

Redesigning Liver Distribution

OPTN/UNOS Liver and Intestinal Organ Transplantation Committee

Prepared by: Christine M. Flavin, MPH
UNOS Policy Department

Executive Summary	1
Is the sponsoring Committee requesting specific feedback or input about the proposal?	1
What problem will this proposal address?.....	2
Why should you support this proposal?	5
Which populations are impacted by this proposal?	11
How does this proposal impact the OPTN Strategic Plan?	12
How will the OPTN implement this proposal?	12
How will members implement this proposal?	12
How will members be evaluated for compliance with this proposal?	13
How will the sponsoring Committee evaluate whether this proposal was successful post implementation?	13
Policy or Bylaws Language.....	14

Redesigning Liver Distribution

<i>Affected Policies:</i>	<i>Policy 1.2: Definitions, Policy 5.4.B: Order of Allocation, Policy 9.6: Liver Allocation, Classifications, and Rankings</i>
<i>Sponsoring Committee:</i>	<i>Liver and Intestinal Organ Transplantation</i>
<i>Public Comment Period:</i>	<i>August 15, 2016 – October 15, 2016</i>

Executive Summary

Currently there is significant variation in a liver transplant candidate's chances of receiving a lifesaving organ offer depending on where they live and the location of the transplant hospital where they are listed. In March 2000, the US Department of Health and Human Services (HHS) implemented the Final Rule, which instructs that OPTN/UNOS allocation policies must, among other factors, be based on sound medical judgment, seek to achieve the best use of donated organs, and shall not be based on the candidate's place of residence or place of listing except to the extent needed to satisfy other regulatory requirements.¹ The OPTN/UNOS recognizes that there are not enough organs for patients in need of lifesaving transplant and is invested in increasing the number of transplants each year by increasing donation, reducing organ discards, and improving OPO performance.²

However, these efforts will not change the fact that the current regional boundaries often physically separate areas with a greater number of candidates from areas with comparably more eligible donors. The result is that in some areas of the United States, candidates must reach a much higher MELD or PELD score in order to get a transplant.³ Among the current OPTN/UNOS regions in 2015, the difference in median MELD at transplant is as great as 12 points (35 vs 23), the equivalent of a 60 percentage point difference in the estimated risk of 3-month mortality without a liver transplant.⁴

This proposal seeks to modify these boundaries to better match organ supply with demand, ensuring more equitable access for those in need of liver transplant regardless of their place of residence or listing. To prepare for this necessary next step, the OPTN/UNOS Liver and Intestinal Organ Transplantation Committee has been engaged in an inclusive, consensus-driven process to develop this proposal. The Committee proposes eight mathematically-optimized districts with additional priority of 3 MELD or PELD points for those candidates that are both within the district and a 150-mile radius of the donor hospital upon initial district-wide sharing. The Committee proposes district-wide sharing of adult deceased donor livers for all candidates with a MELD or PELD of at least 29 before introducing local (DSA) priority.

Is the sponsoring Committee requesting specific feedback or input about the proposal?

The Committee welcomes feedback on this proposal, especially regarding support for the proposed district-wide sharing threshold before introducing local priority or support for alternative distribution concepts with the promise of reducing geographic variance in MELD at transplant.

¹ 42 C.F.R. § 121.8

² Organ Procurement and Transplantation Network. "OPTN Strategic Plan." Richmond, VA, 2014, available at: <https://optn.transplant.hrsa.gov/governance/strategic-plan/>.

³ A liver candidate receives a Model for End-Stage Liver Disease (MELD) score or, if less than 12 years old, a Pediatric End Stage Liver Disease (PELD) score that is used for liver allocation. The score is intended to reflect the candidate's disease severity, or the risk of 3-month mortality without access to liver transplant.

⁴ Based on OPTN data as of July 1, 2016

What problem will this proposal address?

Currently there is significant variation in a liver transplant candidate's chances of receiving a lifesaving organ offer depending on where they live and the location of the transplant center where they are listed. In March 2000, the US Department of Health and Human Services (HHS) implemented the Final Rule, which instructs OPTN/UNOS allocation policies must, among other factors, be based on sound medical judgment, seek to achieve the best use of donated organs, and shall not be based on the candidate's place of residence or place of listing except to the extent needed to satisfy other regulatory requirements.^{5 6} The OPTN/UNOS recognizes that there are not enough organs for patients in need of lifesaving transplant and is invested in increasing the number of transplants each year by increasing donation, reducing organ discards, and improving OPO performance.⁷

However, these efforts will not change the fact that the current regional boundaries often physically separate areas with a greater number of candidates from areas with comparably more eligible donors (**Figure 1**). This proposal seeks to modify these boundaries to better match organ supply with demand, ensuring more equitable access for those in need of liver transplant regardless of their place of residence or listing.

To prepare for this necessary next step, the OPTN/UNOS Liver and Intestinal Organ Transplantation Committee (hereafter, "the Committee") has implemented a series of policies which have demonstrated that broader sharing benefits candidates in urgent need of transplant and has been engaged in a nearly three-year transparent, inclusive, and consensus-driven process to develop this proposal.

The United States is currently divided into 11 regions and 58 smaller donation service areas (DSAs). As described in **Table 1**, adult deceased donor livers are first allocated to the most urgent candidates within a region (Status 1), followed by DSA and regional sharing for candidates by descending order of MELD score, through MELD 35.⁸ While the regions provide an effective mechanism for participation in the OPTN, neither the regional boundaries nor the DSA boundaries were designed to optimally distribute organs.⁹ These borders were designed decades ago based on working relationships that existed at the time, not with the goal of optimizing organ distribution.

The result is that in some areas of the United States, candidates must reach a much higher MELD or PELD score in order to get a transplant. Among the current OPTN/UNOS regions in 2015, the difference in median MELD at transplant is as great as 12 points (35 vs 23), the equivalent of a 60 percentage point difference in the estimated risk of 3-month mortality without a liver transplant.¹⁰ Recent studies have demonstrated that, after adjusting for differences in population, there is an estimated 14-fold difference among the DSAs in the rates of liver candidates added to the waiting list and a 3-fold difference in eligible deaths; however, there is only a two-fold difference in OPO performance.^{11,12}

Since the enactment of the Final Rule, the OPTN/UNOS has approved and implemented several policies to broaden geographic sharing of deceased donor livers. In June 2009, the OPTN/UNOS Board of Directors (hereafter, "the Board") approved regional sharing for Status 1A and 1B candidates to increase access to livers for patients with acute liver failure. Later that year, the Committee distributed a Request

⁵ 42 C.F.R. § 121.8

⁶ 42 C.F.R. § 121.8

⁷ Organ Procurement and Transplantation Network. "OPTN Strategic Plan." Richmond, VA, 2014, available at: <https://optn.transplant.hrsa.gov/governance/strategic-plan/>.

⁸ A liver candidate receives a Model for End-Stage Liver Disease (MELD) score or, if less than 12 years old, a Pediatric End Stage Liver Disease (PELD) score that is used for liver allocation. The score is intended to reflect the candidate's disease severity, or the risk of 3-month mortality without access to liver transplant.

⁹ The regional system provides an effective mechanism for communication among OPTN staff, the OPTN/UNOS Board of Directors and the transplant community. It facilitates the identification of geographically diverse transplant professionals to populate both the Board of Directors and Committees. The regions also provide a forum for consensus building and transparency of work throughout the OPTN/UNOS policy development process through regional meetings that are held twice a year during the public comment periods.

¹⁰ Based on OPTN data as of July 1, 2016

¹¹ Sheehy E., K. J. O'Connor, R. S. Luskin, et al. "Investigating geographic variation in mortality in the context of organ donation." *American Journal of Transplantation* 12(2012), 1598-1602.

¹² Gentry S. E., E. K. Chow, A. B. Massie, et al. "Liver sharing and organ procurement organization performance under redistricted allocation." *Liver Transplantation* 21(2015), 1031-1039.

for Information (RFI) to solicit feedback from the transplant community and public regarding current liver distribution and allocation policy and opportunities for improvement. In April 2010, the OPTN/UNOS hosted a public forum that explored ways to improve organ allocation and distribution and to reduce geographic disparity in access to liver transplant. In June 2012, the Board passed “Share 35,” a policy that sought to improve access to transplant for the sickest patients with chronic liver disease through:

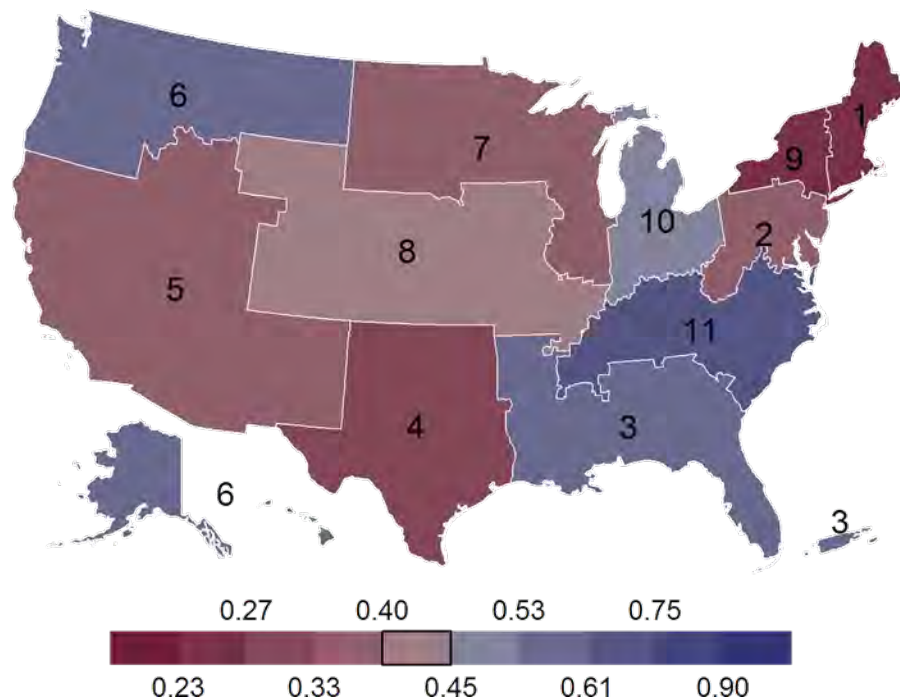
- National sharing for candidates with MELD/PELD scores greater than 15
- Regional sharing for candidates with MELD/PELD scores of at least 35
- National sharing for liver-intestine candidates

The two year post-implementation outcome analysis demonstrated that, for patients with a MELD or PELD of at least 35, Share 35 increased the percentage of transplants from 19% to 27% and increased sharing within each region from 19% to 50%.¹³

Despite the success of broader sharing in allocating livers to candidates with the greatest medical urgency within a region, the geographic disparity in severity of disease at transplant persists (**Figure 2**). This is because organ distribution is still based upon the current regional borders.

Simulation modeling suggests that a smaller number of mathematically-optimized districts would reduce geographic variability in disease severity at transplant. In November 2012, the Board resolved that existing geographic disparity remains unacceptably high. It directed the organ-specific committees to investigate alternatives to the current OPTN/UNOS regions for distribution, considering optimization as a method.

Figure 1. Ratio of eligible deaths to waitlisted candidates with an allocation MELD or PELD greater than 15, by OPTN/UNOS region, in 2013.



