

OPTN/UNOS Liver and Intestinal Organ Transplantation Committee
Report to the Board of Directors
June 28-29, 2011
Richmond, VA

Summary

I. Action Items for Board Consideration

- The Board is asked to approve a request to dissolve the Region 8 “Share 29” Alternative Allocation System (AAS). A majority the members of the Region voted that the AAS, which was scheduled to expire in May 2010, should be dissolved. (Item 1, Page 3).

II. Other Significant Items

- The Committee submitted three proposals for public comment in March 2011 for potential submission to the Board in November 2011: a proposal for improved imaging for hepatocellular carcinoma (HCC); a proposal to reduce waiting list deaths for adult liver-intestine candidates; and a Committee-sponsored alternative allocation system for split liver transplants (Items 2-4, Page.4).
- The Committee circulated Concept Document entitled “Next Steps Toward Improving Liver Distribution” on December 31, 2011. The document was accompanied by a brief survey. Based on this feedback, the Committee is planning to circulate two proposals for public comment in the Fall of 2011 for earliest Board submission in June 2012. The first would extend the current Regional Share 15 policy to all candidates with MELD/PELD scores greater than or equal to 15; the second is a “tiered Regional Share” (Item 5, Page 7).
- The Committee is investigating ways to reduce liver discards, and to facilitate expedited placement of livers not accepted at the local or regional level (Item 6, Page 11).
- The Committee is considering enhancements to the MELD score, including the addition of serum sodium (Item 7, Page 12).
- The joint Pediatric-Liver Subcommittee is developing a proposal for split liver allocation for donors age 35 and under (Item 8, Page 13).

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W. Kenneth Washburn, M.D., Chair
Kim M. Olthoff, M.D., Vice Chair

This report presents the OPTN/UNOS Liver and Intestinal Organ Transplantation Committee's (Liver Committee) deliberations during its October 20, 2010 and March 23, 2011 meetings and December 13, 2010 and February 24, 2011 conference calls.

I. Action Items for Board Consideration

1. Review of the Region 8 "Share 29" Alternative Allocation System (AAS). During the March 23, 2011 meeting, the Committee reviewed the history of the Region 8 AAS, as many members were not involved with the Committee when the discussions leading to the AAS took place. There have been some misconceptions that the Region 8 AAS was intended to be a "demonstration project" or "experiment" for regional sharing, which was not the case.

In June 2004, the Board approved an alternative local unit (ALU) for the state of Missouri that allowed organs to be offered first to patients listed at centers in Missouri before being offered to other patients in Region 8. Although this had been approved by the Liver Committee and at the Region 8 meeting, the support was very mixed. In July 2004, the Region 8 Liver Committee Representative voiced the objections from programs in other states within Region 8. At that time, the Committee requested additional analyses related to Missouri and Region 8, and asked the Board to delay implementation of the ALU. This led to several discussions between the Board/Executive Committee and the Liver Committee over the next year and a half. In November 2005, the Board directed the Liver Committee to work with the programs in Region 8 to develop a plan for broader sharing of livers. This ultimately led to the development of the "Share 29" agreement, which was unanimously approved by the Region in May 2006, circulated for public comment in August 2006, and approved by the Board in December 2006. The AAS was implemented on May 9, 2007 with an initial ending date of May 9, 2009 which was extended by request of the region until November 8, 2009. In May 2010 the region voted to dissolve the AAS by a vote of 11 in support, 4 opposed, and 1 abstention. At this point, the time frame established for the AAS had expired, requiring the Committee and Board to determine whether it should be continued. In July 2010 the Committee requested additional analyses, which were presented to the Committee in October 2010. These unadjusted analyses suggested that the AAS had reduced waiting list mortality. In November 2010, the Committee asked that the Board extend the AAS until risk-adjusted analyses could be reviewed; the Board tabled this resolution.

The Committee reviewed the risk-adjusted analysis of the possible effect of the Region 8 AAS on waiting list mortality in March 2011 (**Exhibit A**). The SRTR used a competing-risks model to

estimate the waiting list mortality for three years before and after the AAS was implemented. This showed a 6% decrease in the waiting list mortality in Region 8, whereas there was no decrease in mortality for patients listed in other Regions for the same time periods. However, this was not statistically significant, due to the very small number of patients in the cohort. The SRTR performed a sample size analysis to determine the number of events that would be needed to show a statistically significant reduction in the waiting list death rate. To detect a 6% decrease in mortality before and after AAS implementation would require a sample size of over 27,000 patients in each group. In contrast, the number of patients listed in Region 8 was approximately 2,000 in the three-year pre- and post-analysis eras. Committee members asked whether there was a change in the number of livers shared between OPOs before and after the AAS. A higher percentage of organs were shared outside the OPO in Region 8 (36.7% (pre) versus 39.3% (post)) versus the rest of the country (33.4% (pre) versus 31.0% (post)) for the two eras analyzed.

Committee members noted that, because the AAS was never designed to be an experiment, it is not surprising that there was no statistically significant outcome. The area of distribution required to determine a statistically significant effect is likely larger than a region. Committee members expressed discomfort about requiring participation in an AAS once the region had voted to dissolve it, as this might impede other regions from experimenting with alternative systems. It was reported that some AAS participants were opposed to the AAS in part because it was imposed on them. Further, the Committee is not currently proposing this level of sharing for the national system. The Committee submits the following resolution for consideration by the Board of Directors:

**** RESOLVED, that Region 8's request to dissolve its Alternative Allocation system for regional sharing of livers shall be approved, effective pending notice and programming in UNetSM.**

Committee vote: 16 in favor, 1 opposed, and 3 abstentions.

Several Committee members emphasized that this action does not imply that the Committee is opposed to broader distribution.

The Resource and Impact Statement for removing the AAS is included as **Exhibit B**.

II. Other Significant Items

Proposals Circulated for Public Comment, March – June 2011

2. Proposal for Improved Imaging for Hepatocellular Carcinoma (HCC). Patients awaiting a liver transplant who are diagnosed with HCC are eligible for additional priority through MELD/PELD exceptions. Currently, HCC exceptions are based on diagnostic criteria that rely on imaging characteristics rather than liver biopsy. The attendees of a multi-disciplinary HCC Consensus Conference held in November 2008 made specific recommendations regarding the appropriate imaging criteria to properly determine HCC staging. The Committee surveyed all liver programs in

the U.S. in October 2010 to determine acceptance of these recommendations. The Committee received 77 responses to the imaging survey. Eighty-six percent supported a change that would more clearly define the imaging characteristics of HCC, and 92% supported a policy requiring images used for documentation of HCC to be performed at the transplant center or be reviewed by a multi-disciplinary team at the transplant center. Ninety percent of respondents reported that the imaging specifications are similar to what is currently being used at their transplant centers.

