

mortality rate was 46%, 1-year mortality rate was 72%, and 2-year mortality rate was 79%. The purpose of care for VOPs admitted to ICU might be just life-sustaining therapy rather than survival with highly qualified life. Increased long life-sustaining therapy might result in increased economic and emotional stress for patients, families, and medical costs. In addition, it will be difficult to properly operate in the ICU because of the prolonged length of stay of VOPs with chronic illnesses and the shortage of human resources for the other patients.

Nguyen et al. [5] suggested that the outcome of admission to the ICU of a VOP for postoperative care after an unplanned surgery or severe medical problems would be dismal, and recommended admission to a regular ward or acute care unit rather than ICU admission. However, there is a lack of legal backgrounds for doctors and VOPs with chronic illness to make advanced plans for the proper end of life care in Korea. There have been significant concerns about a new law on hospice and palliative care and withdrawal of life-sustaining therapy, which will be implemented in 2018 because it includes ambiguous or difficult provisions to be applied in medical reality [6]. Its improvement and supplement will be required. Additionally, advanced-care planning regarding ICU admission with patients or their families seems to improve the quality of life and satisfaction level and reduce related mental stress and depression. In these cases, we need to make an early and active palliative care consultation system after ICU admission to reduce life-sustaining therapy and decrease ICU length of stay [7,8].

References

1. Lim JU, Lee J, Ha JH, Kang HH, Lee SH, Moon HS. Demographic changes in intensive care units in Korea over the last decade and outcomes of elderly patients: a single-center retrospective study. *Korean J Crit Care Med* 2017;32:164-73.
2. Oh SY, Cho S, Lee H, Chang EJ, Min SH, Ryu HG. Sepsis in patients receiving immunosuppressive drugs in Korea: analysis of the National Insurance Database from 2009 to 2013. *Korean J Crit Care Med* 2015;30:249-57.
3. Sjoding MW, Prescott HC, Wunsch H, Iwashyna TJ, Cooke CR. Longitudinal changes in ICU admissions among elderly patients in the United States. *Crit Care Med* 2016;44:1353-60.
4. Roch A, Wiramus S, Pauly V, Forel JM, Guervilly C, Gannier M, et al. Long-term outcome in medical patients aged 80 or over following admission to an intensive care unit. *Crit Care* 2011;15:R36.
5. Nguyen YL, Angus DC, Boumendil A, Guidet B. The challenge of admitting the very elderly to intensive care. *Ann Intensive Care* 2011;1:29.
6. Act on hospice and palliative care and withdrawal of a life-sustaining therapy for dying patients, No. 14013 (Feb 3, 2016).
7. Detering KM, Hancock AD, Reade MC, Silvester W. The impact of advance care planning on end of life care in elderly patients: randomised controlled trial. *BMJ* 2010;340:c1345.
8. Zalenski RJ, Jones SS, Courage C, Waselewsky DR, Kostaroff AS, Kaufman D, et al. Impact of palliative care screening and consultation in the ICU: a multi-hospital quality improvement project. *J Pain Symptom Manage* 2017;53:5-12.e3.

The Authors Reply

We appreciate your interest in our paper and are thankful for taking the time to express your opinions. We would also like to thank you for the opportunity to clarify aspects of our methodology in relation to concerns on diagnostic criteria of the study patients and further express our opinions on the issue of elderly patients' intensive care unit (ICU) care.

As for the low proportion of sepsis, the article has a limitation. The Materials and Method section states that "The ICU patients with diagnoses associated with ICU mortality were classified into 10 subcategories. Diagno-

ses were sorted according to main 10th revision of the International Statistical Classification of Diseases (ICD-10) codes of the patients.” Due to large number of study patients (10,366), checking whether each patient had been diagnosed of sepsis according to strict clinical definitions was impossible, and it is possible that the patients in other disease categories would have been treated for sepsis; for example, sepsis originated from pneumonia, hepatobiliary infection, etc. For future studies, data collection by reviewing individual patient’s medical charts or well-designed prospective studies could overcome the limitation mentioned above.