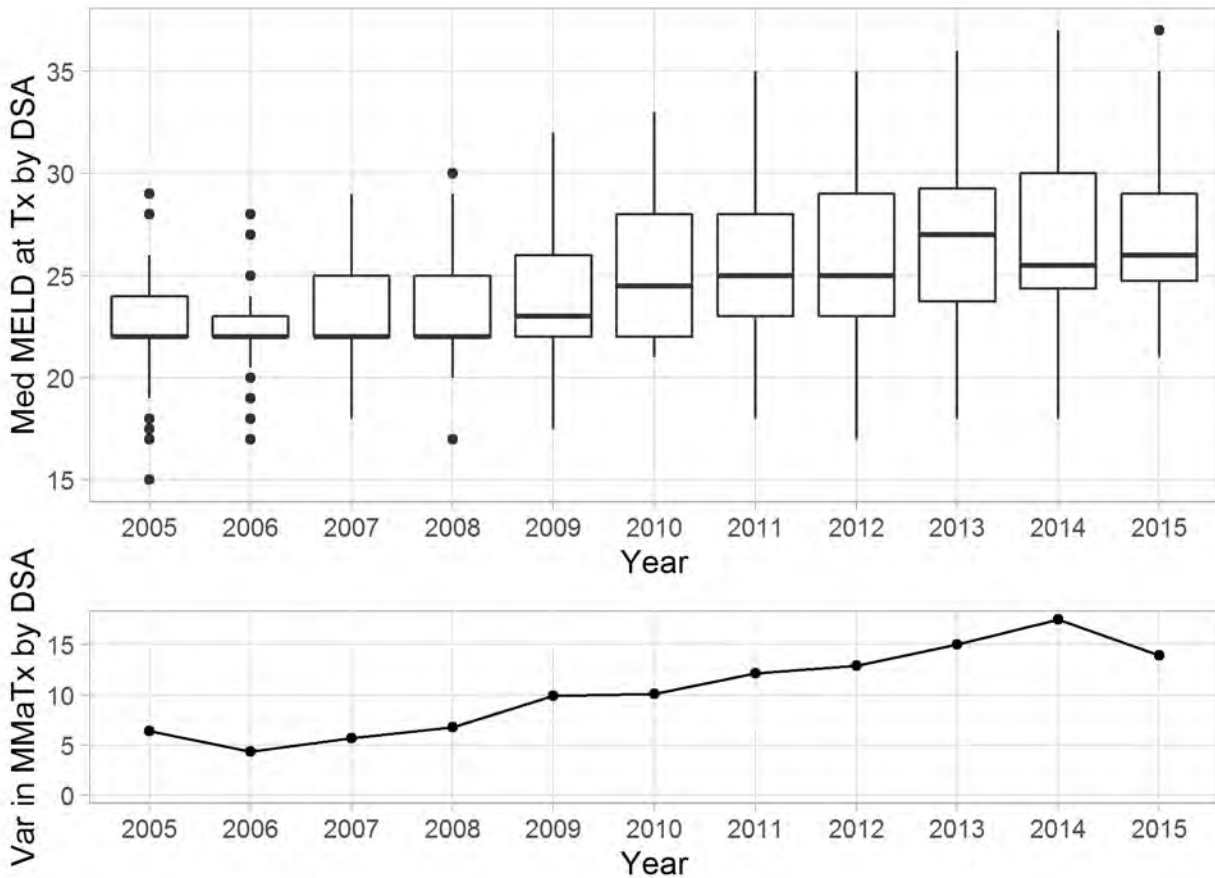
¹³ Edwards, E. B., A. M. Harper, R. Hirose, “The impact of broader regional sharing of livers: 2-year results of ‘Share 35.’” *Liver Transplantation*. 22(2016), 399-409.

Table 1. Allocation of livers from deceased donors at least 18 years old for candidates with a MELD or PELD of at least 15.¹⁴

Classification	Candidates that are within the:	And are:
1	OPO's region	Adult or pediatric status 1A
2	OPO's region	Pediatric status 1B
3	OPO's DSA	MELD/PELD of 40
4	OPO's region	MELD/PELD of 40
5	OPO's DSA	MELD/PELD of 39
6	OPO's region	MELD/PELD of 39
7	OPO's DSA	MELD/PELD of 38
8	OPO's region	MELD/PELD of 38
9	OPO's DSA	MELD/PELD of 37
10	OPO's region	MELD/PELD of 37
11	OPO's DSA	MELD/PELD of 36
12	OPO's region	MELD/PELD of 36
13	OPO's DSA	MELD/PELD of 35
14	OPO's region	MELD/PELD of 35
15	OPO's DSA	MELD/PELD of at least 15
16	OPO's region	MELD/PELD of at least 15
17	Nation	Adult or pediatric status 1A
18	Nation	Pediatric status 1B
19	Nation	MELD/PELD of at least 15

¹⁴ Policy 9.6.E: Allocation of Livers from Deceased Donors at Least 18 Years Old, Organ Procurement and Transplantation Network Policies.

Figure 2. Median MELD at transplant (MMaTx) by DSA and variance in MMaTx for 2005-2015.



Why should you support this proposal?

This proposal seeks to modify the boundaries of liver distribution areas to better match organ supply with demand, ensuring more equitable access for those in need of liver transplant regardless of their place of residence or listing. The Committee proposes eight mathematically-optimized districts (**Figure 3**) with additional priority of 3 MELD or PELD points for those candidates that are both within the district and a 150-mile radius of the donor hospital upon initial district-wide sharing (also referred to as “proximity points”). Candidates within the 150-mile radius of the donor hospital but outside of the district will receive an additional 3 MELD or PELD points when sharing nationally. The Committee proposes district-wide sharing of adult deceased donor livers for all candidates with a MELD or PELD of at least 29 before introducing local (DSA) priority. The first eight classification categories for adult deceased donor livers are provided in **Table 2** below.

By establishing a district-wide sharing threshold of MELD or PELD 29 before allocating locally, and by assigning proximity points within the district, this proposal provides the benefit of improved geographic access to transplant but avoids the inefficient and costly transport of livers to candidates of nearly identical allocation priority and medical urgency.

For all pediatric donors less than 18 years old, the Committee proposes district-wide sharing for all candidates. Due to their acute medical urgency, Status 1A and 1B candidates do not receive additional priority over other Status 1 candidates in the district based on proximity to the donor hospital.

Figure 3. Proposed eight district map for deceased donor liver allocation.¹⁵

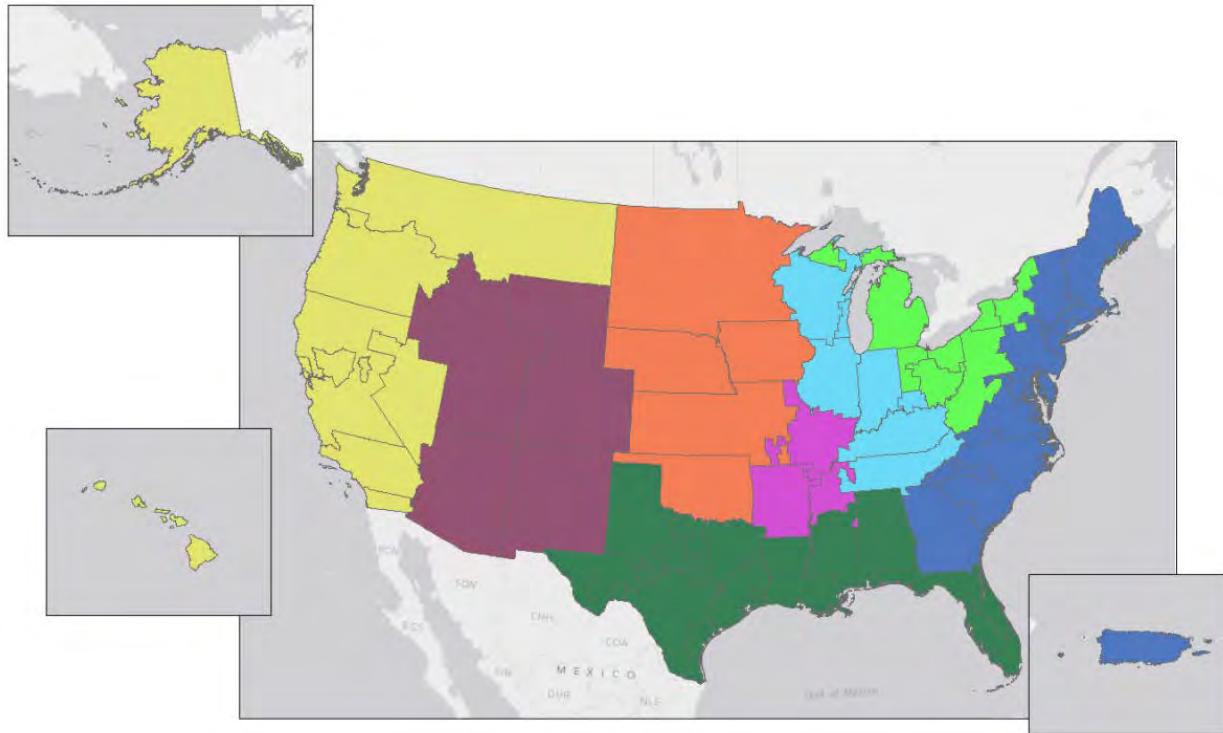


Table 2. Proposed allocation of livers from deceased donors at least 18 years old for candidates with a MELD or PELD of at least 15.

Classification	Candidates that are within the:	And are:	Proximity points for any candidates in this classification?
1	OPO's district	Adult or pediatric status 1A	No
2	OPO's district	Pediatric status 1B	No
3	OPO's district	MELD or PELD of at least 29	Yes, if the candidate is within both the district and a 150-mile radius of the donor hospital
4	OPO's DSA	MELD or PELD of at least 15	No
5	OPO's district	MELD or PELD of at least 15	No
6	Nation	Adult or pediatric status 1A	No
7	Nation	Pediatric status 1B	No
8	Nation	MELD or PELD of at least 15	Yes, if the candidate is within a 150-mile radius of the donor hospital

How is redistricting related to the rest of the Committee work plan?

At the June 2015 public forum, the Committee received overwhelming feedback that the current exception system also contributes to geographic differences in access to liver transplant. For most patients with chronic liver disease, the risk of death without access to liver transplant can be accurately predicted by the MELD score. However, some candidates' need for transplant is due to a complication of liver disease that is not reflected in the calculated MELD score. In these instances, a liver transplant program may request an exception score for the candidate. Unless a candidate meets the criteria for one of nine

¹⁵ See the proposed definition of district in *Policy 1.2: Definitions* for a list of the DSAs included in each of the districts.

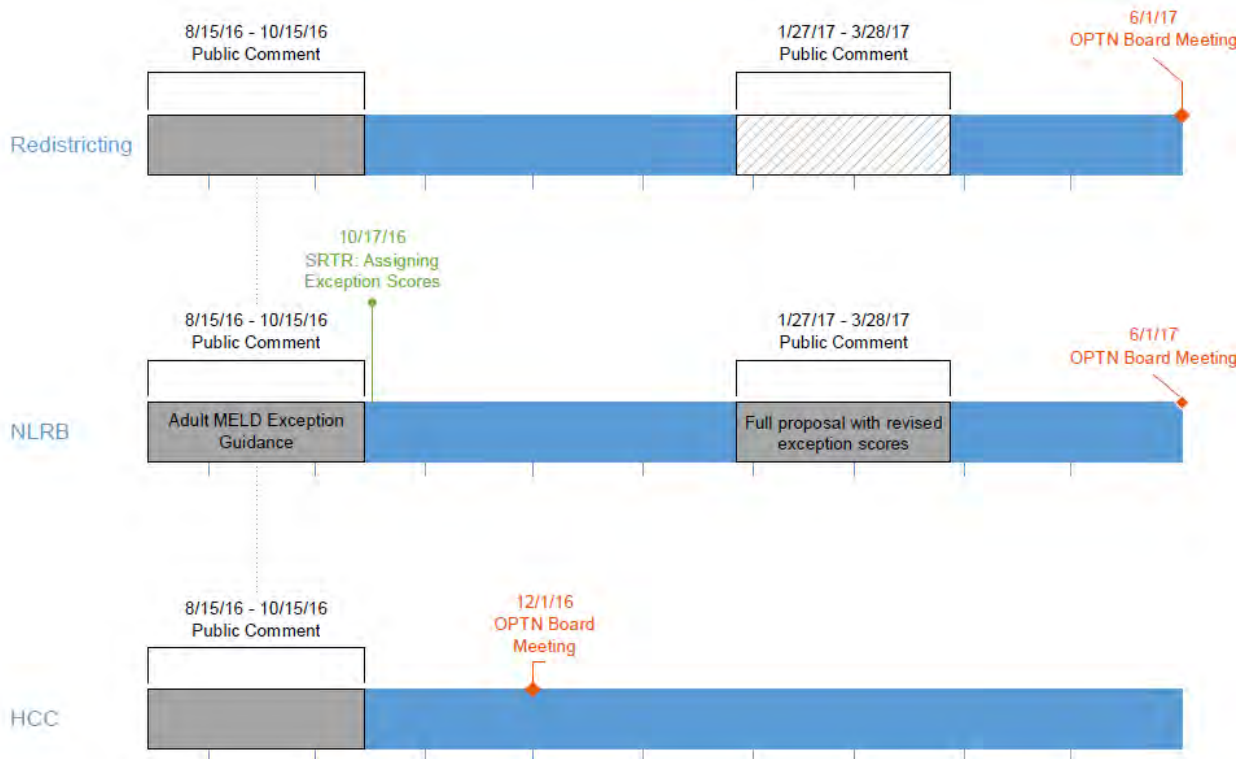
diagnoses in policy and is approved for a standardized MELD exception, the request is considered by the transplant program's Regional Review Board (RRB).

