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ADVANTAGES AND APPLICATIONS OF NEURAL NETWORKS

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ABSTRACT

Prediction is an important task in clinical fields. There has been increased interest in using neural networks (NNs) as a potential alternative to multivariate regression models for predicting clinical outcomes. We applied logistic regression and NNs to a real medical data set to estimate the probabilities of nosocomial infection in patients admitted to intensive care units. Their predictive performances were assessed by data-splitting. We described how to deal with medical data to improve the predictive performance of NNs and discussed the advantages and disadvantages of NNs versus logistic regression for predicting clinical outcomes. If we take appropriate measures against the disadvantages of NNs, NNs will probably outperform multivariate regression models.

Keywords: neural networks, artificial neural networks, healthcare, medicine, medical diagnostics, mathematical modeling.