

## **Costs after implementation of Acuity Circle allocation policy for liver transplant are largely driven by increased organ acquisition costs**

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**Purpose:** Acuity circles allocation policy was implemented to ameliorate geographic disparities in access to liver transplant. There have been reports suggesting substantial increases in transplant center cost due to increased travel associated with broader organ sharing. We hypothesized that some centers would not see additional incurred expense based on geographic relationships to multiple UNOS regions in the pre-acuity circles (PRE) and post-acuity circles (POST) eras.

**Methods:** This single center retrospective cohort study included all deceased liver donor transplants from February 2019 – January 2020 (PRE) and April 2020 – March 2021 (POST). Results were analyzed with R 4.3.2, RStudio and the gtsummary package.

**Results:** There was no significant difference in distance travelled (273 vs 286 miles,  $p = 0.5$ ) or the number of donors that were within a 150-mile radius (61 vs 68%,  $p = 0.5$ ) by era. Total cost per donor was significantly increased in the POST cohort (\$46752 vs \$57024,  $p < 0.001$ ), as Organ acquisition costs (OACs) significantly increased (\$37500 vs \$42840,  $p < 0.001$ ). Costs associated with air transport were similar between eras and there was no significant increase in the amount of air travel utilized.

**Conclusion:** Our center is on the edge of a large geographic region without a highly productive OPO. As expected, there has not been increased travel or travel expenses since the implementation of acuity circles policy. Instead, increased costs after implementation of acuity circles have been driven by OACs. Further scrutiny regarding the fees imposed by OPOs is warranted.

**Table 1. Characteristics and costs per transplant by acuity circle era**

	<b>PRE, N = 93<sup>1</sup></b>	<b>POST, N = 97<sup>1</sup></b>	<b>p-value<sup>2</sup></b>
Organ Acquisition Cost (\$)	37,500 (36,720, 39,270)	42,840 (37,500, 47,430)	<0.001
Distance Traveled (nm)	273 (8, 450)	286 (85, 468)	0.5
Procurement within 150 nautical miles			0.5
No	32 (34%)	29 (30%)	
Yes	61 (66%)	68 (70%)	
Method of Transportation			0.083
Air	60 (65%)	73 (76%)	
Ground	33 (35%)	23 (24%)	
Aviation Cost per transplant (\$)	15,152 (11,955, 16,840)	15,319 (14,142, 17,478)	0.2
Total Cost per transplant (\$)	46,752 (37,500, 54,506)	57,024 (37,500, 62,448)	<0.001

<sup>1</sup> Median (IQR); n (%)

<sup>2</sup> Wilcoxon rank sum test; Pearson's Chi-squared test