

OPTN/UNOS Thoracic Organ Transplantation Committee
Report to the Board of Directors
June 28-29, 2011
Richmond, Virginia

Summary

I. Action Item For Board Consideration

- Proposal to Require Collection of Human Leukocyte Antigen (HLA) Type for Thoracic Organs

The Board is asked to approve the addition of HLA to Policy 3.7.12.1 (Essential Information for Thoracic Offers) to allow transplant centers to consider offers for sensitized candidates in circumstances where prospective crossmatch is not practical. (Item 1, page 3)

- Proposal to Clarify Adult Heart Status 1A Exception Language to Enable Consistent Interpretation of Policy and Reflect Current Programming in UNetSM

The Board of is asked to approve modifications to Policy 3.7.3 (Adult Candidate Status) so that the proposed language matches the intent of the Committee and programming in UNetSM. (Item 2, page 5)

- Recommendation to Delete Policy 3.7.13 (Status 1 Listing Verification)

The Board is asked to delete Policy 3.7.13 (Status 1 Listing Verification), because it is no longer current. (Item 3, page 8)

II. Other Significant Items

- Committee Distributed the Following Proposals for Public Comment on March 11, 2011

Proposal to Encourage Organ Procurement Organizations (OPO) to Provide Computed Tomography (CT) Scans if Requested by Transplant Programs, And to Modify Language in Policy 3.7.12.3 for Currency and Readability;

Proposal to Require Updates of Certain Clinical Factors Every 14 Days for Lung Transplant Candidates whose Lung Allocation Scores (LAS) Are at Least Fifty (Affected policies: 3.7.6.3.1 (Candidate Variables in UNetSM upon Implementation of Lung Allocation Scores Described in Policy 3.7.6) and 3.7.6.3.2 (Updating Candidate Variables)); and,

Proposal to Allow Outpatient Adult Heart Transplant Candidates Implanted with Total Artificial Hearts (TAH) Thirty Days of Status 1A Time.
(Item 4, page 9)

- Ongoing Discussions and Activities to Improve Policy 3.7.7 (Allocation of Thoracic Organs to Heart-Lung Candidates)

The Committee continues its efforts to revise Policy 3.7.7, and recently discussed the following three concepts:

Guidance on Listing Candidates Who Need Heart-Lung Transplants and Removing from WaitlistSM Recipients of Heart-Lung Transplants;

Interpretation of UNOS Staff on The Geographic Classification Or Classifications that An OPO Must Consider for An Isolated Status 1A Heart Candidate When Allocating A Heart to A Heart-Lung Candidate off The Lung Match Run; and,

Breaking a Tie When Two Heart-Lung Candidates Are Eligible to Receive a Heart and a Lung in the Same Geographic Area.

(Item 5, page 10)

- Discussions on the Adult and Pediatric Heart Allocation Policies and Systems

The Committee continues its efforts to revise Policy 3.7.3 (Adult Candidate Status) for clarification and general revisions, and to better accommodate the medical urgency of candidates implanted with MCSDs. The Committee continues to collaborate with the OPTN/UNOS Pediatric Committee and the Pediatric Heart Transplant Study to revise Policy 3.7.4 (Pediatric Candidate Status) for medical currency. (Item 6, page 12)

- Discussion of the Adult and Pediatric Lung Allocation Systems

The Committee continues its effort to revise the waiting list and post-transplant models using data collected since 2005, and will submit for public comment a policy proposal to revise the Lung Allocation Score in September, 2011. (Item 7, page 16)

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Mark Barr, MD, Chair
Steven Webber, MD, Vice-Chair

The Thoracic Organ Transplantation Committee (Committee) met by teleconference on January 24, 2011, and in person in Chicago, Illinois on March 22, 2011. The following is a summary of the Committee's deliberations:

1. Discuss Comments Received on the Proposal to Require Collection of Human Leukocyte Antigen (HLA) Type for Thoracic Organs

On March 22, 2011, the Committee reviewed and responded to comments submitted for this proposal (**Exhibit A** – resource impact summary and briefing paper), which UNOS distributed on October 1, 2010. The summary of the proposal reads as follows:

Clinical practice and review of the literature suggest that knowledge of donor HLA type allows for a sensitized candidate to receive the most suitable thoracic organ offer. The proposed policy states that if a transplant center requests donor HLA type when its candidate receives a thoracic organ offer, the OPO must provide HLA type for each thoracic organ offered prior to the organ's final placement. The proposed policy change does not require that a thoracic transplant center request donor HLA type for its candidate. However, if the transplant center seeks donor HLA type, then it is responsible for communicating this request to the relevant OPO.

Coupled with recently developed techniques to determine HLA antibody specificity and perform virtual crossmatching, donor HLA data provided at the time of a thoracic organ offer will allow transplant centers to consider offers for sensitized candidates in circumstances where prospective crossmatch is not practical. Enabling virtual crossmatching for thoracic organs also has the potential to reduce post-transplant morbidity and mortality by preventing unanticipated positive crossmatches.

This proposal received thirty-six individual responses through the OPTN website: 29 (80.56%) supported the proposal; 3 (8.33%) opposed the proposal; and, 4 (11.11%) had no opinion. Of the 32 who responded with an opinion, 29 (90.63%) supported the proposal and 3 (9.38%) opposed the proposal. The American Society of Transplant Surgeons supported the proposal whereas the Organization of Transplant Professionals (NATCO) did not. Among the OPTN regions, only Region 4 supported the proposal with a caveat – the other regions supported the proposed policy. Among the nine OPTN/UNOS committees that commented on the proposal, only the OPO Committee opposed it.

The Committee discussed at length the comments submitted and whether it should modify the policy based on the comments. The Committee emphasized that the proposed policy requires that an OPO provide HLA-typing, if requested to do so by the transplant center. Existing practice and telephone communication methods allow for OPOs and transplant centers to communicate about a medically unstable donor or a donor whose family wishes to expedite the organ recovery process. The proposed HLA policy does not need further modification to explain these scenarios

as this practice is in the proposal. The proposed policy requires OPOs to provide HLA-typing prior to the organ's final acceptance and only if requested by the transplant center.

The Committee also discussed the:

- Practicality of requiring documentation from transplant centers as written in the proposed policy;
- Substitution of the word "process" for "request" when referring to the transplant center's role;
- Documentation of the request and provision of HLA typing should occur via DonorNet[®]; and,
- Requirement to HLA-type all thoracic deceased donor organs.

