OPTN Heart Transplantation Committee
Meeting Summary
August 18, 2020
Conference Call

Shelley Hall, MD, Chair
Richard Daly, MD, Vice Chair

Introduction

The Heart Transplantation Committee met via Citrix GoToMeeting teleconference on 08/18/2020 to discuss the following agenda items:

1. Introductory remarks
2. Multi-Organ Transplant workgroup discussion
3. Potential Heart data collection as part of special public comment for COVID-19 caused transplants
4. Identifying Potential Primary Graft Dysfunction Criteria and Definitions

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

1. Introductory remarks

UNOS staff and the Chair reminded the Committee of requirements and upcoming meeting dates.

Summary of discussion:

The Chair welcomed the Committee and reviewed the agenda items. UNOS staff reminded the Committee members to complete their National Organ Transplant Act (NOTA) and Final Rule training in order to gain access to the Committee's SharePoint site. The members received emails with instructions.

UNOS staff reminded the Committee of the schedule for the upcoming regional meetings and the additional Committee meeting being held on September 8th. During this meeting, the Committee will hear and provide feedback on the *COVID-19 Emergency Policies and Data Collection* and the *Align OPTN Policy with U.S. Public Health Service Guidelines, 2020* proposals that are currently out for public comment.

The Chair encouraged the Committee to review the proposals ahead of time. These proposals are available in the public comment section of the OPTN website.

2. Multi-Organ Transplant workgroup discussion

The Vice Chair of the OPTN Organ Procurement Organization (OPO) Committee, gave an overview of the Multi-Organ Transplant workgroup's progress and updates.

Summary of discussion:

The Vice Chair of the OPO Committee shared the scope of the Multi-Organ Policy Review Workgroup. He commented that this project falls under one of the Policy Oversight Committee's (POC) strategic policy priorities. The Vice Chair of the Heart Committee assisted with the development of the proposal. The Workgroup is in the second step of a multi-step process to address multi-organ allocation. The first

completed step was the development of the Ethics Committee's white paper on Multi-Organ Allocation that was approved by the Board of Directors in December 2019.

This project is intended to clarify Policy 5.10.C, which addresses other multi-organ combinations that are not currently addressed in policy. This project will not include kidney-pancreas, heart/lung, liver-intestine or simultaneous liver kidney transplants.

This project intends to promote consistency and transparency by establishing clearer rules for organ procurement organizations (OPOs) and sharing thresholds using distance/criteria. OPOs will continue to follow the match run. This project will not change the match run order, increase priorities, nor establish eligibility criteria or a safety net. These topics will be addressed in a future project.

The Vice Chair of the OPO Committee noted that the combinations being addressed are fairly infrequent with heart/liver having 45, and lung/liver having 12 occurrences in 2019.

For heart-liver allocation:

- Status 1, 2, or 3 heart candidates receive the liver if MOT candidate within 500 nautical miles (NM)
- No Status 1, 2, or 3 heart candidates within 500 NM, allocate liver alone to Status 1A, 1B, or MELD/PELD 35 or higher candidate prior to allocating to remaining heart statuses
- No Status 1, 2, or 3 heart candidates or liver Status 1A, 1B, MELD/PELD 35 or higher liver candidates - *OPO determines next steps, allocates according to organ-specific policies*

For lung-liver allocation:

- Lung candidates with LAS of greater than 35 should also receive liver if MOT candidate within 500 NM
- Lung candidates with LAS of less than 35 within 500 NM, allocate liver alone to Status 1A, 1B, MELD/PELD 35 or higher candidate prior to allocating to other lung candidates
- No lung candidates with LAS greater than 35 or Status 1A, 1B, MELD/PELD 35 or higher liver candidates – *OPO determines next steps, allocates according to organ-specific policies*

The Vice Chair of the OPO Committee reviewed a flowchart that visualizes how the allocation process works based on the points addressed above. He commented that it is important to note that policy is followed throughout the process.

A member commented that this is a good start and asked if there are anticipated dates for including other organs, noting that heart-kidney has specific challenges relating to regional sharing. The Vice Chair of the OPO Committee responded that heart-kidney and lung-kidney combinations will be addressed by the workgroup during upcoming meetings.

The Chair raised a question about how statuses affect the likelihood of patients receiving a heart as a second organ and asked if the safety net concept will be reviewed at a future date. The Vice Chair of the OPO Committee confirmed that a safety net is being discussed.

The Chair asked what percentage of liver candidates are Status 1A or 1B or MELD 35. The Vice Chair of the OPO Committee did not have data but commented that Status 1A and 1B are getting multiple offers. Currently, the OPO makes the decision to share which is perceived as being unfair.

