

Impact of Broader Geographic Allograft Sharing on Outcomes and Cost in Small to Medium Size Lung Transplant Centers

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Objectives: On November 24, 2017, Organ Procurement and Transplantation Network implemented a change to lung allocation replacing donor service area with a 250 nautical mile radius around donor hospitals. Experience of a large transplant center has been described following the change. We sought to evaluate the experience of a small to medium size center following implementation.

Materials and Methods: Patients (47 pre and 47 post) undergoing lung transplantation were identified from institutional database from January 2016 to June 2019. Detailed chart review and analysis of institutional cost data was performed. Univariate analysis was performed to compare eras.

Results: Similar short-term mortality and primary graft dysfunction were observed between groups. Decreased local donation (68% vs 6%, $p < 0.001$), increased travel distance (145 vs 234 miles, $p = 0.006$), travel cost (\$8,865.34 vs \$13,992.32, $p < 0.001$), total procurement cost (\$60,804.98 vs. \$68,944.36, $p < 0.001$), and length of hospital stay (18 vs. 26 days, $p < 0.01$) were observed post implementation (Table). We also document an increase in waitlist mortality post-implementation (6.29 vs 31.4 per 100 patient years).

Conclusions: Unlike the large center experience, we demonstrate graft ischemic times were unchanged despite increased travel distance, highlighting different travel patterns between centers located in rural vs. populated urban areas. Increased resource utilization, however, was similar between larger and smaller centers thus warranting close monitoring and allocation adjustment by both government and private insurance to maintain global availability of lung transplantation to all Americans regardless of geographic residence.

Table. Post-operative outcomes and resource utilization by eras

<i>Post Operative Outcomes</i>	Pre Policy (n = 47)	Post Policy (n = 47)	p value
Primary Graft Dysfunction	12 (26%)	11 (23%)	0.81
Grade 3 Primary Graft Dysfunction	6 (13%)	7 (15%)	0.77
30 day mortality	1 (2%)	0 (0%)	0.32
90 day mortality	3 (6%)	0 (0%)	0.09
<i>Resource Utilization</i>			
Local Donor	32 (68%)	3 (6%)	<0.001
Distance to Procurement (miles)	145 [65 - 393]	234 [155 - 285]	0.006
Organ Cost	\$49,194.96 (+/- \$4,169.25)	\$46,518.34 (+/- \$5,845.35)	0.25
Travel Cost	\$8,865.34 (+/- \$7,251.57)	\$13,992.32 (+/- \$6,778.07)	<0.001
Total Procurement Cost	\$60,804.98 (+/- \$12,029.29)	\$68,944.36 (+/- \$10,713.12)	<0.001
Length of Stay (days)	18 [12 - 31]	26 [18 - 38]	0.01
Length of ICU Stay (days)	7 [4 - 20]	9 [5 - 23]	0.14
U = Intensive Care Unit			