The Committee seeks, for the time being, to proceed with a manual solution for the policy proposed. (The Committee will consider a stricter policy in the future once it has sufficient data to evaluate the outcome of this policy.) Committee members cautioned that for auditing purposes, transplant programs must keep records of requesting HLA-typing in the form of an email, progress notes, or another type of documentation. Should the Board of Directors approve this policy, the Committee requested that UNOS staff develop a guidance document to facilitate member compliance with this policy.

The Committee voted in favor of the policy as written and recommends the following for consideration by the Board of Directors: 21-supported; 0-opposed; and, 0-abstained.

****RESOLVED, that Policy 3.7.12.1 (Essential Information for Thoracic Offers) shall be modified as set forth below, effective August 27, 2011:**

3.7.12.1 Essential Information for Thoracic Offers. The Host OPO or donor center must provide the following donor information to the recipient center with each thoracic organ offer:

- (i) The cause of brain death;
- (ii) The details of any documented cardiac arrest or hypotensive episodes;
- (iii) Vital signs including blood pressure, heart rate and temperature;
- (iv) Cardiopulmonary, social, and drug activity histories;
- (v) Pre- or post-transfusion serologies as indicated in 2.2.7.1 (pre-transfusion preferred);
- (vi) Accurate height, weight, age and sex;
- (vii) ABO type;
- (viii) Interpreted electrocardiogram and chest radiograph;
- (ix) History of treatment in hospital including vasopressors and hydration;
- (x) Arterial blood gas results and ventilator settings; ~~and~~
- (xi) Echocardiogram, if the donor hospital has the facilities; ~~and~~
- (xii) Human leukocyte antigen (HLA) type if requested by the transplant center.

If a transplant center requires donor HLA type prior to submitting a final organ acceptance, it must communicate this request to the OPO; the transplant center must document this request. If a transplant center requests donor HLA type prior to submitting a final organ acceptance, the OPO must provide the following identified splits before the organ's final acceptance: HLA-A, HLA-B, HLA-Bw4, HLA-Bw6, HLA-Cw, HLA-DR, and HLA-DQ antigens. The transplant center

may request HLA-DP type, but the OPO need only provide it if its affiliated laboratory performs related testing. The OPO must document provision of HLA type to the requesting transplant center.

The thoracic organ procurement team must have the opportunity to speak directly with responsible ICU personnel or the on-site donor coordinator in order to obtain current first-hand information about the donor physiology.

[There are no further changes to this policy.]

2. Proposal to Clarify Adult Heart Status 1A Exception Language to Enable Consistent Interpretation of Policy and Reflect Current Programming in UNetSM

On March 22, 2011, the Committee reviewed and responded to comments submitted for this proposal (**Exhibit B** – resource impact summary and briefing paper), which UNOS distributed on October 1, 2010.

In order to reduce confusion about candidate eligibility, this proposal clarifies language about Status 1A requirements in Policy 3.7.3 (Adult Candidate Status). The revised Status 1A-exception language clarifies that clinicians requesting Status 1A-exceptions may only do so for candidates who are inpatients at their listing hospital. Revised language in criterion (b) clarifies that in UNetSM, clinicians may write in a mechanical circulatory support device complication other than the examples included in policy, and that the OPTN contractor will process such an entry as a request for Status 1A-exception by criterion (b). Finally, revised language maintains that a request for Status 1A-exception by criterion (b) does not require that the candidate be an inpatient at his or her listing center. This proposal will require minor programming in UNetSM – addition of the dosage values for inotropes that qualify for “single high-dose intravenous inotrope,” as the proposed in criterion (d). However, the remaining clarifications will not require programming, because the system already functions this way.

All votes submitted to the OPTN website, by the regions, and by OPTN/UNOS Committees favored the proposal. The proposal aligns the programming with the intent of the policy. The Committee recommends the following for consideration by the Board of Directors: 21-support; 0-opposed; and, 0-abstained:

****RESOLVED, that Policy 3.7.3 (Adult Candidate Status) shall be modified as set forth below, effective August 27, 2011, with the exception of the proposed changes in criterion (d), which will be effective pending programming:**

3.7.3 Adult Candidate Status. Each candidate awaiting heart transplantation is assigned a status code which corresponds to how medically urgent it is that the candidate receive a transplant. Medical urgency is assigned to a heart transplant candidate who is greater than or equal to 18 years of age at the time of listing as follows:

Status Definition

1A A candidate listed as Status 1A is admitted to the listing transplant center hospital (with the exception for 1A (a)(i), and 1A (b) candidates) and has at least one of the following devices or therapies in place:

- (a) Mechanical circulatory support for acute hemodynamic decompensation that includes at least one of the following:
 - (i) left and/or right ventricular assist device implanted
Candidates listed under this criterion, may be listed for 30 days at any point after being implanted as Status 1A once the treating physician determines that they are clinically stable. Admittance to the listing transplant center hospital is not required.
 - (ii) total artificial heart;
 - (iii) intra-aortic balloon pump; or
 - (iv) extracorporeal membrane oxygenator (ECMO).

Qualification for Status 1A under criterion 1A(a)(ii), (iii) or (iv) is valid for 14 days and must be recertified by an attending physician every 14 days from the date of the candidate's initial listing as Status 1A to extend the Status 1A listing.

A candidate with a total artificial heart who has been discharged from the listing hospital may be listed as Status 1A for 30 days at any point in time after the discharge.

- (b) Mechanical circulatory support with objective medical evidence of significant device-related complications, such as thromboembolism, device infection, mechanical failure and/or life-threatening ventricular arrhythmias. A transplant center can report a complication not listed here. The report of an "other" complication will result in a review by the respective heart regional review board. (Candidate sensitization is not an appropriate device-related complication for qualification as Status 1A under this criterion. The applicability of sensitization to thoracic organ allocation is specified by Policy 3.7.1.1 (Exception for Sensitized Candidates).)



Admittance to the listing center transplant hospital is not required. Qualification for Status 1A under this criterion is valid for 14 days and must be recertified by an attending physician every 14 days from the date of the candidate's initial listing as Status 1A to extend the Status 1A listing.

- (c) Continuous Mechanical ventilation. Qualification for Status 1A under this criterion is valid for 14 days and must be recertified by an attending physician every 14 days from the date of the candidate's initial listing as Status 1A to extend the Status 1A listing.
- (d) Continuous infusion of a single high-dose intravenous inotrope (~~e.g., dobutamine \geq 7.5 mcg/kg/min, or milrinone \geq .50 mcg/kg/min~~), or multiple intravenous inotropes, in addition to continuous hemodynamic monitoring of left ventricular filling pressures.



Qualification for Status 1A under this criterion is valid for 7 days and may be renewed for an additional 7 days for each occurrence of a Status 1A listing under this criterion for the same candidate. The OPTN contractor shall maintain in the heart status justification form in UNetSM a list of the specific inotropes and doses approved by the Board of Directors to be compliant with this criterion.

