

ABSTRACT

THESIS: SURVIVAL ANALYSIS OF UNPLANNED HOSPITAL READMISSION WITHIN 30 DAYS OF POST CANCER THERAPY TREATED PATIENTS

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Cancer treatment has been declared a crisis in the United States because of the growing demand of services, increasing complexity of treatment and dramatically rising costs of treatment. The vast majority of adverse events occur within 30 days after receiving treatment. This suggests that this 30-day period is a very important time frame to observe side effects of treatment.

We analyzed unplanned hospital readmission data of cancer patients at Ball Memorial Hospital from June 2018 to May 2019 and explored how certain demographic and clinical characteristics affected patients' risk of unplanned readmission within 30 days. Our key explanatory/predictive variables were patients' age, gender, cancer stage and elapsed days and the response variable was the time to event which is patients' unplanned return to hospital within 30 days. We performed survival analysis to identify factors affecting hospital readmission and their significance. We applied the semi-parametric Cox Proportional Hazard model and the parametric Exponential and Weibull models, to determine if there were any significant differences in the results obtained from the two methods.

We considered models with gender, age and cancer stage and found that cancer stage was highly associated with risk of hospital readmission. Moreover, after adjusting for age, cancer stage became even more significant predictor for the risk of hospital readmission. The results from both semi-parametric and parametric models were consistent.