Hospital Use for Diabetes and Co-Occurring Disease Among Vermonters

Vermont Uniform Hospital Discharge Data Set (VUHDDS)

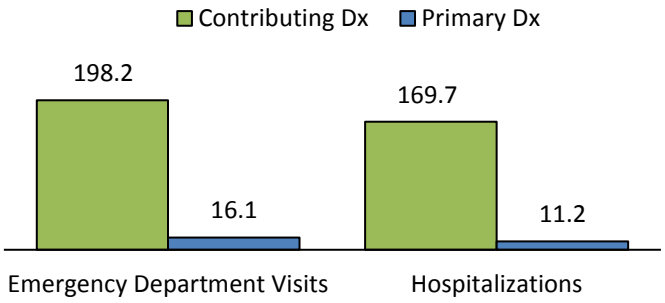
Background

Diabetes is a chronic condition affecting at least 8% of Vermonters.[1] Diabetes affects multiple body systems and uncontrolled diabetes can lead to numerous health consequences. Advances in medicine allow people to manage and live with diabetes longer. Complications from diabetes greatly contribute to the burden on hospitals and the cost of healthcare. Since 2006, the rate of diabetes-related hospital use has slightly increased.[2] The proportion of Vermont adults 65 and older is higher than the national average and continues to grow. Given the association of diabetes with age and that 18% of Vermont adults 65 and older have diabetes, the burden of diabetes on health systems is expected to grow.[1,3]

Hospital Use for Diagnosed Diabetes

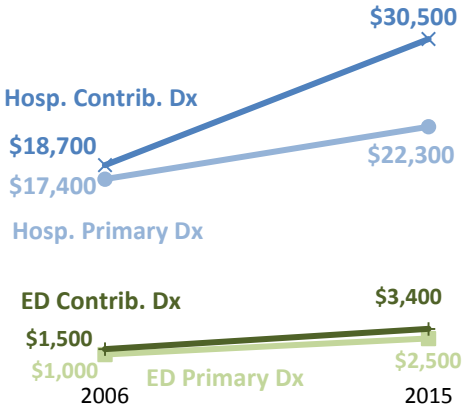
In 2015, 16.1 Emergency Department (ED) visits and 11.2 hospitalizations per 10,000 Vermonters (1,007 ED visits and 703 hospitalizations, respectively) had a **primary diagnosis (dx)** of diabetes. Hospital use in which diabetes was a **contributing cause accounted for** 198.2 ED visits and 169.7 hospitalizations for every 10,000 Vermonters (12,411 ED visits and 10,627 hospitalizations, respectively). This is substantially higher than those with a primary cause, demonstrating that the main impact of diabetes on health systems is as a comorbidity.

Rate of Hospital Use for Diagnosed Diabetes, VUHDDS 2015 (Rate per 10,000 Vermonters)

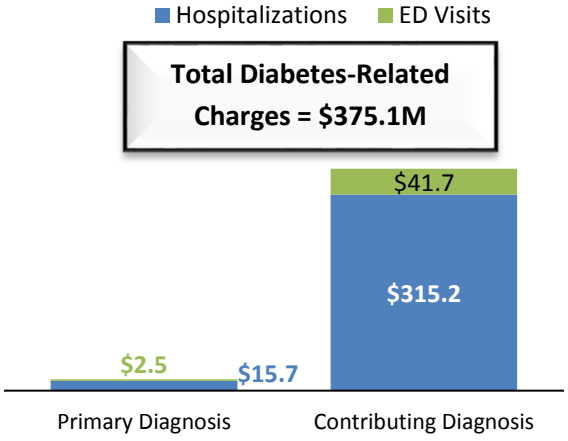


From 2006 to 2015, the average charge of diabetes-related care has risen sharply for both hospitalizations (primary dx: 28% and contributing dx: 63%) and ED visits (primary dx: 150% and contributing dx: 127%). In 2015, the average charge for a hospitalization with a **primary diagnosis** of diabetes was $22,300 and $30,500 for a **contributing diagnosis** of diabetes. The average charge for an ED visit with a **primary diagnosis** of diabetes was $2,500 and $3,400 for an ED visit with a **contributing diagnosis**. The total charges for diabetes hospital use increased 96% from $191.8 million in 2006 to $375.1 million in 2015. Total charges for hospitalizations were markedly higher than those for ED visits and were driven by hospitalizations with a contributing cause of diabetes, which accounted for 84% of the total charges for diabetes hospital use in 2015. Medicare was the primary payer for the majority of diabetes-related hospitalizations (70%), followed by private insurers (17%), and Medicaid (12%). This was slightly different for ED visits with 60% Medicare, 20% Medicaid, and 18% private insurers (data not shown).

