

Hospital Volume Influences Length of Stay and Costs Following Endobronchial Valve Placement

Glenview, IL – A nationwide analysis found that hospital volume influences length of stay and costs following endobronchial valve (EBV) placement for patients with chronic obstructive pulmonary disease (COPD), a bronchoscopic treatment that has grown substantially in use since receiving FDA approval in 2018.

Bronchoscopic lung volume reduction using EBV is an innovative, minimally invasive treatment designed to improve quality of life in patients with severe emphysema. Since its FDA approval in 2018, adoption of EBV placement has increased rapidly across U.S. hospitals. This study assessed the impact of hospital procedural volume on patient outcomes, including length of stay (LOS) and total charges (TC), using national data from 2019 to 2021.

Researchers analyzed the National Inpatient Sample from 2019 to 2021, identifying adults with COPD who were electively admitted for EBV placement. Hospitals were categorized into low-, medium-, and high-volume groups based on the percentile distribution of EBV procedures performed.

Results showed that there was a significant increase in the number of EBV placements over the three-year study period, with 535 cases in 2019, with 1,210 cases in 2020, and with 1,630 cases in 2021. The majority of patients were male, with a mean age ranging from 67.13 to 68.48 years, and most did not have significant comorbidities. In 2019, after adjustment, LOS and TC did not differ significantly across hospital volume categories. In 2020, the unadjusted LOS at low-, medium-, and high-volume hospitals (HVHs) was 5.13, 5.92, and 5.36 days, respectively. Following adjustment, compared with low-volume hospital (LVH), medium-volume hospital (MVH) had a significantly longer LOS by 0.81 days ($p = 0.028$, 95% CI: 0.087–1.532). The unadjusted TC following EBV placement at LVHs, MVHs, and HVHs was \$119,936, \$150,805, and \$124,672, respectively. Following adjustment, compared with LVH, TC at MVH was \$32,913 higher ($p = 0.042$, 95% CI: \$1,247–\$64,578). In 2021, the unadjusted LOS at LVH, MVH, HVH was 5.17, 5.48, and 5.87 days, respectively. After adjustment, compared to LVH, HVH had a significantly longer LOS by 0.81 days ($p=0.044$, 95% CI: 0.021–1.608). No significant difference in TC was observed in 2021.

“The number of endobronchial valve procedures performed in the US increased substantially since 2019,” said Doan Ngoc Chau Nguyen, MD, lead researcher and CHEST 2025 presenter. “We observed that hospitals performing higher volumes of these procedures tended to have longer patient stays, which may reflect greater case complexity or more conservative post-procedure monitoring. We found no significant association between hospital volume and costs, except in 2020-during the COVID-19 pandemic-when higher volume was associated with higher costs, likely due to pandemic-related disruptions”

These findings suggest that hospital volume affects LOS, emphasizing the need for standardized post-procedural management to improve efficiency. Future research should assess whether longer LOS correlates with improved patient outcomes.

Further results will be shared at the CHEST Annual Meeting 2025 as part of the *Updates in Pulmonary Procedures original investigations presentations, titled Impact of Hospital Volume on Outcomes of Endobronchial Valve Placement: A Nationwide Analysis (2019-2021)*. The [study abstract](#) can be viewed on the CHEST® journal website.