A member asked if a Status 4 heart-liver candidate on inotropes with cirrhosis is unlikely to be given an offer. A member commented that many congenital heart disease patients, specifically those with failing

Fontans, will meet standard criteria for Status 5 or 6 but may meet exception criteria for Status 4. The Chair asked for the percentage of these types of patients that are in more urgent statuses.

The Chair commented that this is good start to create uniformity and structure so everyone understands the rules of engagement.

A member asked if heart-lung-kidney is being considered for inclusion in the next project phase. They noted that there are an increasing number of centers doing triple organ transplants. Three organ combinations have not been discussed but the Vice Chair of the OPO Committee will bring this suggestion to the Workgroup. The Vice Chair of the Heart Committee said this will be addressed along with heart-kidney. When the Donor Service Area (DSA) was removed as a unit of allocation, these multi-organ patients were orphaned. These policy considerations are similar to the previous system but replaces DSA with 500 NM and allows medically urgent liver patients the opportunity to receive a transplant before less medically urgent heart candidates.

A member asked that although less common, if there are criteria for heart-liver or other multi-organ allocation in pediatric patients being considered. The Vice Chair of the OPO Committee asked if these patients would be higher on the list and commented that he will take this question back to the Workgroup.

The Vice Chair of the OPO Committee and the Vice Chair of the Heart Committee are working on a response to the Liver Committee about the qualities of a Status 3 candidate. The Workgroup is striving to meet the needs of all of the committees.

Next steps:

The members were invited to reach out to the Workgroup if they have additional questions.

3. Potential Heart data collection as part of special public comment for COVID-19 caused transplants

Elizabeth Miller, UNOS staff, presented information on a special public comment proposal concerning data collection for COVID-19 related transplants.

Summary of discussion:

The Lung Committee is preparing a special public comment proposal intended to add COVID-19 diagnoses to lung data collection to assist in tracking COVID-19 related lung transplants. There have been three or more lung transplant due to COVID-19 related lung damage. When a candidate is listed for lung, two additional COVID-19 diagnoses will be available.

The need for this type of data collection may be applicable to other organs. The Committee was asked to provide feedback about if they are seeing COVID-19 related heart transplants and if there is a need to collect COVID-19 related data elements for heart candidates. These data elements will be included in the proposal before going out to public comment.

The Chair commented that during these early months there would be value in knowing if a candidate had COVID-19 prior to transplant in order to assess if this history impacts transplant survival or operative outcomes. Another concern is around COVID-19 related myocarditis and the potential for an emerging population that may develop advanced heart failure secondary to COVID-19.

Currently, there is data being collected for candidates that are deactivated due to COVID-19. The Chair commented that tracking whether the candidate had COVID-19 or not will be important for all transplant medicine. UNOS staff commented that the Disease Transmission Advisory Committee (DTAC) and Data Advisory Committee (DAC) are working on this topic and will provide that feedback to them.

A member commented that to their knowledge there have been no infant or child transplant cases due to COVID-19 but there may be a few due to Multisystem Inflammatory Syndrome (MIS-C) which is associated with COVID-19.

UNOS staff commented that the Lung Committee plans to add COVID-19 as a prefix to existing diagnoses. This will allow for two options such as "pulmonary fibrosis" and "COVID-19: pulmonary fibrosis."

A member agreed that separating out the diagnoses codes to include more options with the COVID-19 modifier similar to what lung is planning will help with future reference. The Vice Chair noted that this may be more difficult to discern with chronic cases but agrees that tracking whether the candidate has a history of COVID-19 is a good idea. A member agreed with collecting this data up front while testing is more prevalent.

A member asked if any recipients have been diagnosed with COVID-19. The Vice Chair and other members commented that various research organizations are tracking this data. There are publications available and more coming out shortly on this topic. There are no known cases of donor-derived transmission. The Chair commented that one of her patients became positive for COVID-19 when completing rehab following transplantation.

A member reviewed statistics on pediatric transplant recipients and COVID-19 that were published by the University of Alabama. The majority of these cases are resolved. A member asked if any of these pediatric patients have renal failure and received dialysis. A member responded that this particular information is part of the dataset but not in the infographic included in the article.

The Committee agreed to add COVID-19 diagnoses for heart and supports DTAC in its effort to add a history of COVID-19 to candidate data collection. Another member suggested adding data elements to capture the diagnoses of acute cardiac syndrome associated with COVID-19 and hyper inflammatory syndrome.