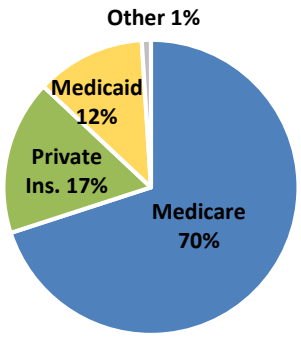
Average Charge for Diabetes-Related Hospital Use, VUHDDS 2006-2015



Total Charges for Diabetes-Related Hospital Use (in millions), VUHDDS 2015



Primary Payer of Diabetes-Related Hospitalizations (Any Diagnosis), VUHDDS 2015



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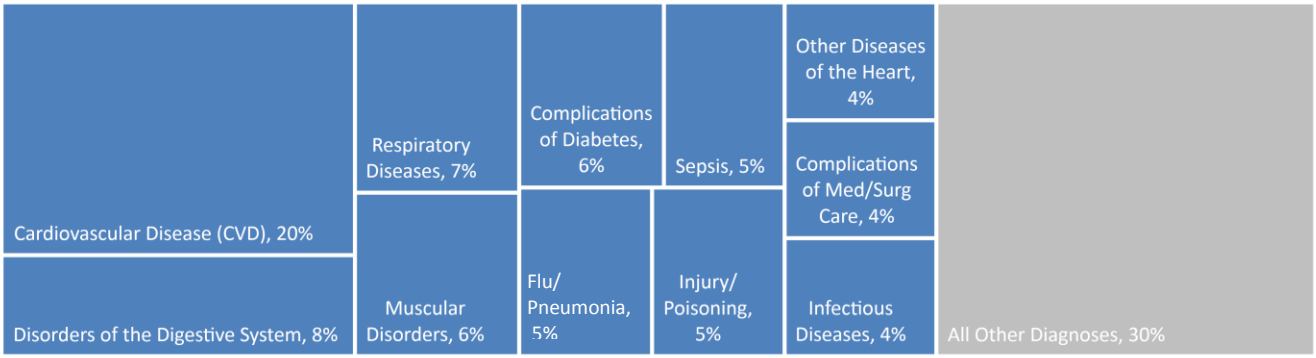
Co-Occurring Disease

Cardiovascular disease (CVD) was the most common single primary diagnosis for encounters where diabetes was a contributing diagnosis. In 2015, 20% of diabetes-related hospitalizations had a primary diagnosis of CVD; in comparison, only 11% of hospitalizations with no mention of diabetes had a primary diagnosis of CVD. Eight percent of diabetes-related encounters were for digestive disorders, 7% respiratory diseases, 6% muscular disorders, and 6% complications of diabetes. Sepsis, flu/pneumonia, injury/poisoning, other heart diseases, complications of medical care, and infectious diseases each accounted for 4%-5% of these hospitalizations. All other conditions together made up the remaining 30% of hospitalizations.

Primary Diagnosis for Hospitalizations with a Contributing Diagnosis of Diabetes, VUHDDS 2015

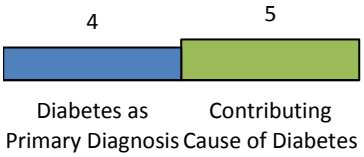


For ED visits in 2015, the highest proportion of visits where diabetes was a contributing diagnosis had a primary diagnosis of signs/symptoms/ill-defined conditions (29%), injury/poisoning (14%), and muscular disorders (8%). This reflects the distribution of overall ED use. Diagnosis of 'complications due to diabetes' accounted for 5% of ED visits.

Length of Hospital Stay

The average length of stay for hospitalizations with a **primary diagnosis** of diabetes in 2015 was 4 days and accounted for 2,982 total days hospitalized. Meanwhile, the average length of stay for hospitalizations with a **contributing** cause of diabetes was 5 days (51,525 days). In total, Vermonters spent 54,507 days hospitalized for diabetes-related conditions in 2015.

Average Length of Stay for Hospitalizations, VUHDDS 2015



Summary

Diabetes often causes or complicates various co-occurring diseases, particularly CVD, and presents a considerable burden to those with diabetes and on hospital systems. This is evidenced by the rate of encounters and total charges for this care, which are principally being paid by public insurers (Medicaid & Medicare). Since these charges are considerably higher for encounters with a contributing diagnosis of diabetes, preventing/managing diabetes is critical to reducing the physical and financial burden of the disease.

Resources to Reduce the Burden of Diabetes in Vermont

① Vermont Diabetes Program: http://www.healthvermont.gov/wellness/diabetes

② Learn about self-management programs, Helping Yourself to Health: http://myhealthyVT.org

③ CDC Prediabetes Screening Test: https://www.cdc.gov/diabetes/prevention/pdf/prediabetestest.pdf

For more information, contact Paul Meddaugh, MS; VDH; Email: paul.meddaugh@vermont.gov.

Data Notes

Hospitalization and ED data are collected from in-state and border-state hospitals. Data presented here are limited to Vermont residents. A primary diagnosis of diabetes refers to when diabetes was listed as the first diagnosis code of the encounter. Contributing diagnosis refers to when diabetes was the 2nd through 20th diagnosis code. Patients admitted to the hospital through the ED had their encounters counted as hospitalization and will not be in the ED data. Reported charges do not account for inflation and may not be what was paid for the care recieved. NH changed their data processing in 2009 and may contribute to any differences seen in NH data provided to Vermont after 2009. Additionally, beginning in 2014 data from MA is no longer included, but has minimal impact on these analyses.

[1] BRFSS, 2016; [2] 1305 Program Data Pages, June 2017. http://www.healthvermont.gov/sites/default/files/documents/pdf/HS_1305_Data_Pages_081816.pdf.
[3] Mahan LK, et al. (Eds). *Krause's food & the nutrition care process*. St. Louis, MO: Elsevier/Saunders; 2012.