The objective of our study is to construct a predictive index (Pedi-ITT) utilizing ITT analysis for pediatric liver transplant recipients. Our Pedi-ITT score index could provide a perspective for organ allocation that is more representative of the patient’s overall transplant experience by informing the recipient of the potential waitlist and post-transplant outcomes at the time of listing.

**METHODS**

- We performed a retrospective analysis utilizing de-identified data provided by the United Network for Organ Sharing (UNOS) database from January 1, 2000, to December 31, 2020, for patients <18 years of age.
- Study population: 12,952 patients
- We performed a univariate and multivariable logistic regression analysis to test for various risk factors that could impact ITT survival.
- Points were assigned to each significant factor found in the multivariable analysis (p-value <0.05) based on the odds ratio for the specific factor.
- Three risk groups were generated for the Pedi-ITT index by equally dividing the index into low-, medium-, and high-risk categories, each with a similar number of patients.
- The scoring index was assessed by using receiver operating characteristic (ROC) curve analysis.
- We compared the ITT index to the Pedi-SOFT and MELD/PELD indices using ROC curve analysis.

**RESULTS**

- Multivariate analysis found the following factors to be independently associated with death on the waitlist or after transplant: diagnoses biliary atresia, hepato-choledochal cyst, metabolic disorder, liver status 1, inactive; HCC support: UNOS region 2, 3, 5, 7, 8; blood type AB; initial MELD/PELD score: 20-25; initial age <2, 2-5; initial INR: 2.0-2.5, 2.5-3.0, 3.0-3.5, >3.5; multiple waitlist listing: intoxication and pancreatitis; intox only, exception for hepatocellular carcinomas, US citizenship, and history of simulator use.
- Three risk categories were assigned: low-risk (<44 points), medium-risk (44-124 points), and high-risk (>124 points).
- A Kaplan-Meier curve was generated to display survival outcomes for each risk group and is displayed in Figure 1.
- Using the Pedi-ITT score and risk stratifications, the survival of recipients at 10 years with <44 points was around 84%, the survival of recipients with 44-124 points was 74%, and the survival of recipients with >124 points was 52%.
- The area under the receiver operating curve for the ITT risk score was 0.70 (95% Confidence Interval [CI]: 0.69-0.71).
- When applying the PEDI-SOFT score to the current study population, the c-statistic was found to be 0.59 (CI: 0.58-0.61).
- When applying the Pedi-SOFT score to the current study population, the c-statistic was found to be 0.51 (CI: 0.50-0.52).

**CONCLUSION**

- The Pedi-ITT index found 14 significant factors in predicting waitlist or post-transplant mortality for pediatric liver transplant recipients.
- Our index has a moderate predictive value with a c-statistic of 0.70 for predicting waitlist or posttransplant mortality as compared to the MELD/PELD and Pedi-SOFT score indices, which had c-statistics of 0.59 and 0.51, respectively.
- Our Pedi-ITT index offers a unique and novel perspective when determining liver allocation by considering the relationship between waitlist, organ allocation, and post-transplant outcomes in one model; therefore, this index accounts for a patient’s overall transplant experience by studying these associations.
- While our index provides moderate predictive value with a c-statistic of 0.70, further studies can expand upon and improve the index’s predictive power.