A78 - Comparison of severity score models based on different sepsis definitions for predicting in-hospital mortality of sepsis patients in medical intensive care unit

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Introduction:
There are three generations of sepsis definition concepts: Systemic Inflammatory Response Syndrome (SIRS), Predisposition, Insult, Response, Organ dysfunction (PIRO), and Sequential Organ Failure Assessment (SOFA). However, the performance between these concepts had not been compared. The aim of our study to evaluate and compare the performance between severity score models based on different sepsis definitions in order to predict outcomes among sepsis patients.

Methods:
A retrospective analysis over a 10-year period. The primary outcome was in-hospital mortality and the secondary outcome was the composite of hospital death and ICU stay of more than 72 hours.

Results:
A total of 2,152 sepsis patients were enrolled. The hospital mortality was 45.9%. Mean APACHE-II score was 23.9. The SOFA score had the highest performance for predicting hospital mortality with an area under the receiver operating characteristic curve (AUC) of 0.86. The AUC of SOFA score was statistically greater than the other scores (p<0.001, Figure 1). Also, the SOFA and qSOFA presented good discrimination for secondary outcome. The AUC of SOFA (0.76) and qSOFA (0.76) for predicting secondary outcome was statistically greater than those of SIRS (0.59, p<0.001) and the PIRO models (Howell 0.72, Robulotta 0.71, p=0.01). In the subgroup analysis (n=1,239), serum lactate value (> 2 mmol/L) was shown to improve qSOFA specificity from 32.4% to 54.1% with comparable sensitivity (96.9% and 94.7%). Howell’s PIRO performance was not significantly changed.

Conclusion:
The SOFA score had the best performance for predicting hospital mortality among ICU sepsis patients. Our findings support the Sepsis-3 using SOFA in an ICU setting.
Comparison of the area under the receiver operating characteristic curve of all scores for predicting hospital mortality in ICU sepsis patients.