Committee members expressed concern regarding scans performed at outside centers. Currently, centers often list a patient based on an outside scan, and then perform their own scans when the HCC exception extension is due. Repeat scans at the center may not be reimbursed by insurance companies. It may be difficult to ascertain whether scans performed outside the transplant center meet the criteria in the policy, so an official review at the transplant center would serve to certify whether the HCC meets criteria or not. Some members noted that, if the policies require repeat scans, the insurance companies may actually change their practice and reimburse for them. The Committee can monitor this practice if the policy is approved and implemented.

During the December conference call, the Committee reviewed a draft of the public comment proposal, which had been updated to reflect the classifications used in the published paper. The entire policy section was also reorganized so that it will be easier to follow. Several aspects of the proposed policy were highlighted:

- The policy would no longer allow several sub-centimeter tumors to count towards T2 staging, and there would be stricter requirements for smaller lesions.
- The proposed policy includes the following: “Any imaging examination performed for the purpose of obtaining or updating priority points on the transplant waitlist *should* meet minimum technical and imaging protocol requirements for CT and MRI listed in Table 4 and Table 5.” While the survey suggested that almost all centers already meet these requirements, it would be difficult for DEQ staff to monitor compliance with this if it were required.
- Images must be interpreted at the transplant center. An earlier version of the proposals would have allowed images to be read by a multidisciplinary team such as a tumor board, but the Subcommittee felt it is important to be more stringent on this point.

The Committee reviewed the proposed OPTN classifications 5A, 5A-G, 5-B, and 5T. These fit into a larger imaging classification scheme developed by radiologists for liver imaging (LiRADs). These criteria were developed by radiologists, and radiologists at 45 centers were surveyed to develop consensus. The Committee suggested an additional classification for those larger than Stage T2 (e.g., Class 5X). The Committee also suggested that the requirement for documentation should be clarified to state that “Documentation of the radiologic characteristics of each OPTN class 5 nodule (for an example, see Tables 7A-C) must be kept on file at the transplant center” and that Tables 7A-C should contain a signature block for the radiologist. The Committee approved the proposal to be circulated for public comment by a vote of 17 in favor, 1 opposed, and no abstentions.

3. Proposal to Reduce Waiting List Deaths for Adult Liver-Intestine Candidates. Waiting list death rates in adult candidates awaiting a combined liver-intestine transplant are nearly three times higher than those waiting for a liver alone. During the April 2010 meeting, the Committee approved a proposal for public comment that would provide for broader access to donors for these candidates. However, during a call held in July 2010, several newly-appointed members had questions and concerns about the proposal and supporting data. The Committee reviewed a summary of the analyses during the October 2010 meeting. The analysis confirmed that the death rates in adult candidates awaiting a liver-intestine are three-fold higher for those needing a liver alone. The mortality rates remain higher even after an increase in the MELD/PELD score equal to a 10 percentage point increase in the underlying mortality risk was provided to these candidates in March 2005. In contrast, it was reported that the national share for pediatric donors (age 0-11), implemented in 2007, has reduced the mortality for pediatric liver-intestine candidates such that it is comparable to liver-alone candidates. This is a small group of patients that have a very high death rate. The proposed national share would distribute the impact among most of the regions, such that regions with large intestine programs would not bear the full impact. Committee members expressed concerns about the potential impact on small-statured liver-alone candidates, as these compete for the same donor pool, and requested additional analyses of the mortality rates for these candidates relative to liver-intestine candidates. During the December 2010 conference call, the Committee reviewed a draft of the public comment proposal, as well as an analysis of the death rates for small-statured candidates. The analysis showed that, while small-statured adult liver-alone candidates have a slight increase in the risk of death, it is much lower than the risk for adult liver-intestine candidates.

The Working Group that was charged with developing the proposal had also discussed increasing the MELD score assigned to these candidates to a minimum MELD score of 20, or the calculated MELD score plus 5 additional points. The current increase assigned to these candidates already results in a minimum score of 20. The latest SRTR data demonstrated a 5-point mortality differential between liver-intestine and liver-alone candidates. Further, a recent OPTN analysis showed that the MELD score that represented a comparable death rate for these candidates would be approximately 22. This increase would allow patients with higher MELD scores to compete for local donors. However, the Committee felt that it might be confusing to change both the distribution and the allocation components at the same time, and agreed to go forward with the distribution changes only at this time, by a vote of 14 in favor, 0 opposed, 0 abstentions. The proposed adult donor liver allocation algorithm is as follows:

Combined Local and Regional

1. Status 1A candidates in descending point order
2. Status 1B candidates in descending point order.

Local

3. Candidates with MELD/PELD Scores ≥ 15 29 in descending order of mortality risk scores (probability of candidate death)

National

4. Liver-Intestine Candidates in descending order of mortality risk scores

Local

5. ~~4~~ Candidates with MELD/PELD Scores 15-28 in descending order of mortality risk scores

Regional

6. ~~4~~ Candidates with MELD/PELD Scores ≥ 15 in descending order of mortality risk scores

Local

7. ~~5~~ Candidates with MELD/PELD Scores < 15 in descending order of mortality risk scores

Regional

8. ~~6~~ Candidates with MELD/PELD Scores < 15 in descending order of mortality risk scores

National

9. ~~7~~ Status 1A candidates in descending point order

10. ~~8~~ Status 1B candidates in descending point order

11. ~~9~~ All other candidates in descending order of mortality risk scores

4. Committee Sponsored AAS for Split Liver Allocation. During the November 2010 meeting, the Board of Directors approved the Region 2 and OneLegacy Split Liver AASs, which had been circulated for public comment in the spring of 2010. Under these AASs, if an adult/adolescent candidate who is offered a liver through the standard policy (i.e., via the match run) who has been determined to be suitable for a segmental liver transplant (known as the index patient), the candidate's transplant center may transplant the right lobe into the index patient. The center may then transplant the left lobe/left-lateral segment into any other medically suitable listed patient at that institution or an affiliated pediatric institution (if applicable). After approving these AASs, the Board directed the Committee to pursue a committee-sponsored AAS (CAS) for split livers. In December 2010, the Committee voted to support a CAS for split liver allocation based on the Region 2 and OneLegacy proposals, by a vote of 14 in favor, 0 opposed, 0 abstentions.

Proposals in Development

5. Next Steps Toward Improving Liver Distribution. During the October 2010 meeting, the Committee reviewed the recent history of policy development towards changes to the distribution of livers. The Committee has sought repeated input from the community regarding possible changes, beginning with the December 2009 Request for Information (RFI), which led to the Forum held in April 2010. Several concepts emerged as feasible changes to the distribution system:

- Share 15 national;
- Tiered regional sharing;
- Risk-equivalent threshold; and
- Better utilization/expedited placement of deceased donor livers.

