National Trends in Utilization of Ex-Vivo Lung Perfusion in Lung Transplantation

Objective
Ex-vivo lung perfusion (EVLP) is used to evaluate lung graft function prior to lung transplantation in circumstances of extended criteria organs. We evaluated the temporal, geographical trends and outcomes in EVLP utilization in lung transplantation.

Methods
The United Network for Organ Sharing (UNOS) thoracic database was reviewed from February 28, 2018, to December 31, 2022, to identify EVLP use. All transplant center that performed at least one EVLP during the study period were included. Pediatric recipients, recipients with missing center ID or missing EVLP variable were excluded. Geographic trends of EVLP lung transplants were reviewed based on the UNOS region specification. EVLP recipients were propensity score matched 1:4 (case:control) for recipient age, BMI, lung disease diagnosis, and year of lung transplant with non-EVLP lung recipients.

Results
A total of 12,075 lung transplants were performed during the study period. Of these, 694 (5.7%) were identified as EVLP lung transplant recipients. The rates of EVLP utilization were 4.8% (n=101) in 2018 and 6.5% (n=148) in 2022, and the number of EVLP centers grew from 24 (34%) in 2018 to 43 (61%) in 2022. Center volume and the use of EVLP was moderately correlated during the study period (Spearman correlation coefficient = 0.58, $p<0.001$). Overall EVLP utilization is highest in region 4 (Oklahoma, Texas; 10%) and region 10 (Indiana, Michigan, Ohio; 9.7%) in which it has increased steadily and reached the highest overall EVLP utilization rate in 2022 (12%). Importantly, there was no significant difference in survival between EVLP lung recipients and matched non-EVLP lung recipients (p=0.131).

Conclusion
The national EVLP utilization rate has steadily increased since 2018. Currently, EVLP is being performed in larger-volume transplant centers and there is geographic variation in the utilization rate across the USA. The correlation between EVLP use and increases in lung transplant center volume needs further investigation.

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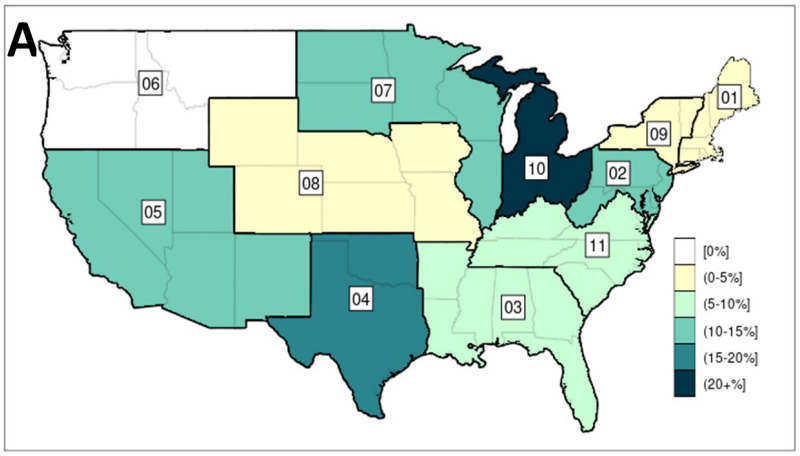

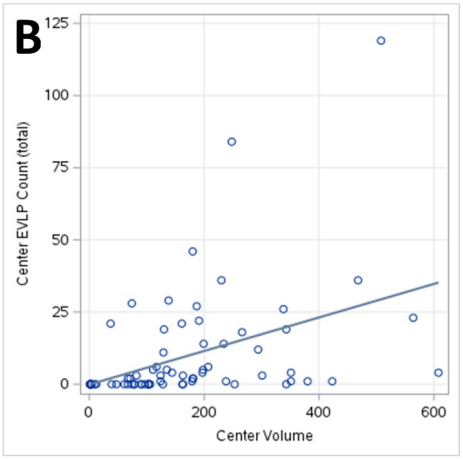

Figure: National trends in ex-vivo lung perfusion utilization A) by region B) Scatter plot of ex-vivo lung perfusion use and lung transplant center volume, correlation coefficient 0.58, p<0.001.