LIVER

S1169 ACG Auxiliary Award (Trainee)

Comparison of Baveno VI Criteria, Expanded Baveno VI Criteria, Chess Alarm Score and Other Noninvasive Scores for Predicting Esophageal Varices and Varices Needing Treatment

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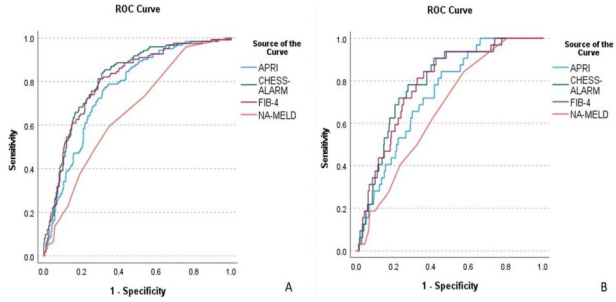
Introduction: Many non-invasive scores have been proposed for predicting the presence of esophageal varices (EV) in patients with compensated advanced chronic liver disease(cACLD),to avoid unnecessary esophagogastroduodenoscopy(EGD). No extensive studies have described real-world experience with non-invasive scores
Methods: In cross-sectional analysis from Jan 2015 and Dec 2021,we studied Baveno VI criteria (liver stiffness >20 kPa & platelet count < 150X109cells/L), exp Baveno VI criteria (liver stiffness >25 kPa & platelet count< 110 X109cells/L), CHESS ALARM score (Model=0.033×Age-0.598×Male-0.018×Platelet+0.032×liver stiffness), APRI score and FIB-4 score in predicting the presence of EV,varices needing treatment (VNT) in cACLD patients, in Mid-West United States
Results: Of 424 patients(42.8%males,mean age59.2±12.5 years,78.3%Caucasian and 14.9%Afro American). Etiology of cACLD was NAFLD (55.3%),chronic hepatitis C (32.7%),alcohol (23.1%). EV present in 126 (29.7%), VNT in 32 (7.5%). 221 patients(52%) met Baveno VI criteria and 173(40.7%) met exp Baveno VI criteria. Among patients with EV on EGD, 87.7% met Baveno VI criteria, and 77.4% met exp Baveno VI criteria. Of all patients who had VNT (n=32), 85.7 % met expanded Baveno criteria. Baveno VI criteria (p< 0.001), expanded Baveno VI criteria (p< 0.001) and CHESS-ALARM score (p< 0.001, at cut off >0.37) independently correlated with presence of EV on logistic regression analysis. Baveno VI criteria had a predictive accuracy of 93.1% to rule out EV, and exp Baveno VI criteria had a predictive accuracy of 98.3% to rule out VNT. On comparison of non-invasive scores, predictive accuracy (AUROC) for EV on EGD was highest for CHESS-ALARM score (0.82, CI=0.77 to 0.86), then FIB-4 (0.80, CI=0.76 to 0.85), APRI (0.76, CI=0.72 to 0.81) and lowest for MELD-NA (0.66, CI=0.60 to 0.72). CHESS-ALARM score at -0.36 with sensitivity 82.9% and specificity 70% to predict EV. AUROC for predicting VNT on EGD was highest for CHESS-ALARM score (0.79, CI=0.72 to 0.86), followed by FIB-4 (0.78, CI=0.72 to 0.85), APRI (0.73, CI=0.66 to 0.81), and the lowest for MELD-NA (0.66, CI=0.58 to 0.74). CHESS-ALARM score of -0.36 has sensitivity of 90.2 and specificity of 66.2% to predict VNT
Conclusion: Baveno VI criteria has high predictive accuracy in ruling out EV in cACLD. Expanded Baveno VI criteria has high accuracy to rule out VNT. CHESS-ALARM score has high predictive accuracy for identifying EV and VNT. Application of these scores could reduce the burden of EGD in cACLD. (Figure)



[1169] **Figure 1.** Comparison of noninvasive scores for predicting esophageal varices and varices needing treatment. A: ROC for predicting esophageal varices, B: ROC for predicting varices needing treatment

S1170

Anticoagulation for the Treatment of Portal Vein Thrombosis in Patients With Cirrhosis: A Systematic Review and Meta-Analysis

