Urgency, Utility, and Time Horizon of Transplant Benefit

TO THE EDITORS:

We read with interest a recent review by Toso et al.[1] about liver graft allocation for patients with hepatocellular carcinoma (HCC), and we wished to comment further on the ethical implications of transplant benefit allocation models.

The allocation of liver grafts to patients with end-stage liver disease is dominated by 2 main ethical principles: equity and utility.[2] Equity criteria include horizontal equity, or equal treatment for equal need, and vertical equity, or the prioritization of those with more severe health conditions.[3,4] Horizontal equity implies that different subgroups of patients should have similar priority (eg, patients with and without HCC). Vertical equity coincides with the sickest-first urgency principle. On the other hand, utility is associated with the general philosophical moral theory of utilitarianism.[2] Whereas treating the sickest first prioritizes those with the worst future prospects if left untreated, utility-based allocation aims to save the most life-years or most lives.[2]

Toso et al.[1] described urgency-based[5] and utility-based allocation models, with the latter including the benefit concept.[6]

However, the survival benefit–based deceased donor liver allocation described by several authors in the last 10 years[6-10] does not always coincide with the ethical concept of utility; this depends on the time horizon.

Time horizon is a technical term referring to the duration of observation or follow-up in a statistical model. This term is often buried in the methods sections of articles or not even mentioned at all, but it turns out that decisions about time horizon have a profound ethical implication. When transplant benefit is considered with a long-term horizon (10 years to lifetime), it is weighted more heavily toward posttransplant outcomes and thus reflects a "pure utility" allocation (see Fig. 1). In this context, transplant benefit corresponds to a utilitarianism measure and suffers from all the biases of cost-effectiveness studies, such as ageism and poor long-term predictive ability.[2] Conversely, transplant benefit with a very short time horizon of 1 to 3 years is much more influenced by variables predicting nontrans-
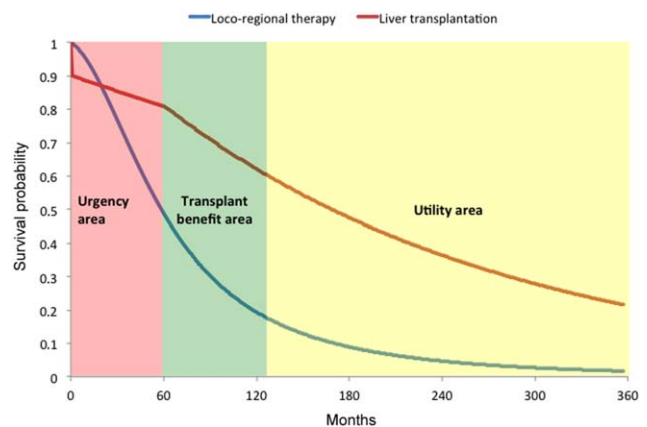

Figure. 1. Transplant benefit by time horizon.

plant survival (MELD score, tumor stage, and alternative therapies available) and reflects a "pure urgency" measure, and it risks leading to "futile" transplants of very sick patients with poor posttransplant survival.[7] The area of the time horizon between 5 and 10 years after LT is equally influenced by pretransplant and posttransplant variables and thus can provide what Schaubel et al.[8] defined as a balancing role of transplant benefit "between urgency and utility."

In conclusion, we wish to make readers aware that the choice of time horizon in allocation models reflects a tradeoff between urgency and utility. In this view, transplant benefit may approximate the objective of any ideal allocation system as it is defined by some ethicists: "To achieve a just allocation of scarce medical interventions, society must embrace the challenge of implementing a coherent multiprinciple framework rather than relying on simple principles or retreating to the status quo."[2]

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