

A Comparative Study of Clinical Severity Scoring Systems in ICUs in Taiwan

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Abstract

Objective: The objective of this study is to compare the performance of five commonly applied severity measures. Severity scoring systems have been developed in response to an increased emphasis on the evaluation and monitoring of health care services. The Acute Physiology and Chronic Health Evaluation (APACHE) II system is the only one that has been widely applied in Taiwan. This study is designed to ascertain the outcome prediction abilities of various severity measures in ICUs in Taiwan. Materials and Methods: All five severity instruments were applied to the same patient sample to assess the correlations and relative performance of all five systems. The data collection process was done in a 600-bed regional hospital with 101 valid cases recorded. Results: All five major severity scores, Multiple Organ Dysfunction Score (MODS), Therapeutic Intervention Scoring System (TISS), APACHE II, Mortality Probability Model 24 (MPM24), and Simplified Acute Physiology Score (SAPS), significantly correlated with each other. The accuracy of mortality prediction of each measure ranged from 0.71 to 0.88 as illustrated by the area under the receiver operating characteristics (ROC) curve. The predictive power of each severity measure against the total expenses for each admission was poor in light of the fact that the only significant coefficient of determination was as low as 0.064. APACHE II's performance was as good as all the other systems. MODS performed better in predicting costs of surgical cases with the coefficient of determination reaching 0.331. Conclusions: The application of APACHE II in Taiwan's ICUs as the only standard severity measure is justifiable based on our findings. MODS appears to have a better expense predictive power. However, the expense predictive power of TISS was not as good as expected. (Tzu Chi Med J 2005; 17:239-245)