OPTN Lung Transplantation Committee
Meeting Summary
July 16, 2020
Conference Call

Erika Lease, MD, Chair
Marie Budev, DO, Vice Chair

Introduction

The Lung Transplantation Committee met via Citrix GoTo teleconference on 07/16/2020 to discuss the following agenda items:

1. Introduction of New Members
2. Scientific Registry of Transplant Recipients (SRTR) Introduction
3. Incorporating Pediatrics in the Lung Allocation Score Framework

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

1. Introduction of New Members

The Chair welcomed the new members of the Committee. UNOS staff reminded members to complete their required training.

2. Scientific Registry of Transplant Recipients (SRTR) Introduction

SRTR staff presented an introduction to the SRTR, particularly the SRTR's role and how it relates to the work of the Committee. There were no questions or comments from the Committee.

3. Incorporating Pediatrics in the Lung Allocation Score Framework

SRTR staff presented their analysis on how pediatric priority could be incorporated into the lung allocation score (LAS) framework. SRTR staff used OPTN data from 2010 to 2019 on lung candidates under age 12 to estimate one-year waitlist survival, one-year post-transplant survival, and LAS for pediatric priority 1 and pediatric priority 2 candidates.

Summary of discussion:

For pediatric priority 1 candidates, estimated waitlist survival was 247 days; estimated post-transplant survival was 333 days; and computed LAS was 52.0. For pediatric priority 2 candidates, estimated waitlist survival was 325 days; estimated post-transplant survival was 328 days; and computed LAS was 37.3.

SRTR staff shared data on the small population of 11-year-olds that had pediatric priority scores as well as an LAS. A member asked if they should be concerned about the spread of LAS among 11-year-olds, which ranged from 31.8 (10^{th} percentile) to 90.8 (90^{th} percentile) for pediatric priority 1 candidates. SRTR staff noted that since LAS is not used for allocation for 11-year-olds, it is possible that transplant programs did not enter all of the relevant data for these candidates, which may have impacted the calculated LAS.

HRSA staff asked if SRTR looked at the spread of the computed LAS values. SRTR staff explained there is no variability in the computed LAS because every candidate has exactly one covariate: either pediatric

priority 1 or pediatric priority 2. Every pediatric priority 1 candidate was predicted to have an LAS of 52.0 and every pediatric priority 2 candidate was predicted to have an LAS of 37.3. The model did not have any other predictors that would allow for variability. HRSA staff asked if the raw waitlist survival data for the pediatric priority 1 candidates would show the same variability as the LAS data for 11-year-olds. SRTR staff explained that the model only computed one value for each category, but it is not true that all of those candidates died on the same day. The confidence interval shows that there was a lot of variability, which reflects the variability in the risk of waitlist death in the cohort.

A member asked if the policy criteria for pediatric priority 1 versus pediatric priority 2 are objective or if there are some subjective elements that feed into it. An attendee listed the criteria for pediatric priority 1 and pediatric priority 2 and explained that candidates can be eligible for pediatric priority 1 without having conditions that would give that candidate a high LAS. For example, a candidate on continuous mechanical ventilation would have a high LAS, but a candidate with elevated $PC0_2$ who is not on a ventilator or does not have a high supplemental oxygen requirement may not have as high an LAS. Priorities are used for candidates under age 12 instead of LAS because the LAS calculation is not as predictive for this population as for older candidates. SRTR staff showed data of first LAS by age among adolescents ages 11 to 14 on the waiting list to show how the data compare to the LAS values computed by the model. Among the 12-, 13-, and 14-year-olds, the distribution of LAS was very similar.

The Chair asked the Committee whether this is an appropriate place to start to incorporate waitlist and post-transplant mortality for candidates under age 12 into the continuous distribution framework. She noted that pediatric candidates would receive additional points separately through a pediatric priority attribute and a candidate stature attribute.

A member said it is important for the Committee to understand what is missing from LAS that would distinguish pediatric priority 1 candidates from pediatric priority 2 candidates. SRTR staff said it is always hard to identify what is unknown, and that SRTR cannot put something in the model if the data does not exist. SRTR staff said that it is a good thing that not very many children are dying on the waitlist, but as a result, there are not a lot of data that can help to distinguish between candidates. SRTR staff noted that the Committee has the power to give more weight in the medical urgency attribute to certain pediatric priority 1 or priority 2 criteria based on clinical experience or ethical principles, even if SRTR does not have data on it.