Next steps:

The Committee will determine additional COVID-19 diagnoses and other COVID-19 data collection needs at the September 8th meeting.

4. Identifying Potential Primary Graft Dysfunction Criteria and Definitions

The Chair led a discussion around defining Primary Graft Dysfunction (PGD) and related data collection requirements.

Summary of discussion:

The Chair asked the Committee several discussion questions to begin framing and developing the scope of the PGD project. The reason that Committee chose to pursue this project is because data indicating PGD is currently lacking. The Committee previously worked to address this topic in 2014 but was waylaid due to other projects such as the allocation policy changes. With the status changes and the increased acuity of patients being transplanted who have higher risk of PGD, this project has been prioritized and could potentially be used as a factor in allocation in the future.

The Committee reviewed the "Definition of Severity Scale for Primary Graft Dysfunction" table included in the article *Report from a consensus conference on primary graft dysfunction after cardiac transplantation (*Kobashigawa J, Zuckermann A, Macdonald P, et al., 2014). The Chair asked if the Committee is comfortable using this data in their PGD definition.

A member agreed with the table's definitions of moderate and severe PGD but did not agree with the definition for mild PGD. Using low dose inotropes and other treatments that only last an hour does not seem congruent with the diagnoses of PGD. The Chair noted that other members have commented on this and one of the suggestions is to eliminate the "mild" category of the definition. The Committee agreed to eliminate mild.

A member commented that they agree with the definition for moderate PGD provided in the table but suggested extending the timeline for needing high dose inotropes to greater than 3 to 5 days. The Chair agreed that one hour is too short and commented that these tight or stiff hearts begin getting better in the first 24 hours and the level of care is deescalated. A member agreed that one hour was insufficient and commented that the focus should be on the time, speed, and increment of escalation. The impact of being on extracorporeal membrane oxygenation (ECMO), being in cardiogenic shock, or being very sick prior to transplant does not disappear after one hour of transplant. The auto dysregulation of the patient caused by the transplant procedure needs to be considered. There are other contributing factors for patients who are on balloon pumps, ECMO, or Impellas.

A member commented that needing to use temporary mechanical support following transplant within 72 hours is a bad sign and there is no quantification of this practice in literature. A member disagreed and commented that they put patients on ECMO, if on ECMO prior to transplant, regardless to assist with the trauma of the transplant for the first few hours following transplant. This should not be considered PGD if done prophylactically.

A member commented that 24 hours may be a natural cut point to make the determination if there is hemodynamically significant PGD or if the patient is still reacting to the trauma of the transplant. The Chair noted that some patients go into surgery with a balloon pump and come out with balloon pump for the first 24 hours. There is a problem when the patient did not have a balloon pump or ECMO prior to surgery but needs one following transplant.

A member commented that when there is substantial graft dysfunction 12 hours to 72 hours following transplant, the differential diagnoses can include antibody mediated rejection. They considered defining PGD not just by the need to provide cardiac support but by needing cardiac support due to steadying or worsening graft function that cannot not be explained by immunologic or surgical issues. The Chair commented that these clarifying considerations can be provided in education materials or other content that provides additional context for the definition. The next step will be determining what data elements will be mandated for inclusion or exclusion that support the diagnoses.

The Chair commented that if a person entering data felt the diagnosis was acute rejection, then they are likely to not classify as a PGD when completing data collection forms. A member mentioned that it is dependent on the person entering the data and the data collection form needs to be created in a way that automatically corrects itself. A member asked if the concern is that patients are having hyper acute rejection which is leading to PGD and noted that hyper acute rejection is very unusual. Members agreed that hyper acute and accelerated rejection are not PGD.

A member commented that it is important to define what data needs to be collected that will identify PGD rather than rely on people reporting PGD. The data collected needs to objectively indicate PGD.

The Chair asked if the definition of severe PGD is requiring a new mechanical support device. Members agreed. A member commented that they agree if the definition also excludes other causes.

A member suggested creating a timeline to delineate what is normal dysfunction that recovers versus what is delayed and then variables for events or occurrences that would be considered severe or moderate. The Chair suggested focusing on severe. A member commented that moderate is important

too. Patients coming out of the operating room may need high dose inotropes for a few hours so it may take longer than 24 hours to be able to diagnose PGD.

A member said that 72 hours should be the measure. In regard to the moderate definition, a member commented that the high dose inotropes fluctuate which creates a challenge in knowing the score. A member commented that the sustained requirement of high dose inotropes 48-72 hours after transplant identifies all graft dysfunction. A member suggested adjusting ISHLT's graft dysfunction definition to make it more useful. A member suggested ways to incentivize programs to report data more accurately. The Chair commented that this is out of the scope of the project.

