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Mind MELD or Ignore It at Your Peril

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Chronic liver disease (CLD) and its attendant increased risk of operative mortality and morbidity give appropriate pause to many surgeons and patients prior to undertaking any operation, especially an emergency. While the American College of Surgeons National Surgical Quality Improvement Project Surgical Risk Calculator[1] does not yet incorporate liver disease–specific measures, multiple previous studies have demonstrated the importance of prognostic factors such as Child-Turcotte-Pugh score, serum creatinine level, international normalized ratio, cardiopulmonary comorbidities, and American Society of Anesthesiologists physical status class.[2] Advances in the medical care of patients with CLD and improved outcomes in liver transplantation have made long-term survival in patients who would not otherwise be considered for major surgery quite possible. For these reasons, accurate prognostic models of survival in cirrhotic patients are useful to clinicians.

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One such prognostic model, the Mayo Clinic Model for End-Stage Liver Disease (MELD) score, has performed well in a number of settings. Despite being initially based on survival after transjugular intrahepatic portosystemic shunt in a highly selected group of patients with cirrhosis and without cardiopulmonary comorbidity or intrinsic renal disease, the MELD score provides a reliable estimate of short-term survival over a wide range of liver disease severity and etiology and has become the standard by which deceased donor liver grafts are allocated.[3] The MELD score has also been previously shown in a number of studies to allow for the prediction of postoperative outcomes.[4,5]

In this issue of *JAMA Surgery*, Havens et al[6] add to that list by showing that the MELD score is closely associated with mortality following intensive care unit admission among emergency general surgery patients with CLD. Focusing on more than 700 patients admitted to the intensive care unit within 48 hours of emergency general surgery at 1 of 2 academic medical centers, they confirm that MELD scores can predict 90-day mortality and that decreases in MELD scores after 48 hours following intensive care unit admission can also predict outcomes. Notwithstanding standard caveats regarding retrospective data analyses, their study goes far in confirming the utility of the MELD score and elevating it above other preoperative prognostic factors such as age, organ failure, and inotropic support.

Beyond sound statistical and clinical validity, the ideal model for prognostic purposes should use a few inexpensive, readily available, noninvasive, objective parameters. Furthermore, it should be generalizable to a diverse group of patients, while maintaining the ability to discern gradations within a continuum of risk. The model should be able to assess the risk of death in independent groups of patients with liver disease of varying etiology and severity and also to incorporate sex, ethnic/racial, and geographical diversity. While it appears to satisfy these criteria, the question remains whether the MELD score, now entering its 16th year of service, should be revised,[7] augmented, or replaced with other measures of liver or global function.[8] Furthermore, armed with this reliable preoperative predictor of mortality, how should we use it? Are there ways to optimize some patients before surgery in a way that would improve outcomes and not just delay care? There are predictors of futility in liver transplantation that allow for patient optimization.[9] Prognostic models should compel us to prospectively test ways to improve the efficacy of care in general surgery patients as well.

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