Currently, geographic differences exist in the MELD and PELD exception submission, review, and award practices. If redistricting gives similar candidates equal access to transplant regardless of where they are registered, then it requires that these candidates have similar medical urgency.

In response to community feedback, the Committee adopted a 2016-2017 work plan last January that is a series of interrelated projects that aim to improve equity in access to liver transplant (**Figure 4**). The Committee seeks to mitigate geographic differences in the exception system by replacing Regional Review Boards (RRBs) with a National Liver Review Board (NLRB). As part of the NLRB project, the Committee is also considering revisions to the MELD scores assigned to candidates meeting exception criteria in policy as a means of curbing national inflation of the MELD score at transplant. The Committee will also propose revisions to the eligibility criteria for the most common MELD exception request, Hepatocellular Carcinoma (HCC). With these revisions to the exception system, MELD and PELD exception scores will more accurately reflect the candidate's disease severity and will be consistent regardless of geography.

The Committee has submitted the adult MELD exception guidance document that the NLRB would use to assess exception requests, as well as the HCC proposal, for public comment in August 2016. The full NLRB proposal will be submitted for a second round of public comment in January 2017. The Committee anticipates submitting the HCC proposal for Board consideration in December 2016 and the final NLRB and redistricting proposals in June 2017.

Figure 4. OPTN/UNOS Liver and Intestinal Organ Transplantation Committee 2016-2017 Work Plan



How was this proposal developed?

In June 2014, the Committee released the concept paper, “Redesigning Liver Distribution to Reduce Variation in Access to Liver Transplantation.”¹⁶ This paper included a survey to solicit feedback. The OPTN/UNOS hosted two public forums in September 2014 and June 2015 to engage the community in discussion of alternatives to the current system of distribution.¹⁷ In the interim the Committee convened four Ad Hoc Subcommittees, which included non-Committee members, to develop recommendations for the development and implementation of solutions to reduce geographic disparity. One of these recommendations was addition of proximity points, or additional MELD or PELD points for those candidates that are both within a set radius of the donor hospital. This was intended to reduce the total number of livers being transported, which incurs logistic and financial cost, for candidates with similar risk of death.

Based on feedback received at the second forum, the Committee adopted a comprehensive work plan to address geographic disparity in the MELD and PELD exception system (see ***How is redistricting related to the rest of the Committee work plan?***). In response to a proposed alternative to optimized districts, the Committee also requested that the SRTR model 500-mile radial distribution based on the donor hospital location, with additional proximity points given to local candidates (at radii of 150 and 250 miles). The Committee commonly refers to this distribution scenario as “concentric circles.”

The Redistricting Subcommittee convened in February 2016, with the charge to recommend to the full Committee an optimized system of distribution that reduces geographic variation in access to deceased donor liver transplant. The expectation was that the full Committee would consider the optimized district solution recommended by the Subcommittee in addition to concentric circles.

At the full Committee meeting in Chicago on April 27, the SRTR presented the modeling results for concentric circles. Scenarios included assigning proximity points to all candidates, all lab MELD candidates, and all candidates without HCC exception points. Key findings were as follows:

- Any of the tested redistricting or 500-mile radius circle with proximity points scenarios would noticeably decrease disparity in median MELD at transplant (see **Table 3** in ***How well does this proposal address the problem statement?***).
- The variance in median MELD at transplant is expected to decrease, while the nationwide median MELD/PELD is expected to remain stable.
- Approximately 95% of transplants are estimated to occur within the 500 mile radius of the donor hospital.
- All scenarios increase median transport time and distance; however, median transport distance and percentage of organs flown is lowest in the eight district scenario.

Ultimately the Committee supported the Subcommittee’s recommendation, which was the current proposal of eight districts with additional priority of 3 MELD or PELD points for those candidates that are both within the district and a 150-mile radius of the donor hospital.

Although concentric circles also demonstrated a reduction in the variance of median MELD at transplant, the Committee preferred optimization to determine the boundaries for distribution. Unlike choosing an arbitrary radius for distribution, optimization provides a method for matching waiting list volume with organ availability and takes into account constraints developed and outlined by the Committee (detailed in ***How well does this proposal address the problem statement?***). Modeling also indicated that substantially more organs would have to be flown in a concentric circle distribution system (73.1% (72.5%, 73.4%) versus 68.3 (68.1, 68.7) for the proposed eight districts without the MELD/PELD sharing threshold of 29; see **Table 3**).

¹⁶ Organ Procurement and Transplantation Network. “Redesigning liver distribution to reduce variation in access to liver transplantation.” Richmond, VA, 2014, available at: https://optn.transplant.hrsa.gov/media/1269/liver_concepts_2014.pdf.

¹⁷ For more information about the public forums, please see <https://optn.transplant.hrsa.gov/governance/policies/policy-initiatives/evolution-of-liver-allocation-and-distribution/>.

The Subcommittee also recommended district-wide sharing of adult deceased donor livers for a subset of the waiting list before introducing local (DSA) priority. Based on recent experience implementing “Share 35,” members believed that incremental implementation of district-wide sharing would give the transplant community the opportunity to adapt to a large change while still reducing geographic disparity in access to transplant. Before extending district-wide sharing to a larger portion of the waiting list, the Committee will monitor the policy post-implementation and verify a reduction in the variance in median MELD at transplant by DSA. The Subcommittee requested that the full Committee consider three options (where “X” below represents a threshold MELD or PELD score to be determined by the Committee):

- **Option 1:** District-wide sharing for all MELDs and PELDs $\geq X$ before introducing local priority
- **Option 2:** District-wide sharing for all calculated MELDs $\geq X$ and any PELD $\geq X$, then exception MELDs $\geq X$, before introducing local priority
- **Option 3:** District-wide sharing for calculated MELDs $\geq X$, non-HCC exception MELDs $\geq X$, and any PELD $\geq X$. Then district-wide sharing for HCC exception MELDs $\geq X$. Finally, introduce local priority.

The reason the Committee considered prioritizing calculated MELD candidates before exception MELD candidates is because scores for certain exceptions do not accurately reflect waitlist mortality, and exception practices are influenced by geography.^{18,19,20} However, in light of the Committee efforts to implement revisions to the exception system at the same time as redistricting (see ***How is redistricting related to the rest of the Committee work plan?***), the majority of members supported Option 1.

The majority of Committee members supported a MELD and PELD threshold of 29 for initial district-wide sharing of adult deceased donor livers, since currently HCC candidates receive a MELD 28 after an initial six months waiting at their lab MELD score. However, members requested modeling to examine the disparity benefit with a MELD and PELD threshold of 25, 29, and 35 for initial district-wide sharing. The Committee chose to proceed to public comment while collecting evidence for the final threshold in order to receive feedback from the community on other aspects of the proposal for which the group has strong consensus (12-Yes, 5-No, 0-Abstentions). The Committee will reconsider the proposed threshold based on public comment and modeling results, as well as any new score assignment for HCC candidates as part of the NLRB project.

How well does this proposal address the problem statement?

This proposal uses mathematical optimization to modify the boundaries of liver distribution areas to better match organ supply with demand, ensuring more equitable access for liver candidates regardless of where they register. Mathematical optimization is an analytic approach used in many industries as a systematic way of selecting the best solution, with regard to a set of criteria or “constraints”, from a set of alternatives.²¹

The proposed distribution system was designed to minimize the sum of disparities over all the districts, where disparity is the difference between the number of donors a region should have if organs went to the highest MELD candidate anywhere in the US and the number of donors in a proposed district, subject to the following constraints (determined by the Committee):

- Districts must respect the existing DSA boundaries and be contiguous.
- There must be a minimum of 6 transplant centers in any district.

¹⁸Massie, A. B., B. Caffo, S. E. Gentry, et al. “MELD exceptions and rates of waiting list outcomes.” *American Journal of Transplantation*, 11(2011), 2362-2371.

¹⁹Rodriguez-Luna, H., H. E. Vargas, A. Moss, et al. “Regional variations in peer reviewed liver allocation under the MELD system.” *American Journal of Transplantation*, 5(2005), 2244-2247.

²⁰Gish, R. G., R. J. Wong, G. Honerkamp-Smith, et al. “UNOS regional variations in appeal denial rates with non-standard MELD/PELD exceptions: support for a national review board.” *Clinical Transplantation* 29(2015), 513-522.

²¹Gentry S. E., A. B. Massie, S.W. Cheek, et al. “Addressing geographic disparities in liver transplantation through redistricting.” *American Journal of Transplantation* 13(2013), 2052-8.

- There should be a minimum of 4 and a maximum of 8 districts.
- There cannot be a significant increase in either waiting list deaths or the waiting list death rate.
- The median volume-weighted travel time is less than 3 hours.

After the proposed distribution system, and several alternatives, were designed using optimization, the Committee employed the Liver Simulated Allocation Model (LSAM) to evaluate the various options with regard to several metrics that included:

- Distribution and variance in median MELD or PELD at transplant
- Distribution and variance in transplant rate
- Distribution and variance in pre-transplant mortality rate
- Median transport distance and percentage of organs flying

The LSAM analyses were based on actual patient data for transplant candidates listed on the liver waiting lists as of December 31, 2006, and candidates added to those waiting lists and organs donated between January 1, 2007, and December 31, 2011. Please note that the results presented below are based on the proposed 8 district model, *without* limiting initial district-wide sharing of adult deceased donor livers to candidates that have at least a MELD or PELD 29. This is referred to as the “eight district model” below. The Committee has an outstanding modeling request to examine the disparity benefit with a MELD and PELD threshold of 25, 29, and 35 for initial district-wide sharing (see ***How was this proposal developed?***).

The 8 district model is projected to cut the current variance in median MELD or PELD at transplant in half (2.9 (2.0, 3.6) vs. 6.2 (5.5, 6.9)).²² The variance in transplant rates is also projected to decrease. Overall pre- and post-transplant deaths are not predicted to increase over the current system. The two redistricting scenarios examined (4 and 8 districts with 150-mile in-district proximity circles awarding 3 additional allocation MELD/PELD points) appear to have the greatest effect on decreasing the variance in transplant rates.

All redistricting and radial distribution (also referred to as “concentric circle”) options are predicted to increase median transport time, distance, and the percent of organs flown; however, median transport distance (in miles, 200 (195, 201)) and percentage of organs flown (68.3% (68.1%, 68.7%)) is lowest in the 8 district scenario. Almost all transplants (approximately 95%) are projected to occur within the district, with 50% occurring within the 150-mile proximity circle. A summary of outcome metrics of interest for the final two alternative distribution systems the Committee considered on April 27 is provided in **Table 3** below.