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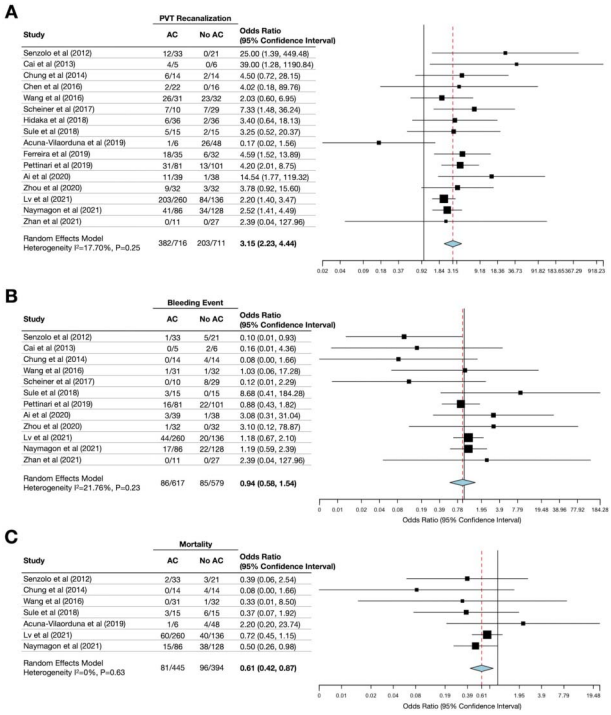
Introduction: Portal vein thrombosis (PVT) in the setting of cirrhosis leads to significant morbidity and mortality burden. Current consensus for anticoagulation use in PVT is primarily limited to symptomatic patients. An improved understanding of the utility of anticoagulation in patients with PVT will aid clinical decision making and inform future research. We performed a systematic review and meta-analysis on outcomes following anticoagulation for PVT in cirrhosis.
Methods: We searched Pubmed, Embase, and Web of Science from inception to February 13, 2022 for studies comparing the use of anticoagulation to other modalities as treatment for PVT in cirrhosis. Using a random-effects model, we calculated pooled odds ratios (OR) for PVT improvement, recanalization, progression, bleeding events, and all-cause mortality. Heterogeneity among the included studies was assessed using I^2 statistics and Cochran Q test. Low heterogeneity was defined as I^2 less than 50% and Cochran Q p value >0.10. In randomized controlled trials (RCT), the risk of bias was assessed using the Cochrane risk-of-bias tool for randomized trials (RoB2). In non-randomized studies, the risk of bias was assessed using the Risk of Bias in Non-randomized Studies – of Interventions (ROBINS-I) tool.
Results: Our literature search yielded 1,516 potential records, of which 572 duplicates were removed, resulting in 944 records for screening. 17 studies (n=1,478) examining anticoagulation as PVT treatment were included for analysis. Anticoagulation as PVT treatment was associated with PVT improvement (OR 3.53; 95% CI 2.54-4.89), PVT recanalization (OR 3.15; 95% CI 2.23-4.44), decreased PVT progression (OR 0.37; 95% CI 0.22-0.62), and decreased all-cause mortality (OR 0.61; 95% CI 0.42-0.87). Use of anticoagulation was not associated with bleeding events (OR 0.94; 95% CI 0.58-1.54). All outcomes revealed low heterogeneity. (Figure)
Conclusion: Results of our meta-analysis suggest anticoagulation is associated with PVT recanalization, lower rates of PVT progression, and improved survival. Furthermore, there does not appear to be an increased risk of bleeding events with anticoagulation when compared to management without anticoagulation. These findings provide evidence for the clinical utility of anticoagulation for PVT in patients with cirrhosis and may inform the development of modern clinical guidelines. This study also highlights the need for continued research on the use of anticoagulation for PVT in cirrhosis, with particular emphasis on large RCT.



[1170] **Figure 1.** Forest plots for rate of (A) portal vein thrombosis (PVT) recanalization, (B) bleeding events, and (C) all-cause mortality following use of anticoagulation as therapy for PVT in the setting of cirrhosis.

S1171

Elevated Ferritin Is Associated With Increased Prevalence of Cirrhosis but Not Congestive Heart Failure Among Patients With Metabolic Dysfunction-Associated Fatty Liver Disease

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Introduction: Hyperferritinemia is common in patients with metabolic dysfunction associated fatty liver disease (MAFLD). Elevated ferritin levels are also associated with elevated AST/ALT levels and non-invasive markers of fibrosis. The purpose of our study was to explore the relationship between hyperferritinemia and prevalence of cirrhosis in patients with MAFLD after adjustment for other cirrhosis risk factors.
Methods: We conducted a cross sectional analysis of patients with MAFLD seen at Michigan Medicine between 2010-2021. A diagnosis of MAFLD required hepatic steatosis on biopsy, imaging, or vibration-controlled transient elastography in addition to overweight, diabetes or two of dyslipidemia, pre-diabetes, hypertension. Patients with baseline malignancy aside from non-melanoma skin cancer were excluded. The primary predictor was ferritin level, which was dichotomized with a cutoff of 300 or 450mcg/L for women or men respectively (1.5 times the upper limit of normal). The primary outcomes were cirrhosis and congestive heart failure (CHF) diagnosed < 365 after the MAFLD index date. We conducted logistic regression to characterize the association between ferritin and cirrhosis or CHF adjusted for confounders.
Results: We included 7,705 patients with MAFLD, of whom 1,762 (22.9%) had elevated ferritin. Patients with elevated ferritin were older, more often male, and more often had FIB-4 score >3.25 (29 vs 9%), NFS >0.676 (35 vs 22%), and AST > ULN (80 vs 62%). Elevated ferritin was associated with increased prevalence of cirrhosis with odds ratio (OR) 1.24 (95% CI 1.06-1.45, p< .007) after adjusting for gender, age, diabetes, hypertension, dyslipidemia, and AST levels (Table). As expected, diabetes (OR) 1.93 (95% CI 1.66-2.25, p< 0.0001) and AST levels >ULN (OR) 2.87 (95% CI 2.40-3.43, p< 0.0001) were independently associated with increased prevalence of cirrhosis. High ferritin was not associated with increased prevalence of CHF after adjusting for other variables (OR) 1.04 (95% CI 0.84-1.30, p=0.71). However, diabetes (OR) 1.58 (95% CI 1.30-1.92, p< 0.0001), and hypertension (OR) 3.79 (95% CI 2.82-5.08, p< 0.0001) were expectedly associated with increased prevalence of CHF in this cohort.
Conclusion: Elevated ferritin is associated with increased prevalence of cirrhosis but not CHF in patients with MAFLD. Hyperferritinemia may be a poor prognostic indicator in MAFLD.