The Chair commented that the data collection has to be simple, straightforward, collectable, and interpretable. A member pointed out that the PGD definition being discussed has been published for seven years but is largely unused because it is not user-friendly.

A member suggested focusing on data collection first, rather than the definition, and use the data collected to inform the definition long term. Data that could be collected are whether the patient has a new dependence on mechanical circulatory support as well as their hemodynamic data at 48 hours. The Chair noted that this will help with severe but may be more difficult for reporting on moderate cases because thresholds will need to be determined so hospitals are not submitting this data for all transplants. Data may be missed if guidance is not provided about which patients should be reported on. Hemodynamic and inotrope thresholds could be determined and if patients fit within these parameters at 72 hours, data is submitted. A member commented that it may be onerous for hospitals to add this data but could be valuable later.

The Committee reviewed the data collected on the Transplant Recipient Follow up form (TRF) form. This data is collected at six months, one year, and annually thereafter. Currently, no data are collected 24 hours after transplant. Data fields would be added to an existing form and it would need to be determined when the data should be collected and who will be mandated to report the data.

A member proposed applying sky scores at day one and day three. The member offered to send articles describing this way of classifying cardiogenic shock. A member commented that patients may be in shock because of vasoplegia which is not PGD. The member responded that the sky score could be assessed alongside of ejection fraction data to determine PGD.

A member commented that there is no data element being collected about the patient being hyper perfused. The Vice Chair commented that if the patient was hyper perfused, therapy would be escalated. The question is at what point in this escalation can the patient be diagnosed with moderate PGD. Therapy will continue to be escalated until they are adequately perfused.

The Chair and Committee offered some data points that could be collected:

- A need for a new mechanical support device and type
- Central venous pressure (CVP)
- Pulmonary wedge pressure
- Inotrope score
- Use of ECMO for respiratory or cardiac (new or continued)

A member suggested defining the disease independent of the therapy.

A member agreed that 72 hours is the appropriate cut off for data collection.

The Chair summarized the discussion by saying the Committee was in agreement to eliminate mild and data will be collected at 72 hours with data elements that still need to be developed. The Chair will send a list of data elements to the Committee for feedback. The Committee will need to determine if

hospitals will be required to fill out this data form for all patients or just those who may have PGD. A member asked if the data will need to go on the Transplant Recipient Registration (TRR). UNOS staff commented that creating a new form will create delays and complications. Modifying existing forms is a more efficient process.

UNOS staff will have a conversation with the DAC support team to determine next steps.

A member asked for the timeline for TRR form submission. UNOS staff said the TRR is submitted following transplant.

The Chair suggested that the Committee put together a wish list of data elements, determine which of the suggested elements are already being collected, and then collect feedback from the support staff on the timeline and any other considerations.

A member asked about using the "Primary Non-Function" field on the TRR. UNOS staff agreed with another member that clicking this button indicates the graft has failed.

A member asked if lung collects data on temporary graft failure. UNOS staff commented that lung collects something similar at 72 hours which will be shared at the next meeting when PGD is discussed. The member commented that this would be a good example of objective measures that are being collected.

Next steps:

A list of data elements that will be considered further will be circulated to the Committee for response.

Upcoming Meeting

- September 8, 2020

Attendance

- **Committee Members**
  - Adam Schneider
  - Arun Krishnamoorthy
  - Cindy Martin
  - David Baran
  - Donna Mancini
  - Greg Ewald
  - Hannah Copeland
  - Jonah Odim
  - Jonathan Hammond
  - JonDavid Menteer
  - Michael Kwan
  - Mike McMullan
  - Kelly Newlin
  - Rachel White
  - Rocky Daly
  - Ryan Davies
  - Shelley Hall
  - Steven Kelban
- **HRSA Representatives**
  - Jim Bowman
  - Marilyn Levi
- **SRTR Staff**
  - Melissa Skeans
  - Monica Colvin
  - Yoon Son Ahn
- **UNOS Staff**
  - Elizabeth Miller
  - Eric Messick
  - Janis Rosenberg
  - Julia Chipko
  - Kaitlin Swanner
  - Keighly Bradbrook
  - Leah Slife
  - Rebecca Brookman
  - Rebecca Goff
  - Sara Rose Wells
  - Sarah Konigsburg
  - Susan Tlusty
- **Other Attendees**
  - Kurt Shutterly