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Use of linked data to assess the impact of out-of-hospital deaths on 30-day mortality indicators

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Introduction

Publicly reported 30-day mortality indicators in Canada usually only take into account in-hospital deaths recorded in clinical administrative databases. Studies show that the percentage out-of-hospital deaths may account for 24% to 53% of all 30-day mortality, depending on the indicator, however, such assessments have not been done in Canada.

Objectives and Approach

The objective of this study was to compare 30-day mortality rates calculated using clinical administrative data only (in-hospital deaths) with rates calculated combining administrative data and Canadian Vital Statistics Death Database (CVSD) that captures both in- and out-of-hospital deaths. We considered mortality following acute myocardial infarction (AMI), stroke and major surgery. Episodes of care were created through linkage of Discharge Abstract Database (DAD) and National Ambulatory Care Reporting System (NACRS). Mortality information on deaths outside of acute care hospitals was obtained from DAD/NACRS-CVSD linked files created by Statistics Canada. Data from Quebec and Yukon were not included in the analysis.

Results

The overall 30-day AMI mortality rate calculated using both DAD and DAD-CSVD linked file was 7.4% compared to 6.7% 30-day in-hospital mortality rate calculated using DAD only. Mortality rates after stroke were 15.8% and 14.0% and after major surgery 1.8% and 1.6%, respectively. The impact of adding out-of-hospitals deaths to rate calculations varied by province and rurality. Adding death data from the DAD-CVSD linked file accounted for 10% of 30-day AMI mortality, 11% of 30-day stroke mortality and 12% of 30-day mortality after major surgery, based on 2011 data. However, depending on the indicator, 7% to 9% of the deaths within 30 days recorded in DAD were not found in DAD-CVSD linked file due to limitations of the linkage methodology.

Conclusion/Implications

An impact of including out-of-hospital deaths in the 30-day mortality rates appears to be less in Canada (~10%) than shown in other studies. However, while the DAD/NACRS-CVSD linked files provide valuable supplemental information, linkage methodology limitations suggest that they should be used in conjunction with mortality information available in DAD.

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