Table 1. Unadjusted and adjusted predictors of prevalent cirrhosis

Variable	Unadjusted odds ratio	P-value	Adjusted odds ratio	P-value
High ferritin	1.51 (1.30-1.76)	< 0.0001	1.24 (1.06-1.45)	0.0068
Age (per year)	1.02 (1.02-1.03)	< 0.0001	1.03 (1.02-1.03)	< 0.0001
Male gender	0.99 (0.86-1.13)	0.86	0.92 (0.80-1.06)	0.25
Diabetes	1.66 (1.45-1.91)	< 0.0001	1.93 (1.66-2.25)	< 0.0001
Hypertension	1.24 (1.07-1.42)	0.0030	1.13 (0.96-1.33)	0.15
Dyslipidemia	0.73 (0.63-0.84)	< 0.0001	0.47 (0.40-0.55)	< 0.0001
AST >ULN	2.70 (2.27-3.21)	< 0.0001	2.87 (2.40-3.43)	< 0.0001

S1172

Early Palliative Care Referral May Improve End of Life Care in End-Stage Liver Disease Patients. A Retrospective Analysis From a Non-Transplant Center

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Introduction: Patients with End Stage Liver Disease (ESLD) who are not transplant candidates often have a trajectory of rapid decline and death similar to patients with stage IV cancer. Palliative care (PC) services have been shown to be underutilized for such patients. Most studies examining the role of PC in ESLD have been done at transplant centers. Thus, determining the utilization and benefit of PC at a non-transplant tertiary center may help establish a standard of care in the management of transplant-ineligible patients with ESLD.
Methods: We conducted a retrospective analysis of adult patients with ESLD admitted to Rochester Regional Health (RRH) system hospitals from 2012 to 2021. Patients were divided into groups based on presence (Group 1) or absence (Group 2) of PC involvement. Baseline characteristics were recorded. Impact of PC was assessed by comparing number of hospitalizations before and after PC referral, comparing code status changes, health care proxy (HCP) assignments, and requirement of repeated paracentesis.
Results: 576 patients were analyzed of which 237 received a PC consult (Group 1) and 339 did not (Group 2). Baseline characteristics were comparable in both groups (Table). Mortality rate was significantly higher in group 1 than group 2 (83.1 vs 46.4%, $p < 0.01$). Changes in code status were higher in group 1 than in group 2 (77.6% vs 29.2%, $p < 0.001$). 59.9% in group I had comfort care code status and 67.8% in group 2 had full code. Patients in group 1 were more likely to have an HCP assigned (63.7% vs 37.5%, $p < 0.001$). Aspira catheter use (5.9% vs 0.9%, $p < 0.001$) and hospitalizations for frequent paracentesis (30.8% vs 16.8%, $p < 0.001$) were both more frequent in group 1. Mean number of emergency room visits or hospitalizations before the first PC consult was 15.6 and mean number of admissions after PC consult was 3.4 ($P< 0.001$).
Conclusion: Our study shows that PC referral in patients with ESLD is associated with a higher rate of code status changes, HCP assignments and reduced hospitalizations. Patients receiving a PC referral were more likely to have a comfort care status while patients without a PC referral were more likely to be full code. Mortality rates at our non-transplant center were higher in patients with palliative care referral than those without. It suggests that patients did not receive a PC referral unless their disease severity was significant, however all patients with ESLD may benefit from early PC referral.

Table 1. Baseline characteristics and outcomes

Variable	PC involved (237)	PC not involved (339)	P-value
Age (years)	64.61	64.07	0.58
Sex (% male)	57.40%	55.20%	0.59
Hepatocellular carcinoma	11 (4.6%)	12/339 (3.5%)	0.38
Transplant referral done	41 (17.3%)	72/339 (21.2%)	0.29
Mortality	196 (83.1%)	157 (46.4%)	< 0.0001
Aspira catheter	14 (5.9%)	3 (0.9%)	< 0.001
Frequent paracentesis	73 (30.8%)	57 (16.8%)	< 0.001
TIPS procedure	8 (3.4%)	24 (7.1%)	0.06
Code status changes	184 (77.6%)	99 (29.2%)	< 0.001
Full code	44 (18.6%)	230 (67.8%)	< 0.001
Comfort care	142 (59.9%)	70 (20.6%)	< 0.001
HCP assignments	151 (63.7%)	127 (37.5%)	< 0.001

S1173

Terlipressin Treatment of Patients With Hepatorenal Syndrome Type 1 Decreased the Need for Renal Replacement Therapy in Transplant Recipients: A 12-Month Follow-Up of the CONFIRM Study

