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## ICU Volume 9 - Issue 1 - Spring 2009 - Cover Story

### Cost-Effectiveness of Providing Quality ICU Care to Elderly Patients

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**The Aging Population Creates an Ever-Increasing Demand for Quality Healthcare, Which has its Effect on Critical Care Services as Well. Limiting Care to the Elderly Would Raise Ethical Issues – so, it is Best to First Explore Whether Quality ICU Care is Cost-Effective or not?**

It is well known by clinicians that both expenditures on intensive care and the percentage of the elderly population are dramatically increasing. These are two different issues and both require attention from healthcare policy-makers. There is however, a possibility that in the future, elderly patients will be denied intensive care treatment if restrictions on healthcare resources are introduced. Cost-benefit analysis is therefore important in the evaluation of intensive care treatment for the elderly patients. In order to answer this, we will take three steps.

#### 1. What is the Outcome of Elderly Patients Treated in ICU?

For years, there had been no consensus in the literature regarding prognosis, functional outcome, and costs of elderly patients admitted to ICU. Some articles have suggested that after an adequate correction of their natural mortality reference, there was no significant difference between the young and the elderly, whereas other authors have found a positive correlation between age and outcomes. Most of these early studies included elderly patients within their ICUs from a pre-selected and therefore biased population, i.e. the patients included were either the less elderly patients or the elderly who had an excellent premorbid status. So, where are the others? In a Canadian survey (Essebag et al. 2002), when elderly patients were questioned about end-of-life decisions, up to 41% choose to limit certain life-sustaining therapies including cardiopulmonary resuscitation, ventilation and ICU admission. This trend is further confirmed by Yu et al: They analysed Medicare data on 89,667 patients about the percentage of different age groups admitted to ICU in the population.

The outcome of elderly on ICU has been studied recently even in countries of higher healthcare spending, like France (Garrouste et al. 2006), Spain (Torres et al. 2006) or Netherlands (De Rooij et al. 2006): they all explored the short and long term outcomes of elderly in intensive care units. As a result, it can be concluded that age alone is not a major determining prognostic factor and should not prevent treatment from being offered.

#### 2. Do we Spend More on Elderly Patients treated in ICU?

The costing studies are consistent that older age is associated with lower hospital costs and resource intensity (Hamel et al. 1996; Boumendil et al. 2005). Mechanical ventilation in ICUs implies long length of stays and high treatment costs, so it would be interesting to see if age has an impact on the hospital cost of patients receiving mechanical ventilation? Chelluri et al. analysed this in a single centre prospective observational study including 813 patients. They found that total cost for hospitalisation as well as cost per day was less for the older patients compared with younger patients. One would think that the lower hospital cost was due to higher mortality and consequent shorter ICU length of stay of elderly – but it is not the case! The relationship between age and costs was independent of hospital mortality, resuscitation status and discharge location.

This study as well as other costing studies showed that elderly on ICU receive fewer resources than other age groups; this contributes to the lower daily ICU costs found with regards to elderly patients. Less resource use in the elderly can be explained from different perspectives:

Physicians' perspective:

- Using age as a co-morbidity in deciding on treatment.
- Underestimating older person's preferences and using fewer treatments.

Patient perspective:

- Preferring less aggressive care and fewer treatments.
- Older patients admitted to ICU being healthier and having fewer complications.

Other:

- Age bias

#### 3. Is it Cost-Effective to Treat Elderly Patients in ICU?

This is the most difficult question to answer, because it implies quality of life data as well as life expectancy. Older patients are at higher risk for poor functional outcomes, not just by failure to recover activities of pre-ICU daily living, but also by additional impairments during ICU stay (Covinsky et al. 2003). To make it more complicated, there is a wide variety of expected quality of life in individual elderly patients. This explains why there is no data on cost-effectiveness in this group of patients. However, we know that intensive care in general is cost-effective (Ridley et al. 2007) and we also know that we spend less on the elderly, so I do not refuse admitting elderly patients to my intensive care unit.

Finally, another interesting issue in this respect is how to define the elderly population when life expectancy is low? As far back as 1875, in Britain, the Friendly Societies Act, enacted the definition of old age as, "any age after 50", but in this century there is a general consensus that elderly is considered to be over retirement age, e.g. >65 years. Should be increased to >70 years, since the life expectancy has increased in the last 10 years? Additionally, should we consider a lower elderly age limit in those countries where life expectancy is lower? This would have an

impact on the cost-effectiveness studies in this patient group as well.

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