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Lobar Volume Reduction of ≥50% with Zephyr Valves Correlates with Significant Reduction in Longer-term Rate of Severe COPD Exacerbations

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Background: Improvements in FEV1, 6MWD and SGRQ after BLVR with Zephyr valves (EBV) were shown in the LIBERATE Study. There was a trend towards a reduction in the rate of severe COPD exacerbations (requiring hospitalization) in the longer-term ($p=0.053$) compared to medically managed Control group (SoC). Absolute improvements after BLVR are higher in patients that achieve a treated lobar volume reduction (TLVR) of ≥50%.

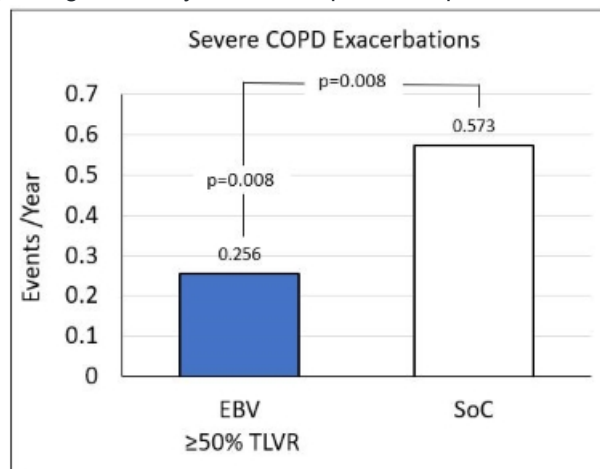
Objectives: Compare rates of severe COPD exacerbations between the EBV and SoC in the year after treatment using TLVR threshold of ≥50%.

Methods: Post-hoc analysis of LIBERATE study data for Clinical Events Committee adjudicated severe COPD exacerbations.

Results: Of the 128 EBV subjects (mean±SD: baseline age, 64.0±6.9yrs; FEV1, 28.0±7.45% pred; RV, 224.5±42.5% pred), 70 subjects achieved ≥50% TLVR at 12months; mean RV reduction of 17.3%. Clinical outcomes at 12months for subjects with TLVR ≥50% were significantly higher and severe COPD exacerbation rate significantly reduced compared to the SoC (n=62) during the 46day to 12month post-EBV period.

	Outcomes (EBV ≥50% TLVR – SoC, Difference for Change from Baseline to 12 months) Mean [95% CI]	p-value
Severe COPD Exacerbations (Events/Year)	0.317	0.008 ^a
Post-BD FEV1 (L)	0.191 [0.134, 0.248]	<0.001 ^b
6MWD (meters)	57.91 [30.43, 8.39]	<0.001 ^b
SGRQ (points)	-12.82 [-17.82, -7.81]	<0.001 ^b

a: p-value from Poisson regression adjusted for each subject's length of follow-up.
b: p-values, least squares mean; confidence intervals from an analysis of covariance (ANCOVA) with factor of treatment and the respective baseline value as a covariate. Values have been adjusted for multiple imputation.



Conclusions: TLVR of ≥50% after BLVR with EBV correlated with significantly fewer severe COPD exacerbations in the longer-term post-valve treatment. The improved clinical outcomes and the reduction in COPD exacerbations resulting in hospitalization has the potential to reduce the economic burden of severe COPD.