Status 1A-Exception

A candidate who does not meet ~~the criteria (a), (b), (c), or (d) for Status 1A~~ may nevertheless be ~~assigned to such~~ classified as ~~s~~Status 1A upon application by his/ or her transplant physician(s) and justification to the applicable Regional Review Board that the candidate is considered, using acceptable medical criteria, to have an urgency and potential for benefit comparable to that of other candidates in this status as defined above. The justification must be for a candidate admitted to his or her listing transplant center hospital and must include a rationale for incorporating the exceptional case as part of the status criteria. The justification must be reviewed and approved by the Regional Review Board. Timing of the review of these cases, whether prospective or retrospective, will be left to the discretion of each Regional Review Board. A report of the decision of the Regional Review Board and the basis for it shall be forwarded to for review by the Thoracic Organ Transplantation Committee to determine consistency in application among and within Regions and continued appropriateness of the candidate status criteria. A candidate's listing under this exceptional provision is valid for 14 days.

Any further extension of the Status 1A listing under this criterion requires prospective review and approval by a majority of the Regional Review Board Members. If Regional Review Board approval is not given, the candidate's transplant physician may list the candidate as Status 1A, subject to automatic referral to the Thoracic Organ Transplantation Committee. A report of the decision of the Regional Review Board and the basis for it shall be forwarded for review by the Thoracic Organ Transplantation and Membership and Professional Standards Committees to determine consistency in application among and within Regions and continued appropriateness of the candidate status criteria.

Submission of Status 1A Justification Form

For all adult candidates listed as Status 1A, a completed Heart Status 1A Justification Form must be received by submitted to on UNetSM in order to list a candidate as Status 1A, or extend their his or her listing as Status 1A in accordance with the criteria listed above in Policy 3.7.3. Candidates listed as Status 1A will automatically revert back to Status 1B unless they are re-listed on UNetSM by an attending physician within the time frames described in the definitions of status 1A(a)-(d) above. When a candidate's time at Status 1A expires, the candidate will automatically be classified as Status 1B unless the attending physician recertifies the candidate's qualification for a Status 1A criterion. Note: This automatic status downgrade will not require submission of a Status 1B Justification Form.

- 1B A candidate listed as Status 1B has at least one of the following devices or therapies in place:
- (aa) left and/or right ventricular assist device implanted; or
 - (bb) continuous infusion of intravenous inotropes.

A candidate with a total artificial heart who has been discharged from the listing hospital may be listed as Status 1B at any point in time after the discharge.

Status 1B-Exception

A candidate who does not meet the criteria for Status 1B may nevertheless be assigned to such status upon application by his/ or her transplant physician(s) and justification to the applicable Regional Review Board that the candidate is considered, using accepted medical criteria, to have an urgency and potential for benefit comparable to that of other candidates in this status as defined above. The justification must include a rationale for incorporating the exceptional case as part of the status criteria. A report of the decision of the Regional Review Board and the basis for it shall be forwarded for review by the Thoracic Organ Transplantation and Membership and Professional Standards Committees to determine consistency in application among and within Regions and continued appropriateness of the candidate status criteria.

Submission of Status 1B Justification Form

For all adult candidates listed as Status 1B, a completed Heart Status 1B Justification Form must be received submitted on to UNetSM in order to list a candidate within one working day of a candidate's listing as Status 1B.

[There are no further changes to Policy 3.7.3.]

3. Delete Policy 3.7.13 (Status 1 Listing Verification)

Policy 3.7.13 references an incorrect title for Policy 3.7.3 and an incorrect medical urgency status – Status 1. The DEQ audits programs randomly and forwards potential non-compliance events to the Membership and Professional Standards Committee. The OPTN does not routinely monitor Policy 3.7.3 as described in Policy 3.7.13. However, the OPTN has a process in place for auditing programs for policy compliance, including that of Policy 3.7.3. Therefore, the Committee suggested deleting this policy: 20-supported; 0-opposed; and, 0-abstained.

Policy 3.7.13 is not programmed in UNetSM, because it did not need to be. Public comment is not required to delete this policy, because it neither changes organ allocation practices nor any transplant program behavior required in Policy 3.7.3. The following is recommended for consideration by the Board of Directors:

****RESOLVED, that Policy 3.7.13 (Status 1 Listing Verification) be modified as set forth below, and the subsequent policies be renumbered as follows, effective August 27, 2011:**

3.7.13 Status 1 Listing Verification. A transplant center which has demonstrated noncompliance with the Status 1 criteria specified in Policy 3.7.3 (Primary Allocation Criteria) for heart candidate registration shall be audited on a random

~~basis and any recurrence of noncompliance will result in a recommendation to the Membership and Professional Standards Committee and Executive Committee that further Status 1 heart candidate registrations from that center shall be subject to verification by OPTN contractor of the candidates' medical status prior to their Status 1 placement on the Waiting List for a period of one year.~~

3.7.134 Removal of Thoracic Organ Transplant Candidates from Thoracic Organ Waiting Lists When Transplanted or Deceased. If a heart, lung, or heart-lung transplant candidate on the Waiting List has received a transplant from a deceased or living donor, or has died while awaiting a transplant, the listing center, or centers if the candidate is multiple listed, shall immediately remove that candidate from all Thoracic Organ Waiting Lists for that transplanted organ and shall notify the OPTN contractor within 24 hours of the event. If the thoracic organ recipient is again added to a Thoracic Organ Waiting List, waiting time shall begin as of the date and time the candidate is relisted.

3.7.145 Local Conflicts Involving Thoracic Organ Allocation. Regarding allocation of hearts, lungs and heart-lung combinations, locally unresolvable inequities or conflicts that arise from prevailing OPO policies may be submitted by any interested local member for review and adjudication to the Thoracic Organ Transplantation Committee and the Board of Directors.

