

Title: Elderly in ICU

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**ICU for the Elderly**

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Abstract.

Population ageing is a global health challenge. The proportion of very old patients ( $\geq 80$  years) referred and admitted to intensive care units (ICUs) is increasing (1), as are ICU treatment intensity and survival rates in the very old (2). Age is associated with decisions to withhold or withdraw treatment once admitted to ICU (3). There are differences between countries, cultures and religions regarding admission to ICU, treatment intensity in ICU and decisions around end-of-life of very old patients. There are few studies describing the prevalence and practice of establishing treatment limitations prior to ICU admission (4).

The ICU is a finite resource, limited by bed spaces and staffing. Unless there is increased awareness and application of advance care planning, there will be a

requirement to increase ICU capacity or apply distributive justice principles to allocate current resources (5). Studies evaluating ICU triage for very old patients are hindered by variability in critical care practices between hospitals (6) and countries (7, 8).

Admission policies are also often arbitrary, rather than evidence-based (9). Published studies about refusal of admission to the ICU show highly variable mortality (8, 10), compounded by the variable health status of very old patients, which is not necessarily correlated with chronological age (11).

In a large retrospective study of 1240 very old patients ( $\geq 80$  years), who were urgently referred to an Australian ICU, we divided patients into those who were “too well” for the ICU, admitted to the ICU, and “too sick” for the ICU (12). Very old patients who were considered too well for the ICU had a significantly lower hospital mortality rate than patients admitted to the ICU after urgent referral. However, 12 months after referral, patients considered too well for ICU admission had a mortality rate approaching that of patients admitted to the ICU. Patients considered too sick for ICU admission had high hospital and 12-month mortality, and a low rate of discharge back to the residence category they were in before ICU referral. Over half of very old patients urgently referred to the ICU died within 12 months of referral. Treatment limitations were common, but there appeared to be a discrepancy between factors associated with long-term outcome and the presence or institution of treatment limitations in this cohort of patients (13).

Once admitted to ICU, outcomes for very old patients ( $\geq 80$  years) are poor compared with outcomes for younger adults. The strongest predictors of outcome in very old patients are severity of illness, co-morbidities, frailty and baseline performance, not age. The 1-year survival rate of very old ICU patients is estimated to be between 40-50%.

After 1 year, only 25% of very old ICU survivors have a quality of life similar to baseline (14). Further research is needed to understand whether patients themselves would like to base their decisions on life-support treatment more on their perceived quality of life rather than the objectively predicted length of survival (15, 16).

Finally, research shows there is incongruity between family values and preferences for end-of-life care and actual care received for very elderly patients who are admitted to the intensive care unit (17). Deficiencies in communication and decision-making may be associated with prolonged use of life-sustaining treatments in very elderly critically ill patients, many of whom ultimately die. Honest communication with patients and their relatives is essential to provide the best possible care for very elderly ICU patients.

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