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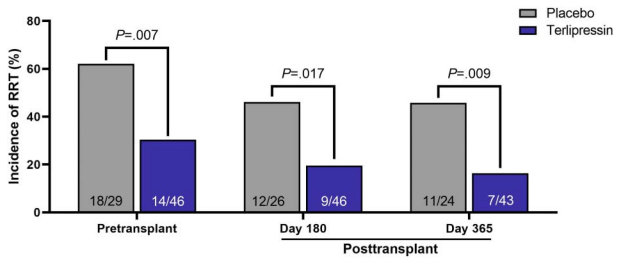
Introduction: Hepatorenal syndrome type 1 (HRS) is a rapid-onset renal failure in the setting of end-stage liver disease. While liver transplant (LT) is the definitive treatment, posttransplant renal failure requiring renal replacement therapy (RRT) is common and contributes to low patient survival rates. A randomized, placebo (PBO)-controlled study (CONFIRM; NCT02770716) demonstrated that terlipressin (TERLI) reversed HRS and reduced the need for RRT. This subgroup analysis of LT recipients from CONFIRM assessed whether TERLI treatment reduced the incidence of RRT and improved overall survival (OS) through 12-months posttransplant.
Methods: Patients with HRS were treated with TERLI plus albumin (n=199) or PBO plus albumin (n=101) for up to 14 days. RRT was defined as any procedure that replaced nonendocrine kidney function including continuous hemofiltration and hemodialysis, intermittent hemodialysis, peritoneal dialysis, ultrafiltration, or other dialysis and filtration techniques. The incidence of verified HRS reversal (primary endpoint in CONFIRM), HRS reversal, the need for RRT (pretransplant; at Day 180 and Day 365 posttransplant), and OS at 12-months were compared between groups. Verified HRS reversal was defined as the percentage of patients with 2 consecutive qualified serum creatinine (SCr) values of ≤1.5 mg/dL at least 2 hours apart. HRS reversal was defined as the percentage of patients with a SCr value of ≤1.5 mg/dL while receiving treatment by Day 14 or day of discharge.
Results: In total, 46 (23%) patients in the TERLI group and 29 (28%) patients in the PBO group received an LT (P=.290). Five of these patients (TERLI n=3; PBO n=2) received a simultaneous liver–kidney transplant. Verified HRS reversal was comparable between the TERLI group (30%, n=14) and the PBO group (17%, n=5; P=.168). HRS reversal was significantly higher in the TERLI group (37%, n=17) vs the PBO group (14%, n=4; P=.021). The pretransplant need for RRT was significantly lower in the TERLI group compared with PBO (P=.007; Figure). The posttransplant need for RRT was significantly lower in the TERLI vs PBO group at Day 180 (P=.017; Figure) and Day 365 (P=.009; Figure). Posttransplant 12-month OS in the TERLI group was 94% (n=43) compared with 83% (n=24) in the PBO group (P=.093).
Conclusion: Patients with HRS who received TERLI treatment and an LT had a decreased need for RRT for up to 12-months posttransplant. These findings have implications for morbidity and mortality in patients with advanced cirrhosis.



[1173] **Figure 1.** Incidence of RRT by Treatment Group in Transplant Recipients in the CONFIRM Study, ITT population. Values at the bottom of each bar represent n/N. ITT, intent-to-treat; n, number of patients requiring RRT; N, number of patients who were alive at each timepoint; RRT, renal replacement therapy.

S1174 Outstanding Research Award in the Liver Category

The Global Landscape of Nonalcoholic Fatty Liver Disease: Results From the Global Burden of Disease Study, 1990-2019

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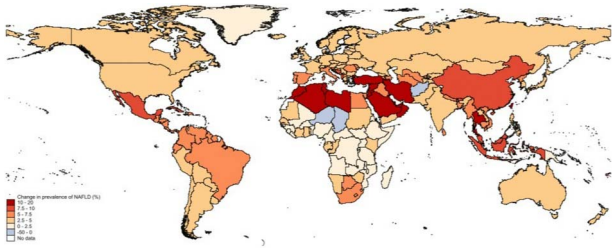
[1]Trinity Health of New England, Springfield, MA; [2]The Wright Center for Graduate Medical Education, Geisinger Commonwealth School of Medicine, ATSU-SOMA, Scranton, PA; [3]New York University School of Medicine, New York, NY; [4]New York University School of Medicine, Brooklyn, NY; [5]Woodhull Medical and Mental Health Center, Brooklyn, NY; [6]State University of New York Downstate Medical Center, Brooklyn, NY; [7]Loma Linda University Medical Center, Loma Linda, CA; [8]Saint Peter's University Hospital, New Brunswick, NJ; [9]Zhongshan Hospital of Fudan University, Shanghai, Shanghai, China.

Introduction: Nonalcoholic fatty liver disease (NAFLD) is causing an emerging global epidemic. The global burden of disease (GBD) study estimates the burden of NAFLD in 203 countries and geographic areas across the world, providing a unique opportunity to understand the landscape of this disease.
Methods: Prevalence, mortality, and disability-adjusted life years (DALYs) of NAFLD from 1990 to 2019 by region and country in all sex and age groups were collected from the Global Health Data Exchange (GHDx) results tool (Available from http://ghdx.healthdata.org/gbd-results-tool). DALYs are the sum of years lost due to premature death and years lived with disability. The socio-demographic index (SDI) categorizes countries and geographic areas by development (low, low-middle, middle, high-middle, and high).
Results: Between 1990 to 2019, the global prevalence of NAFLD increased from 10.9% to 16.6% (increased by 52.6%; linear regression beta-coefficient 0.2, $P < .001$). In 2019, an estimated 1.3 billion people were affected by NAFLD worldwide. Mortality attributed to NAFLD increased from 93,000 to 169,000. DALYs of NAFLD increased from 2.7 million years to 4.4 million years. Significant uptrends were observed in all SDI regions, more prominent in the middle SDI regions (**Table**). Changes in the prevalence of NAFLD by countries are depicted in **Figure.** All but three countries demonstrated an increase in the prevalence of NAFLD. More notable increases (≥10%) were mostly observed in North African and Middle Eastern countries.
Conclusion: NAFLD's prevalence increased by more than 50% globally from 1990 to 2019. The mortality and DALYs also increased. The increase in NAFLD prevalence is more prominent in countries with middle SDI and countries in North African and Middle Eastern regions, possibly due to changes in lifestyle in these areas over the past 30 years.