3.7.156 Allocation of Domino Donor Hearts. ~~A domino heart transplant occurs when the native heart of a combined heart-lung transplant recipient is procured and transplanted into a candidate who requires an isolated heart transplant. First consideration for donor hearts procured for this purpose will be given to the candidates of the participating transplant program from which the native heart was procured. If the program elects not to use the heart, then the heart will be allocated according to Policy 3.7, or an approved variance to this policy. For the purpose of Policy 3.7.16, the Local Unit of allocation for the domino heart shall be defined as the CMS-designated service area of the OPO where the domino heart is procured.~~

3.7.167 Crossmatching for Thoracic Organs. ~~The transplant program and its histocompatibility laboratory must have a joint written policy that states when a crossmatch is necessary. Guidelines for policy development, including assigning risk and timing of crossmatch testing, are set out in Appendix D of Policy 3.~~

4. Committee-Sponsored Public Comment Proposals Distributed on March 11, 2011

The Committee sponsored the following three policy proposals for public comment, and will meet in June, 2011 to review them:

- Proposal to Encourage Organ Procurement Organizations (OPO) to Provide Computed Tomography (CT) Scans if Requested by Transplant Programs, and to Modify Language in Policy 3.7.12.3 for Currency and Readability
- Proposal to Require Updates of Certain Clinical Factors Every 14 Days for Lung Transplant Candidates whose Lung Allocation Scores (LAS) Are at Least Fifty (Affected policies: 3.7.6.3.1 (Candidate Variables in UNetSM upon Implementation of Lung

Allocation Scores Described in Policy 3.7.6) and 3.7.6.3.2 (Updating Candidate Variables))

- Proposal to Allow Outpatient Adult Heart Transplant Candidates Implanted with Total Artificial Hearts (TAH) Thirty Days of Status 1A Time

5. Ongoing Discussions and Activities to Improve Policy 3.7.7 (Allocation of Thoracic Organs to Heart-Lung Candidates)

The Committee recently began approaching modifications to Policy 3.7.7 in three parts, as presented below.

Part 1: Guidance on Listing Candidates Who Need Heart-Lung Transplants and Removing from WaitlistSM Recipients of Heart-Lung Transplants

The Committee distributed a memorandum (**Exhibit C**) to provide guidance to thoracic clinicians on listing heart-lung candidates on the waiting list, and correctly removing heart-lung candidates from the waiting list. The Committee approved the content of the memorandum and its distribution to thoracic clinicians by UNOS staff on January 24, 2011: 15-supported; 0-opposed; and, 0-abstained. (UNOS staff distributed the memorandum by email to all thoracic clinicians on January 27, 2011.)

Part 2: Interpretation of the Geographic Classification Or Classifications that an OPO Must Consider for an Isolated Status 1A Heart Candidate When Allocating a Heart to a Heart-Lung Candidate off the Lung Match Run

The following sentence in Policy 3.7.7 states clearly that if a heart-lung candidate is suitable and eligible to receive a heart, then this individual must receive the lung from the same donor.

When the candidate is eligible to receive a heart in accordance with Policy 3.7, or an approved variance to this policy, the lung shall be allocated to the heart-lung candidate from the same donor.

However, the sentence that follows the aforementioned one is ambiguous:

When the candidate is eligible to receive a lung in accordance with Policy 3.7, or an approved variance to this policy, the heart shall be allocated to the heart-lung candidate from the same donor if no suitable Status 1A isolated heart candidates are eligible to receive the heart.

This ambiguous sentence has understandably created confusion among OPOs in how to consider geography when allocating a heart and lung off a lung match run. A geographic classification or area is local, Zone A, Zone B, Zone C, Zone D, and Zone E. These areas stem from the donor hospital's location, which Policy 3.7.2 (Geographic Sequence of Thoracic Organ Allocation) defines. The ambiguous sentence in Policy 3.7.7 results in the following questions:

1. Should an OPO using the lung match run offer a donor heart to a suitable, isolated Status 1A heart candidate nationally before offering the heart and lung to a candidate in need of both in any geographic area?

2. Should an OPO when using a lung match run follow the process listed below?
 - Before offering the heart-lung bloc to a candidate on the lung match run, the OPO must first offer the heart to all candidates on the heart match run through Status 1A in the same zone as the lung candidate. This may entail offers to heart candidates at a lower status than Status 1A if they appear in a higher position on the match run.

When using the lung match run to offer a heart to a heart-lung candidate, the OPO must apply the word “eligible” in the geographic classification concept. The Committee is preparing a mandate to OPO community, in collaboration with the OPO Committee, regarding the:

- a) Geographic classification or classifications that an OPO must consider for an isolated Status 1A heart candidate when allocating a heart to a heart-lung candidate off the lung match run;
- b) Combined geographic classifications when allocating heart-lung blocs to pediatric candidates; and,
- c) Breaking a tie when two heart-lung candidates are eligible to receive the same heart-lung bloc in the same geographic area.

The Committee is collaborating with the OPO Committee to develop a final version of a memorandum that they will distribute to the OPO community, but this latter distribution will occur after its approval by Executive Committee. The Committee voted in favor of the memorandum’s intent, its distribution to the OPO Committee, and its subsequent distribution to the Executive Committee for approval: 20-approved; 0-opposed; and, 0-abstained.

Part 3: Breaking a Tie When Two Heart-Lung Candidates Are Eligible to Receive a Heart and a Lung in the Same Geographic Area

There is a possibility that two heart-lung candidates, who are in the same geographic area, could be eligible to receive that same set of organs, through a heart or heart-lung match run and a lung match run. The Lung Subcommittee had initially proposed waiting time as the tie-breaking factor, but during a later discussion opined that waiting time is not an objective medical criterion. During the discussion on March 22, 2011, the Committee recommended that the Lung Allocation Score (LAS) should be the tiebreaker, because all heart-lung candidates will have this score.

In discussing whether such a policy change needs public comment, the Committee recommended that the OPTN leadership consider alternative methods for the application of constructs not addressed directly in policy. The Committee voted to submit the policy modification to the Executive Committee, recognizing that this body may recommend that the Committee submit the changes for public comment: 20-supported; 0-opposed; and, 0-abstained.

6. Discussions on the Adult and Pediatric Heart Allocation Policies and Systems

Mechanical Circulatory Support Devices (MCS D)

Since 2010, and as part of the deliberations leading up to the Board of Directors' approval of the interim policy for outpatient candidates with total artificial hearts, the Committee has been discussing conceptual improvements to criteria (a) and (b) in Policy 3.7.3 (Adult Candidate Status).

One such discussion was to clarify for UNOS staff the intent of the 30-day time limit for candidates implanted with ventricular assist devices (VAD). The Committee's intent – past and present – is that candidates implanted with VADs receive only 30 days of time at Status 1A – regardless of the number of centers where the individual registers for transplant. The issue arose due to queries from the thoracic community about whether to allow a candidate to accrue 30 days in Status 1A due to criterion (a)(i) in more than one center. Since UNetSM does not apply this policy across multiple registrations for a candidate, it is possible for a candidate to be listed as Status 1A at two or more transplant programs by this same VAD criterion. The Committee voted that the language in the policy is accurate – it is 30 days of Status 1A time per candidate, not per center or registration: 20-supported; 0-opposed; and, 0-abstained.

