OPTN Thoracic Organ Transplantation Committee
Continuous Distribution Data Taskforce
Meeting Summary
May 14, 2020
Conference Call

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Introduction

The Thoracic Committee's Continuous Distribution Data Taskforce met via Citrix GoTo teleconference on 05/14/2020 to discuss the following agenda items:

1. Recap Ischemic Time Discussion
2. Travel Efficiency Rating Scale
3. Other Ways Distance May Be Relevant

The following is a summary of the Taskforce's discussions.

1. Recap Ischemic Time Discussion

UNOS staff recapped the Taskforce's progress. The Taskforce is developing rating scales for attributes that will be included in the composite allocation score for lungs. The Taskforce previously discussed the rating scales for medical urgency and post-transplant survival, and the goal for this meeting was to discuss the rating scale for travel efficiency.

In May 2020, the Taskforce reviewed data on correlations between one-year post-transplant survival, ischemic time, and distance, and ultimately chose not to pursue use of distance as a proxy for the impact of ischemic time on outcomes because the relationship between these variables was clouded by other factors. UNOS staff asked Taskforce members if they had any questions or comments on this topic.

Summary of discussion:

A member asked when the Taskforce will revisit the discussion regarding the under-12 pediatric patients in terms of estimating their lung allocation score (LAS) relative to adults. SRTR staff said that this report will be complete by early to mid-June.

2. Travel Efficiency Rating Scale

UNOS staff reminded the Taskforce that the OPTN Board adopted recommendations in 2018 from the Ad Hoc Geography Committee stating that geographic distribution of organs may be constrained in order to:

- Reduce inherent differences in the ratio of donor supply and demand across the country
- Reduce travel time expected to have a clinically significant effect on ischemic time and organ quality
- Increase organ utilization and prevent organ wastage
- Increase efficiencies of donation and transplant system resources

These recommendations, which align with the OPTN Final Rule, form the basis for incorporating travel efficiency into the composite allocation score.

UNOS staff explained the approach for developing the travel efficiency rating scale, noting that maximum points would be assigned to candidates at the same hospital as the donor and minimum points would be assigned to candidates with the greatest predicted travel cost. Based on preliminary results from the prioritization exercise completed by the Workgroup members, UNOS staff noted that the travel efficiency attribute will likely not carry much weight in the composite allocation score.

SRTR staff presented data on the relationship between travel cost and distance. SRTR staff explained that the graph of travel cost versus distance, which has inflection points at 50 nautical miles (nm), 75 nm, and 100 nm, can be converted to a 0-to-1 scale and incorporated into the composite allocation score. The variability between 50 nm and 100 nm reflects the transition from ground travel to air travel. SRTR staff also shared differences in estimated cost by age, LAS, diagnosis, and mode of travel, noting that the observed differences were expected based on distance. For example, candidates under age 12 are not inherently more expensive, but lungs generally have to travel farther to reach these candidates. UNOS staff presented the rating scale based on SRTR's analysis, noting that the purpose of the rating scale is not to predict exactly whether any given candidate would have lungs transported by ground or air, but to estimate cost on average, particularly in between the transition from ground to air.

Summary of discussion:

A member sought clarification that the shift from driving to flying only impacts cost between the 50-100 nm window. UNOS staff noted that SRTR applied a 60-minute drive time assumption based on a previous committee decision. If predicted travel time by ground is less than 60 minutes, or less than shortest predicted charter flight time, ground transportation is assumed.

A member asked if it was true that the cost for flights is related to miles, rather than hours. SRTR staff explained that they followed the structure of an analysis on liver transportation costs,[1] which was based on miles and not time. SRTR staff noted that hours may be another approach to estimating flight costs, but some of the fixed costs for flight are built into the intercept of the proposed rating scale. UNOS staff acknowledged that organ transportation cost data are limited and this approach was intended to leverage the best data available. Members acknowledged that the distinction between flight cost by distance or by time may not ultimately impact the rating scale as a whole.

UNOS staff explained that this rating scale depends solely on relative costs. Absolute costs may be biased but the rating scale will function appropriately as long as relative costs reflect reality. Accordingly, what matters is the shape of the curve, particularly the relative differences between the fixed cost of driving versus flying; the transition from driving to flying; and incremental per-mile cost of flight. A member agreed that this is the best estimate that can be achieved with the available data.

