Optimal Timing of Hepatitis C Treatment for Patients on the Liver Transplant Waiting List


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Abstract Body: The availability of oral direct-acting antiviral (DAAs) has changed the hepatitis C virus (HCV) treatment paradigm in both pre- and post-liver transplant (LT) patients. There is a tradeoff between pre- versus post-LT treatment of HCV—treatment can improve liver function but decrease the likelihood of LT. Our objective was to identify LT-eligible patients with decompensated cirrhosis who will benefit (and not benefit) from pre-LT treatment based on their MELD scores.

Methods: We simulated a virtual trial comparing long-term outcomes of pre- versus post-LT HCV treatment with oral DAAs for genotype 1 and 4 patients having MELD scores between 10-40. For this purpose, we developed a Markov-based microsimulation model, SIM-LT (simulation of liver transplant candidates), which simulated the life course of patients on the transplant waiting list. SIM-LT integrated data from recent trials of oral DAAs (SOLAR 1 and 2), United Network for Organ Sharing (UNOS), and other published studies. SIM-LT followed patients on the transplant waiting list, tracked their MELD scores over time, and projected the natural history of their disease after LT. The outcomes of the model included expected life years, quality-adjusted life years (QALYs), 1-year and 5-year patient survival, and death from background and liver-related causes. Model-predicted patient survival was validated with UNOS data.

Results: The Figure shows change in life years by treating HCV pre- versus post-LT in patients having different MELD scores. On average, treating HCV before LT would increase life expectancy (and QALYs) if MELD ≤ 26, and could decrease at higher MELD. The threshold to treat HCV pre-LT varied between 22 and 26, depending on the UNOS region; was lower for UNOS regions 3, 10 and 11, and higher for regions 1, 2, 4, 5, 8 and 9.

Conclusions: Our findings suggest that the optimal threshold to treat HCV in decompensated cirrhosis patients on the transplant waiting list is between 22-26, depending on the UNOS region. Patients below those MELD thresholds will benefit from HCV treatment before LT.