Disparities in the Lung Allocation Score due to geography have not changed since November 2017

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Background

Differences in geographic donor lung availability have been shown to affect waitlist outcomes. Patients listed in areas of low donor lung availability have lower transplant rates and a higher risk of waitlist mortality. In November 2017, there was a dramatic change in the geographic allocation of donor lung and the primary allocation unit for lungs expanded from the local donation service area (DSA) to a 250-nautical mile radius around the donor hospital.

Hypotheses

We hypothesized that the lung allocation score (LAS) at transplant and waitlist time would vary based on local donor lung availability and that broader geographic sharing since November 2017 would improve these disparities.

Methods

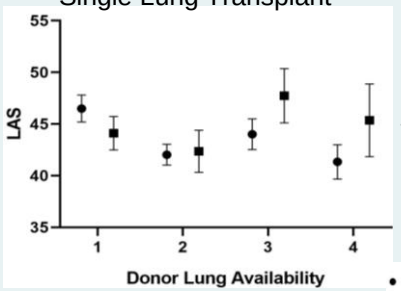
Using UNOS data, we conducted a retrospective cohort study of 23,414 lung transplant recipients from January 1, 2006 - December 31, 2018. Local lung availability was defined as the ratio of donor lungs to waitlist candidates in the local donation service area. We calculated the local lung availability for candidates prior to November 25, 2017. We used a mixed multivariable linear regression and Poisson regression, adjusting for time dependent LAS changes, to examine the relationship between local lung availability, LAS at transplant and waitlist time. We used Wilcoxon rank-sum to compare LAS at transplant before and after November 2017.

General Results

The LAS at transplant did not meaningfully change after November 2017, although the waitlist time for recipients at centers in areas of low local lung availability did decrease from 206 days (95%CI: 192-222) to 155 days, (95% CI: 133-176), p <0.001

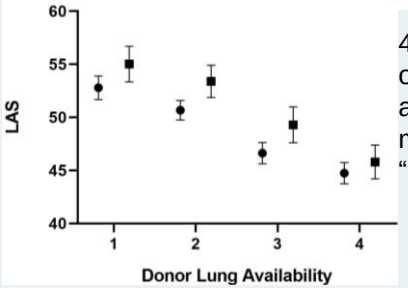
Change in LAS after November 2017 Based on Local Donor Lung availability

Single Lung Transplant



1= lowest quartile of donor lung availability and the organ "poorest" DSA"

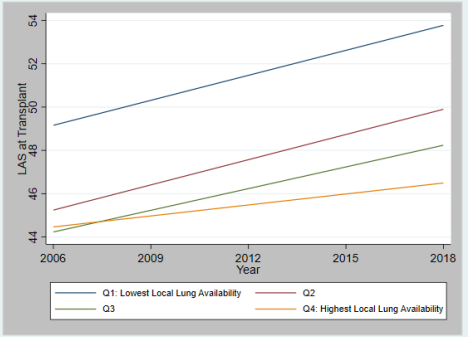
Double Lung Transplant



4 = highest quartile of local donor lung availability and most organ "rich" DSA

The disparities in LAS varied by transplant type; there were similar LAS scores among single lung transplant recipients despite differences in local lung availability. In double lung recipients, the LAS was 8.8 points higher (95% CI: 8.0-9.6, p<0.001) in the lowest quartile compared with the top quartile.

Disparities in LAS over time



Compared to recipients in the top quartile with greatest local lung availability, recipients in the lowest quartile were transplanted with a LAS 6.2 points higher (95%CI: 5.6-6.9, p< 0.001) and waited significantly longer, 186 days (95%CI: 178-194) compared with 93 days (95%CI: 88-97), p <0.001. interesting this disparity in LAS increased since the implementation of the LAS in 2005

Conclusions

1. The LAS at transplant did not meaningfully change after the November 2017 geographic allocation change
2. The disparities in LAS at transplant based on geographic donor lung availability have increased over time and are amplified for double lung transplant recipients.
3. Waiting time is longer for patients in areas of lower local lung availability and waiting time did decrease for lung transplant recipients in the areas of lowest organ availability