3. Other Ways Distance May Be Relevant

The Taskforce discussed other potential proximity-related attributes. A member asked whether cost is an appropriate surrogate for the efficiencies the Taskforce is trying to measure. Besides transportation costs, the member suggested other efficiency measures as organs start being offered at longer distances, including preventing organ discard as the list of potential recipients gets longer, and mitigating risk to staff. UNOS staff cited likelihood of acceptance, staff availability based on travel, and population density as other possible efficiency measures. UNOS staff said that the Workgroup could

[1] Sommer Gentry et al., "The Impact of Redistricting Proposals on Health Care Expenditures for Liver Transplant Candidates and Recipients," *American Journal of Transplantation*, no. 16 (2016): 585.

consider creating districts based on supply and demand as a way to equalize patient access. A member said that it would be hard to define supply and demand in a way that would gain broad support.

HRSA staff said there is some concern that as the number of offers extends outward geographically from an organ procurement organization (OPO), it will extend the length of time for an OPO to get a final acceptance, and thereby extend the time to get to the operating room, which could ultimately impact organ function. A member said that this represents two different efficiency issues: (1) if the OPO has to go through a longer list, there is increased risk that donor will become unstable and no organs will be procured, and (2) the pressure to place the other organs may lead to non-utilization of the lungs if the OPO has to pursue too many lung candidates.

UNOS staff asked the Taskforce whether they are assuming that there will be more refusals as hard boundaries are eliminated and geographic distribution increases. UNOS staff suggested that broader distribution may make it easier to place organs, for example, if a high LAS candidate who would typically be outside the geographic boundaries would now appear on the initial match run.

A member said that previous modeling of broader sharing for lungs using LAS predicted increased discards, though the member said that the model probably over-predicted discards. The member noted observed changes in utilization and discard rates following removal of local distribution, and said that broader distribution adds another layer of complexity and increases the likelihood that someone with a higher LAS turns down lungs. The member said that if the OPO has to go through more potential candidates, the likelihood of not using that organ goes up, likely at some small but measurable level. A member asked if the OPTN has the data to model this phenomenon. The member said that in the current system, if offers are going outside of the boundaries, it is probably because no one within the boundary wanted it, and it is hard to control for that behavior. The member suggested evaluating the time to place an organ rather than the number of offers, noting that when an offer goes out to a certain distance, the amount of time it takes to get to the donor operating room is much longer than if all three teams are local.

Another member suggested modeling the time from brain death to organ procurement to figure out if travel distance for the farthest team is a significant factor. The member agreed that it is challenging to model acceptance practices in the future state without hard boundaries compared to the current state with hard boundaries. The member suggested looking at differences before and after the removal of local distribution but acknowledged that it would be still be a rough extrapolation. Another member suggested looking at offers inside 250 nm but outside local distribution, where there are still good offers, to see if acceptance varies by distance. UNOS staff said it may be possible to look at organ offers within boundaries, adjusting for other factors, to evaluate how much distance matters. HRSA staff suggested that in the absence of data, the OPTN could consider asking OPO personnel how they would behave in a series of situations, as an alternate approach that could inform the process.

A member asked if updates to SRTR's likelihood of acceptance models indicate how distance impacts acceptance practice. SRTR staff said that some of the distance variables have been removed from the acceptance models since they were dependent on an environment where local allocation was still in effect. SRTR staff realized that it was inappropriate to include distance in these models since distance used to indicate that lungs offered at greater distances were refused by everyone closer. SRTR staff noted that while allocation is not as localized currently, distance still says something about how many people have refused an organ, so SRTR still has to figure out to incorporate that in the model. A member agreed that SRTR would have to control the model for distance based on how many people previously turned down the organ.

A member said that the Taskforce needs to evaluate which efficiencies are important and what data is available to measure them. If the efficiencies can be modeled, there may be opportunities to make the system more efficient. For example, if the OPTN can measure that when surgeons travel to procure organs, it inhibits their availability, that could serve as justification to encourage local recovery.

Another member suggested including supply and demand in some form, recognizing that it cannot be incorporated in a rating scale in the same way as cost. The member suggested exploring some estimation of population density as a surrogate for potential recipients and potential donors, while recognizing that population density is a poor surrogate for both. UNOS staff said it may make sense to remove hard boundaries from allocation first and see if it is necessary in a subsequent phase to add boost points for supply and demand. The member supported this approach.

Next steps:

The Taskforce supported the approach for the cost rating scale. UNOS staff agreed to provide the Taskforce with a list of other efficiency measures prior to next Taskforce call. UNOS staff also agreed to consider how organ offers and discards could be incorporated as an efficiency measure.

Upcoming Meetings

- May 21, 2020 – Continuous Distribution Workgroup
- June 11, 2020 – Continuous Distribution Data Taskforce