

Organ Donor Allocation System for Liver Transplantation in the Kingdom of Saudi Arabia: Call for Major Revision

Equitable allocation of scarce health resources is probably the most challenging task facing decision makers in any health care system. This is particularly true in the field of organ transplantation nationally and globally. The disparity between organ supply and organ demand is high and increasing. The consequences are grave in cases of end-stage organ failure when artificial replacement therapy is not available, such as in end-stage liver disease.

In the United States, ensuring fair organ allocation continues to be a major concern of the public as well as of the transplant community. Organ allocation was based on Child–Pugh score and the waiting time on the liver transplant list, but that did not lead to equitable distribution. The Department of Health and Human Services issued a mandate in 1998 stating that “deceased donor livers for transplantation be prioritized in a more equitable manner, emphasizing the concept of transplanting the ‘sickest first,’ and de-emphasizing the amount of time spent on the transplantation waiting list.”^[1,2]

In response to this mandate, in 2002, the United Network for Organ Sharing (UNOS), a federally appointed organization which organizes and overlooks transplant activities in the US, made the first change in organ allocation by adopting the Model for End Stage Liver Disease (MELD) score as an objective model for prioritizing patients based on its ability to predict waiting list mortality within the 58 geographical areas called Donation Service Areas (DSAs) which are further grouped into 11 regions (the Kingdom may be equivalent to 5 DSAs or one region). This led to a decrease in waiting list mortality, a decrease in new patients added to the waiting list, and an increase in the number of patients who are transplanted, particularly the sick ones.^[3] This was reproducible in other countries.^[4] The MELD allocation system replaced the time spent on the waiting list as the priority criterion; however, it did not fulfill the goal of “distribution based on objective priority rather than accidental geography.” There is currently a hot debate in the US in order to bypass geography and bring patients or

organs across geographical boundaries to give the organ to the patient who is in utmost need.^[5] This will obviously face a lot of logistical and political hurdles. One of these hurdles is the fear of small centers “losing business” as livers will move to big centers who transplant sick patients. On June 18, 2013, the second major change to liver allocation took place in the United States. The UNOS introduced “Share 35” offering livers first to all candidates in an organ procurement and transplantation network (OPTN) region with MELD ≥ 35 before the local candidates with MELD < 35 . The assessment of this new regulation after 1 year showed decrease in organ discard rate, no change in cold ischemia time (CIT), an increase in transplants for MELD ≥ 35 , decrease in transplants for MELD 30–34, and no change in post-transplant mortality.^[6] A new mathematical model was developed to reconfigure the map of organ allocation. This new model was recently presented at a public meeting, and proposed dividing the country into four or eight regions instead of 11. If this model is adopted, it will be the third change in organ allocation in the USA. Hyponatremia is associated with ascites, hepatorenal syndrome, and increased mortality. The liver transplant survival benefit increased significantly with decreasing serum sodium values when the MELD scores were > 11 .^[7] UNOS is moving toward implementing MELD-Na as a better predictor of waiting list mortality compared to MELD. The transplant community should strongly consider adopting MELD-Na in Saudi Arabia. MELD allocation system is disadvantageous to patients with conditions such as metabolic disorder, hepatopulmonary syndrome, and hepatocellular carcinoma. Saudi Center of Organ Transplantation (SCOT), the official body deciding on allocation in Saudi Arabia, and the Liver Transplant Committee, which is formed from liver transplant program representatives and members of SCOT, should establish a policy for these patients in Saudi Arabia.