These ideas were incorporated into a document, along with a brief survey, circulated to the public beginning on December 31, 2010 through February 18, 2011 (**Exhibit C**). This „concept document’ was intended to be a high-level /overview of concepts that represent step-wise improvements. Feedback from the concept paper was intended to help the Committee assess the community’s current willingness for change.

The Committee reviewed the results of the Concept Paper survey during the February conference call and March meeting (**Exhibit D**). There were 227 responses, with 70% identified as being affiliated with a liver transplant program, and the remainder as either OPO personnel, or recipients, candidates, family, or donors. Responses were received from every region and 36 states. A tabulation of the responses is shown in Table 1. Because respondents could select multiple thresholds for Question 4, the percentages sum to greater than 100%. Some of the responses were difficult to interpret; for example, 26 answered that they would support a threshold of 32 only, making it unclear whether those would also support a higher threshold of 35 if it was proposed. Further, some individuals selected “none of the above” but in the text response indicated that a lower threshold or full regional sharing for all MELD/PELD scores should be considered. The combinations of responses are provided in Table 2. A total of 164 respondents (72%) selected some form of regional sharing (35, 32, 29, or other). The Committee also reviewed results by Region.

Table 1 Concept Paper Survey Results

Question	Yes	No
1. Would you support a national share 15 policy?	170 (74.9%)	57 (25.1%)
2. Is there a subgroup of liver transplant candidates with low MELD/PELD scores who may be unduly disadvantaged by a National Share 15 policy?	107 (47.1%)	120 (52.9%)
3. Do you think broader sharing for patients with high waiting list mortality is reasonable?	178 (78.4)	49 (21.6)
4. Would you support regional sharing for a MELD/PELD threshold of (check all that apply):		
• 35	74 (32.6%)	
• 32	57 (25.1%)	
• 29	68 (30.0%)	
• None of the above	47 (20.7%)	
• Other	24 (10.6%)	
➤ Selected 29, 32, or 35, above	143 (63.0%)	
5. Should the Sharing Threshold (ST) concept be incorporated if tiered MELD/PELD sharing is endorsed?	185 (80.5%)	42 (18.5%)
6. Would you support a national policy for facilitated placement of donor livers that are not used locally or regionally?	208 (91.6%)	19 (8.4%)

Table 2: Question 4: Would you support regional sharing for a MELD/PELD threshold of:

Share 35	Share 32	Share 29	Other share	None of the	N	%
					16	7.1
				X	47	20.7
			X		21	9.3
		X			43	18.9
	X				26	11.5
X					41	18.1
X			X		2	0.9
X	X				6	2.6
X	X	X			24	10.6
X	X	X	X		1	0.4
Total					227	

27.8%

72.2%

During the March 2011 meeting, the Committee discussed feedback received to date. The two main concepts that appear to have broad acceptance are the “Share 15 National” and some form of tiered regional sharing, with or without a “Sharing Threshold” (ST). Committee members noted that the overall message from the survey is that there is support for broader distribution, but that there will never be 100% consensus for any proposal.

Share 15 National

The “Share 15 National” concept is an extension of the current “Share 15” Regional policy (implemented in 2005). This was supported by 74.9% of survey respondents. The proposed sequence, for adult donors only, is as follows:

- Regional Status 1A
- Regional Status 1B
- Local MELD/PELD \geq 15
- Regional MELD/PELD \geq 15
- National Status 1A
- National Status 1B
- **National MELD/PELD \geq 15**
- Local MELD/PELD $<$ 15
- Regional MELD/PELD $<$ 15
- National MELD/PELD $<$ 15

Local and regional candidates with MELD/PELD scores of 15 or higher, and all Status 1 candidates, would have access to livers before they would be offered to candidates with MELD/PELD scores greater than 15 nationally. One Committee member asked whether the threshold for gaining benefit

from a transplant versus remaining on the list was still at a MELD of 15. This score still applies to the benefit accrued by patients at one year post-transplant; however, when the calculation is made using longer post-transplant follow-up, the benefit threshold drops below 15. As the current policy uses a threshold of 15, it is reasonable to maintain that threshold for now, but could be changed later if the data support a change.

One subset of candidates that could potentially be disadvantaged by a Share 15 National policy are those candidates with low sodium and MELD scores under 15. The Committee reviewed data showing that, of all candidates listed with a MELD score less than 15, those whose recalculated MELD-Na is in the 15-24 range have nearly double the rate of mortality than those with normal sodium levels. Thus, the disadvantage to these candidates could be mitigated by implementation of MELD-Na.

Committee members expressed concerns that Share 15 National would lead to transcontinental shipping of organs and the additional cost and cold ischemia time associated with travel. However, centers can always take those issues into consideration when deciding whether to accept a remote liver offer. Very few centers currently accept organs from outside their region. It is likely that only lesser quality organs would be turned down both locally and regionally, so this policy may facilitate placement of these organs. One additional concern is that insurers will stop allowing centers to list patients with MELD scores less than 15.

A motion to adopt the “Share 15 national” concept for adult donor livers, including patients with MELD/PELD exceptions, was approved by a vote of 23 in favor, 0 opposed, and 0 abstentions. The Committee unanimously approved a motion to review MELD-Na as a potential option to address the issue of mortality in patients with hyponatremia and a calculated MELD score of less than 15.

Tiered Regional Sharing

The survey indicated support for broader sharing for candidates with high waiting list mortality (79%). A total of 164 respondents (72%) agreed with some level of tiered regional sharing (35, 32, 29, or other), and 81% agreed that the Sharing Threshold (ST) concept be incorporated if tiered regional sharing is endorsed. The Committee discussed tiered regional sharing for MELD/PELD scores of 35 and higher as a starting point. The waiting list survival for patients with a MELD score of 35 or high is similar to the mortality for candidates listed in Status 1, and there is currently regional sharing for Status 1A and 1B candidates.

In an informal poll, Committee members were asked what minimum MELD/PELD score for regional sharing each would support, with ten in favor of a score of 29, three in favor of 32, and 8 in favor of 35. Committee members were then asked whether a score of 29 seemed feasible in terms of community support, and only three members thought that it would be feasible.

The Committee discussed the mechanics of an ST, which is intended to prevent two livers from being shipped across the region for patients with similar medical urgency. The regional sharing score (i.e., 29, 32, 35) would be a ‘floor’ above which regional sharing could occur. Under a regional “share 35” with an ST of 3, a regional patient with a MELD score of 35 would only be offered a liver first if there are no local patients with a MELD score above 31. If the most urgent local patient has a MELD

score lower than 32, then the organ would be offered to regional patients with scores of 35 and higher. It was noted that an ST might not be necessary if the score set for sharing is high (i.e., MELD 35), versus a lower MELD score (i.e., MELD 29). However, some Committee members felt that if an ST is envisioned at one level (e.g., MELD 29) then it should be proposed at any level of MELD score for consistency. The ST could be raised or lowered depending on the score established for regional sharing. There is still some concern that the ST will be confusing and difficult to explain.

