

Predicting the Rate of Non-Acceptable  
In-Patient Hospital Utilization

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Abstract

This paper describes results from a hierarchical Bayesian statistical model which predicts the probability of a Non-Acceptable Claim (NAC), an unnecessary hospital stay, using hospital discharge claim records as inputs. Patient-specific information includes age, sex, length of hospital stay, urgent/emergency type of admission, and in-patient medical type of service. This study compares the results of a hierarchical Bayesian logistic regression model against those of a standard logistic regression model. The Bayesian logistic regression model has regression coefficients varying by the principal reason for admission, while the standard logistic model pools across the reasons for admission. The Bayesian model provides better fits and predictions than the standard method. The predictions can be summarized by hospital, insured group, or other aggregate form. The model can be used as a supplement to current insurer retrospective review programs that rely on detailed audits of patient medical records to inexpensively provide timely indications of possible changes in a hospital's admission process.