[1174] **Figure 1.** The change in NAFLD prevalence by countries and territories, 1990-2019.

Table1. The prevalence of nonalcoholic fatty liver disease (%), globally and by SDI categories, 1990-2019

	Global	High SDI	High-middle SDI	Middle SDI	Middle-low SDI	Low SDI
1990	10.9 (9.7-12.3)	9.3 (8.3-10.4)	12.9 (11.5-14.4)	12.2 (10.8-13.7)	9.4 (8.3-10.6)	8.2 (7.2-9.3)
1991	11.0 (9.8-12.4)	9.4 (8.4-10.6)	13.1 (11.7-14.7)	12.4 (11.0-14.0)	9.5 (8.4-10.7)	8.2 (7.2-9.3)
1992	11.2 (9.9-12.6)	9.6 (8.5-10.7)	13.3 (11.9-14.9)	12.6 (11.2-14.2)	9.6 (8.5-10.9)	8.2 (7.2-9.3)
1993	11.3 (10.1-12.8)	9.7 (8.7-10.9)	13.5 (12.1-15.2)	12.8 (11.4-14.4)	9.7 (8.6-11.0)	8.2 (7.3-9.4)
1994	11.5 (10.2-12.9)	9.8 (8.8-11.0)	13.7 (12.2-15.4)	13.0 (11.6-14.6)	9.8 (8.6-11.1)	8.2 (7.3-9.4)
1995	11.6 (10.3-13.1)	10.0 (8.9-11.2)	13.9 (12.4-15.6)	13.2 (11.8-14.9)	9.9 (8.7-11.2)	8.3 (7.3-9.4)
1996	11.8 (10.5-13.3)	10.1 (9.1-11.3)	14.1 (12.6-15.8)	13.5 (12.0-15.1)	10.0 (8.8-11.3)	8.3 (7.3-9.4)
1997	11.9 (10.6-13.4)	10.2 (9.2-11.5)	14.3 (12.8-16.0)	13.7 (12.2-15.4)	10.1 (8.9-11.4)	8.3 (7.3-9.4)
1998	12.1 (10.7-13.6)	10.4 (9.3-11.6)	14.5 (13.0-16.2)	13.9 (12.4-15.6)	10.2 (9.0-11.6)	8.3 (7.4-9.5)
1999	12.2 (10.9-13.8)	10.5 (9.5-11.8)	14.7 (13.2-16.4)	14.1 (12.6-15.8)	10.3 (9.1-11.7)	8.4 (7.4-9.5)
2000	12.4 (11.0-13.9)	10.7 (9.6-11.9)	14.8 (13.3-16.6)	14.3 (12.7-16.1)	10.5 (9.2-11.9)	8.4 (7.4-9.5)
2001	12.5 (11.1-14.1)	10.8 (9.7-12.1)	15.0 (13.4-16.8)	14.5 (12.9-16.3)	10.5 (9.3-11.9)	8.4 (7.4-9.6)
2002	12.6 (11.2-14.1)	11.0 (9.9-12.3)	15.1 (13.5-16.8)	14.6 (13.0-16.4)	10.6 (9.4-12.0)	8.4 (7.5-9.6)
2003	12.7 (11.3-14.2)	11.2 (10.1-12.5)	15.1 (13.6-16.9)	14.7 (13.1-16.5)	10.7 (9.4-12.1)	8.5 (7.5-9.6)
2004	12.8 (11.4-14.3)	11.4 (10.3-12.7)	15.2 (13.7-17.0)	14.9 (13.2-16.6)	10.7 (9.5-12.1)	8.5 (7.5-9.7)
2005	12.9 (11.5-14.5)	11.6 (10.4-12.9)	15.4 (13.8-17.1)	15.0 (13.4-16.9)	10.8 (9.6-12.3)	8.5 (7.5-9.7)
2006	13.1 (11.7-14.7)	11.8 (10.6-13.1)	15.6 (14.0-17.4)	15.3 (13.7-17.2)	11.0 (9.8-12.4)	8.6 (7.6-9.8)
2007	13.4 (12.0-15.0)	12.0 (10.8-13.4)	16.0 (14.4-17.8)	15.8 (14.1-17.6)	11.2 (9.9-12.7)	8.6 (7.6-9.8)
2008	13.7 (12.2-15.3)	12.3 (11.1-13.6)	16.4 (14.8-18.3)	16.2 (14.5-18.1)	11.4 (10.1-12.9)	8.7 (7.7-9.9)
2009	14.0 (12.5-15.6)	12.5 (11.3-13.9)	16.9 (15.2-18.8)	16.7 (14.9-18.6)	11.7 (10.3-13.2)	8.8 (7.7-9.9)
2010	14.3 (12.8-16.0)	12.7 (11.5-14.1)	17.3 (15.5-19.2)	17.1 (15.3-19.1)	11.9 (10.5-13.4)	8.8 (7.8-10.0)
2011	14.6 (13.0-16.3)	13.0 (11.7-14.4)	17.7 (15.9-19.6)	17.5 (15.7-19.5)	12.2 (10.8-13.7)	8.9 (7.9-10.1)
2012	14.9 (13.3-16.6)	13.2 (11.9-14.6)	18.1 (16.3-20.1)	17.9 (16.0-20.0)	12.5 (11.1-14.1)	9.0 (8.0-10.2)
2013	15.2 (13.6-17.0)	13.5 (12.2-14.9)	18.5 (16.7-20.6)	18.3 (16.4-20.4)	12.9 (11.4-14.5)	9.1 (8.1-10.4)
2014	15.5 (13.9-17.3)	13.7 (12.4-15.1)	19.0 (17.1-21.1)	18.7 (16.7-20.8)	13.2 (11.8-14.9)	9.3 (8.2-10.5)
2015	15.8 (14.1-17.6)	13.9 (12.5-15.3)	19.3 (17.4-21.5)	19.0 (17.1-21.2)	13.5 (12.0-15.2)	9.4 (8.3-10.7)
2016	16.1 (14.4-18.0)	14.0 (12.7-15.5)	19.8 (17.8-22.0)	19.5 (17.5-21.7)	13.8 (12.2-15.5)	9.5 (8.4-10.8)
2017	16.4 (14.7-18.3)	14.1 (12.8-15.6)	20.2 (18.2-22.5)	19.9 (17.9-22.2)	14.0 (12.4-15.8)	9.6 (8.5-10.9)