The Committee continued its discussion with a series of polls. When asked whether to support a regional share at MELD 35 without an ST, 15 members were in favor. A motion was made and seconded for regional sharing for scores of 35 or higher. A friendly amendment to lower the score to 32 with an ST of 3 was accepted, but the vote was split with 11 in favor, 9 opposed, and 2 abstentions. This led to another motion for a “Share 35 Regional” with an ST of 3.

The Committee agreed to pursue the development of a proposal for tiered regional sharing for MELD/PELD scores of 35 or higher with an ST of 3, by a vote of 20 in favor, 2 opposed, and 2 abstentions. The Committee believes that there is strong evidence to select a score of 35, and that level is more likely to be supported by the community at this time. Committee members felt that a regional share at this level should include standard MELD/PELD exceptions (i.e., those specifically mentioned in the policy) and patients awaiting a liver-kidney transplant. The Committee asked that the SRTR model a tiered regional share at MELD/PELD scores of 32 and 35, both with an ST of 3, versus the current policy, with outcome measures to include the number of total deaths and transplants, and the number of organs shared across OPOs.

The Committee plans to submit both proposals for public comment in September 2011, with earliest submission to the Board in June 2012.

Subcommittee Updates

6. Liver Utilization Working Group. The Liver Utilization Working Group was formed following the Forum held in April 2010. The working group was tasked to: (1) Evaluate and assess the magnitude of expedited liver placements; and (2) formulate a transparent process for expedited liver placement that will enhance utilization and decrease discards. During their first conference call, the working group requested several analyses related to organ offer refusals and discards. As a starting point, the group analyzed national shares as a surrogate for expedited placement (**Exhibit E**). In 2009, there were 248 adult deceased donor livers transplanted nationally. Approximately one-half were offered out of sequence. The group requested an analysis of factors common to national shares, offers that indicate ‘expedited placement’ or are made out of sequence, as well as discarded livers, to determine if there is a set of characteristics that could be used to define organs that could be considered for facilitated/expedited placement. The group discussed a potential proposal that would allow centers to opt-in to an “expedited placement” list. Participating centers would be required to indicate their acceptance criteria before enrolling, and UNOS would monitor adherence to stated acceptance criteria. Such a system could provide an incentive for OPOs to procure organs that they may not typically be able to place within their DSA but could be placed regionally or nationally, as some OPOs forego procuring organs that they cannot place in their area.

The Concept Paper survey indicated overwhelming support for some type of facilitated placement (90%). Working group members reviewed the text responses submitted with the Concept Paper survey regarding expedited placement and liver utilization, which highlighted three primary ways to reduce discards: use of pre-procurement biopsies; increasing the number of centers that receive organ offers at a time; and decreasing the allowed organ acceptance time. The Committee discussed increasing the number of centers that receive initial offers, and/or decreasing the time for acceptance. Some members expressed concerns that centers will still indicate a „provisional yes’ but ultimately turn down the offer, leading to discard. The Effective Screening Working Group (ESWG) has been studying acceptance criteria for kidney offers, and recently sent letters to kidney programs that routinely turn down offers that meet their acceptance criteria, in hopes the center would tighten up their criteria. The ESWG is beginning to review liver offers.

The Working Group briefly discussed the Organ Availability Committee’s proposed standardized liver biopsy form. Data reviewed by the working group show that approximately 50% of donors that are discarded have a discard reason of „biopsy findings,” which is considered a subjective assessment. The Working Group felt that a better option would be the ability to upload biopsies to DonorNet or have real-time images with cameras available for surgeons to view the biopsies. Several members felt that the form was too detailed, and that centers will not be able to obtain all of the fields included on the form. There were concerns that this could become a required form and that centers would be audited for compliance with the form.

7. MELD Enhancements Subcommittee. This Subcommittee was created after the April 2010 Forum and was charged to: evaluate potential incremental changes to the MELD score that will optimize the ranking of liver candidates by their medical urgency. As a first step, the Subcommittee requested that the SRTR update the “MELD-Na” analysis (i.e., the addition of serum sodium to the MELD score) with a more recent cohort of patients. The original MELD-Na equation as published in the New England Journal of Medicine (NEJM) was developed on the cohort patients added to the liver waiting list in 2005 and validated on those added in 2006. The NEJM analysis demonstrated that adding serum sodium to the MELD equation could improve the predictive power of MELD, and that the effect of serum sodium was greater in candidates with lower MELD scores.

The revised analyses were presented to the Committee in March 2011 (**Exhibit F**). The SRTR updated the analysis, using all adults added to the liver waiting list between 2005 and 2008 (N=27,801) to develop the model, and adults added to the liver waiting list in 2009 (N=6,884) to validate the updated MELD-Na equation. The following patients were excluded from the analysis in both cohorts: Status 1s, and patients with diagnosis of malignancy or previous liver transplant. Patients with hypernatremia (serum sodium > 150 mmol/L) were excluded from the development cohort only. The model included the current MELD variables plus the serum sodium concentration at the time of first active listing date. The outcome measure was 90-day mortality after initial listing. In the original MELD-Na equation, the lower and upper bounds for additional points for serum sodium were determined to be at 125 and 140 mmol/L. In the updated model, these appear to be at 125 and 137 mmol/L. There is an 8% increase in the risk of death per unit decrease in serum sodium concentration between 137 and 125 mmol/L (RR = 1.08, 95% CI 1.07-1.09, p<0.001), versus 5% in the originally published analysis.

Committee members discussed the analysis and its implications and applicability. The percentage of liver patients with hyponatremia was reported to be approximately 30%, although not all would be eligible for extra points based on their calculated MELD score. The use of MELD-Na has been tested in Region 11 for the last two years. Results from this pilot program were presented at the 2011 ASTS Winter Symposium, and a manuscript is in preparation. Under the Region 11 agreement, the MELD-Na score assigned to hyponatremic patients is capped at 22, and sodium levels must be tested two times, two weeks apart, at 130mmol/L or lower. These requirements serve to protect access to organs for sicker patients, and to better ensure that the patients are truly hyponatremic and are receiving appropriate medical management. However, there are still concerns that use of MELD-Na will lead to poor medical management of patients by use of diuresis to achieve hyponatremia.

Committee members noted that the SRTR's analysis only used the first sodium entered upon listing, whereas, in practice, the score would likely be updated at regular intervals. Alternatively, hyponatremia could be included as a standard MELD/PELD exception, which is valid for three months. The Subcommittee was asked to determine whether use of MELD-Na would likely shift livers from men to women, and the impacts on regions that transplant high versus low MELD score patients. The Subcommittee will continue to refine the analysis and potential implementation strategies, and report back to the Committee.

