Trends in Diabetes-Related Preventable Hospitalizations in the U.S., 2005–2014

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Muni Rubens,[1] Anshul Saxena,[2] Venkataraghavan Ramamoorthy,[3] Rohan Khera,[4] Jonathan Hong,[5] Emir Veledar,[2] and Khurram Nasir[2,6,7,8,9]

Diabetes-related preventable hospitalizations are indicators of effective primary care services (1), but recent trends are unknown. Hence, we examined the trends in diabetes-related preventable hospitalizations to critically inform policy decisions seeking accountability.

The current study used National (Nationwide) Inpatient Sample (NIS) data for assessing the trends in diabetes-related ;preventable hospitalization rates during the years 2005–2014. The NIS collected stratified samples of ~20% of U.S. community hospital discharge data, which has been useful in calculating national estimates (2). The main outcomes included temporal trends in diabetes-related preventable hospitalization rates and associated conditions such as diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, lower-extremity amputations, and hospitalization costs. Yearly rates were calculated by dividing diabetes-related preventable hospitalizations and four diabetes-related Prevention Quality Indicators conditions by estimated number of adults aged ≥18 years with diagnosed diabetes obtained from National Health Interview Survey (NHIS) data.

A total of 5,399,199 diabetes-related preventable hospitalizations were reported as primary discharge diagnosis during the years 2005–2014. Diabetes-related preventable hospitalizations increased from 500,444 in 2005 to 577,040 in 2014. Age-adjusted diabetes-related preventable hospitalization rates did not change significantly during the study period (P_{trend} = 0.279) (Fig. 1*A*). Diabetes-related preventable hospitalization rates decreased across all age-groups, except for an increase in the age-group 18–44 years, which was not significant (relative increase 20.5%; P_{trend} = 0.052). The overall diabetes-related preventable hospitalization rates showed an annual percentage change of 1.0% (95% CI −0.9, 2.9; *P* = 0.300).

Age-adjusted hospitalization rates due to diabetes short-term complications increased significantly (relative increase 30.3%; P_{trend} = 0.003) while those due to uncontrolled diabetes decreased significantly (relative increase 68.4%; P_{trend} <0.001) (Fig. 1*B*). Hospitalization rates due to diabetes short-term complications increased across all age-groups, except for a nonsignificant decrease in the age-group ≥75 years (relative decrease 10.00%; P_{trend} = 0.838). Hospitalization rates due to uncontrolled diabetes significantly decreased in all age-groups.

The mean length of stay decreased significantly from 5.7 to 5.3 days during the years 2005–2014 (relative decrease 7.5%; P_{trend} <0.001). The total cost of hospitalizations due to diabetes-related preventable causes significantly increased from $5.32 to $6.28 billion during the study period (P_{trend} = 0.042); however, mean hospitalization cost decreased significantly from $12,080 to $11,440 ($P_{trend}$ = 0.017).

Our study found that diabetes-related preventable hospitalization rates did not change significantly during the years 2005–2014, unlike the results in a previous study (3) that reported significantly decreasing trends. This could probably be due to a slight increase in hospitalization rates due to diabetes short-term complications balanced by a slight decrease in hospitalization rates due to

[1]*Miami Cancer Institute, Baptist Health South Florida, Miami, FL*
[2]*Center for Healthcare Advancement and Outcomes, Baptist Health South Florida, Miami, FL*
[3]*Department of Nutrition and Kinesiology, University of Central Missouri, Warrensburg, MO*
[4]*Division of Cardiology, University of Texas Southwestern Medical Center, Dallas, TX*
[5]*Division of Cardiovascular Surgery, Vancouver General Hospital, Vancouver, British Columbia, Canada*
[6]*Herbert Wertheim College of Medicine, Florida International University, Miami, FL*
[7]*Miami Cardiac & Vascular Institute, Baptist Health South Florida, Miami, FL*
[8]*Department of Epidemiology, Robert Stempel College of Public Health & Social Work, Florida International University, Miami, FL*
[9]*Ciccarone Center for the Prevention of Heart Disease, The Johns Hopkins University, Baltimore, MD*

Corresponding author: Khurram Nasir, khurramn@baptisthealth.net.