Another goal of the discussion has been to revise the policy for candidates implanted with MCS Ds. MCS Ds in policy include VADs, total artificial hearts (TAH), extracorporeal membrane oxygenation (ECMO), and balloon pump. The Committee seeks to improve the MCS D policies to delineate candidates with higher waiting list mortality from those with lower waiting list mortality, and to better define what constitutes device-related complications and infections.

The International Society for Heart and Lung Transplantation recently published an article¹ that describes the variety of device infections and complications that candidates implanted with VADs experience. This article, combined with clinical expertise, will likely be the evidence that supports revisions to the language in criterion (b), but the Committee needs to arrive at a consensus on which infections qualify a candidate for Status 1A and which do not. It is likely that the Committee will request submission of all Status 1A criterion (b) justification forms to the heart regional review boards. Even if this latter approach becomes policy, the Committee will still need to develop a guidance document for the review boards to evaluate such listings.

There are varying opinions on how to approach the revisions to the MCS D section. Whenever possible, the Committee seeks to make changes based on OPTN data. These data, while helpful, may not be the only piece of evidence that will guide revisions to the policy. Politically, the Committee needs to arrive at a consensus – based on OPTN data, the literature, and clinical observations – regarding the predicted waiting list mortality for candidates who receive VADs.

The Committee continues to discuss improvements to the MCS D policy, and in the near future, they will discuss the following questions and issues:

- 1) What data support the concepts proposed thus far to revise the MCS D policy? For example, how many candidates with VADs receive transplants within 30 days of the VAD-Status 1A listing?

¹ Hannan et al., "Working Formulation for the Standardization of Definitions of Infections in Patients Using Ventricular Assist Devices," *Journal of Heart and Lung Transplantation Vol 30, No 4* (April 2011): 375-384.

- 2) Should candidates implanted with VADs and who are medically stable receive time as Status 1A?
- 3) The device infection policy – Status 1A(b) – needs improvement as the language allows for subjective interpretation of infections. The policy should delineate between serious and superficial infections. The Committee will review data will on the number of status justification forms submitted for device complications.
- 4) Perhaps all status justification forms submitted for thromboembolism should be submitted to the heart regional review board, i.e., treated as exceptions.
- 5) The current heart medical urgency system may be disadvantaging the very sick.
- 6) Should the type of device – temporary or long term – be better defined in policy?
- 7) Can data from other registries assist in providing the data needed?
- 8) What would be the impact on other policies in 3.7.3 if only changes to the MCSD section are made? Should the Committee review the entire policy for revision, including the development of a heart allocation score?

OPTN Data Analysis: Preliminary Report on Collection of Mechanical Circulatory Support Device (MCSD) Data at Waiting List Removal

Related to the MCSD discussion, the Committee reviewed analysis of MCSD data collected on the heart and heart-lung waiting list removal page (**Exhibit D**). Data collected include the type of MCSD that the candidate ever had (with the exception of balloon pump), the brand of that device (with the exception of ECMO), the date of implant, the date the device was removed, and the reason for the removal. UNOS began collecting these data on January 6, 2011. The Committee will continue to review the results of this data collection effort, and will likely use it to develop a heart allocation score in the future. In the short-term, some of these data may inform the development of a revised MCSD policy.

Since balloon pump data are not being collected on the removal page, the Committee requested that the removal page should include text that balloon pump data are not collected, and highlight that ECMO data are collected.

UNOS staff received queries about whether MCSD data must be reported at removal if the removal reason is “lost to follow-up.” The Committee suggested not collecting these MCSD data, because such data may not be accurate or complete.

Heart Medical Urgency Status Downgrade Policy

The Committee discussed what time limit to place in policy for noting a change in a candidate’s criterion or Status, or both, in UNetSM. Should transplant centers be afforded a 24-hour time period, or a lesser amount of time, to record the change in a candidate’s status – in particular, change in a Status 1A criterion? If twenty-four hours is ample time to make the change in a candidate’s medical urgency status, and it would be inappropriate for a candidate to receive a heart offer due to a given criterion when that criterion is not current, then the policy needs to state this downgrade practice.

The Committee discussed whether the programs should update the UNetSM record immediately upon a change in a candidate’s criterion, but decided that the 24-hour time period was fair. This time allows the program to note the change in criterion in UNetSM. The UNOS DEQ also uses the 24-hour limit to assess Member compliance in making a criterion change. The Committee voted in favor of drafting a proposal to modify Policy 3.7.3 (Adult Candidate Status) and Policy 3.7.4 (Pediatric Candidate Status) to state that a transplant program has 24-hours during

which to note in UNetSM when a candidate no longer qualifies for Status 1A or 1B by a given criterion: 20-supported; 0-opposed; and, 0-abstained. The Committee will distribute the proposed policy for public comment in September, 2011.

Type of Blood Titer Value to Report in UNetSM for Candidates Who Are Eligible to Receive Hearts from Donors with any Blood Type: IgG versus IgM

On November 22, 2010, Policy 3.7.8 (ABO Typing for Heart Allocation) was implemented. Soon after implementation, UNOS staff received questions about which type of isohemagglutinin titer to enter: IgG versus IgM. Programming only allows for the entry of the titer value, not the type. In addition, Policy 3.7.8 does not state which type of titer value to use, and its programming does not accommodate entry of different types of titer values.

The Committee will be requiring clinicians to enter the highest titer value, and not the type of titer value. Entering the higher titer value will ensure that the candidate does not receive an incompatible blood type heart that her or his body will reject. Mandating which candidates are eligible to receive ABO-incompatible heart offers requires a policy change; so, the Committee voted in favor of modifying Policy 3.7.8 to include the phrase “enter the highest titer value.”

The Committee then discussed whether this change should undergo the public comment process, or whether the change meets the intent of the policy, and therefore, could receive approval by the Executive Committee. Anecdotally, the majority of laboratories provide only IgM values, which tend to be higher. The intent of the policy is to identify patients with high titer antibody and preclude eligibility for transplantation for those patients. (Additionally, the Committee commented on the need to revisit ABO-incompatible policy.)

If there is a good faith argument that the physician could use a lower titer value to list their patient, because that was the right thing to do for that candidate, then this policy change requires public comment. If there is no doubt that the higher titer value is the one that was always intended, and that everyone should use, i.e., there is consensus in the community about the use of the highest titer value, then, the change is a policy clarification that the Committee can make through the Executive Committee. The Committee commented that the change fits the latter scenario and opted to submit the policy change to the Executive Committee: 20-supported; 0-opposed; and 0-abstained.