Table1. (*continued*)

	Global	High SDI	High-middle SDI	Middle SDI	Middle-low SDI	Low SDI
2018	16.5 (14.8-18.4)	14.3 (12.9-15.8)	20.4 (18.4-22.6)	20.1 (18.1-22.4)	14.2 (12.7-16.0)	9.7 (8.6-11.0)
2019	16.6 (14.9-18.5)	14.4 (13.0-15.9)	20.3 (18.3-22.5)	20.2 (18.1-22.4)	14.4 (12.8-16.2)	9.9 (8.7-11.2)
Change (%, 1990-2019)	52.6	55.1	57.8	65.7	53.6	20.6

Abbreviation: SDI, Socio-Demographic Index.
Numbers present (except for the last row): prevalence (95% uncertainty interval).
Uncertainty intervals are a range of values that are likely to include the correct estimate of health loss for a given cause. Limited data create substantial uncertainty.

S1175

Bariatric Surgery Reduces the Risk of Major Liver and Renal Outcomes in Patients With Nonalcoholic Fatty Liver Disease: A Large Population-Based Multicenter Study

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Introduction: Nonalcoholic fatty liver disease (NAFLD) is the hepatic manifestation of obesity and metabolic syndrome (Mets). MetS is a cluster of central obesity, dyslipidaemia, insulin resistance and hypertension. Bariatric surgery (BS) is an effective approach for weight loss and improvement in metabolic disorders. The long-term effects of BS on the major liver and renal outcomes in patients with NAFLD are uncertain. This study aimed to compare the association of BS with non-bariatric treatment (non-BS) and major adverse liver and renal outcomes.
Methods: This population-based, multicenter, retrospective cohort study was conducted using the TriNetX platform. All adult patients(>18 years) diagnosed with NAFLD were identified after excluding other chronic liver diseases. We performed a 1:1 propensity score matching (PSM) for demographics, body mass index (BMI), and comorbidities. BS procedures included Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy. The main outcome of our study was to assess the major adverse liver events such as cirrhosis, liver cancers, and renal outcomes as the incidence of CKD after BS. Hazard ratios(HR) were calculated to compare the association of BS with the outcomes.
Results: A total of 781,579 adult patients with NAFLD were identified. Among these, 9519 patients had a history of BS, and 772,060 participants did not. After PSM, BS and non-BS (9519 each) were well matched. For bariatric surgeries, 4378 (45.9%) patients had an RYGB. Among the BS cohort, a majority of participants were female and younger, White, and had a history of smoking. BS patients also had a higher mean BMI and were likely to have comorbidities such as diabetes, hypertension, cardiovascular diseases, chronic pulmonary diseases, and sleep apnea. In the adjusted analysis, for liver-related outcomes, the risks of cirrhosis (HR 0.80; 95%CI 0.63-0.98), hepatocellular carcinoma (HR 0.75; 95%CI 0.61-0.92), and malignant neoplasm of liver and intrahepatic bile duct (HR 0.80; 95%CI, 0.65-0.99), were significantly lower for BS patients. Similarly, BS patients had a lower risk of developing composite events of CKD than non-BS patients (HR 0.73; 95%CI 0.67-0.81). Likewise, the BS group was more protected against CKD for mild, moderate, ESRD and need for dialysis (Table).
Conclusion: In this large, propensity score-matched multicenter study of patients with NAFLD, BS was associated with a lower risk of major incident liver and renal events than those who did not undergo surgery.

Table 1. **Outcomes of bariatric surgery and non-bariatric surgery patients with NAFLD after propensity-matched analysis at 3 years of bariatric surgery**

Outcomes	BS (n=9519), n(%)	Non-BS (n=9519), n(%)	Hazard Ratio€ (95% CI)
Major liver-related outcomes			
Cirrhosis of liver	121(1.2)	154(1.6)	0.80(0.63-0.98)
Hepatocellular carcinoma	151(1.5)	204(2.1)	0.75(0.61-0.92)
Malignant neoplasm of liver and intrahepatic bileduct	159(1.6)	200(2.1)	0.80(0.65-0.99)
Major renal related outcome			
CKD stage 1 and 2	174(1.8)	234(2.4)	0.75(0.61-0.91)
CKD stage 3A and 3B	133(1.3)	179(1.8)	0.75(0.60-0.94)
End stage renal disease	211(2.2)	271(2.8)	0.79(0.66-0.94)
Composite endpoint of CKD*	823(8.6)	1118(11.7)	0.73(0.67-0.81)
Need for dialysis	67(0.7)	94(0.9)	0.72(0.52-0.98)

Abbreviations: BS, bariatric surgery; CI, confidence interval; CKD, chronic kidney disease.
*Composite endpoint of CKD was defined as CKD progression from five stages (stages 1-5).
€Adjusted for age, sex, ethnicity, race, smoking, hypertension, diabetes, hyperlipidemia, chronic respiratory diseases, chronic renal disease, and other comorbidities.

