.com/content/13/3/145>

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Critical Care 2009, **13**:145 (doi:10.1186/cc7791)

See related research by Bagshaw *et al.*, <http://ccforum.com/content/13/2/R45>

Abstract

The demographic shift in the age of most industrialized countries' populations is profoundly impacting all areas of healthcare, perhaps nowhere more so than critical care. As the proportion of elderly patients increases, so to will our consideration for admission of elderly patients to the intensive care unit (ICU). Whether explicitly acknowledged or not, intensivists routinely debate (both inwardly and outwardly) the benefit, utility, and patient-focused dignity of admitting very elderly patients to the ICU. Despite the apparent increase in demand for, and provision of critical care services to, the elderly, there are few data on the outcomes from these admissions, and how one might predict which elderly patients are most likely to derive benefit from the invasive and resource-intensive services provided in modern ICUs.

In their retrospective cohort analysis, Bagshaw and colleagues [1] report the results of 120,123 intensive care unit (ICU) admissions in Australia and New Zealand between January 2000 and December 2005. The robust database they explored allowed the determination of important clinical characteristics, ultimate hospital dispositions of these patients, and predictors of survival.

The proportion of ICU patients 80 years or older increased over the 6 years by an annual average of 5.6%; interestingly, higher than the increase in this segment of the general Australian and New Zealand population. Patients 80 years or older were more seriously ill, with higher age-adjusted Acute Physiology and Chronic Health Evaluation (APACHE) scores on admission, and had longer lengths of stay if they survived the admission. These older patients had the highest mortality of any age group, and were also more likely to be discharged to a rehabilitation or long-term care facility, as opposed to living independently in the community. Several factors increased the odds of death among patients 80 years or older, including admission from a chronic care facility, a non-surgical admission, a higher age-adjusted APACHE score, the need for mechanical ventilation, and acute kidney injury.

Although these results are not surprising, they represent one of the few large outcome studies of elderly patients admitted to ICU. It is conceivable that patients who live longer than 80 years already be 'self selected' as more likely to survive critical illness than some younger patients. For instance, Somme and colleagues [2] performed a single-centre cohort study in which they found that among the population aged 75 years or older, increased age did not correlate with worse survival. In fact, the cohort aged 75 to 79 years had a higher mortality than the group aged 80 to 84 years. Although not borne out by the survival statistics in the current much larger study by Bagshaw and colleagues, it is interesting to note that in this study, the proportions of patients with multiple comorbidities in the 65 to 79 and 80 years and above groups were not significantly different. When examining outcomes of patients admitted to ICU, there very likely is a degree of selection bias not only by patients, but also by health care professionals who have offered ICU admission to such patients, presumably believing that there may be beneficial effects from aggressive ICU care for this subset of the octogenarian population.

Chelluri and colleagues [3] performed a prospective comparison of critically ill patients aged 75 years or older, in comparison to patients younger than 75 years, and found that the admission APACHE score predicted outcome better than age alone. This is not surprising since the APACHE score, which includes age as a component, is validated to do exactly this on a population-wide basis. Similar results were reported by De Rooij and colleagues [4], who performed a relatively small retrospective cohort study, which showed that the best predictor of survival in patients 80 years and older was severity of illness. A single-centre cohort study by Boumendil and colleagues [5] also found that long-term survival in patients 80 years and older was related more to their underlying condition and functional status rather than age.

APACHE = Acute Physiology and Chronic Health Evaluation; ICU = intensive care unit.

The inability to examine data from elderly patients considered for, but not admitted to, ICU makes it difficult to draw firm conclusions about decision-making prior to admission. It is well established that age is an independent predictor of a 'not for resuscitation' order [6-8], and scenario-based studies of physician decision-making also identify age as an independent predictor of denial of admission to ICU [9-11]. These factors mean that there is likely a substantial pre-selection of the elderly population admitted to ICU, either on a patient or physician level. It is unclear, however, whether elderly patients are being 'over- or under-admitted' to ICU. In a unique study design, Garrouste-Orgeas and colleagues [12] examined a cohort of patients 80 years or older who were assessed for ICU admission. Over two-thirds were denied admission; factors associated with refusal were non-surgical status, age over 85, and no available beds in the ICU. Long-term functional independence was not modified by ICU admission. Prior research has taught us that many elderly patients do not want aggressive interventions, with only regard for life-saving potential, but instead prefer an approach emphasizing relief of symptoms [13-15]. Future larger-scale research may better clarify not only what happens once admitted to ICU, but the outcomes of patients who choose not to be admitted, or who are declined admission to ICU.

Bagshaw and colleagues highlight the growing challenges in light of uncertain outcomes that are faced by patients, their families, and intensivists as the elderly segment of our populations expand. It is clear that decision-making based on age alone is inadequate, and would not stem from an evidence-based perspective of outcomes. Through this and other outcomes-based research, we have increasing knowledge with which to guide patients and families in decision-making about care during critical and potentially end-of-life illness.

Competing interests

The authors declare that they have no competing interests.

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