See Article page 1284.

Commentary: New lungs may be right around the corner

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Lung transplantation (LTx) has long faced organ shortage, necessitating equitable allocation of allografts balanced with projected transplant benefit. Within this calculus, medical urgency and geographic feasibility must be considered. In 2005, the Lung Allocation Score revolutionized candidate prioritization, decreasing waitlist mortality and increasing transplantation of critically ill patients.¹ However, allocation of donor lungs first within a donation service area (DSA) restricted high Lung Allocation Score candidates' access to available lungs. Lung allocation policy was emergently revised in November 2017, replacing DSA with a 250-nautical mile radius around the donor hospital as the first unit of lung allocation.² This facilitates broader sharing of donor lungs to urgent candidates, but replaces a residual cliff in allocation at arbitrary DSA borders, with one at 250 nms. Unsurprisingly, early reports demonstrated an increase in the distance donor lungs travel to reach recipients and a decline in local (within DSA) LTx.^{3,4}

These data raise the question of whether post-transplant outcomes are affected by use of local versus distant donor lungs, a question addressed by Gerull and colleagues⁵ in this issue of the *Journal*. They conducted a retrospective cohort study of 722 LTx performed at their institution, including 392 (54%) local and 330 (46%) distant transplants. The study revealed no difference in 1-year mortality or chronic lung allograft dysfunction between groups; however, use of distant donor lungs was associated with longer ischemic times (median 346 vs 319 minutes), nighttime transplantation (39% vs 15%), and higher estimated costs (median \$229,871 vs \$183,542). This study sheds some light on the

How far must donor lungs travel? Perhaps not as far as we think.

CENTRAL MESSAGE

Use of distant donor lungs is safe, albeit more costly and logistically cumbersome. Efforts to increase lung availability may improve access to transplantation and reduce need for distant procurement.

impact of moving beyond DSA for first allocation. However, beyond-DSA donors are not necessarily "distant" donors.

The authors conclude that, while safe, broader lung sharing may increase costs and complicate LTx logistics as procurement teams travel farther and coordinate with nonlocal organ procurement organizations (OPOs) to acquire donor lungs. They suggest several possible solutions, including the use of collaborative OPO-based procurement teams, centralized donor management facilities, and, when possible, daytime transplantation to reduce resource use and organ transport times to streamline LTx in this new era.

Notably absent, however, is discussion of the potential to increase lung availability, decreasing need for distant procurements and minimizing the aforementioned issues. A growing body of literature suggests tremendous unrealized donor potential in the United States. In a national study, Klassen and colleagues⁶ estimated that potential donors represent 1.4% to 1.5% of annual deaths; of those, actual donors represent only 16% to 21%.⁶ Goldberg and colleagues⁷ likewise found that inpatient deaths leading to donation varied from 20% to 57% among OPOs, suggesting that maximizing OPO performance could result in thousands of additional transplants annually. While revised OPO performance monitoring may begin to address these issues,⁸ OPOs and transplant centers must collaborate to realize this untapped donor potential.

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In summary, Gerull and colleagues⁵ offer compelling evidence to motivate ongoing scrutiny of lung allocation policy to optimize transplant efficiency, without sacrificing post-transplant outcomes. Although distant LTx may be the current reality, ultimately, new lungs may be right around the corner.

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See Article page 1284.

Commentary: Long-distance relationships work well in lung transplantation

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A considerable number of long-distance donor organs are still rejected based on a fear that post-transplant outcomes might be impaired by the prolonged cold ischemic time (CIT). In this issue of the *Journal*, Gerull and colleagues¹ analyzed a cohort of patients transplanted at the Washington University and compared recipients of local donors with recipients receiving a distant donor organ. Early- and long-term outcomes of both groups were identical, despite the fact that recipients with distant donors had a greater lung allocation score and were more likely to be intubated or

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CENTRAL MESSAGE

Long-distance organ sharing should not be hindered by a fear of prolonged cold ischemic times.

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on extracorporeal life support before the transplant. Of note, 63% of the distant organs had an ischemic time of >300 minutes as compared with only 12% in the local donor group.

These findings are in line with other publications, which question the importance of CIT for early organ function. Traditionally, 6 hours is considered the acceptable CIT threshold for a donor lung.² However, Hayes and colleagues³ found, in a diligent analysis of United Network