The Subcommittee had also requested a frequency distribution of the reasons for MELD/PELD exceptions for a recent time period, to identify diagnoses that may not be adequately addressed by the MELD score. In a separate request, the full Committee asked for more detailed information to assess the impact of the standardized MELD exceptions approved by the Board in 2009. These requests were combined into a single descriptive analysis (**Exhibit G**). The cohort included all exception requests between March, 10 2010 and November 30, 2010, including initial requests, appeals, and extensions. Automatically approved HCC exceptions were excluded. "Other specify" text diagnoses were re-categorized when possible.

There were 2,022 MELD/PELD exception applications during this time period, with 54.2% initial applications, 43.2% extensions, and 2.6% appeals. One-half of these were listed as „other specify’ and one-third were for HCC cases not meeting policy criteria. When the „other specify’ diagnoses were reclassified, just under 400 cases still fell into that category. The Committee reviewed the percentage of applications that were approved/denied and the MELD scores requested by diagnosis. It is too early to assess outcomes for this cohort of exceptions, especially as the number of requests for several of the diagnoses is small.

8. Joint Pediatric-Liver Subcommittee Split Liver Proposal. During the April 2010 meeting, the Committee reviewed a proposal for split liver allocation developed by the joint Pediatric-Liver Subcommittee. Under the proposed algorithm, livers from donors under age 35 would be offered preferentially to very young pediatric candidates, for whom they would likely be split. Several concerns were expressed by the Committee relating to the proposal, such as outcomes for split livers, the impact on small-statured adults, and the potential for the proposal to actually increase number of split livers. The Committee reviewed data intended to address these concerns. Graft and patient survival for splits versus whole are equivalent. Very few splittable livers have led to reduced graft transplants. The majority of liver registrants indicate that they are willing to accept a segmental liver.

However, split liver transplants represent only about 1.4% of all liver transplants. Nearly half of these transplants were performed in pediatric recipients, and most with MELD/PELD scores between 15 and 28. In 90% of split liver transplants, the pediatric candidate drives allocation. Policy currently provided guidance regarding which livers are to be considered suitable for splitting. However, there were more split liver transplants resulting from donors who did not meet the splittable criteria, suggesting that the criteria are not adequate. The proposed policy change is estimated to result in as many as 88 more transplants for pediatric patients per year, which would be a 16.7% increase on pediatric transplants resulting from using 1.5% more donors for splitting.

Members expressed concerns about how the vessels are distributed when a liver is split for a pediatric patient. The policy current states that “The center getting the primary whole graft organ offer will determine the method of splitting and use of the vessels.” Any proposal for public comment would have to more clearly specify how the vessels would be distributed. Committee members also suggested that the proposal should require that the split occur at the donor hospital rather than at the pediatric center, where it then has to be shipped to the recipient center.

During the March 2011 meeting, the Committee reviewed additional data related to split liver transplants, including waiting list death rates for pediatric candidates waiting for liver alone, stratified by region and age group at listing (<1, 1-5, 6-11, 12-17), as well as a descriptive analysis of the characteristics of pediatric candidates who died or were removed for being too sick on the liver waiting list (**Exhibit H**). Waiting list death rates are still highest for patients less than one year of age, followed by those 1-5, adolescents (11-17), 6-10, and then adults. Currently, 90% of the livers that are transplanted as splits are those that are first offered to pediatric patients. These data were intended to address several remaining concerns raised previously about the proposed split liver policy, such as:

- *Children have lower waitlist mortality than adults:* Data provided show that very small children continue to have much higher mortality rates.
- *Right lobe split livers have worse outcomes in adults than whole organs:* This belief has been based on a paper published in 2006 (Feng et al), and a single center study (Hong, et al). Recent OPTN data suggest that right lobe splits have similar survival to whole liver transplants.
- *Sick adults who cannot use a split liver will be skipped over and this will increase adult waitlist mortality:* The proposal has been modified (below) so that sick adults will get offers ahead of children.
- *This would not increase number of split livers:* It is estimated that this proposal could result in as many as 88 additional split liver transplants per year.
- *Technical aspect – vessel allocation and method of splitting.* Extrapolating the risk of graft loss from the donor risk index (DRI), this could result in one adult graft lost for every 10 additional infants transplanted.

The revised proposal *for donors <35 years old* is as follows (bold indicates new strata):

- Combined Local/Regional Status 1A
- Combined Local/Regional Status 1B
- **Combined Local/Regional MELD/PELD>30**
- ***Pediatric (Age < 2 years old)***
- Local MELD>15
- Regional MELD>15
- *Etc...*

Committee members asked whether there should be some minimum PELD score for the national share for the 0-2 year olds. The PELD score does not adequately predict pediatric deaths, so age is a more relevant determinant. Further, the impact of illness on these small children is a lifelong one in terms of growth and development. Other concerns included the impact on small-statured adults and the potential for centers to no longer utilize living donors for these patients. Further, the OPTN has yet to assess the impact of the recently-implemented national share for pediatric donors to Status 1A and 1B candidates, and the two AASs approved by the Board in November. The Subcommittee believes that this proposal would increase splitting more than the two AASs, which only address a subset of children at select centers. The Committee voted to support the proposal by a vote of 8 in favor, 6 opposed, and 3 abstentions.

9. HCC Subcommittee Report. During the October 2010 meeting, the Subcommittee reported that the Committee's request for a standardized on-line pathology form would be submitted to the Board in November 2010. These will be required for all patients transplanted with a MELD/PELD exception for HCC. The Committee discussed whether pathology reports should be required for non-standard HCC exceptions, such as those outside the Milan criteria, or those that do not meet criteria for administrative reasons, such as a missed extension. Some centers submit exceptions for "other, specify" (non-HCC), but indicate HCC in either the diagnosis field or the clinical narrative. The primary goal of requiring the pathology forms is to monitor compliance with the exception policy. The Committee felt that these forms should be required for any patient with an HCC exception at transplant. The Committee also decided that the pathology reports should be submitted within 60 days post-transplant; this will be incorporated into Policy 7 (Data Submission Requirements).

The Committee discussed the current priority given to candidates with HCC. Recently published data indicate that there is a higher rate of waiting list "drop-out" for candidates without HCC exceptions than those with HCC exceptions. This suggests that candidates with HCC exceptions are being given too much priority relative to other patients. The HCC exception scores appear to be driving the scores at transplant for all other candidates. The scores given to HCC patients have been decreased several times since the MELD/PELD implementation in 2002. The Committee discussed two possible solutions to address this issue. The first is to develop a continuous allocation score that would rank candidates with HCC among the non-HCC candidates on the waiting list, based on the MELD score, tumor size, AFP, and tumor growth. This was recommended in the HCC Consensus Conference report, and incorporates factors known to influence wait list survival. However, there are

still questions regarding how to weight these factors, as well as how to handle patients treated with ablative therapy (with respect to tumor growth), and the possible impact on post-transplant survival.

