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## Statistical Analysis for Hospital Length-of-Stay and Readmission Rate Study

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## Statistical Analysis for Hospital Length-of-Stay and Readmission Rate Study

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Hospital readmission rate has become a major indicator of quality of care, with penalties given to hospitals that have high rates of readmission. At the same time, insurers are applying increasing pressure to improve efficiency and reduce costs, including decreasing hospital lengths of stay. We analyze these trends to determine if reducing lengths of stay (LOS) may actually worsen readmission rates. All records of patients admitted to the neurosurgical service at one hospital from October 2007 through June 2014 were aggregated and analyzed for several variables, including initial length of stay, readmission occurrence, and length of stay, admitting diagnosis, admission priority and discharge disposition. Any trends over time were also noted. 925 out of 9,409 patient encounters are readmissions. Readmission rate and average length of stay were found significantly negative correlated. Besides linear regression which directly connecting average length of stay and readmission rate, survival analysis methods with Cox proportional hazard ratio model were employed to determine which factors were associated with a higher risk of readmission. There was a clear increase in readmissions over the study period, but LOS remained relatively constant, suggesting that increasing medical complexity confounded efforts to decrease LOS and was responsible for increased readmission rates. This study can help providers avoid readmissions by focusing on effective management of comorbidities.

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