EHR data identifies liver transplant patients at high risk of early graft loss

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> Liver transplantation offers a lifeline for patients with end-stage liver disease, but early graft loss and patient mortality remain significant challenges. Identifying recipients at highest risk for these adverse outcomes before or shortly after transplantation could allow for targeted interventions and closer monitoring.
> A novel EHR-based marker now provides a clear signal, allowing clinicians to pinpoint those patients who require more aggressive post-transplant strategies, potentially improving long-term survival.

KEY TAKEAWAYS

- The Pivot: A new EHR-derived score, the Liver Transplant Early Allograft Dysfunction (LTEAD) score, accurately predicts 90-day graft loss and mortality.
- The Data: Patients with a high LTEAD score had a significantly increased risk of 90-day graft loss (HR 2.8; 95% CI, 2.1-3.7; P2.5; 95% CI, 1.9-3.3; PThe Action: Implement the LTEAD score in clinical practice to stratify risk, guide resource allocation, and tailor immunosuppression or surveillance protocols for high-risk liver transplant recipients.

Early graft dysfunction and subsequent patient mortality represent critical complications following liver transplantation, impacting both patient outcomes and healthcare resource utilization. While various factors contribute to these adverse events, a standardized, easily implementable tool to predict risk has been elusive. Current assessment methods often rely on complex scoring systems or subjective clinical judgment, which can vary across institutions and clinicians.
The newly developed Liver Transplant Early Allograft Dysfunction (LTEAD) score leverages readily available electronic health record (EHR) data to provide a predictive marker. This score integrates key clinical and laboratory parameters, offering a more objective and consistent assessment of risk. The development of such a tool addresses a long-standing need in transplant hepatology, aiming to move beyond reactive management to proactive risk stratification.

Developing the LTEAD Score

Investigators developed the LTEAD score using a retrospective cohort of adult liver transplant recipients. The primary goal was to identify a combination of pre- and post-operative variables that strongly correlated with 90-day graft loss and patient mortality. They meticulously reviewed EHRs, extracting data points such as recipient age, MELD score, cold ischemia time, intraoperative blood product transfusions, and early post-operative liver function tests including bilirubin, INR, and AST/ALT levels. The selection of these variables was based on established pathophysiological understanding of factors influencing early graft function and patient survival.
The research team employed a rigorous statistical methodology, including multivariate logistic regression, to identify the most predictive variables and assign appropriate weighting within the score. This iterative process ensured that

each component contributed meaningfully to the overall predictive power of the LTEAD score. The score's construction focused on simplicity and clinical utility, ensuring it could be calculated quickly and accurately from routine EHR entries without requiring specialized tests or extensive manual data extraction. This design makes it highly adaptable for integration into existing clinical workflows.

The Predictive Power of EHR Data

The LTEAD score demonstrated a strong ability to predict adverse outcomes. Patients classified as high-risk by the LTEAD score faced a significantly elevated risk of 90-day graft loss, with a hazard ratio of 2.8 (95% CI, 2.1-3.7; P2.5 (95% CI, 1.9-3.3; PBeyond the primary endpoints, the LTEAD score also correlated with other indicators of post-transplant morbidity. High-risk patients had longer hospital stays, a greater incidence of re-hospitalization within the first year, and a higher rate of infectious complications. For example, the median length of hospital stay for high-risk patients was 21 days compared to 12 days for low-risk patients. These secondary findings underscore the broader clinical impact of early graft dysfunction and the potential for the LTEAD score to identify patients who will consume more healthcare resources.

The score's performance was consistent across various subgroups, including patients with different etiologies of liver disease, such as alcoholic liver disease, non-alcoholic steatohepatitis (NASH), and viral hepatitis. This broad applicability suggests the LTEAD score is not limited to specific patient demographics or disease profiles, enhancing its generalizability. The consistency across subgroups is a critical factor for widespread clinical adoption, as it ensures the tool remains effective for the diverse patient population undergoing liver transplantation.

Where it Falls Short

The retrospective nature of the study is the obvious caveat. While the development and validation cohorts were substantial, prospective validation in a multi-center setting is essential to confirm these findings and assess the score's generalizability across different transplant centers with varying protocols and patient populations. The reliance on EHR data, while a strength for practical implementation, also means the score is limited by the quality and completeness of that data. Missing or inconsistently recorded variables could impact its accuracy in real-world scenarios.

The study also did not explore the impact of specific post-transplant interventions tailored to LTEAD-identified high-risk patients. While the score identifies risk, it does not yet provide direct guidance on how to modify immunosuppression, surveillance, or supportive care to mitigate that risk. Future research needs to focus on interventional studies to determine if targeted management strategies based on the LTEAD score can improve outcomes. Without such evidence, the score remains a prognostic tool rather than a prescriptive one.

The current iteration of the LTEAD score focuses on early outcomes (90 days). While crucial, long-term graft survival and patient quality of life are also paramount. Whether an early high LTEAD score continues to predict adverse events beyond 90 days, or if its predictive power wanes over time, remains an open question. Further investigation into the score's utility for predicting chronic rejection or long-term complications would enhance its value. Clinicians managing liver transplant patients often consult comprehensive resources like Sherlock's Diseases of the Liver and Biliary System for deeper insights into complex hepatobiliary conditions.

CLINICAL IMPLICATIONS

> The LTEAD score offers a practical, data-driven approach to risk stratification in liver transplant recipients. For transplant teams, this means moving beyond subjective assessments to a more objective identification of patients who will demand closer attention and potentially more aggressive management strategies in the crucial early post-operative period.
> Implementing this score could streamline resource allocation, ensuring that high-risk patients receive enhanced surveillance, more intensive immunosuppression adjustments, or earlier consideration for re-transplantation. This proactive approach could reduce the incidence of preventable graft loss and improve overall patient survival, easing the burden on already stretched transplant units.
> But the score is not a silver bullet. Its utility hinges on the quality of EHR data and the willingness of clinicians to integrate it into their decision-making processes. The next step involves prospective trials to validate specific interventions based on LTEAD scores, moving from prediction to actionable clinical pathways. Without such evidence, it remains a powerful prognostic tool awaiting its full therapeutic potential.

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REFERENCES

1. 1. Healio. EHR-based marker identifies high-risk liver transplant recipients. Accessed Jul 2026. https://www.healio.com/news/gastroenterology/20260720/ehrbased-marker-identifies-liver-transplant-recipients-at-risk-for-organ-rejection

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