S1176

Dual Therapy With Metformin and Glucagon-Like Peptide-1 Receptor Agonists (GLP1-RA) Improves Mortality in Diabetic Cirrhotic Patients

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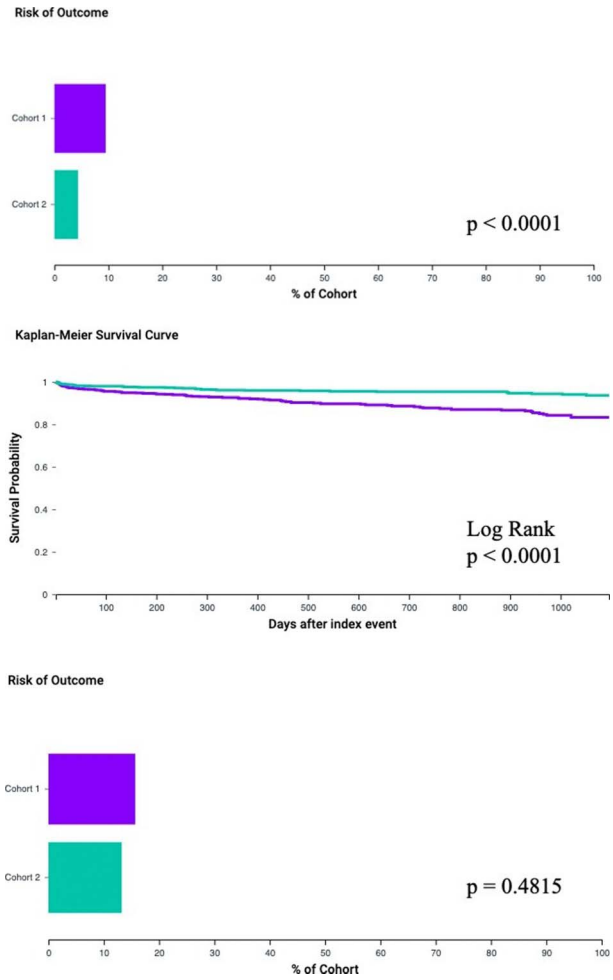
Introduction: Diabetes mellitus (DM) is a common comorbidity of cirrhosis, but there is limited research on the impact of dual diabetes therapies on mortality and hepatic decompensation in cirrhosis, particularly in non-alcoholic fatty liver disease (NAFLD).
Methods: We carried out propensity score-matched analyses of DM patients with cirrhosis comparing those on metformin with those on both metformin and an GLP1-RA. We queried for people with both Type 2 DM (DM2) and cirrhosis using ICD-10 codes on the TriNetX network. We collected patient demographics—age, sex, race, among others—and our primary outcome was mortality in three years. Our secondary outcome was a composite of hepatic decompensation events—hepatic encephalopathy, ascites, and variceal bleeding—over three years.
Results: We identified 873 patients with cirrhosis and DM2 who were on both metformin and a GLP1-RA. This cohort included 592 Whites (67.8%), 499 women (57.2%), had a mean age of 60.9 years, and was matched with a baseline group of patients who were on metformin alone (Table). The monotherapy group had a greater mortality risk (RR 2.2, 95%CI 1.5-3.2, p< 0.0001) with survival probability 83.3% at 3 years compared to the dual therapy group (93.6%, p< 0.0001). We also identified a subset of 204 patients within the dual therapy group that was confirmed to have cirrhosis from non-alcoholic steatohepatitis (NASH) and that included 157 Whites (77.0%), 142 women (69.6%), and had a mean age of 58.9 years. When comparing the NASH cohorts, they had equivalent mortality risk (RR 1.0, 95%CI 0.4-2.4, p=1) and survival at 3 years (95.5% vs. 97.8%, p=0.05). The composite risk for hepatic decompensation was equivalent between both therapy groups (Figure).
Conclusion: We found a potential mortality benefit in cirrhosis patients on dual metformin and GLP1-RA compared to metformin alone that was durable over a 3-years though this did not persist in our NASH subset. This finding was consistent for men, women, and White patients but particularly more pronounced in older men in our matched cohort analyses. There were too few non-White patients in the NASH cohort for meaningful analysis. Further, there was no clear effect on the composite risk for hepatic decompensation, and the lack of mortality benefit may be due to underreporting of NASH ICD-10 codes in the database. Further prospective studies in patients with biopsy-confirmed NASH and especially from underrepresented populations are needed to investigate our primary and secondary outcomes.



[1176] **Figure 1.** 3 Year Cumulative Incidence Purple=Patients treated with metformin; Green=Patients treated with metformin and an GLP1-RA; A - 3 Year All-Cause Mortality in DM Cirrhosis Patients; B - 3 Year All-Cause Mortality in DM Cirrhosis Patients; C - 3 Year Composite Hepatic Decompensation in DM NASH Cirrhosis Patients.