Historically, there were only two centers performing deceased donor transplant in addition to living donor liver transplant in Riyadh, Saudi Arabia and the distribution of organs was center based. A third center was started in the Eastern Province in 2008. Currently three programs attempt to meet the need for liver transplantation in the Kingdom of Saudi Arabia utilizing donors from within the Kingdom and, to a lesser extent, from some of the Gulf countries. The outcome of cadaveric liver transplantation in these centers has been comparable to that from centers in Europe and North America.^[8] It is apparent, however, that clinical outcome does not depend solely on the quality of care given, but also

Access this article online	
	Quick Response Code:
	Website: www.saudijgastro.com
	PubMed ID: ***
DOI: 10.4103/1319-3767.166202	

on case selection, which is even more noticeable in liver transplantation. Currently the allocation system for livers is center based, i.e. the organ is offered to centers in turns irrespective of the needs of patients. This, of course, creates a disparity due to which sicker patients are disadvantaged. It is conceivable under the current center-based allocation system that an organ is allocated to a patient who is called from home with low MELD (lower chance of mortality on the liver transplant waiting list) while another patient with much higher MELD score is deteriorating in the ICU at another center simply because it is not the center's turn. Unlike UNOS, reporting the waiting list mortality to SCOT is voluntary. There are no data on waiting list mortality in Saudi Arabia, except our recent report on patients with potential living donor.^[8] SCOT should implement mandatory reporting of waiting list mortality of each liver transplant center, in order to ensure equal waiting list mortality risk in all centers in Saudi Arabia. Despite having two changes in the organ allocation system in USA with a possible third change in the near future addressing the regional allocation, the liver transplant community in Saudi Arabia has not made a single change and the current allocation system has been in effect since the early 1990s when the liver transplantation programs were launched in the Kingdom, leading to unjust distribution of organs between patients in the same country based on the transplant center they are listed at.

The current liver allocation system in the Kingdom clearly does not address the fair distribution between patients, but rather favors the interest of the centers. Centers have failed to overcome the politics around the allocation and we continue to favor the interest of centers over that of the patient. The Liver Transplant Committee has failed over the past two decades to bring about an allocation system which meets the needs of the patients rather than the needs of the centers. The barrier appears to be political with a fear that a broader organ sharing will have negative impact on smaller

centers. The political support from the Secretary of the Department of Health and Human Services in the US forced the transplant community to revise its allocation system to be much more equitable with rewarding results. A similar strategy may be adopted in the Kingdom of Saudi Arabia in which a political will toward equitable organ allocation needs to be enforced on the transplant community, leaving the details of how to achieve this goal to the professionals in the field.

Mohammed Al Sebayel, Hussien Elsiey

Department of Liver Transplantation and Hepatobiliary Surgery,
King Faisal Specialist Hospital and Research Centre, Riyadh,
Saudi Arabia.
E-mail: msebayel@gmail.com

REFERENCES

1. Institute of Medicine. Analysis of waiting times. In: Committee on Organ Transplantation. Organ Procurement and Transplantation: Assessing Current Policies and the Potential Impact of the DHHS Final Rule. Washington DC: National Academy Press; 1999. p. 57.
2. Organ Procurement and Transplantation Network-HRSA. Final rule with comment period. Fed Regist 1998;63:16296-338.
3. Asrani SK, Kim WR. Model for end-stage liver disease: End of the first decade. Clin Liver Dis 2011;15:685-98.
4. Cejas NG, Villamil FG, Lendoire JC, Tagliafichi V, Lopez A, Krogh DH, *et al.* Improved waiting-list outcomes in Argentina after the adoption of a model for end-stage liver disease-based liver allocation policy. Liver Transpl 2013;19:711-20.
5. Lamas D, Rosenbaum L. Very complicated math-reconfiguring organ allocation. N Eng J Med 2014;371:2447-50.
6. Proposal for Regional Distribution of Livers for Critically Ill Candidates. Available form: http://optn.transplant.hrsa.gov/PublicComment/pubcommentPropSub_288.pdf. [Last accessed on 2015 March 21].
7. Sharma P, Schaubel DE, Merion RM. Serum sodium and survival benefit of liver transplantation. Liver Transpl 2015;21:308-13.
8. Elsiey H, AlSebayel M, Hashim A, Hemeda B, Shawkat M, Al Arie H, *et al.* Mortality in patients with potential living donor liver waiting liver transplantation. Gastroenterology and Hepatology: Open Access, August 2014.