Ongoing Discussions about the Pediatric Heart Policy

The Heart Subcommittee of the Committee, Thoracic Working members of the Pediatric Transplantation Committee, and the Pediatric Heart Transplant Study (PHTS) representatives continue discussing improvements to the heart medical urgency policy for pediatric candidates. On August 27, 2010, it had reviewed data on waiting list and post-transplant outcomes by status and criteria and waiting list and post-transplant outcomes by device type. On February 11, 2011, the group reviewed the remaining data analysis on pediatric registrations and transplants by urgency status and diagnosis which are included in the current report. Specifically, the group reviewed:

- Waiting list counts and outcomes for pediatric registrations added to the heart waiting list by age group, medical urgency status, criteria met (for Status 1A and Status 1B) and diagnosis at time of listing; and

- Transplant counts and patient survival for pediatric recipient of deceased donor (DD) heart transplants by medical urgency status, criteria met (for Status 1A and Status 1B) and diagnosis at time of transplant.

The summary of this analysis is presented below:

- Across pediatric age groups, the two most common diagnoses at listing and at transplant were congenital diseases and dilated cardiomyopathy.
- Criterion (e) was most commonly reported with restrictive cardiomyopathy, dilated cardiomyopathy, congenital diseases and other diagnoses among pediatric candidates aged 1-10 and 11-17 added to the waiting list in Status 1A; and among pediatric recipients 1-10 and 11-17 years of age, transplanted as Status 1A.
- Status 1A pediatric registrations with dilated cardiomyopathy had a higher probability of transplant within 90 days of listing as compared to those with congenital diseases.
- Status 1A pediatric registrations with dilated cardiomyopathy had a lower probability of death within 90 days of listing as compared to those with congenital diseases.
- One-year Kaplan-Meier patient survival for Status 1A pediatric recipients aged <1 year was higher for dilated cardiomyopathy as compared to congenital diseases.
- One-year Kaplan-Meier patient survival for Status 1A pediatric recipients aged 1+ year was the highest for dilated cardiomyopathy, followed by hypertrophic cardiomyopathy, other diagnoses, congenital diseases and restrictive cardiomyopathy.

Making inferences from the OPTN data analyses and the group's previous clinical assessment of the pediatric heart policy to prioritize candidates by type of mechanical circulatory support device (MCS) implanted, the group, working with UNOS staff, will draft a policy to better address the medical urgency of pediatric heart candidates, either implanted or not implanted with MCS. This policy effort will continue to employ the three-tiered medical urgency status system – Status 1A, 1B, and 2. The revisions will move one or more criterion in Status 1A to either 1B or 2. The committees will revise policy based on the literature, clinical expertise, and data analyses provided by the PHTS.

The joint working group began its effort to revise the pediatric heart policy as follows:

- Status 1A, criterion (c) is satisfactory as is.
- Status 1A, criterion (d) is vague and needs to be simplified. This criterion needs to focus on “ductus related ventilation” and eliminate the reference to pulmonary hypertension.
- Status 1A, criterion (e) needs modification. The waiting list mortality rate for candidates who require infusion of high dose of an inotrope or multiple inotropes is lower than for candidates implanted with VADs or ECMOs, or placed on a ventilator. Thus, it may be reasonable to incorporate criterion (e) as part of the qualifier for Status 1B or Status 2.

The joint working group will compare data analyses prepared by the PHTS to its revised pediatric policy. Thus, policy development will occur simultaneously with this request for additional ECMO data from the PHTS (**Exhibit E**).

Finally, once the group reaches consensus on a final draft of a new pediatric heart policy, the group will ask the SRTR to simulate the outcome of the new policy, and compare it with the outcome of the current policy. The expectation is that the new policy will better stratify the medical urgency of pediatric heart transplant candidates than the current policy. The group will next meet during the summer of 2011.

Review of in Utero Waiting Time Policy

During policy re-write project, which is ongoing, UNOS staff recognized that Policy 3.2.1.7 (In Utero Waiting Time) is not programmed as written. Staff raised this issue as part of the discussions of the pediatric heart policy.

The textual appearance of Policy 3.2.1.7 (see below) leads the reader to believe that the policy is in effect, because there are no underlines and notation to indicate that the policy is pending programming. Current programming allows waiting time accrued while in utero to carry over upon birth, and not recommence as written. The Committee considered whether the programming or the policy should change.

3.2.1.7 In Utero Waiting Time. If an in utero candidate is not assigned a thoracic organ transplant prior to delivery on the basis of Policy 3.2.1.6, the candidate's waiting time will recommence from the time of birth with the candidate listed under the regular status code.

The Committee requested feedback from the Pediatric Committee but commented that listing heart candidates *in utero* is not as prevalent today as it might have been about 20 years ago. Perhaps the goal should be to eliminate the policy. In the meantime, the Committee opined that the programming needed to match the policy, i.e., the waiting time needs to recommence at birth.

In the past decade, about 22 candidates were registered for transplant *in utero* – only one of which was in 2010. Given this small number of candidate registrations, the Committee asked UNOS staff to monitor manually each such registration, and inform the transplant program to remove the candidate upon his or her birth and re-list. While the fetus could be delivered via caesarean section for transplant at the 36-week gestation period, the clinical practice today is to favor the evaluation of the born candidate prior to listing for transplant.

The Committee will await the Pediatric Committee's opinion before taking further action on this policy or correcting its programming, the latter of which would only happen after the Chrysalis project.

7. Discussion of the Adult and Pediatric Lung Allocation Systems

Revising the Lung Allocation Score (LAS) System

Analyses for a revised LAS system could not consider the impact of current and increase in bilirubin. Although the Board of Directors approved the inclusion of current and increase in bilirubin in the waiting list model of the LAS, UNOS has not yet implemented the collection of serial bilirubin in the waiting list pages. Thus, current and increase in serial bilirubin could not be included as factors in the analysis to revise the LAS system.

The revised LAS system was scheduled for distribution in the March, 2011 public comment cycle. However, a distribution in March, 2011 or September, 2011 – the difference between a Board of Directors' meeting in November, 2011 and June, 2011 – is not significant from the perspective of placing the revised LAS model in the queue for programming. The Executive Committee will schedule projects for programming based on their priority, not based on the order the project was approved by the Board of Directors. Therefore, waiting to distribute the revised LAS for public comment in November, 2011 will allow the OPTN and the SRTR to answer lingering questions about addressing current and increase in bilirubin in the revised LAS system.

While there is a difference in time between the cohorts used in the development and revision of the LAS system, perhaps further analytical modeling could guide whether this time difference is significant. This analysis could make use of the retrospective data project's cohort. A comparison of the revised LAS model (without bilirubin) with a revised LAS model that includes bilirubin data (as well as other data proposed for inclusion during recent discussion) could inform whether current and increase in bilirubin remain significant predictors of waiting list mortality – especially for candidates with pulmonary hypertension. In other words, would the inclusion of current and increase in bilirubin in the revised LAS model enhance the model's ability to predict a candidate's waiting list mortality?