Another option would be to lengthen the interval at which HCC candidates receive extension upgrades beyond the current 90 days. The interval could potentially be different for each region. This would be less complicated and represents a more moderate change. However, this is a different approach from what was developed by consensus, and would need to be modeled to determine the impact.

Some members noted that candidates with HCC may not be advantaged relative to other patients in certain specific regions. Areas of the country where candidates with HCC wait longer are reporting higher rates of HCC recurrence. Other members stated that candidates without HCC exceptions must have higher MELD scores than the HCC patients in order to get offers in their areas, highlighting disparities resulting from regional boundaries. Several Committee members felt that additional data on recurrence, plus analysis of data from the on-line pathology reports, will be necessary in order to make another change to the policy. The Subcommittee will determine what additional data is required to move forward.

10. Status 1 Review Subcommittee. The Committee discussed the process for review of Status 1A/B cases not meeting criteria (NMC). Since 2005, all such cases have been reviewed by a subcommittee on a quarterly basis. The Subcommittee determined whether the cases were appropriate, inappropriate, or required further information. If a center had more than one inappropriate case for the same type of infraction, the cases were forwarded to the MPSC. In 2009, the Committee asked the Subcommittee to develop more specific criteria for review and referral. At that time the Subcommittee recommended that centers with more than one inappropriate Status 1 listing within the current year and two prior years should be referred to the MPSC. In April 2010, the Committee asked the Board to reverse previously-approved policy language that would require review of these cases by the RRBs, as the Committee felt the subcommittee review process was working well. In August 2010, the Subcommittee began to review cases as they are listed, rather than on a quarterly basis. The cases are decided by a majority vote of the subcommittee. If case is determined to be inappropriate, the center is notified and provided with the following options:

- The center may voluntarily downgrade the patient to an appropriate status/score (only an option if candidate has not been transplanted). No further action will be required.
- The center may appeal the decision by submitting additional clinical information that supports listing at Status 1A/1B, and respond to comments of the reviewers. The Subcommittee will re-review and vote again.
- The center may opt to maintain the 1A/1B Status, with the understanding that cases not resolved will be forwarded to full Liver Committee for further consideration. The Liver Committee may refer the case to the MPSC for additional review and consideration of disciplinary action.

The Subcommittee proposed that all centers with a single Status 1 case NMC should receive letters of education and warning, and include a description of the potential disciplinary action if an inappropriate listing occurs again. Centers with more than one inappropriate listing over a rolling 2

year period will be referred to full Committee and to MPSC if Committee agrees. The Committee asked that the new process be communicated to all centers, with clear guidelines and description of possible disciplinary action. The Committee will review this process in one year.

Several centers had more than one inappropriate case that was transplanted over the last year. The Subcommittee was concerned about referring cases to the MPSC if the center did not receive letters of warning. However, centers have been warned about listing patients with hepatic artery thrombosis (HAT) as Status 1A rather than a MELD of 40, per policy, including a letter to all the programs. Several of the cases involved HAT that should have been listed as MELD 40. Further, centers receive a warning whenever they list a patient as NMC that the listing could lead to referral to the Liver Committee and MPSC. A motion was made to send all these cases to the MPSC. This does not mean that the MPSC will take disciplinary action or imply any recommended consequence. Center behavior is likely to change upon referral to the MPSC. The Committee approved the motion to refer all of these cases to the MPSC by a vote of 16 in favor, 0 opposed, and 0 abstentions.

The Committee also reviewed a summary of the review activity since August 2010. This includes one case listed prospectively that was determined to be inappropriate, and the patient was never listed as 1A/B. A letter will be sent all centers with a patient whose listing was deemed to be inappropriate, providing them details of the Committee's comments and rationale. Cases where a patient is transplanted while in Status 1A/B and deemed to be inappropriate will be reviewed again by the Subcommittee and Committee.

During the December 2010 conference call, the Committee reviewed additional information that was provided for a case reviewed in October. In June 2010, the center had listed a patient as status 1A who did not meet criteria, and the Subcommittee found the listing to be inappropriate, with most indicating that the patient should have been listed with a MELD of 40. The case did not meet criteria because the patient had hepatic artery thrombosis (HAT) but the AST was less than 5000 (the reported value was 166). An appeal was denied by the Subcommittee. The center had two prior status 1A cases not meeting criteria in the prior year. The Committee voted to send these cases to the MPSC for review by a vote of 14 in favor, 1 opposed, 0 abstentions.

Review of Items Circulated for Public Comment, October 2010-February 2011 and March-June 2011

11. Proposal to Clarify which Transplant Program has Responsibility for Elements of the Living Donation Process and to Reassign Reporting Responsibility for Living Donation from the Recipient Transplant Program to the Transplant Program Performing the Living Donor Nephrectomy or Hepatectomy. The Committee voted to support this by a vote of 14 in favor, 0 opposed, 0 abstentions.
12. Proposal to include Qualifications for Director of Liver Transplant Anesthesia in the Bylaws. Committee members asked whether (a) this position would be considered „key personnel,” and if there would be some pathway if the Director of Liver Anesthesia left a transplant program and (b) the requirements for the number of transplants performed would adversely impact pediatric programs. A UNOS staff liaison to the MPSC noted that the only parts of the proposed by-law that would be mandatory are the first two requirements: the center shall designate a Director of Liver Transplant

Anesthesia who must be board certified. Everything else in the proposal is a recommendation only. It was noted that the Pediatric Committee was in support of this proposal, as these are a very minimum level of qualifications. The Committee voted to support this by a vote of 14 in favor, 0 opposed, 0 abstentions.

13. Safety Proposal: Prohibiting Storage of Hepatitis C Antibody Positive and Hepatitis B Surface Antigen Positive Extra Vessels. The Committee had significant concerns about this proposal, in that it could create a shortage of vessels, and could potentially preclude a center from storing vessels for someone who has hepatitis C from a hepatitis C positive donor. Committee members felt that there could be other options, such as prohibiting vessel between institutions or patients, or requiring a “time-out” when using vessels. Others suggested that the Committee wait and see whether the new donor labels help such situations. It was noted, however, that almost all of the errors that occur are labeling errors. The Committee did not support this proposal by a vote of 2 in favor, 12 opposed, and no abstentions.

