Reply to Fabio and Carrabba

To the Editor—We appreciate the letter by Fabio and Carrabba [1] regarding our article evaluating the performance of the Pneumonia Severity Index (PSI) and CURB-65 (confusion, urea, respiratory rate, blood pressure, age ≥65) scoring systems in predicting 30-day mortality in patients with healthcare-associated pneumonia (HCAP) compared to those with community-acquired pneumonia (CAP) [2]. They evaluated the discriminatory powers of the recently proposed scoring systems, A-DROP (age, dehydration, respiratory failure, orientation disturbance, and low blood pressure) [3] and SOAR (systolic blood pressure, oxygenation, age, and respiratory rate) [4], which were developed to identify the high-mortality-risk patients with CAP, for 30-day mortality in patients with HCAP. In addition, they evaluated the influence of the age variable on the performance of PSI score in predicting 30-day mortality in patients with HCAP using the modified PSI excluding the age variable [5].

We also tested these scoring systems retrospectively using our study population. As a result, the estimated areas under the curve (AUC) of A-DROP and SOAR were 0.682 (95% confidence interval [CI], .612–.752) and 0.618 (95% CI, .544–.693), respectively, which were not statistically different from 0.679 (95% CI, .619–.739) of the PSI class in patients with HCAP ($P = .922$ and $P = .067$, Hanley-McNeil test). The discriminatory power of modified PSI score...
excluding the age variable (AUC 0.700 [95% CI, .635–.763]) was also comparable to that of the PSI score (AUC 0.692 [95% CI, .626–.758]) as well as the PSI class in patients with HCAP (P = .690 and P = .302, respectively).

Although the receiver-operating characteristic analysis is a popular method of evaluating the performance of scoring systems, AUC may not be optimal in assessing models that predict future risk or stratify individuals into risk categories [6]. Therefore, evaluating the performance of a scoring system solely by AUC may lead to misinterpretation in clinical practice. In our article, we found that the low-risk patients identified using the CURB-65 score had a higher aggregated 30-day mortality compared to the low-risk patients identified using PSI class in patients with HCAP [2]. The low-risk patients with HCAP identified using A-DROP and SOAR also had higher aggregated 30-day mortality of 9.1% (25/274) and 10.7% (32/298) compared with 4.9% (6/123) for the low-risk patients with HCAP identified using PSI class (Figure 1). Although the discriminatory powers of A-DROP and SOAR for 30-day mortality were comparable to that of PSI class, we must be cautious in applying these scoring systems to determine the site of care of HCAP patients, especially in predicting a low risk of mortality.

Note

Potential conflicts of interest. Both authors: No reported conflicts.

Both authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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References
