Factors Associated With Dialysis Independence in Patients With Cirrhosis and Acute Kidney Injury Requiring Dialysis: A Population-based Study.

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Background
Acute kidney injury (AKI) in cirrhosis is associated with high mortality. Therefore, dialysis in patients with cirrhosis and AKI is often considered a bridge to liver transplantation (LT). The decision to initiate dialysis (AKI-D) remains difficult as it is unclear which patients will derive long-term benefit. This study aimed to evaluate predictors of renal recovery in patients with cirrhosis and AKI-D to help inform shared decision-making and derive a clinically useful risk prediction tool.

Methods
Retrospective cohort study using administrative healthcare data from Ontario, Canada. Adult patients with cirrhosis admitted between 01/01/2009–12/31/2016 were identified and followed until 12/31/2017. Patients were included if they had AKI (based on serum creatinine) and required dialysis during hospitalization. Those with history of LT, kidney transplant, eGFR<15 mL/min or dialysis before index hospitalization were excluded. The primary outcome was a composite of death and/or the absence of renal recovery defined as no dialysis ≥30 days. Univariate and multivariate competing risks regression were used to identify factors associated with the primary outcome. These factors were then used to derive and internally validate a clinical risk score to estimate the risk of death and/or absent recovery.

Results
722 patients met inclusion criteria (median age 61 years [IQR 54-68], 66% male, 35% non-alcoholic fatty liver disease, 33% alcohol-related, 19% hepatitis). The median MELD was 26 [IQR 22-34]). 193 patients (27%) had renal recovery, 19 (3%) received LT, 54 (8%) were on the LT waitlist, and 589 (82%) died after a median follow-up of 19 days. The cumulative incidence of renal recovery at 1, 3, 6, and 12 months was 3%, 22%, 25% and 26% respectively. After competing risk analysis, factors associated with an increased likelihood of death and/or continued dialysis were admission to ICU (sHR 1.55, 95%CI 1.17-2.05), sepsis (sHR 1.42, 95%CI 1.18-1.71), higher MELD (sHR 1.23 per 5 units, 95%CI 1.16-1.30), continuous renal replacement therapy (sHR 1.23, 95%CI 1.02-1.48), and older age (sHR 1.06 per 5 years, 95% CI1.02-1.10). LT waitlisting was strongly associated with improved outcomes (sHR 0.23, 95% CI0.14-0.39). The clinical risk score results will be available at the time of presentation.

Discussion
In patients with cirrhosis, renal recovery is rare in AKI-D in the absence of LT and was associated with younger age and markers of critical illness. Using a risk score, we hope to stratify patients who are more likely to recover providing important information regarding prognosis for patient-centered decision-making.