The Lung Subcommittee requested the following analysis from the SRTR:

- Estimation of the effect of bilirubin in the Lung Retrospective Project (LRP) cohort, along with other factors included in the revised waitlist survival model, and show how its inclusion affects the model's predictive ability and parameters already included in the revised model; and
- Correlation of bilirubin with other factors included in the revised model among patients in the LRP Cohort.

On April 19, 2011, the SRTR presented its analysis (**Exhibit F**). The Lung Subcommittee requested the following, additional analyses for discussion at its June 7, 2011, meeting:

- Examination of the impact of bilirubin on waiting list survival using unweighted factors in the revised LAS model based on the LRP cohort. Compare the results of this analysis with the revised waiting list model, using the more recent patient cohort.

The Lung Subcommittee expects to distribute this revised LAS proposal for public comment on September 23, 2011.

Review of Lung Cases and the Lung Review Board Guidelines

Since the implementation of the LAS system, there have been a very few number of exception cases where the Lung Review Board (LRB) did not reach a "majority vote." When there is no majority vote, UNOS staff forwards the case to the Committee for its review.

The Committee discussed two such cases (#645 and #653) for candidates diagnosed with pulmonary hypertension and that did not receive majority vote by the LRB within the specified seven-day review period. Both cases were exception requests for candidates to receive requested Lung Allocation Scores. In both cases, the Committee awarded the candidates the exception requests: 21-supported; 0-opposed; and, 0-abstained. The two cases represent four exceptional cases out of over 600 since May, 2005 that did not receive majority votes from the LRB. The case review resulted in several discussion and action items listed below.

- Patients might be in jeopardy when the LRB cannot reach a majority vote. In the two cases under discussion, UNOS staff needed to contact the alternate representatives, but staff did not receive responses from these individuals. (The alternate members that did not respond were not the same individuals.) Could the LRB Chair become involved to facilitate responses to cases? Can UNOS staff contact the LRB Chair to alert her or him of the potential non-majority vote? However, is the number of cases that did not receive majority vote by the LRB significant enough to warrant a review of the Lung Review

Board Process? In the time since LAS has been in place, there have been only four cases where the LRB did not reach a majority vote. After some discussion, the Committee opined that the LRB system is working, but its membership needs to consist of people who remain engaged in the review process throughout their terms; and UNOS staff should facilitate this engagement or change in membership, if necessary.

- The LRB membership should also include the Chair of the Lung Subcommittee and the Thoracic Committee, and the Vice-Chair of the Thoracic Committee to serve as alternate members. This change requires revisions to the LRB guidelines, and approval by the OPTN/UNOS Board of Directors.
- UNOS staff members should provide an orientation to the LRB members on their responsibilities at the start of their terms.
- The Committee requests guidance from the OPTN leadership on whose responsibility it is to govern the quality of the review board process.
- The Committee needs to foster a broader interpretation of the pulmonary hypertension guidelines, and not a narrow one as has been adopted by some members of the lung transplant community. The Committee intended these guidelines for clinicians to consider when submitting exception request for candidates, and not for clinicians to consider as conditions that the candidate must meet prior to requesting an exception to the LRB. The Committee tasked the Lung Subcommittee to edit the language and to educate the lung transplant community about this intent.
- The Heart and Lung Subcommittees will review the activities of the heart and lung review boards annually. This review will evaluate the cases submitted and the judgments rendered.
- The Committee tasked the Lung Subcommittee to review the LRB guidelines.

OPTN Data Analysis: Monitoring of Data since the Implementation of the Pediatric Lung Priority Policy

Candidates who are less than 12 years of age receive priority for lung allocation through priority – or, medical urgency – system. The OPTN/UNOS Board of directors approved this system in 2008, and UNOS implemented it on September 12, 2010. The Committee reviewed an analysis of the data collected thus far in UNetSM (**Exhibit G**). The Committee will continue to monitor the results of this data collection effort.

8. Review Public Comment Proposals Distributed in January and March, 2011

The Committee discussed the following three proposals sponsored by other committees, and provided comments as follows.

Proposed Model for Assessing the Effectiveness of Individual OPOs in Key Measures of Organ Recovery and Utilization (Sponsored by the Membership and Professional Standards Committee (MPSC))

On January 24, 2011, UNOS staff presented this bylaw proposal to the Committee. This proposal is the result of a joint effort between the MPSC and the OPO Committee.

The proposed bylaw includes an overall model as well as organ-specific models. The organ-specific models assess a given OPO's ability to recover and transplant the specific organ type. An OPO could be performing well in the overall model, but not as well in one or more of the organ specific models.

Currently, only the Centers for Medicare and Medicaid Services (CMS) audits an OPO's performance, but using different criteria than in the current proposal. The proposed bylaw would allow UNOS to assess an OPO's performance. The Committee queried whether the proposed model, if approved by the Board, would create additional work burden for UNOS staff. (The Board directed the development of the proposal under discussion. The proposed model has received favorable feedback from the OPO community.) However, neither the proposed OPO model nor the one applied by the CMS address the relationship between OPO performance and transplant outcome. Perhaps it is in the purview of the OPTN to consider this transplant outcome factor.

The Committee approved proposed model: 15-supported; 0-opposed; and, 0-abstained.

Proposal to Standardize Label Requirements for Vessel Storage and Vessel Transport (Sponsored by the OPO Committee)

On March 22, 2011, the Committee approved the proposal: 21-supported; 0-opposed; and, 0-abstained.

Proposal to Update and Clarify Language in the DCD Model Elements (Sponsored by the OPO Committee)

The Committee reviewed an earlier version of the proposal on January 24, 2011. Referring to the section below, the Committee recommended that the OPO Committee include that the agreement that exists between the OPO and the hospital should detail the methodology that will be used during the declaration of death process. It is important to have this information be available to clinicians as they are making the pronouncement.

F. Pronouncement of Death

The patient care provider who is authorized to declare death must not be a member of the OPO or the surgical recovery team. Circulatory Death is death defined as the irreversible cessation of circulatory and respiratory functions. Death is declared in accordance with hospital policy and applicable state and local statutes or regulation.

Pronouncement of death can only be made after a sufficient time period has passed, as defined by hospital policy.

