

Constructing episodes of inpatient care: How to define hospital transfer in hospital administrative health data?

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Objectives

Hospital administrative data creates a separate record for each hospital stay of patients. Treating a hospital transfer as a readmission could lead to biased results in health service research, resource planning, and quality of patient care. This study is to identify the optimal time gaps between two hospitalizations to identify hospital transfer cases.

Approach

This is a cross-sectional study. We used the hospital discharge abstract database (DAD) in 2013 from Alberta, Canada to define transfer cases. Institution code and transfer indicators of “institution to” and “institution from” are mandatory in Canadian DAD and have high reliability. We defined transfer cases by transfer institution indicators and used it as the reference standard. Different time gaps between two hospitalizations (6, 9, 12 and 24 hours) were used to identify transfer cases. We compared the sensitivity and positive predictive value (PPV) of different transfer case definitions across different categories of sex, age, and location of residences. Readmission rate within 30 days was also compared after the episode of care were defined by combining transfer cases at the different time gaps.

Results

Sensitivity increased with an increase of time gap between two hospitalizations while PPV decreased. Use of ≤ 6 hours lead to low sensitivity for patients under the age of 50 or living in the rural area; Use of ≤ 24 hours lead to low PPV for patients under the age of 50 or living in urban area. Use of ≤ 12 hours overestimated the 30 days readmission rate compared with the reference standard. The time gap of 9 hours between two hospitalizations is the optimal way to identify transfer cases with the

sensitivity of 0.97 and the PPV of 0.95.

Conclusion

We recommend the use of a time gap of up to 9 hours between two hospitalizations to define hospital transfer in inpatient databases. This validated definition provides a foundation for research in health service and for outcomes such as readmission.

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