A Comparison of MICU Survival Prediction Using the Logistic Regression Model and Artificial Neural Network ModelNetwork Model.

林淑萍,Chi-Hsueh Lee,Yang-Shu Lu,Ling-Nu Hsu
Technology Management
Management
splin@chu.edu.tw

Abstract

Under the policy of restraint in medical expenditure and with the dual pressures of medical technology development and population aging, the critical care services will exert even greater pressure on the limited medical resources. Therefore, the objective of this study is to compare the abilities of two models, the Logistic Regression Model and the Neural Network Model, to predict the survival of critical care patients, in order to provide a more ethical and objective survival prediction system, as well as to promote more effective management of the resources of the medical intensive care unit (MICU). The two models use the Acute Physiology and Chronic Health Evaluation-II (APACHE-II) and Glasgow Coma Scale (GCS) scores of 1,496 patients stayed who in the MICU of a Taiwan medical center during January 2002 January 2004 to conduct the survival prediction. The study results show that the Neural Network Model has a better predictive ability than the Logistic Regression Model both with regard to the survivors (86.7%, n = 361) and with regard to the entire population of patients studied (74.7%, n = 498).

Keyword：survival rate, medical intensive care unit (MICU), Artificial Neural Network Model, Logistic Regression Model.