²² Schladt D., J. Pyke, C. Bolch, et al. “Scientific Registry of Transplant Recipients analysis report in response to a data request from the OPTN Liver and Intestinal Organ Transplantation Committee regarding ongoing policy considerations.” April 20, 2016.

Table 3. Outcome metrics for two modeled alternative distribution systems.

Scenario	Variance in median allocation MELD/PELD at transplant by DSA	Median transport time (hours)	Median transport distance (miles)	Percentage of organs flown
Current	6.2 (5.5, 6.9)	1.7 (1.7, 1.7)	124 (121, 127)	54.4 (53.8, 54.8)
Eight districts	2.9 (2, 3.6)	1.8 (1.8, 1.8)	200 (195, 201)	68.3 (68.1, 68.7)
500-mile radial distribution from the donor hospital with 3 MELD/PELD points for candidates within a 150-mile radius	2.2 (1.8, 2.6)	1.9 (1.9, 1.9)	232 (230, 235)	73.1 (72.5, 73.4)

Table shows the mean estimate across the 10 modeled iterations of each scenario, followed by the range of estimates.

The LSAM predicts a slight (less than 2%) decrease in the number of transplants performed each year under the 8 district model. However, this finding needs to be interpreted carefully since LSAM cannot account for behavioral changes, especially in acceptance behavior. Simulation is based on previously-collected data, and data collected does not include information on items such as transplant center or physician behavior, nor can previous data be used to predict behavior change.

The predicted reduction in transplant rate can be traced back to a specific part of the LSAM, the acceptance model, which assumes that a transplant program is more likely to turn down livers that are shared outside of the recovering DSA or would need to travel for a long time to reach the transplant center. This acceptance behavior is based on the fact that under historical allocation policy, most organs shared beyond the local DSA are rejected by local centers. This behavior may be less likely to happen under broader sharing or redistricting, and so this aspect of simulated acceptance behavior will change in practice and is not included in the modeling.

While the LSAM cannot predict exact numbers or changes in behavior, it is best at projecting the direction of large-scale changes, effects on large patient populations, and the direct impacts of allocation and distribution changes. A comparison of Share 35 projected versus observed data post-implementation demonstrated that the LSAM correctly predicted the direction of change of most outcome metrics of interest.²³

Which populations are impacted by this proposal?

The goal of this project is to reduce the geographic variance in median MELD at transplant among the estimated 15,000 candidates waiting for a lifesaving liver transplant each day. This means that many candidates in what are currently regions with lower organ availability will have greater access to lifesaving organs and will likely be transplanted at lower MELD scores. Other candidates in regions that currently have higher organ availability and are currently transplanted at relatively low MELD scores may be transplanted at higher MELD scores. Additionally, this is not projected to increase overall pre-transplant deaths (see a description of the constraints of the optimization design in ***How well does this proposal address the problem statement?***).

Overall, outcome metrics showed no major differences by pediatric age group, sex, or race/ethnicity that would indicate that a subset of the population would be disadvantaged by the 8 district model. The number of overall deaths (including pre-transplant, waiting list, and post-transplant deaths) prevented by subgroup slightly increased compared with current policy. However, post-transplant deaths prevented by pediatric status, sex, and race/ethnicity slightly decreased compared with current policy, indicating that

²³ Pyke J., D. Schladt, S. Leppke, et al. "Historical comparison of projected and observed liver transplants" (poster presentation at the American Transplant Congress, Philadelphia, Pennsylvania, May 2-6, 2015). Available at: http://www.srtr.org/publications/content/posters/2015/Historical_Comparison_of_Projected_and_Observed_Liver_Transplants.pdf.

redistricting may increase the number of post-transplant deaths. All redistricting scenarios, including the 8 district model, had a smaller effect on the number of increased post-transplant deaths for sex and race/ethnicity subgroups when compared to the concentric circle scenarios.²⁴

How does this proposal impact the OPTN Strategic Plan?

Increase the number of transplants: *The LSAM predicts a slight (less than 2%) decrease in the number of transplants performed each year under the 8 district model. However, this finding needs to be interpreted carefully since LSAM cannot account for behavioral changes, especially in acceptance behavior. For more information, see **How well does this proposal address the problem statement?***

Improve equity in access to transplants: *The primary goal of this proposal is to improve geographic disparity in access to liver transplant. The Final Rule states that access to transplant “shall not be based on the candidate’s place of residence or place of listing.” However, among the current OPTN/UNOS regions the difference in median MELD at transplant is as great as 9 points (34 vs 25), the equivalent of a 50 percentage point difference in the estimated risk of 3-month mortality without a liver transplant.²⁵ The 8 district model is projected to cut the current variance in median MELD or PELD at transplant in half (2.9 vs. 6.2).²⁶ The variance in transplant rates is also projected to decrease.*

Improve waitlisted patient, living donor, and transplant recipient outcomes: *Overall pre- and post-transplant deaths are not predicted to increase over the current system.*

Promote living donor and transplant recipient safety: *No expected impact on this goal.*

Promote the efficient management of the OPTN: *No expected impact on this goal.*

How will the OPTN implement this proposal?

If the OPTN/UNOS Board approves all the proposals in the Committee’s work plan, the OPTN/UNOS plans to coordinate implementation such that the NLRB and revisions to standardized eligibility criteria for HCC exceptions are in place upon the implementation of redistricting. See **How is redistricting related to the rest of the Committee work plan?** for more information about active projects to modify the exception system.

This proposal will require programming in UNetSM. The OPTN/UNOS will follow established protocols to inform members and educate them on any policy changes through Policy Notices. Due to the significant impact of these policy changes, the OPTN/UNOS will offer learning opportunities to specific audiences to promote knowledge, awareness, and compliance related to policy and system changes in advance of implementation. The OPTN/UNOS will deliver communications to the membership when instructional offerings are available. Members should take advantage of relevant educational opportunities offered.

UNOS IT provides cost estimates for each public comment proposal that will require programming to implement. The estimates can be small (108-419 hours), medium (420-749 hours), large (750-1,649 hours), very large (1,650-3,999 hours), or enterprise (4,000-8,000 hours). The IT estimate for this proposal is enterprise.

How will members implement this proposal?

OPOs and transplant hospitals may need to devote significant effort in developing new working relationships for organ offers that travel outside of current boundaries. Any broader sharing policy, and especially one this significant, poses logistical and financial challenges. While approximately 50% of

²⁴ Schladt D., J. Pyke, C. Bolch, et al. “Scientific Registry of Transplant Recipients analysis report in response to a data request from the OPTN Liver and Intestinal Organ Transplantation Committee regarding ongoing policy considerations.” April 20, 2016.

²⁵ Based on OPTN data as of July 1, 2016

²⁶ Schladt D., J. Pyke, C. Bolch, et al. “Scientific Registry of Transplant Recipients analysis report in response to a data request from the OPTN Liver and Intestinal Organ Transplantation Committee regarding ongoing policy considerations.” April 20, 2016.

transplants are projected to occur within the 150-mile proximity circle and 95% within the district, the percentage of organs flown is projected to increase by 13%.

OPOs

OPOs will need to prepare for the additional cost and coordination of transportation. It will also be important to verify whether a center requires a back-up once it has formally accepted a liver.²⁷

Transplant Hospitals

Transplant hospitals will also need to prepare for the additional cost and coordination of transportation and may consider using local procurement teams in some instances.

Will this proposal require members to submit additional data?

No, this proposal does not require additional data collection.

How will members be evaluated for compliance with this proposal?

The proposed language will not change the current monitoring of OPTN members. Organ allocation according to the match run will still be subject to OPTN review, and members are required to provide documentation as requested.

How will the sponsoring Committee evaluate whether this proposal was successful post implementation?

Using pre vs. post comparisons, analyses will be performed post-implementation at approximate 6-month intervals (up to 2 years) to identify trends and potentially unanticipated consequences of the policy.

The primary metric for evaluation of this policy change is the variance in the median MELD at transplant by DSA, since the main goal of this policy is to reduce the variance in that metric.

Other metrics evaluated will include:

- Number of deceased donor liver transplants
- Size and composition of the waiting list
- Waiting list mortality rates, transplant rates
- Transplant recipient demographics (age, gender, diagnosis, ethnicity)
- Transplants by exception (HCC, non-HCC)
- Post-transplant survival rates, overall and stratified by MELD/PELD category
- Post-transplant length of stay
- Liver discard rates (of livers recovered)
- Livers not recovered
- Organ travel distance, cold ischemia time, donor risk index

²⁷ A practice to prevent organ discard where the OPO has a local transplant center available to accept an organ if the primary offer is unsuccessful.

Policy or Bylaws Language

Proposed new language is underlined (example) and language that is proposed for removal is struck through (~~example~~).

1 1.2 Definitions

2 District

3 A geographic area used in the allocation of certain organs. The districts are as follows:

4
5 District 1 includes the DSAs served by the following OPOs: LifeChoice Donor Services (CTOP),
6 Washington Regional Transplant Community (DCTC), LifeLink of Georgia (GALL), New England Organ
7 Bank (MAOB), The Living Legacy Foundation of Maryland (MDPC), LifeShare of the Carolinas (NCCM),
8 Carolina Donor Services (NCNC), New Jersey Organ and Tissue Sharing Network (NJTO), Center for
9 Donation and Transplant (NYAP), LiveOnNY (NYRT), Gift of Life Donor Program (PADV), LifeLink of
10 Puerto Rico (PRL), LifePoint (SCOP), LifeNet Heath (VATB).

11
12 District 2 includes the DSAs served by the following OPOs: Gift of Life Michigan (MIOP), Finger Lakes
13 Donor Recovery Network (NYFL), Upstate New York Transplant Services Inc (NYWN), LifeBanc (OHLB),
14 Life Connection of Ohio (OHLC), Lifeline of Ohio (OHL), and Center for Organ Recovery and Education
15 (PATF).

16
17 District 3 includes the DSAs served by the following OPOs: Gift of Hope Organ & Tissue Donor Network
18 (ILIP), Indiana Donor Network (INOP), Kentucky Organ Donor Affiliates (KYDA), LifeCenter Organ Donor
19 Network (OHOV), Tennessee Donor Services (TNDS), Wisconsin Donor Network (WIDN), and UW
20 Health Organ and Tissue Donation (WIUW).

21
22 District 4 includes the DSAs served by the following OPOs: Arkansas Regional Organ Recovery Agency
23 (AROR), Mid-America Transplant Services (MOMA), and Mid-South Transplant Foundation (TNMS).

24
25 District 5 includes the DSAs served by the following OPOs: Iowa Donor Network (IAOP), LifeSource
26 Upper Midwest Organ Procurement Organization (MNOP), Midwest Transplant Network (MWOB),
27 Nebraska Organ Recovery System (NEOR), and LifeShare Transplant Donor Services of Oklahoma
28 (OKOP).

29
30 District 6 includes the DSAs served by the following OPOs: Alabama Organ Center (ALOB), TransLife
31 (FLFH), Life Alliance Organ Recovery Agency (FLMP), LifeQuest Organ Recovery Services
32 (FLUF), LifeLink of Florida (FLWC), Louisiana Organ Procurement Agency (LAOP), Mississippi Organ
33 Recovery Agency (MSOP), LifeGift Organ Donation Center (TXGC), Texas Organ Sharing Alliance
34 (TXSA), and Southwest Transplant Alliance (TXSB).

35
36 District 7 includes the DSAs served by the following OPOs: Donor Network of Arizona (AZOB), Donor
37 Alliance (CORS), New Mexico Donor Services (NMOP), and Intermountain Donor Services (UTOP).