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M.R. and A.S. are co–first authors.

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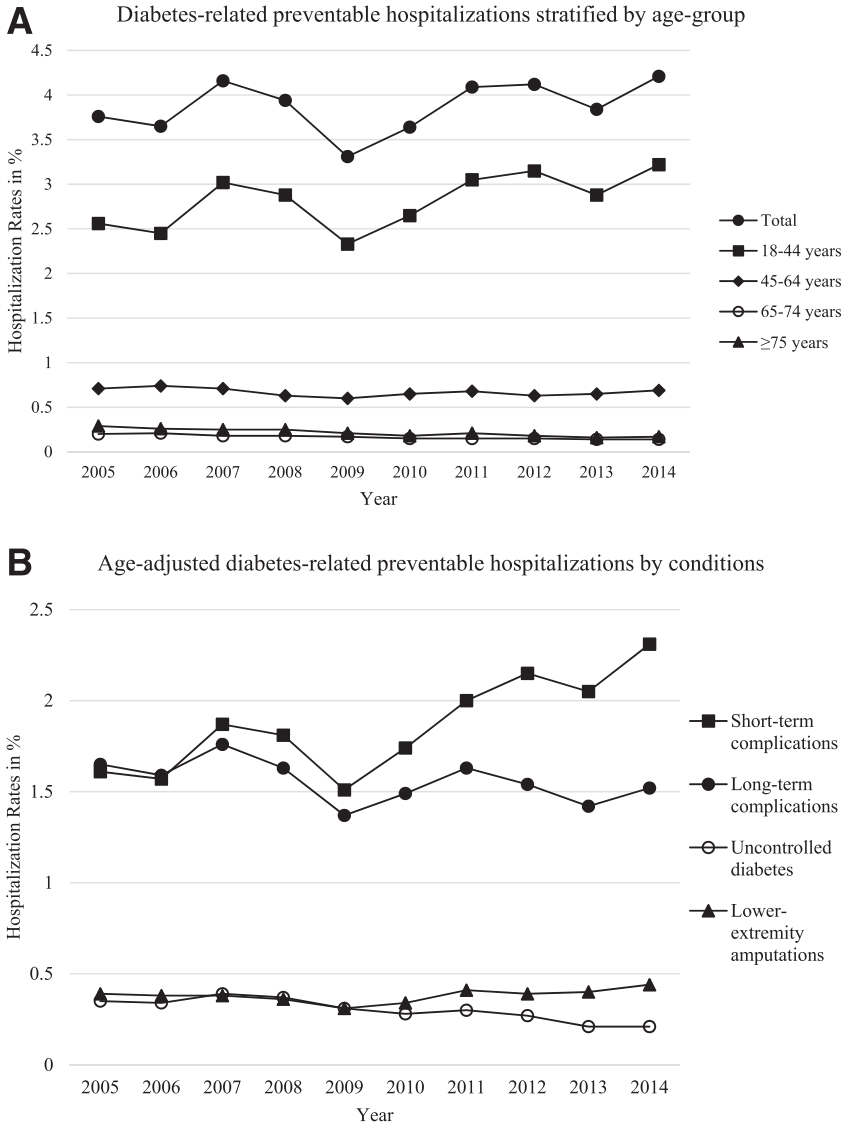

Figure 1—Diabetes-related preventable hospitalization rates, 2005–2014.

uncontrolled diabetes. More importantly, we noted a significant increase in diabetes-related preventable hospitalizations due to acute complications in the age-group 18–44 years. Future interventions should focus on adequate management strategies in younger patients (18–44 years) because earlier control over the risk factors for microvascular and macrovascular processes could delay complications (4,5) and significantly decrease the prevalence of hospitalizations in this age-group. Further studies are needed to identify the underlying determinants of these trends so that primary care can focus on effective strategies to address these continuing challenges.

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