A member said that there is a lot of variability in the pediatric priority 1 population, which is driving the observed spread in LAS. This population is small, and dividing up the group by diagnosis will further reduce the sample size. While the criteria for pediatric priority are objective, there are a wide variety of underlying reasons why candidates meet these criteria. SRTR staff asked if anybody is disadvantaged if all of the pediatric priority 1 candidates are treated the same. An attendee responded that existing policy is in place because the OPTN judged that this group was disadvantaged by allocation such that it was appropriate to give the under-12 candidates a first shot at organ offers relative to the 12-and-older population.

A member said the Committee needs to be concerned that they are not disadvantaging under-12 candidates with high medical urgency. An attendee gave an example: an 11-year-old priority 1 candidate on a ventilator would be assigned an LAS of 52 based on this approach but a 12-year-old with the same clinical situation would be assigned an LAS between 70 to 80. The additional pediatric priority boost would not resolve this issue since it would apply to all candidates under the age of 18.

A member asked why the pediatric priority boost would have to apply to all candidates under the age of 18. UNOS staff explained that the current lung allocation system has a demarcation at age 12 because that is when LAS starts. However, per the Age Discrimination Act of 1975, programs or activities

receiving federal financial assistance cannot discriminate based on age.[1] The OPTN has an exemption to this law because the National Organ Transplant Act allows the OPTN to give special consideration to children, where children refers to individuals under age 18.[2] Accordingly, UNOS staff recommend defining pediatric candidates in the continuous distribution framework as those under age 18.

A member noted that the Committee does not have to give an LAS of 52 to all pediatric priority 1 candidates if the Committee is concerned about the under-12 population. The Committee could choose to give pediatric priority 1 candidates or a subpopulation of those candidates a higher LAS, if the Committee has some data or consensus to support that those groups are at higher risk. The Vice Chair noted that the cohort is really small and asked whether it would be possible to divide the pediatric priority 1 group into subpopulations that could be prioritized.

SRTR staff said that the first question for the Committee to answer is whether there is a statistically or clinically sound way to differentiate between pediatric priority 1 and priority 2 candidates. If the answer is yes, then the next question is whether this difference can be defined in a longitudinal way so that an 11-year-old and 12-year-old would be assigned scores that makes sense. Another SRTR staff member said the analysis shows that there is a waitlist difference between priority 1 and priority 2, and asked whether it is possible to distinguish the variability among the priority 1 candidates. An attendee asked if SRTR accounted for the differential likelihood of getting a transplant across these two groups. SRTR staff affirmed that they accounted for that in their computed LAS.

SRTR staff expressed concern about the transition from the assigned LAS for an 11-year-old to the calculated LAS when the candidate turns 12, and suggested that this might be a bigger issue than distinguishing between priority 1 and priority 2. An attendee said the Committee will have to use the new system to get to that point. In the interim, the Committee has to decide what to select as a starting point to use in simulation modeling, which will give the Committee an opportunity to see if this approach achieves the desired effects for organ allocation. The attendee expressed interest in seeing how this approach compares to existing policy. SRTR staff noted that simulation modeling is a fairly blunt instrument, so it is good at detecting large changes but it likely will not detect subtle changes to a small group. Those subtle changes would be more likely to be detected over time as the policy goes forward.

The Chair acknowledged that this is a crude way of trying to incorporate the priority 1 and priority 2 pediatric candidates into the continuous distribution model, but asked if there is support for starting with this approach or if members have other ideas. The Chair noted that the population is small and the Committee does not have the data that would be collected for LAS.

A member said that this seems like a reasonable place to start within the broader context but said that the Committee needs to be able to provide a just way not to disadvantage those sicker priority 1 candidates. A member noted that the review board process will remain in place which will give transplant programs the opportunities to request exceptions for candidates. The Committee will discuss the review board process more in the future. There were no objections from Committee members to starting with this analysis.

UNOS staff asked if the Committee was interested in using the overall average for post-transplant survival, 331 days, for both priority 1 and priority 2 candidates since the difference was not statistically significant. SRTR staff said this approach makes sense from a statistical standpoint.

[1] 42 USC Sec. 6101
[2] 42 USC Sec. 274(b)(2)

Next steps:

The Committee agreed to use the pediatric analysis by SRTR as a starting point for incorporating candidates under age 12 into the medical urgency and post-transplant survival attributes of the continuous distribution framework. The Committee will continue to assess whether candidates under age 12 would be disadvantaged by this approach and will consider other ways to ensure appropriate prioritization of these candidates.

Upcoming Meetings

- August 13, 2020 – Continuous Distribution Data Workgroup
- August 20, 2020 – Lung Committee