The Association of a Rural Hospital Closure with 30-Day Post Hospital Discharge Mortality from Selected Conditions

Melinda A. Merrell, MPH[1,2], Janice Probst, PhD[1],
Kevin Bennett, PhD[3], Bankole Olatosi, PhD[1], Jeffrey Hall, MD[3]
University of South Carolina[1], South Carolina Office of Rural Health[2], University of South Carolina School of Medicine[3]

BACKGROUND AND PURPOSE

- During the last decade, over 100 rural hospitals have closed in the United States[1].
- Concurrently, rural populations, compared to urban, are experiencing disparate trends in all-cause, cause-specific, premature, and in-hospital mortality rates[2-5].
- It is unknown what impact, if any, rural hospital closures will have on these mortality trends.
- 30-day post hospital discharge mortality is a CMS quality indicator that allows for the standardization of mortality outcomes across time and facility[6].

Purpose:
Our study examines, in one state, the association of rural hospital closure with 30-day post hospital discharge mortality for selected conditions impacted most by timely access to health care services.

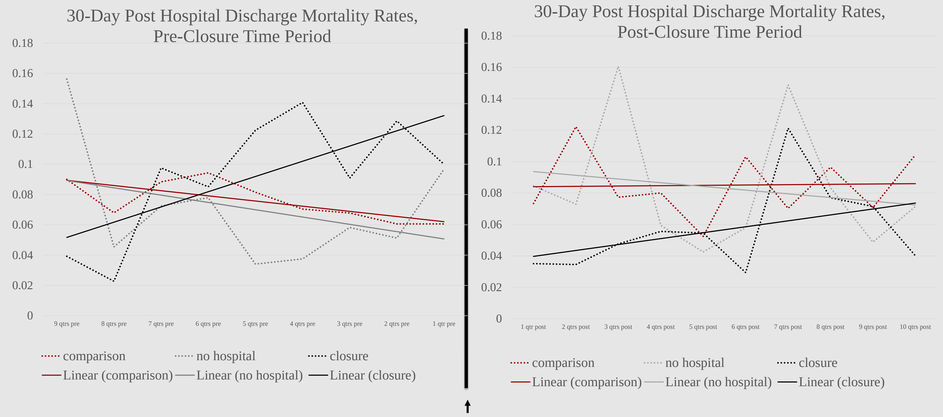
METHODS

- Data were obtained for one Southeastern U.S. state from its all-payer claims database. 30-day post hospital discharge mortality was linked to individual encounters via the state's Vital Records department.
- Inpatient and emergency department (ED) patient encounters from study counties with ICD-9-CM diagnosis codes for acute myocardial infarction (AMI), stroke, sepsis, and trauma were included in the study.
- Study counties were chosen based on their rural community hospital status over the 60-month study period: ***closure*** occurred, ***open*** hospital, and ***no*** hospital. The closure county was identified first and statistical matching was used to identify four additional counties (2 with open hospitals, 2 with no hospital).
- Demographic characteristics of patients included age, gender, race, payment source, Charlson Index (co-morbidity score), and ED utilization during encounter.

RESULTS

Pre-closure time period characteristics of study sample (n=3,029):

- 30-day post hospital discharge mortality = 7.8% (n=236)
- Mean age = 62.0
- Gender = 48.9% female
- Race = 52.6% white
- Emergency Care Sensitive Condition Diagnoses:
  - AMI = 20.3%
  - Stroke = 24.2%
  - Sepsis = 39.2%
  - Trauma = 16.3%
- Significant differences by county hospital closure status were found for race, payment source, Charlson Index score, ED utilization, and sepsis and trauma diagnoses; adjusted in multivariable analysis.



Patient characteristics associated with 30-day post hospital discharge mortality in pre-closure time period:

- Age (each additional year)
- Gender (female v. male)
- Medicare & Self-Pay payment sources (v. total)
- Charlson Index score (each incremental increase)
- ED utilization (yes v. no)
- Sepsis & Trauma Diagnoses (yes v. no)

Key Findings

- ***Logistic regression analyses showed no significant difference in 30-day post hospital discharge mortality rates between pre and post closure time periods in both unadjusted and adjusted models.***
- ***However, for encounters from the closure county, the rate of change slows significantly in the post-closure time period in both unadjusted and adjusted models.***

DISCUSSION

- In our study, 30-day post hospital discharge mortality rates from selected conditions were associated with patient's county of residence hospital closure status.
- It is unknown whether this finding represents improved access for these conditions or increased pre-hospital / in-hospital mortality for residents of counties with these conditions experiencing rural hospital closure.
- Additional analyses are needed. This study only represents one state/one closure in the Southeastern U.S. The explicit impact on vulnerable populations should also be explored further.

ACKNOWLEDGEMENTS & REFERENCES

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