14. Proposed Model for Assessing the Effectiveness of Individual OPOs in Key Measures of Organ Recovery and Utilization. The Committee reviewed this proposal put forward by the OPO and Membership and Professional Standards Committees. The MPSC is recommending that the OPTN implement a statistical model to evaluate OPO performance to identify opportunities for improving organ yield using a comparison of observed to expected organs transplanted per donor. Two models are proposed: an overall organs transplanted model and organ-specific yield models. There is no organ-specific yield model for intestines due to the small numbers involved. The c-statistic for the overall model was 0.83, and ranged from 0.78 to 0.90 for the organ-specific models; a c-statistic greater than 0.7 is generally considered clinically useful. Model outputs include:
 - Number of donors
 - Observed number of organs transplanted
 - Expected number of organs transplanted
 - Observed/Expected
 - Two sided p-value
 - Observed Yield per 100 Donors
 - Expected Yield per 100 Donors
 - Expected – Observed per 100 Donors

For two metrics, the absolute ratio of observed to expected and the difference in organs transplanted per 100 donors, the sponsoring Committees have selected a 10% difference as being a clinically relevant threshold for flagging (i.e., a ratio of observed to expected of less than 0.90). By applying these criteria to donors from 2008-2009, the models would have flagged seven OPOs out of the current 58: four with the overall model, and an additional three with the organ-specific model. This effort is intended as a trigger to begin a dialog with the OPO, rather than being a punitive action. Once an OPO is flagged, the MPSC will send a survey of inquiry and may follow-up with additional questions during the review. If an OPO does not demonstrate a plan for performance improvement or does not respond to the MPSC’s requests, the MPSC may consider taking some adverse action. The

OPO community is in support of this, as it is a better predictive model than the SCD/ECD/DCD model that is currently used, which was developed for kidneys and has been applied to other organs.

A Committee member asked why livers are only counted as one organ transplanted; the sponsoring committees did not consider split livers in their analyses of organs transplanted per donor. After discussion, the Committee indicated its support of the proposal by a vote of 14 in favor, 0 opposed, and 0 abstentions.

Miscellaneous Updates

15. MELD/PELD Exceptions Cases Not Approved in 21 days. The Committee reviewed three cases where a MELD/PELD exception application was not approved within the 21-day time frame set forth in the policy, the center decided to maintain the higher exception score, and the patient was transplanted. These are summarized as follows:

WL_ID #25732 – In this case, one RRB member did not vote even though the member was reminded several times. This caused the case to go beyond 21 days with no majority vote. The Committee voted to take no action by a vote of 15 in favor, 0 opposed, and 0 abstentions.

WL_ID #23723 – This case was from the same region and time frame as the prior case, with one member not voting. The Committee voted to take no action by a vote of 15 in favor, 0 opposed, and 0 abstentions.

WL_ID #27693 – In this case, the center appealed a denied initial submission on day 20. The Committee asked that the center explain the circumstances of the case and the delay in their appeal, by a vote of 15 in favor, 0 opposed, and 0 abstentions.

16. Approval of Cholangiocarcinoma (CCA) Protocol. The Committee agreed to approve an amended protocol for a center that had modified a previously–approved protocol, as recommended by the Subcommittee and two CCA protocols previously approved by the Subcommittee.
17. Committee Request for Change to UNetSM. The Committee approved a motion that UNOS allow centers to electronically transfer MELD/PELD data directly into UNetSM by a vote of 15 in favor, 0 opposed, and 0 abstentions. This would help eliminate human errors in data entry.
18. Requests for Standard Exception for Primary Sclerosing Cholangitis (PSC). The Committee discussed requests for “a public proposal to formalize an exception to the MELD for PSC patients.” This diagnosis was discussed at the MESSAGE meeting in March 2006, and at the time the participants did not recommend that a diagnosis of cholangitis, in and of itself, should be eligible for a standardized MELD exception, as there is no evidence that this diagnosis is directly associated with waiting list mortality risk. However, a physician may still request an exception for any diagnosis through the current Regional Review mechanism. Due to the volume of requests, the issue was brought to the Committee’s attention. The Committee did not take any action on this request.
19. Member Request for a Change to the Time Frame for Submission of Extensions. The Committee discussed a member’s request to change the time frame for submission of MELD/PELD exception

applications. In 2003, the Committee approved a policy stating that “A candidate’s approved score will be maintained if the center enters the extension application more than 3 days prior to the due date and the RRB does not act prior to that date (i.e., the candidate will not be downgraded if the RRB does not act in a timely manner).“ Extensions are required every three months. The member stated that this policy harms patients when centers submit the extension less than three days prior to it being due. Committee members stated that centers must verify that the patient still meets the criteria for an exception, and should submit the extension request earlier than 3 days prior to the downgrade date.

Committee Participation
October 23 2010
Chicago, IL

W. Kenneth Washburn, M.D.	Chair	X
Kim Olthoff, M.D.	Vice Chair	X
Michael Curry, M.D.	Regional Rep. Region 1	X
Stephen Dunn, M.D.	Regional Rep. Region 2	
Brendan McGuire, M.D.	Regional Rep. Region 3	X
Goran Klintmalm, M.D., Ph.D.	Regional Rep. Region 4	
Ryutaro Hirose, M.D.	Regional Rep. Region 5	X
Jorge D. Reyes, M.D.	Regional Rep. Region 6	X
Anthony D'Alessandro, M.D.	Regional Rep. Region 7	
Harvey Solomon, M.D.	Regional Rep. Region 8	By telephone
Lewis Teperman, M.D.	Regional Rep. Region 9	X
John Fung, M.D., Ph.D.	Regional Rep. Region 10	X
Michael Marvin, M.D.	Regional Rep. Region 11	X
Scott Biggins, M.D.	At Large	X
Julie Heimbach, M.D.	At Large	X
Heung Bae Kim, M.D.	At Large	X
Timothy McCashland, M.D.	At Large	X
Kenyon Murphy, J.D.	At Large	X
John Roberts, M.D.	At Large	X
Debra Sudan, M.D.	At Large	X
Kim Brown, M.D.	At Large	X
Kareem Abu-Elmagd, M.D.	At Large	X
Michael Charlton, M.D.	At Large	X
James Trotter, M.D.	At Large	X
Thomas Mone	At Large	X
James Eason, M.D.	At Large	X
Monica Lin, Ph.D.	Ex Officio, HRSA	X
James Bowman, M.D.	Ex Officio, HRSA	X
Jon Snyder, Ph.D., M.S.	SRTR Representative, MMRF	X
Yi Peng, M.S.	SRTR Representative, MMRF	X
David Zaun, M.S.	SRTR Representative, MMRF	X
W. Ray Kim, M.D.	SRTR Representative, MMRF	X
Erick Edwards, Ph.D.	UNOS, Assistant Director, Research	X
Ann Harper	UNOS, Policy Analyst	X
Brian Shepard	UNOS, Director of Policy	X