38

39 District 8 includes the DSAs served by the following OPOs: Donor Network West (CADN), Sierra Donor
40 Services (CAGS), OneLegacy (CAOP), Lifesharing - A Donate Life Organization (CASD), Legacy of Life
41 Hawaii (HIOP), Nevada Donor Network (NVLV), Pacific Northwest Transplant Bank (ORUO), and
42 LifeCenter Northwest (WALC).

43 **Geographical Area**

44 A physical area used to group potential transplant recipients in a classification. OPTN Policy uses the
45 following geographical areas for organ allocation: *district, DSA, region, nation, and zones.*

46

47 **5.4 Organ Offers**

48 **5.4.B Order of Allocation**

49 The process to allocate deceased donor organs occurs with these steps:

50

- 51 1. The match system eliminates candidates who cannot accept the deceased donor based on
52 size or blood type.
- 53 2. The match system ranks candidates according to the allocation sequences in the organ
54 allocation policies.
- 55 3. OPOs must first offer organs to potential recipients in the order that the potential recipients
56 appear on a match run.
- 57 4. If no transplant program on the initial match run accepts the organ, the host OPO may give
58 transplant programs the opportunity to update their candidates' data with the OPTN
59 Contractor. The host OPO must re-execute the match run to allocate the organ.
- 60 5. If no transplant program within the DSA or through an approved regional sharing
61 arrangement accepts the organ, the Organ Center will allocate ~~an abdominal organ first~~
62 ~~regionally and then nationally, according to allocation Policies. The Organ Center will allocate~~
63 ~~thoracic organs according to *Policy 6: Allocation of Hearts and Heart-Lungs* and *Policy 10:*~~
64 ~~*Allocation of Lungs* the organ according to policy.~~
- 65 6. Members may export deceased donor organs to hospitals in foreign countries only after
66 offering these organs to all potential recipients on the match run. Members must submit the
67 *Organ Export Verification Form* to the OPTN Contractor prior to exporting deceased donor
68 organs.
69

70 This policy does not apply to VCA transplants; instead, members must allocate VCAs according to *Policy*
71 *12.2: VCA Allocation.*

72

73 **9.6 Liver Allocation, Classifications, and Rankings**

74 ~~Livers from pediatric deceased donors are first allocated to pediatric potential transplant recipients with~~
75 ~~respect to geographical proximity to donor and medical urgency, according to *Tables 9-7 and 9-8.*~~

76

77 **9.6.B Allocation of Livers for Other Methods of Hepatic Support**

78 A liver must be offered first for transplantation according to the match run before it is offered for use in
79 other methods of hepatic support. If the liver is not accepted for transplant within 6 hours of attempted
80 allocation by the OPTN Contractor, the OPTN Contractor will offer the liver for other methods of hepatic
81 support, according to *Tables 9-6, 9-7, and 9-8* below to status 1A and 1B candidates, followed by all
82 candidates in order of their MELD or PELD scores. Livers allocated for other methods of hepatic support
83 will be offered first locally, then regionally, and then nationally in descending point order.

84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122

9.6.C Allocation of Livers by Blood Type

Livers from blood type O deceased donors may be offered to *any* of the following:

- Status 1A and 1B candidates.
- Blood type O candidates.
- Blood type B candidates with a MELD or PELD score ≥ 30 .
- Any remaining blood type compatible candidates once the blood type O and B candidates on the match run have been exhausted at the ~~regional~~ district and national level.

For status 1A or 1B candidates or candidates with a MELD or PELD score ≥ 30 , transplant hospitals may specify on the waiting list if those candidates will accept a liver from a deceased donor of any blood type. Candidates are given points depending on their blood type according to *Policy 9.5.B: Points Assigned by Blood Type*.

9.6.D MELD or PELD Points for Geographic Proximity to the Donor Hospital

At the time of the match run, a liver candidate with a MELD or PELD score registered at a transplant hospital within a 150 mile radius of the donor hospital receives three additional MELD or PELD points.

9.6.DE Sorting Within Each Classification

Within each status 1A allocation classification, candidates are sorted in the following order:

1. ~~Total points, highest to lowest (waiting time points, plus blood type compatibility points)~~ Total waiting time and blood type compatibility points (highest to lowest), according to *Policy 9.5: Liver Allocation Points*
2. Total waiting time at status 1A (highest to lowest)

Within each status 1B allocation classification, candidates are sorted in the following order:

1. ~~Total points (highest to lowest)~~ Total waiting time and blood type compatibility points (highest to lowest), according to *Policy 9.5: Liver Allocation Points*
2. Total waiting time at status 1B (highest to lowest)

Within each allocation MELD or PELD score allocation classification, candidates with ~~a score \leq six~~ a MELD of 6 or a PELD score less than or equal to 6 are sorted in the following order:

1. ~~Identical blood types, compatible blood types, then incompatible blood types~~
2. ~~Total waiting time (highest to lowest)~~

123 3. ~~Then those waiting list positions assigned to candidates with a MELD or PELD score \leq are~~
 124 ~~redistributed between the pediatric candidates, according to their PELD or MELD score~~
 125 ~~(highest to lowest).~~
 126

- 127 1. First, all candidates are sorted in the following order:
 128 a. Identical blood types, compatible blood types, then incompatible blood types
 129 b. Waiting time at the current or higher MELD or PELD score (highest to lowest)
 130 c. Total waiting time (highest to lowest)
 131 2. Then pediatric candidates are sorted by their PELD score, calculated according to *Policy*
 132 9.1.E: PELD Score (highest to lowest).
 133

134 Within each allocation MELD or PELD score allocation classification, all other candidates are sorted in the
 135 following order:

- 136
 137 1. MELD or PELD score (highest to lowest)
 138 2. Identical blood types, compatible blood types, then incompatible blood types
 139 3. Waiting time at the current or higher MELD or PELD score (highest to lowest)
 140 4. Total waiting time (highest to lowest).
 141

142 **9.6.EF Allocation of Livers from Deceased Donors at Least 18 Years Old**

143 Livers from deceased donors at least 18 years old are allocated to candidates according to *Table 9-6*
 144 below.

145

146

Table 9-6: Allocation of Livers from Deceased Donors at Least 18 Years Old

Classification	Candidates that are within the:	And are:
1	OPO's region	Adult or pediatric status 1A
2	OPO's region	Pediatric status 1B
3	OPO's DSA	MELD/PELD of 40
4	OPO's region	MELD/PELD of 40
5	OPO's DSA	MELD/PELD of 39
6	OPO's region	MELD/PELD of 39
7	OPO's DSA	MELD/PELD of 38
8	OPO's region	MELD/PELD of 38
9	OPO's DSA	MELD/PELD of 37
10	OPO's region	MELD/PELD of 37
11	OPO's DSA	MELD/PELD of 36
12	OPO's region	MELD/PELD of 36
13	OPO's DSA	MELD/PELD of 35
14	OPO's region	MELD/PELD of 35
15	OPO's DSA	MELD/PELD of at least 15
16	OPO's region	MELD/PELD of at least 15
17	Nation	Adult or Pediatric status 1A

Classification	Candidates that are within the:	And are:
18	Nation	Pediatric status 1B
19	Nation	MELD/PELD of at least 15
20	OPO's DSA	MELD/PELD less than 15
21	OPO's region	MELD/PELD less than 15
22	Nation	MELD/PELD less than 15
23	OPO's DSA	MELD/PELD at least 40 and compatible blood type
24	OPO's region	MELD/PELD at least 40 and compatible blood type
25	OPO's DSA	MELD/PELD of 39 and compatible blood type
26	OPO's region	MELD/PELD of 39 and compatible blood type
27	OPO's DSA	MELD/PELD of 38 and compatible blood type
28	OPO's region	MELD/PELD of 38 and compatible blood type
29	OPO's DSA	MELD/PELD of 37 and compatible blood type
30	OPO's region	MELD/PELD of 37 and compatible blood type
31	OPO's DSA	MELD/PELD of 36 and compatible blood type
32	OPO's region	MELD/PELD of 36 and compatible blood type
33	OPO's DSA	MELD/PELD of 35 and compatible blood type
34	OPO's region	MELD/PELD of 35 and compatible blood type
35	OPO's DSA	MELD/PELD of at least 15 and compatible blood type
36	OPO's region	MELD/PELD of at least 15 and compatible blood type
37	Nation	MELD/PELD of at least 15 and compatible blood type
38	OPO's DSA	MELD/PELD less than 15 and compatible blood type
39	OPO's region	MELD/PELD less than 15 and compatible blood type
40	Nation	MELD/PELD less than 15 and compatible blood type
41	OPO's DSA	Adult or pediatric status 1A and in need of other method of hepatic support
42	OPO's DSA	Pediatric status 1B and in need of other method of hepatic support
43	OPO's DSA	Any MELD/PELD and in need of other method of hepatic support
44	OPO's region	Adult or pediatric status 1A and in need of other method of hepatic support
45	OPO's region	Pediatric status 1B and in need of other method of hepatic support

Classification	Candidates that are within the:	And are:
46	OPO's region	Any MELD/PELD and in need of other method of hepatic support
47	Nation	Adult or pediatric status 1A and in need of other method of hepatic support
48	Nation	Pediatric status 1B and in need of other method of hepatic support
49	Nation	Any MELD/PELD and in need of other method of hepatic support
50	OPO's DSA	Any MELD/PELD in need of other method of hepatic support, and a blood type compatible with the donor
51	OPO's region	Any MELD/PELD in need of other method of hepatic support, and blood type compatible with the donor
52	Nation	Any MELD/PELD in need of other method of hepatic support, and blood type compatible with the donor

147

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>1</u>	<u>OPO's district</u>	<u>Adult or pediatric status 1A</u>	<u>Any</u>
<u>2</u>	<u>OPO's district</u>	<u>Pediatric status 1B</u>	<u>Any</u>
<u>3</u>	<u>OPO's district</u>	<u>MELD or PELD of at least 29</u>	<u>Any</u>
<u>4</u>	<u>OPO's DSA</u>	<u>MELD or PELD of at least 15</u>	<u>Any</u>
<u>5</u>	<u>OPO's district</u>	<u>MELD or PELD of at least 15</u>	<u>Any</u>
<u>6</u>	<u>Nation</u>	<u>Adult or pediatric status 1A</u>	<u>Any</u>
<u>7</u>	<u>Nation</u>	<u>Pediatric status 1B</u>	<u>Any</u>
<u>8</u>	<u>Nation</u>	<u>MELD or PELD of at least 15</u>	<u>Any</u>
<u>9</u>	<u>OPO's DSA</u>	<u>MELD or PELD less than 15</u>	<u>Any</u>
<u>10</u>	<u>OPO's district</u>	<u>MELD or PELD less than 15</u>	<u>Any</u>
<u>11</u>	<u>Nation</u>	<u>MELD or PELD less than 15</u>	<u>Any</u>
<u>12</u>	<u>OPO's district</u>	<u>MELD or PELD of at least 29, blood type compatible</u>	<u>O</u>
<u>13</u>	<u>OPO's DSA</u>	<u>MELD or PELD of at least 15, blood type compatible</u>	<u>O</u>
<u>14</u>	<u>OPO's district</u>	<u>MELD or PELD of at least 15, blood type compatible</u>	<u>O</u>
<u>15</u>	<u>Nation</u>	<u>MELD or PELD of at least 15, blood type compatible</u>	<u>O</u>
<u>16</u>	<u>OPO's DSA</u>	<u>MELD or PELD less than 15, blood type compatible</u>	<u>O</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>17</u>	<u>OPO's district</u>	<u>MELD or PELD less than 15, blood type compatible</u>	<u>O</u>
<u>18</u>	<u>Nation</u>	<u>MELD or PELD less than 15, blood type compatible</u>	<u>O</u>
<u>19</u>	<u>OPO's DSA</u>	<u>Adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>20</u>	<u>OPO's DSA</u>	<u>Pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>21</u>	<u>OPO's DSA</u>	<u>Any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>22</u>	<u>OPO's district</u>	<u>Adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>23</u>	<u>OPO's district</u>	<u>Pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>24</u>	<u>OPO's district</u>	<u>Any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>25</u>	<u>Nation</u>	<u>Adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>25</u>	<u>Nation</u>	<u>Pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>26</u>	<u>Nation</u>	<u>Any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>27</u>	<u>OPO's DSA</u>	<u>Any MELD or PELD, in need of other method of hepatic support, blood type compatible</u>	<u>O</u>
<u>28</u>	<u>OPO's district</u>	<u>Any MELD or PELD, in need of other method of hepatic support, blood type compatible</u>	<u>O</u>
<u>29</u>	<u>Nation</u>	<u>Any MELD or PELD, in need of other method of hepatic support, blood type compatible</u>	<u>O</u>