The very elderly patients have high risk of death for critical illness, when compared to younger age groups [1]. The elderly patients have a higher prevalence of chronic illnesses and an age-related decrease of physical ability [2]. Age of the patients is a significant factor when deciding whether patients should undergo active or palliative treatment. The author has well pointed out that aggressive ICU care for very elderly patients could not be clinically beneficial and concurs heavy economic burdens for patients’ families.

A study in Korea showed that for the elderly, the proportion of patients who had specified “do not resuscitate” is higher than younger age groups [3]. In recent publications from JAMA, Guidet et al. [4] report the results of ICE-CUB 2 study. Patients aged 75 years or more were randomized to usual care hospitals and intervention hospital group, in which the study patients were more actively admitted to ICUs when compared to the counterparts. Paradoxically, even though admission rate was two times higher, intervention group showed no clinical benefit and in-hospital mortality was even higher.

On the other hand, many studies also support ICU care for the elderly patients. A study from the Netherlands showed that both short-term and long-term risk-adjusted mortality decreased significantly in both very elderly ICU patients and patients aged less than 80 years during the period of 2008–2014 [5]. Another study in Korea showed that ICU and in-hospital mortalities were not significantly different for very elderly critically ill patients

compared to the younger patients [6]. For these reasons, setting age of 80 years as a cutoff for receiving active ICU care could create other problems such as a considerable number of very elderly patients who could be recovered by active ICU care, missing opportunity of treatment. When deciding whether patients should undergo active ICU care, the age of patients should be considered in conjunction to other important factors such as wills of the patient and family to continue intensive treatment, reversibility of the disease and underlying comorbidities.

In conclusion, we agree that medical care for very elderly patients requires different clinical approaches compared to their younger counterparts. Before ICU care of very elderly patients, physicians should carefully consider various patient-related factors in the decision of aggressive versus palliative care, for optimal results.

Jeong Uk Lim, Jongmin Lee, Jick Hwan Ha, Hyeon Hui Kang, Sang Haak Lee, and Hwa Sik Moon

Division of Pulmonary, Critical Care and Sleep Medicine, Department of Internal Medicine, St. Paul’s Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea
E-mail (Sang Haak Lee): agmante@gmail.com

*No potential conflict of interest relevant to this article was reported.

References

1. Nguyen YL, Angus DC, Boumendil A, Guidet B. The challenge of admitting the very elderly to intensive care. *Ann Intensive Care* 2011;1:29.
2. Bagshaw SM, Webb SA, Delaney A, George C, Pilcher D, Hart GK, et al. Very old patients admitted to intensive care in Australia and New Zealand: a multi-centre cohort analysis. *Crit Care* 2009;13:R45.
3. Moon SB, Koh Y, Hong SB, Lim CM, Huh JW. Effect of timing of do-not-resuscitate orders on the clinical outcome of critically ill patients. *Korean J Crit Care Med* 2016;31:229-35.
4. Guidet B, Leblanc G, Simon T, Woimant M, Quenot JP, Ganansia O, et al. Effect of systematic intensive care unit triage on long-term mortality among criti-

- cally ill elderly patients in France: a randomized clinical trial. *JAMA* 2017;318:1450-9.
5. Karakus A, Haas LE, Brinkman S, de Lange DW, de Keizer NF. Trends in short-term and 1-year mortality in very elderly intensive care patients in the Netherlands: a retrospective study from 2008 to 2014. *Intensive Care Med* 2017;43:1476-84.
 6. Lee SH, Lee TW, Ju S, Yoo JW, Lee SJ, Cho YJ, et al. Outcomes of very elderly (≥ 80 years) critical-ill patients in a medical intensive care unit of a tertiary hospital in Korea. *Korean J Intern Med* 2017;32:675-81.

Korean J Crit Care Med
2017 November 32(4):377-379
<https://doi.org/10.4266/kjccm.2017.00521.r1>