**Committee Participation
December 13, 2010 Conference Call**

W. Kenneth Washburn, M.D.	Chair	X
Kim Olthoff, M.D.	Vice Chair	X
Michael Curry, M.D.	Regional Rep. Region 1	X
Stephen Dunn, M.D.	Regional Rep. Region 2	X
Brendan McGuire, M.D.	Regional Rep. Region 3	X
Goran Klintmalm, M.D., Ph.D.	Regional Rep. Region 4	X
Ryutaro Hirose, M.D.	Regional Rep. Region 5	X
Jorge D. Reyes, M.D.	Regional Rep. Region 6	X
Anthony D'Alessandro, M.D.	Regional Rep. Region 7	
Harvey Solomon, M.D.	Regional Rep. Region 8	
Lewis Teperman, M.D.	Regional Rep. Region 9	X
John Fung, M.D., Ph.D.	Regional Rep. Region 10	X
Michael Marvin, M.D.	Regional Rep. Region 11	X
Scott Biggins, M.D.	At Large	X
Julie Heimbach, M.D.	At Large	X
Heung Bae Kim, M.D.	At Large	X
Timothy McCashland, M.D.	At Large	
Kenyon Murphy, J.D.	At Large	X
John Roberts, M.D.	At Large	X
Debra Sudan, M.D.	At Large	
Kim Brown, M.D.	At Large	
Kareem Abu-Elmagd, M.D.	At Large	X
Michael Charlton, M.D.	At Large	
James Trotter, M.D.	At Large	
Thomas Mone	At Large	X
James Eason, M.D.	At Large	X
Monica Lin, Ph.D.	Ex Officio, HRSA	X
James Bowman, M.D.	Ex Officio, HRSA	X
Jon Snyder, Ph.D., M.S.	SRTR Representative, MMRF	X
Yi Peng, M.S.	SRTR Representative, MMRF	X
David Zaun, M.S.	SRTR Representative, MMRF	X
W. Ray Kim, M.D.	SRTR Representative, MMRF	X
Sally Aungier	UNOS, Liaison to MPSC	X
Erick Edwards, Ph.D.	UNOS, Assistant Director, Research	X
Ann Harper	UNOS, Policy Analyst	X
Brian Shepard	UNOS, Director of Policy	X
Chad Waller, M.S.	UNOS, Policy Analyst	X
Jory Parker	UNOS, Business Analyst	X

Committee Participation
February 24, 2011 Conference Call

W. Kenneth Washburn, M.D.	Chair	X
Kim Olthoff, M.D.	Vice Chair	X
Michael Curry, M.D.	Regional Rep. Region 1	X
Stephen Dunn, M.D.	Regional Rep. Region 2	X
Brendan McGuire, M.D.	Regional Rep. Region 3	X
Goran Klintmalm, M.D., Ph.D.	Regional Rep. Region 4	
Ryutaro Hirose, M.D.	Regional Rep. Region 5	
Jorge D. Reyes, M.D.	Regional Rep. Region 6	X
Anthony D'Alessandro, M.D.	Regional Rep. Region 7	
Harvey Solomon, M.D.	Regional Rep. Region 8	X
Lewis Teperman, M.D.	Regional Rep. Region 9	X
John Fung, M.D., Ph.D.	Regional Rep. Region 10	
Michael Marvin, M.D.	Regional Rep. Region 11	
Scott Biggins, M.D.	At Large	X
Julie Heimbach, M.D.	At Large	X
Heung Bae Kim, M.D.	At Large	X
Timothy McCashland, M.D.	At Large	
Kenyon Murphy, J.D.	At Large	X
John Roberts, M.D.	At Large	
Debra Sudan, M.D.	At Large	
Kim Brown, M.D.	At Large	
Kareem Abu-Elmagd, M.D.	At Large	X
Michael Charlton, M.D.	At Large	
James Trotter, M.D.	At Large	
Thomas Mone	At Large	X
James Eason, M.D.	At Large	
Monica Lin, Ph.D.	Ex Officio, HRSA	X
James Bowman, M.D.	Ex Officio, HRSA	X
Ba Lin, Ph.D.	MMRF, SRTR Representative	X
Peter Stock, M.D.	MMRF, SRTR Representative	X
Yi Peng, M.S.	MMRF, SRTR Representative	X
Adrine Chung	MMRF, SRTR Representative	X
W. Ray Kim, M.D.	MMRF, SRTR Representative	X
Erick Edwards, Ph.D.	UNOS, Assistant Director of Research	X
Ann Harper	UNOS, Policy Analyst	X
Brian Shepard	UNOS, Director of Policy	X
Jory Parker	UNOS, Business Analyst	X

Committee Participation
March 23, 2011
Chicago, IL

W. Kenneth Washburn, M.D.	Chair	X
Kim Olthoff, M.D.	Vice Chair	X
Michael Curry, M.D.	Regional Rep. Region 1	X
Stephen Dunn, M.D.	Regional Rep. Region 2	X
Brendan McGuire, M.D.	Regional Rep. Region 3	X
Goran Klintmalm, M.D., Ph.D.	Regional Rep. Region 4	X
Ryutaro Hirose, M.D.	Regional Rep. Region 5	X
Jorge D. Reyes, M.D.	Regional Rep. Region 6	X
Anthony D'Alessandro, M.D.	Regional Rep. Region 7	
Harvey Solomon, M.D.	Regional Rep. Region 8	X
Lewis Teperman, M.D.	Regional Rep. Region 9	
John Fung, M.D., Ph.D.	Regional Rep. Region 10	X
Michael Marvin, M.D.	Regional Rep. Region 11	X
Scott Biggins, M.D.	At Large	X
Julie Heimbach, M.D.	At Large	X
Heung Bae Kim, M.D.	At Large	X
Timothy McCashland, M.D.	At Large	X
Kenyon Murphy, J.D.	At Large	X
John Roberts, M.D.	At Large	By telephone
Debra Sudan, M.D.	At Large	X
Kim Brown, M.D.	At Large	By telephone
Kareem Abu-Elmagd, M.D.	At Large	X
Michael Charlton, M.D.	At Large	X
James Trotter, M.D.	At Large	X
Thomas Mone	At Large	X
James Eason, M.D.	At Large	X
Monica Lin, Ph.D.	Ex Officio, HRSA	By telephone
Peter Stock, M.D.	MMRF, SRTR Representative	X
Yi Peng, M.S.	MMRF, SRTR Representative	X
Jon Snyder, Ph.D., M.S.	MMRF, SRTR Representative	By telephone
W. Ray Kim, M.D.	MMRF, SRTR Representative	By telephone
Erick Edwards, Ph.D.	UNOS, Assistant Director of Research	X
Ann Harper	UNOS, Policy Analyst	X
Manny Carwile	UNOS IT Department	X