148

149

9.6.FG Allocation of Livers from Deceased Donors 11 to 17 Years Old

150 Livers from deceased donors 11 to 17 years old are allocated to candidates according to *Table 9-7* below.

151

Table 9-7: Allocation of Livers from Deceased Donors 11 to 17 Years Old

Classification	Candidates that are within the:	And are:
1	OPO's DSA	Pediatric status 1A
2	OPO's region	Pediatric status 1A
3	OPO's DSA	Adult status 1A
4	OPO's region	Adult status 1A
5	OPO's DSA	Pediatric status 1B
6	OPO's region	Pediatric status 1B
7	OPO's DSA or region	Any PELD
8	OPO's DSA	MELD of at least 15 and 12 to 17 years old
9	OPO's DSA	MELD of at least 15 and at least 18 years old
10	OPO's region	MELD of at least 15 and 12 to 17 years old
11	OPO's region	MELD of at least 15 and at least 18 years old
12	OPO's DSA	MELD less than 15 and 12 to 17 years old
13	OPO's DSA	MELD less than 15 and at least 18 years old
14	OPO's region	MELD less than 15 and 12 to 17 years old
15	OPO's region	MELD less than 15 and at least 18 years old
16	Nation	Pediatric status 1A
17	Nation	Adult status 1A
18	Nation	Pediatric status 1B
19	Nation	Any PELD
20	Nation	Any MELD and 12 to 17 years old
21	Nation	Any MELD and at least 18 years old
22	OPO's region	Any PELD, and compatible blood type
23	OPO's DSA	MELD at least 15, 12 to 17 years old, and Compatible blood type
24	OPO's DSA	MELD at least 15, at least 18 years old, and compatible blood type
25	OPO's region	MELD at least 15, 12 to 17 years old, and compatible blood type
26	OPO's region	MELD at least 15, at least 18 years old, and compatible blood type
27	OPO's DSA	MELD less than 15, 12 to 17 years old, and compatible blood type
28	OPO's DSA	MELD less than 15, at least 18 years old, and compatible blood type
29	OPO's region	MELD less than 15, 12 to 17 years old, and compatible blood type
30	OPO's region	MELD less than 15, at least 18 years old, and compatible blood type
31	Nation	0 to 11 years old and compatible blood type

Classification	Candidates that are within the:	And are:
32	Nation	12 to 17 years old and compatible blood type
33	Nation	Any MELD, at least 18 years old, and compatible blood type
34	OPO's DSA	Adult or pediatric status 1A and in need of other method of hepatic support
35	OPO's DSA	Pediatric status 1B and in need of other method of hepatic support
36	OPO's DSA	Any MELD/PELD and in need of other method of hepatic support
37	OPO's region	Adult or pediatric status 1A and in need of other method of hepatic support
38	OPO's region	Pediatric status 1B and in need of other method of hepatic support
39	OPO's region	Any MELD/PELD and in need of other method of hepatic support
40	Nation	Adult or pediatric status 1A and in need of other method of hepatic support
41	Nation	Pediatric status 1B and in need of other method of hepatic support
42	Nation	Any MELD/PELD and in need of other method of hepatic support
43	OPO's DSA	Any MELD/PELD in need of other method of hepatic support, and compatible blood type
44	OPO's region	Any MELD/PELD in need of other method of hepatic support, and compatible blood type
45	Nation	Any MELD/PELD in need of other method of hepatic support, and compatible blood type

153

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>1</u>	<u>OPO's district</u>	<u>Pediatric status 1A</u>	<u>Any</u>
<u>2</u>	<u>OPO's district</u>	<u>Adult status 1A</u>	<u>Any</u>
<u>3</u>	<u>OPO's district</u>	<u>Pediatric status 1B</u>	<u>Any</u>
<u>4</u>	<u>OPO's district</u>	<u>Any PELD</u>	<u>Any</u>
<u>5</u>	<u>OPO's district</u>	<u>MELD of at least 15, 12 to 17 years old</u>	<u>Any</u>
<u>6</u>	<u>OPO's district</u>	<u>MELD of at least 15, at least 18 years old</u>	<u>Any</u>
<u>7</u>	<u>OPO's district</u>	<u>MELD less than 15, 12 to 17 years old</u>	<u>Any</u>
<u>8</u>	<u>OPO's district</u>	<u>MELD less than 15, at least 18 years old</u>	<u>Any</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>9</u>	<u>Nation</u>	<u>Pediatric status 1A</u>	<u>Any</u>
<u>10</u>	<u>Nation</u>	<u>Adult status 1A</u>	<u>Any</u>
<u>11</u>	<u>Nation</u>	<u>Pediatric status 1B</u>	<u>Any</u>
<u>12</u>	<u>Nation</u>	<u>Any PELD</u>	<u>Any</u>
<u>13</u>	<u>Nation</u>	<u>Any MELD, 12 to 17 years old</u>	<u>Any</u>
<u>14</u>	<u>Nation</u>	<u>Any MELD, at least 18 years old</u>	<u>Any</u>
<u>15</u>	<u>OPO's district</u>	<u>Any PELD, blood type compatible</u>	<u>O</u>
<u>16</u>	<u>OPO's district</u>	<u>MELD at least 15, 12 to 17 years old, blood type compatible</u>	<u>O</u>
<u>17</u>	<u>OPO's district</u>	<u>MELD at least 15, at least 18 years old, blood type compatible</u>	<u>O</u>
<u>18</u>	<u>OPO's district</u>	<u>MELD less than 15, 12 to 17 years old, blood type compatible</u>	<u>O</u>
<u>19</u>	<u>OPO's district</u>	<u>MELD less than 15, at least 18 years old, blood type compatible</u>	<u>O</u>
<u>20</u>	<u>Nation</u>	<u>Any PELD, blood type compatible</u>	<u>O</u>
<u>21</u>	<u>Nation</u>	<u>Any MELD, 12 to 17 years old, blood type compatible</u>	<u>O</u>
<u>22</u>	<u>Nation</u>	<u>Any MELD, at least 18 years old, blood type compatible</u>	<u>O</u>
<u>23</u>	<u>OPO's district</u>	<u>Adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>24</u>	<u>OPO's district</u>	<u>Pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>25</u>	<u>OPO's district</u>	<u>Any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>26</u>	<u>Nation</u>	<u>Adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>27</u>	<u>Nation</u>	<u>Pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>28</u>	<u>Nation</u>	<u>Any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>29</u>	<u>OPO's district</u>	<u>Any MELD or PELD, in need of other method of hepatic support, blood type compatible</u>	<u>O</u>
<u>30</u>	<u>Nation</u>	<u>Any MELD or PELD, in need of other method of hepatic support, blood type compatible</u>	<u>O</u>

154

9.6.GH Allocation of Livers from Deceased Donors Less than 11 Years Old

155

156

157 Livers from donors less than 11 years old are allocated to candidates according to *Table 9-8* below.

158

159

Table 9-8: Allocation of Livers from Deceased Donors less than 11 Years Old

Classification	Candidates that are within the...	And are...
1	OPO's region	Pediatric status 1A
2	Nation	Pediatric status 1A (0-11)
3	OPO's DSA	Adult status 1A
4	OPO's Region	Adult status 1A
5	OPO's Region	Pediatric status 1B
6	OPO's Region	Any PELD
7	OPO's DSA	MELD of at least 15 and 12 to 17 years old
8	OPO's DSA	MELD of at least 15 and at least 18 years old
9	OPO's Region	MELD of at least 15 and at least 12 to 17 years old
10	OPO's Region	MELD of at least 15 and at least 18 years old
11	OPO's DSA	MELD less than 15 and 12 to 17 years old
12	OPO's DSA	MELD less than 15 and at least 18 years old
13	OPO's Region	MELD less than 15 and 12 to 17 years old
14	OPO's Region	MELD less than 15 and at least 18 years old
15	Nation	Status 1A and 12 to 17 years old
16	Nation	Status 1A and at least 18 years old
17	Nation	Status 1B and 0 to 17 years old
18	Nation	Any PELD
19	Nation	Any MELD and 12 to 17 years old

Classification	Candidates that are within the...	And are...
20	Nation	Any MELD and at least 18 years old
21	OPO's Region	Any PELD and compatible blood type
22	OPO's DSA	MELD of at least 15, 12 to 17 years old, and compatible blood type
23	OPO's DSA	MELD of at least 15, at least 18 years old, and compatible blood type
24	OPO's Region	MELD of at least 15, 12 to 17 years old, and compatible blood type
25	OPO's Region	MELD of at least 15, at least 18 years old, and compatible blood type
26	OPO's DSA	MELD less than 15, 12 to 17 years old, and compatible blood type
27	OPO's DSA	MELD less than 15, at least 18 years old, and compatible blood type
28	Region	MELD less than 15, 12 to 17 years old, and compatible blood type
29	Region	MELD less than 15, at least 18 years old, and compatible blood type
30	Nation	Any PELD and compatible blood type
31	Nation	Any MELD, 12 to 17 years old, and compatible blood type
32	Nation	Any MELD, at least 18 years old, and compatible blood type
33	OPO's DSA	Adult or pediatric status 1A and in need of other method of hepatic support
34	OPO's DSA	Pediatric status 1B and in need of other method of hepatic support
35	OPO's DSA	Any MELD/PELD and in need of other method of hepatic support
36	OPO's region	Adult or pediatric status 1A and in need of other method of hepatic support
37	OPO's region	Pediatric status 1B and in need of other method of hepatic support
38	OPO's region	Any MELD/PELD, any age, and in need of other method of hepatic support
39	Nation	Adult or pediatric status 1A and in need of other method of hepatic support
40	Nation	Pediatric status 1B and in need of other method of hepatic support
41	Nation	Any MELD/PELD, any age, and in need of other method of hepatic support
42	OPO's DSA	Any MELD/PELD, any age, in need of other method of hepatic support, and compatible blood type

Classification	Candidates that are within the...	And are...
43	OPO's region	Any MELD/PELD, any age, in need of other method of hepatic support, and compatible blood type
44	Nation	Any MELD/PELD, any age, in need of other method of hepatic support, and compatible blood type

