

Paper 4

Title: Volume Isn't What It Used to Be - Reconsidering the Minimum Case Volume Threshold for Lung Cancer Resection

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Background: The annual hospital minimum case volume for lung cancer resection proposed by the Leapfrog group is 40. However, improvements in postoperative mortality over time may have lowered this threshold in contemporary practice.

Methods: The National Cancer Database was used to identify patients undergoing curative lung cancer surgery from 2015-2019. Using the cut-off of ≥ 40 annual cases, hospitals were categorized as meeting volume threshold (MVT) and below volume threshold (BVT). A multi-level logistic regression was fitted to model the adjusted odds ratio and 30-day mortality. A 30-day mortality benchmark for case volume of ≥ 40 was established.

Results: 26.8% of hospitals had ≥ 40 annual cases. Overall unadjusted 30-day mortality was 1.6%. Unadjusted 30-day mortality decreased from 1.70% in 2015 to 1.34% in 2019 with the adjusted 30-day mortality showing an overall downwards trend in BVT and MVT groups. The benchmark adjusted 30-day mortality for case volume ≥ 40 was 1.8% for the entire cohort. In 2015, this benchmark was achieved with a case volume of 52 annual cases, and decreased steadily to 24 annual cases by 2019 (Figure).

Conclusion: Only 26.8% of hospitals met the recommended minimum number of 40 for lung cancer resection. Due to a progressive decrease in 30-day postoperative mortality, an annual hospital minimum case volume of 24 in 2019 led to an equivalent 30-day mortality to that achieved by the benchmark of 40 cases for the entire cohort (1.8%). Policymakers should consider lowering volume thresholds for lung cancer resection in contemporary practice to improve access while maintaining quality.