On March 22, 2011 the Committee discussed the proposal and approved the terminology change – from cardiac to circulatory. The Committee sought rationale for the deletion of the “irreversibility of death” section, and suggested that agreements between donor hospitals and OPOs to recover organs due to circulatory death should include the use of extracorporeal membrane oxygenation (ECMO) and other such devices (e.g., pacemaker) that may be used to medically manage the patient before the pronouncement of death. Thus, the Committee approved the proposal (21-supported; 0-opposed; and, 0-abstained) with the following caveats:

- Paragraph A (Agreement) should include more specific detail about the elements in the agreement. Perhaps the OPO Committee could develop a template for the set of elements. These elements must include the methods used to declare death, e.g., electrocardiogram, and pacemaker; the total amount of time required to

declare death; and, whether any form of ECMO support is allowed following declaration of death.

- The agreement must be present in the operating room and invoked during the “time out” performed before the withdrawal of medical support.

9. Communicating the Committee’s Activities to the Thoracic Transplant Community

The Committee discussed whether it needed to make its activities and outcomes of the heart and lung allocation systems more transparent to the thoracic community. The Committee considered making an executive summary of each meeting available to the thoracic community. However, the development and distribution of this document may not be necessary (because UNOS staff posts the reports of the Committee meetings to the OPTN website) and could set a precedent for other committees to follow, thereby possibly creating unnecessary work burden. The SRTR’s annual report could also include information about organ allocation outcomes.

At the conclusion of this discussion, the Committee opted to request the Executive Committee or the Board of Directors to consider how OPTN/UNOS committees could improve transparency of their activities, as well as outcomes of policies to the public.

10. Overview and Function of the New SRTR Contractor (Chronic Disease Research Group, a Subsidiary of the Minneapolis Medical Research Foundation)

The SRTR’s new contractor provided its organizational overview, funding sources, its relationship to the OPTN, and its goals. The Committee requested to be involved in future discussions about changes to the program-specific reports.

Thoracic Organ Transplantation Committee	January 24, 2011 Teleconference and Live Meeting	
Name	Position	Attendance
Mark L. Barr, MD	Chair	By phone
Steven Webber, MD	Vice-Chair	
Maryl R. Johnson, MD	<i>Ex officio</i>	By phone
Kevin Dushay, MD	Region 1 Representative	By phone
Raymond Benza, MD	Region 2 Representative	By phone
Leonardo Seoane, MD	Region 3 Representative	By phone
Dan Meyer, MD	Region 4 Representative	
Craig Selzman, MD	Region 5 Representative	
Nahush Ashok Mokadam, MD	Region 6 Representative	By phone
Sangeeta Bhorade, MD	Region 7 Representative	By phone
Ramsey Hachem, MD	Region 8 Representative	
Alan Gass, MD	Region 9 Representative	
Ladora Dils, RN, CPTC	Region 10 Representative	By phone
Isabel Neuringer, MD	Region 11 Representative	
Nancy Blumenthal, MSN, CRNP	At Large Member	By phone
Kevin Chan, MD	At Large Member/Lung Review Board Chair	
Gregory Couper, MD	At Large Member	
Herbert Heili	At Large Member	
Denise Kinder, RN, CPTC	At Large Member	
Theodore Liou, MD	At Large Member	
Brigitte Marciniak-Bednar, RN, BSN, CCTC	At Large Member	By phone
Kenneth McCurry, MD	At Large Member	By phone
Mandeep Mehra, MD	At Large Member	By phone
David Nelson, MD	At Large Member	
Linda Ohler, MSN, RN, CCTC, FAAN	At Large Member	By phone
Joseph Rogers, MD	At Large Member	
Stuart Sweet, MD, PhD	At Large Member	By phone
J. David Vega, MD	At Large Member	
Mark J. Zucker, MD	At Large Member	By phone
Monica Lin, PhD	<i>Ex Officio</i> – HRSA	By phone
Ba Lin, MS, MPH	<i>Ex Officio</i> – HRSA	By phone
Melissa Skeans, MS	SRTR Liaison	By phone
Maryam Valapour, MD	SRTR Liaison	By phone
Leah Edwards, PhD	UNOS Staff	By phone
Vipra Ghimire, MPH	UNOS Staff	By phone
Aaron McKoy	UNOS Staff	By phone
Jory Parker	UNOS Staff	By phone
Amy Putnam	UNOS Staff	By phone
Brian Shepard	UNOS Staff	By phone

Thoracic Organ Transplantation Committee	March 22, 2011 Chicago, Illinois	
Name	Position	Attendance
Mark L. Barr, MD	Chair	X
Steven Webber, MD	Vice-Chair	X
Maryl R. Johnson, MD	<i>Ex officio</i>	X
Kevin Dushay, MD	Region 1 Representative	X
Raymond Benza, MD	Region 2 Representative	By phone
Leonardo Seoane, MD	Region 3 Representative	By phone
Dan Meyer, MD	Region 4 Representative	X
Craig Selzman, MD	Region 5 Representative	X
Nahush Ashok Mokadam, MD	Region 6 Representative	X
Sangeeta Borhade, MD	Region 7 Representative	X
Ramsey Hachem, MD	Region 8 Representative	
Alan Gass, MD	Region 9 Representative	
Ladora Dils, RN, CPTC	Region 10 Representative	
Isabel Neuringer, MD	Region 11 Representative	
Nancy Blumenthal, MSN, CRNP	At Large Member	X
Kevin Chan, MD	At Large Member/Lung Review Board Chair	X
Gregory Couper, MD	At Large Member	
Herbert Heili	At Large Member	
Denise Kinder, RN, CPTC	At Large Member	
Theodore Liou, MD	At Large Member	X
Brigitte Marciniak-Bednar, RN, BSN, CCTC	At Large Member	X
Kenneth McCurry, MD	At Large Member	By phone
Mandeep Mehra, MD	At Large Member	
David Nelson, MD	At Large Member	X
Linda Ohler, MSN, RN, CCTC, FAAN	At Large Member	
Joseph Rogers, MD	At Large Member	X
Stuart Sweet, MD, PhD	At Large Member	X
J. David Vega, MD	At Large Member	X
Mark J. Zucker, MD	At Large Member	X
Monica Lin, PhD	<i>Ex Officio</i> – HRSA	By phone
Ba Lin, MS, MPH	<i>Ex Officio</i> – HRSA	By phone
Marshall Hertz, MD	SRTR Liaison	X
Bertram Kasiske, MD	SRTR Liaison	By phone
Melissa Skeans, MS	SRTR Liaison	X
Jon Snyder, PhD, MS	SRTR Liaison	By phone
Maryam Valapour, MD	SRTR Liaison	X
Manny Carwile	UNOS Staff	X
Leah Edwards, PhD	UNOS Staff	X
Vipra Ghimire, MPH	UNOS Staff	X
Jory Parker	UNOS Staff	By phone
Brian Shepard	UNOS Staff	X