Classification	Candidates that are within the...	And are...	When the donor is this blood type:
<u>1</u>	<u>OPO's district</u>	<u>Pediatric status 1A</u>	<u>Any</u>
<u>2</u>	<u>Nation</u>	<u>Pediatric status 1A, 0 to 11 years old</u>	<u>Any</u>
<u>3</u>	<u>OPO's district</u>	<u>Adult status 1A</u>	<u>Any</u>
<u>4</u>	<u>OPO's district</u>	<u>Pediatric status 1B</u>	<u>Any</u>
<u>5</u>	<u>OPO's district</u>	<u>Any PELD</u>	<u>Any</u>
<u>6</u>	<u>OPO's district</u>	<u>MELD of at least 15, 12 to 17 years old</u>	<u>Any</u>
<u>7</u>	<u>OPO's district</u>	<u>MELD of at least 15, at least 18 years old</u>	<u>Any</u>
<u>8</u>	<u>OPO's district</u>	<u>MELD less than 15, 12 to 17 years old</u>	<u>Any</u>
<u>9</u>	<u>OPO's district</u>	<u>MELD less than 15, at least 18 years old</u>	<u>Any</u>
<u>10</u>	<u>Nation</u>	<u>Pediatric status 1A, 12 to 17 years old</u>	<u>Any</u>
<u>11</u>	<u>Nation</u>	<u>Adult status 1A</u>	<u>Any</u>
<u>12</u>	<u>Nation</u>	<u>Pediatric status 1B, 0 to 17 years old</u>	<u>Any</u>
<u>13</u>	<u>Nation</u>	<u>Any PELD</u>	<u>Any</u>
<u>14</u>	<u>Nation</u>	<u>Any MELD, 12 to 17 years old</u>	<u>Any</u>
<u>15</u>	<u>Nation</u>	<u>Any MELD, at least 18 years old</u>	<u>Any</u>
<u>16</u>	<u>OPO's district</u>	<u>Any PELD, compatible blood type</u>	<u>O</u>
<u>17</u>	<u>OPO's district</u>	<u>MELD of at least 15, 12 to 17 years old, blood type compatible</u>	<u>O</u>
<u>18</u>	<u>OPO's district</u>	<u>MELD of at least 15, at least 18 years old, blood type compatible</u>	<u>O</u>
<u>19</u>	<u>OPO's district</u>	<u>MELD less than 15, 12 to 17 years old, blood type compatible</u>	<u>O</u>
<u>20</u>	<u>OPO's district</u>	<u>MELD less than 15, at least 18 years old, blood type compatible</u>	<u>O</u>
<u>21</u>	<u>Nation</u>	<u>Any PELD, blood type compatible</u>	<u>O</u>
<u>22</u>	<u>Nation</u>	<u>Any MELD, 12 to 17 years old, blood type compatible</u>	<u>O</u>
<u>23</u>	<u>Nation</u>	<u>Any MELD, at least 18 years old, blood type compatible</u>	<u>O</u>

<u>Classification</u>	<u>Candidates that are within the...</u>	<u>And are...</u>	<u>When the donor is this blood type:</u>
<u>24</u>	<u>OPO's district</u>	<u>Adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>25</u>	<u>OPO's district</u>	<u>Pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>26</u>	<u>OPO's district</u>	<u>Any MELD or PELD, any age, in need of other method of hepatic support</u>	<u>Any</u>
<u>27</u>	<u>Nation</u>	<u>Adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>28</u>	<u>Nation</u>	<u>Pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>29</u>	<u>Nation</u>	<u>Any MELD or PELD, any age, in need of other method of hepatic support</u>	<u>Any</u>
<u>30</u>	<u>OPO's district</u>	<u>Any MELD or PELD, any age, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>31</u>	<u>Nation</u>	<u>Any MELD or PELD, any age, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>

161

162

163

9.6.HI Allocation of Liver-Intestines from Deceased Donors at Least 18 Years Old

164

Livers and intestines from deceased donors at least 18 years old are allocated to candidates according to Table 9-9 below:

165

166

167

Table 9-9: Allocation of Liver-Intestines from Deceased Donors at Least 18 Years Old

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>
<u>1</u>	<u>OPO's region</u>	<u>Liver or liver intestine, adult or pediatric status 1A</u>
<u>2</u>	<u>OPO's region</u>	<u>Liver or liver intestine, pediatric status 1B</u>
<u>3</u>	<u>OPO's DSA</u>	<u>Liver or liver intestine, MELD/PELD of 40</u>
<u>4</u>	<u>OPO's region</u>	<u>Liver or liver intestine, MELD/PELD of 40</u>
<u>5</u>	<u>OPO's DSA</u>	<u>Liver or liver intestine, MELD/PELD of 39</u>
<u>6</u>	<u>OPO's region</u>	<u>Liver or liver intestine, MELD/PELD of 39</u>
<u>7</u>	<u>OPO's DSA</u>	<u>Liver or liver intestine, MELD/PELD of 38</u>
<u>8</u>	<u>OPO's region</u>	<u>Liver or liver intestine, MELD/PELD of 38</u>
<u>9</u>	<u>OPO's DSA</u>	<u>Liver or liver intestine, MELD/PELD of 37</u>
<u>10</u>	<u>OPO's region</u>	<u>Liver or liver intestine, MELD/PELD of 37</u>
<u>11</u>	<u>OPO's DSA</u>	<u>Liver or liver intestine, MELD/PELD of 36</u>
<u>12</u>	<u>OPO's region</u>	<u>Liver or liver intestine, MELD/PELD of 36</u>

Classification	Candidates that are within the:	And are:
13	OPO's DSA	Liver or liver intestine, MELD/PELD of 35
14	OPO's region	Liver or liver intestine, MELD/PELD of 35
15	OPO's DSA	Liver or liver intestine, MELD/PELD of at least 29
16	Nation	Liver or liver intestine, LI/IN status 1A
17	Nation	Liver or liver intestine, LI/IN status 1B
18	Nation	Liver or liver intestine, LI/IN MELD/PELD (highest to lowest)
19	OPO's DSA	Liver or liver intestine, MELD/PELD of at least 15
20	OPO's region	Liver or liver intestine, MELD/PELD less than 15
21	Nation	Liver or liver intestine, adult or pediatric status 1A
22	Nation	Liver or liver intestine, pediatric status 1B
23	Nation	Liver or liver intestine, MELD/PELD of at least 15
24	OPO's DSA	Liver or liver intestine, MELD/PELD less than 15
25	OPO's region	Liver or liver intestine, MELD/PELD less than 15
26	Nation	Liver or liver intestine, MELD/PELD less than 15
27	OPO's DSA	Liver or liver intestine, MELD/PELD at least 40 and compatible blood type
28	OPO's region	Liver or liver intestine, MELD/PELD at least 40 and compatible blood type
29	OPO's DSA	Liver or liver intestine, MELD/PELD of 39 and compatible blood type
30	OPO's region	Liver or liver intestine, MELD/PELD of 39 and compatible blood type
31	OPO's DSA	Liver or liver intestine, MELD/PELD of 38 and compatible blood type
32	OPO's region	Liver or liver intestine, MELD/PELD of 38 and compatible blood type
33	OPO's DSA	Liver or liver intestine, MELD/PELD of 37 and compatible blood type
34	OPO's region	Liver or liver intestine, MELD/PELD of 37 and compatible blood type
35	OPO's DSA	Liver or liver intestine, MELD/PELD of 36 and compatible blood type
36	OPO's region	Liver or liver intestine, MELD/PELD of 36 and compatible blood type
37	OPO's DSA	Liver or liver intestine, MELD/PELD of 35 and compatible blood type
38	OPO's region	Liver or liver intestine, MELD/PELD of 35 and compatible blood type
39	OPO's DSA	Liver or liver intestine, MELD/PELD of at least 15 and compatible blood type

Classification	Candidates that are within the:	And are:
40	OPO's region	Liver or liver-intestine, MELD/PELD of at least 15 and compatible blood type
41	Nation	Liver or liver-intestine, MELD/PELD of at least 15 and compatible blood type
42	OPO's DSA	Liver or liver-intestine, MELD/PELD less than 15 and compatible blood type
43	OPO's region	Liver or liver-intestine, MELD/PELD less than 15 and compatible blood type
44	Nation	Liver or liver-intestine, MELD/PELD less than 15 and compatible blood type
45	OPO's DSA	Liver or liver-intestine, adult or pediatric status 1A and in need of other method of hepatic support
46	OPO's DSA	Liver or liver-intestine, pediatric status 1B and in need of other method of hepatic support
47	OPO's DSA	Liver or liver-intestine, any MELD/PELD and in need of other method of hepatic support
48	OPO's region	Liver or liver-intestine, adult or pediatric status 1A and in need of other method of hepatic support
49	OPO's region	Liver or liver-intestine, pediatric status 1B and in need of other method of hepatic support
50	OPO's region	Liver or liver-intestine, any MELD/PELD and in need of other method of hepatic support
51	Nation	Liver or liver-intestine, adult or pediatric status 1A and in need of other method of hepatic support
52	Nation	Liver or liver-intestine, pediatric status 1B and in need of other method of hepatic support
53	Nation	Liver or liver-intestine, any MELD/PELD and in need of other method of hepatic support
54	OPO's DSA	Liver or liver-intestine, any MELD/PELD in need of other method of hepatic support, and a blood type compatible with the donor
55	OPO's region	Liver or liver-intestine, any MELD/PELD in need of other method of hepatic support, and blood type compatible with the donor
56	Nation	Liver or liver-intestine, any MELD/PELD in need of other method of hepatic support, and blood type compatible with the donor

168

169

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>1</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, adult or pediatric status 1A</u>	<u>Any</u>
<u>2</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, pediatric status 1B</u>	<u>Any</u>
<u>3</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 30</u>	<u>Any</u>
<u>4</u>	<u>Nation</u>	<u>Liver-intestine, adult or pediatric status 1A</u>	<u>Any</u>
<u>5</u>	<u>Nation</u>	<u>Liver-intestine, pediatric status 1B</u>	<u>Any</u>
<u>6</u>	<u>Combined OPO's district and nation</u>	<u>Liver-intestine, any MELD or PELD</u>	<u>Any</u>
<u>7</u>	<u>OPO's DSA</u>	<u>Liver, MELD or PELD of at least 15</u>	<u>Any</u>
<u>8</u>	<u>OPO's district</u>	<u>Liver, MELD or PELD of at least 15</u>	<u>Any</u>
<u>9</u>	<u>Nation</u>	<u>Liver, adult or pediatric status 1A</u>	<u>Any</u>
<u>10</u>	<u>Nation</u>	<u>Liver, pediatric status 1B</u>	<u>Any</u>
<u>11</u>	<u>Nation</u>	<u>Liver, MELD or PELD of at least 15</u>	<u>Any</u>
<u>12</u>	<u>OPO's DSA</u>	<u>Liver, MELD or PELD less than 15</u>	<u>Any</u>
<u>13</u>	<u>OPO's district</u>	<u>Liver, MELD or PELD less than 15</u>	<u>Any</u>
<u>14</u>	<u>Nation</u>	<u>Liver, MELD or PELD less than 15</u>	<u>Any</u>
<u>15</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 40, blood type compatible</u>	<u>O</u>
<u>16</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 40, blood type compatible</u>	<u>O</u>
<u>17</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 39, blood type compatible</u>	<u>O</u>
<u>18</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 39, blood type compatible</u>	<u>O</u>
<u>19</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 38, blood type compatible</u>	<u>O</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>20</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 38, blood type compatible</u>	<u>0</u>
<u>21</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 37, blood type compatible</u>	<u>0</u>
<u>22</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 37, blood type compatible</u>	<u>0</u>
<u>23</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 36, blood type compatible</u>	<u>0</u>
<u>24</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 36, blood type compatible</u>	<u>0</u>
<u>25</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 35, blood type compatible</u>	<u>0</u>
<u>26</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 35, blood type compatible</u>	<u>0</u>
<u>27</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 34, blood type compatible</u>	<u>0</u>
<u>28</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 34, blood type compatible</u>	<u>0</u>
<u>29</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 33, blood type compatible</u>	<u>0</u>
<u>30</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 33, blood type compatible</u>	<u>0</u>
<u>31</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 32, blood type compatible</u>	<u>0</u>
<u>32</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 32, blood type compatible</u>	<u>0</u>
<u>33</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 31, blood type compatible</u>	<u>0</u>
<u>34</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 31, blood type compatible</u>	<u>0</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>35</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, MELD or PELD of at least 30, blood type compatible</u>	<u>O</u>
<u>36</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD or PELD of at least 30, blood type compatible</u>	<u>O</u>
<u>37</u>	<u>Combined OPO's district and nation</u>	<u>Liver-intestine, any MELD or PELD, blood type compatible</u>	<u>O</u>
<u>38</u>	<u>OPO's DSA</u>	<u>Liver, MELD or PELD of at least 15, blood type compatible</u>	<u>O</u>
<u>39</u>	<u>OPO's district</u>	<u>Liver, MELD or PELD of at least 15, blood type compatible</u>	<u>O</u>
<u>40</u>	<u>Nation</u>	<u>Liver, MELD or PELD of at least 15, blood type compatible</u>	<u>O</u>
<u>41</u>	<u>OPO's DSA</u>	<u>Liver, MELD or PELD less than 15, blood type compatible</u>	<u>O</u>
<u>42</u>	<u>OPO's district</u>	<u>Liver, MELD or PELD less than 15, blood type compatible</u>	<u>O</u>
<u>43</u>	<u>Nation</u>	<u>Liver, MELD or PELD less than 15, blood type compatible</u>	<u>O</u>
<u>44</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>45</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>46</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>47</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>48</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>49</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>50</u>	<u>Nation</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>51</u>	<u>Nation</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>52</u>	<u>Nation</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>53</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>54</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>55</u>	<u>Nation</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>56</u>	<u>OPO's DSA</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>57</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>58</u>	<u>Nation</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
59	<u>OPO's DSA</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
60	<u>OPO's district</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
61	<u>Nation</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>

171

172

173

9.6.J Allocation of Liver-Intestine from Donors at Least 11 Years of age

174 For combined liver-intestine allocation from donors at least 11 years of age, the liver must first be offered
175 as follows:

176

- 177 1. According to Policy 9.6.F: Allocation of Livers from Deceased Donors 11 to 17 Years Old
178 2. Sequentially to each potential liver recipient, including all MELD/PELD potential recipients,
179 through national Status 1A and 1B offers
180

181 The liver may then be offered to combined liver-intestine potential recipients sequentially according to the
182 intestine match run.

183

184 **9.6.J Allocation of Combined Liver-Intestines from Donors 11 to 17 Years**

185

Old

186 For combined liver-intestine allocation from donors 11 to 17 years old, the liver must first be offered as
187 follows:

188

- 189 1. According to Policy 9.6.F: Allocation of Livers from Deceased Donors 11 to 17 Years Old
190 2. Sequentially to each liver candidate, including all MELD and PELD candidates, through
191 national Status 1A and 1B offers
192

193 The liver may then be offered to combined liver-intestine potential recipients sequentially according to the
194 intestine match run.

195

196

9.6.1K Allocation of Liver-Intestines from Donors less than 11 Years Old

197

Livers and intestines from donors less than 11 years old are allocated to candidates according to Table 9-10 below.

198

199

200

Table 9-10: Allocation of Combined Liver-Intestines from Donors less than 11 Years Old

Classification	Candidates that are within the:	And are:
The following classifications appear for all blood types		
1	OPO's region	Liver or liver-intestine, Pediatric Status 1A
2	Nation	Liver or liver-intestine, Pediatric Status 1A, and 0 to less than 12 years of age
3	Nation	Liver-intestine, Pediatric Status 1A, and 12 to less than 18 years of age
4	OPO's DSA	Liver or liver-intestine, Adult Status 1A
5	OPO's region	Liver or liver-intestine, Adult Status 1A
6	OPO's region	Liver or liver-intestine, Pediatric Status 1B
7	OPO's region	Liver or liver-intestine, PELD greater than 20, and 0 to less than 12 years of age
8	Nation	Liver-intestine, Pediatric Status 1B
9	Nation	Liver-intestine, PELD greater than 20
10	OPO's region	Liver or liver-intestine, PELD of less than 24
11	OPO's DSA	Liver or liver-intestine, MELD of at least 15, and 12 to less than 18 years of age
12	OPO's DSA	Liver or liver-intestine, MELD of at least 15, and at least 18 years of age
13	OPO's region	Liver or liver-intestine, MELD of at least 15, and 12 to less than 18 years of age
14	OPO's region	Liver or liver-intestine, MELD of at least 15, and at least 18 years of age
15	OPO's DSA	Liver or liver-intestine, MELD less than 15, and 12 to less than 18 years of age

Classification	Candidates that are within the:	And are:
16	OPO's DSA	Liver or liver intestine, MELD less than 15, and at least 18 years of age
17	OPO's region	Liver or liver intestine, MELD less than 15, and 12 to less than 18 years of age
18	OPO's region	Liver or liver intestine, MELD less than 15, and at least 18 years of age
19	Nation	Liver, Pediatric Status 1A, and 12 to less than 18 years of age
20	Nation	Liver or liver intestine, Adult Status 1A
21	Nation	Liver, Pediatric Status 1B
22	Nation	Liver or liver intestine, with any PELD
23	Nation	Liver or liver intestine, with any MELD/PELD, and 12 to less than 18 years of age
24	Nation	Liver or liver intestine, with any MELD, and at least 18 years of age
The following classifications appear for all blood types		
25	OPO's region	Liver or liver intestine, with any PELD, and compatible blood type match with the donor
26	OPO's DSA	Liver or liver intestine, MELD of at least 15, 12 to less than 18 years of age, and compatible blood type match with the donor
27	OPO's DSA	Liver or liver intestine, MELD of at least 15, at least 18 years of age, and compatible blood type match with the donor
28	OPO's region	Liver or liver intestine, MELD of at least 15, 12 to less than 18 years of age, and compatible blood type match with the donor
29	OPO's region	Liver or liver intestine, MELD of at least 15, at least 18 years of age, and compatible blood type match with the donor
30	OPO's DSA	Liver or liver intestine, MELD less than 15, 12 to less than 18 years of age, and compatible blood type match with the donor

Classification	Candidates that are within the:	And are:
31	OPO's DSA	Liver or liver intestine, MELD less than 15, at least 18 years of age, and compatible blood type match with the donor
32	OPO's region	Liver or liver intestine, MELD less than 15, 12 to less than 18 years of age, and compatible blood type match with the donor
33	OPO's region	Liver or liver intestine, MELD less than 15, at least 18 years of age, and compatible blood type match with the donor
34	Nation	Liver or liver intestine, with any PELD, and compatible blood type match with the donor
35	Nation	Liver or liver intestine, with any MELD, 12 to less than 18 years of age, and compatible blood type match with the donor
36	Nation	Liver or liver intestine, with any MELD, at least 18 years of age, and compatible blood type match with the donor
The following classifications appear for all blood types		
37	OPO's DSA	Liver or liver intestine, Adult or Pediatric Status 1A, and in need of other method of hepatic support
38	OPO's DSA	Liver or liver intestine, Pediatric Status 1B, and in need of other method of hepatic support
39	OPO's DSA	Liver or liver intestine, with any MELD/PELD, and in need of other method of hepatic support
40	OPO's region	Liver or liver intestine, Adult or Pediatric Status 1A, and in need of other method of hepatic support
41	OPO's region	Liver or liver intestine, Pediatric Status 1B, and in need of other method of hepatic support
42	OPO's region	Liver or liver intestine, with any MELD/PELD, and in need of other method of hepatic support
43	Nation	Liver or liver intestine, Adult or Pediatric Status 1A, and in need of other method of hepatic support
44	Nation	Liver or liver intestine, Pediatric Status 1B, and in need of other method of hepatic support

Classification	Candidates that are within the:	And are:
45	Nation	Liver or liver intestine, with any MELD/PELD, and in need of other method of hepatic support
The following classifications appear for all blood types		
46	OPO's DSA	Liver or liver intestine, with any MELD/PELD, in need of other method of hepatic support, and compatible blood type match with the donor
47	OPO's region	Liver or liver intestine, with any MELD/PELD, in need of other method of hepatic support, and compatible blood type match with the donor
48	Nation	Liver or liver intestine, with any MELD/PELD, in need of other method of hepatic support, and compatible blood type match with the donor

201

202

Table 9-10: Allocation of Combined Liver-Intestines from Donors less than 11 Years Old

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>1</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, pediatric status 1A</u>	<u>Any</u>
<u>2</u>	<u>Nation</u>	<u>Liver or liver-intestine, pediatric status 1A, 0 to 11 years old</u>	<u>Any</u>
<u>3</u>	<u>Nation</u>	<u>Liver-intestine, pediatric status 1A, 12 to 17 years old</u>	<u>Any</u>
<u>4</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, adult status 1A</u>	<u>Any</u>
<u>5</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, pediatric status 1B</u>	<u>Any</u>
<u>6</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, PELD greater than 20</u>	<u>Any</u>
<u>7</u>	<u>Nation</u>	<u>Liver-intestine, pediatric status 1B</u>	<u>Any</u>
<u>8</u>	<u>Nation</u>	<u>Liver-intestine, PELD greater than 20</u>	<u>Any</u>
<u>9</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, PELD less than or equal to 20</u>	<u>Any</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>10</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD of at least 15, 12 to 17 years old</u>	<u>Any</u>
<u>11</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD of at least 15, at least 18 years old</u>	<u>Any</u>
<u>12</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD less than 15, 12 to 17 years old</u>	<u>Any</u>
<u>13</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD less than 15, at least 18 years old</u>	<u>Any</u>
<u>14</u>	<u>Nation</u>	<u>Liver, pediatric status 1A, 12 to 17 years old</u>	<u>Any</u>
<u>15</u>	<u>Nation</u>	<u>Liver or liver-intestine, adult status 1A</u>	<u>Any</u>
<u>16</u>	<u>Nation</u>	<u>Liver, pediatric status 1B</u>	<u>Any</u>
<u>17</u>	<u>Nation</u>	<u>Liver or liver-intestine, any PELD</u>	<u>Any</u>
<u>18</u>	<u>Nation</u>	<u>Liver or liver-intestine, any MELD, 12 to 17 years old</u>	<u>Any</u>
<u>19</u>	<u>Nation</u>	<u>Liver or liver-intestine, any MELD, at least 18 years old</u>	<u>Any</u>
<u>20</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, any PELD, blood type compatible</u>	<u>O</u>
<u>21</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD of at least 15, 12 to 17 years old, and blood type compatible</u>	<u>O</u>
<u>22</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD of at least 15, at least 18 years old, and blood type compatible</u>	<u>O</u>
<u>23</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD less than 15, 12 to 17 years old, and blood type compatible</u>	<u>O</u>
<u>24</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, MELD less than 15, at least 18 years old, and blood type compatible</u>	<u>O</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>25</u>	<u>Nation</u>	<u>Liver or liver-intestine, any PELD, blood type compatible</u>	<u>O</u>
<u>26</u>	<u>Nation</u>	<u>Liver or liver-intestine, any MELD, 12 to 17 years old, and blood type compatible</u>	<u>O</u>
<u>27</u>	<u>Nation</u>	<u>Liver or liver-intestine, any MELD, at least 18 years old, and blood type compatible</u>	<u>O</u>
<u>28</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>29</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>30</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>31</u>	<u>Nation</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support</u>	<u>Any</u>
<u>32</u>	<u>Nation</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support</u>	<u>Any</u>
<u>33</u>	<u>Nation</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support</u>	<u>Any</u>
<u>34</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>35</u>	<u>Nation</u>	<u>Liver or liver-intestine, adult or pediatric status 1A, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>

<u>Classification</u>	<u>Candidates that are within the:</u>	<u>And are:</u>	<u>When the donor is this blood type:</u>
<u>36</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>37</u>	<u>Nation</u>	<u>Liver or liver-intestine, pediatric status 1B, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>38</u>	<u>OPO's district</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>
<u>39</u>	<u>Nation</u>	<u>Liver or liver-intestine, any MELD or PELD, in need of other method of hepatic support, and blood type compatible</u>	<u>O</u>

203

204 ~~Blood type matches for combined liver-intestine allocation are determined according to *Policy 9.6.C:*~~
205 ~~*Allocation of Livers by Blood Type.*~~

206

207 [*Cross-references to headings and table captions affected by the re-numbering of this policy will also be*
208 *changed as necessary.*]

209

210

#

211