Table 1. Baseline Cohort Demographics after Propensity Score Matching (All Cirrhosis and NASH Cirrhosis Patients)

Demographics (All Cirrhosis Patients)	Metformin Only (n=873)	Metformin + GLP1-RA (n=873)
Mean Age (Years)	60.5	60.9
Men (n, %)	375 (43.0)	374 (42.8)
Women (n, %)	498 (57.0)	499 (57.2)
White (n, %)	599 (68.6)	592 (67.8)
Black/LatinX/Other (n, %)	195 (22.3)	201 (23.0)
Demographics (NASH Cirrhosis Patients)	**Metformin Only (n=204)**	**Metformin + GLP1-RA (n=204)**
Mean Age (Years)	59.2	58.9
Men (n, %)	62 (30.4)	62 (30.4)
Women (n, %)	142 (69.6)	142 (69.6)
White (n, %)	156 (76.5)	157 (77.0)
Black/LatinX/Other (n, %)	38 (27.6)	31 (20.0)

GLP1-RA = Glucagon-Like Peptide Receptor Agonist; NASH = Non-Alcoholic Steatohepatitis.

S1177

Use of GLP1 Agonists or SGLT2 Inhibitors in Non-Alcoholic Steatohepatitis Patients With T2DM Is Associated With a Lower Risk of Cirrhosis: A Nationwide Population-Based Study

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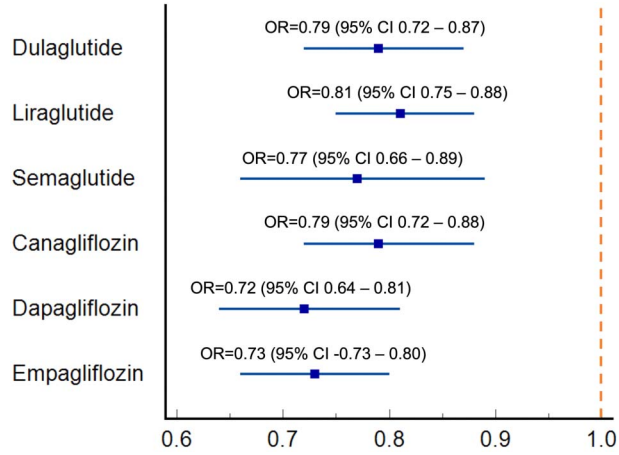
Introduction: Non-alcoholic steatohepatitis (NASH) is becoming increasingly prevalent and a leading cause of cirrhosis. Unfortunately, besides lifestyle changes, therapeutic options specifically targeting NASH are limited. Previous single center studies have suggested that glucagon-like peptide receptor (GLP1) agonists and sodium glucose co-transporter-2 (SGLT2) inhibitors may have a beneficial effect. We sought to investigate the prevalence of cirrhosis among NASH patients with type 2 diabetes mellitus (T2DM) who received GLP1 agonists or SGLT2 inhibitors in a large population-based study.

Methods: We used the Explorys clinical database which includes over 74 million de-identified unique patients across 300 hospitals in the United States. Patient were identified using SNOMED and ICD codes. We identified all patients (age >18 years) who were diagnosed with type 2 diabetes mellitus T2DM and NASH. Exclusion criteria included history of hepatitis B or C, alcoholic cirrhosis, hemochromatosis, alpha1-antitrypsin deficiency, cystic fibrosis, and Wilson's disease. We investigated the prevalence of cirrhosis in NASH patients with and without GLP1 Agonists and SGLT2 Inhibitors therapy. Odds ratios with 95% confidence intervals were calculated to evaluate the risk of cirrhosis.
Results: We identified 29,220 NASH patients with T2DM, of whom 5,120 (17.5%) and 3,850 (13.2%) received GLP1 agonists or SGLT2 inhibitors, respectively. 12,630 (43.2%) patients had a diagnosis of cirrhosis. Patients who received GLP1 agonists or SGLT2 inhibitors were more likely to be Caucasian [OR: 1.64; 95%CI: 1.52 – 1.77] and younger than 65 years [OR: 1.59; 95%CI: 1.51 – 1.68] (Table). There was no statistically significant gender-based difference identified. Use of GLP1 agonists or SGLT2 inhibitors was associated with a significantly lower risk of cirrhosis [OR: 0.83; 95%CI 0.79 – 0.88]. Sub-group analysis revealed that patients who received SGLT2 inhibitors had the lowest risk of developing cirrhosis [OR: 0.76; 95%CI 0.71 – 0.81] (Figure).
Conclusion: In this large retrospective study, we found that the use of GLP1 Agonists and SGLT2 Inhibitors in NASH patients with T2DM was associated with a significantly lower risk of cirrhosis. Furthermore, patients who received SGLT2 inhibitors were associated with the lowest risk of cirrhosis. Further prospective studies are needed to determine whether GLP1 agonists and SGLT2 Inhibitors may mitigate cirrhosis risk in NASH.



[1177] **Figure 1.** Logistic regression of cirrhosis risk with GLP1 agonists and SGLT2 inhibitors in NASH patients with T2DM.

Table 1. Demographics of patients

Variable	Patients who received GLP1/SGLT2				Patients without Cirrhosis	
	With Cirrhosis	%	Without Cirrhosis	%		
N	2,790		4,300		16590	%
Age 18 - 64	1420	50.9%	2,860	66.5%	9,660	58.2%
Age >65	1390	49.8%	1,460	34.0%	7,010	42.3%
Caucasian	2,490	89.2%	3,650	84.9%	12,940	78.0%
Hyperlipidemia	2,400	86.0%	3,950	91.9%	14,110	85.1%
HTN	1010	36.2%	1660	38.6%	5,050	30.4%
Obesity	2170	77.8%	3,380	78.6%	11,140	67.1%
Obstructive Sleep Apnea	1340	48.0%	2,040	47.4%	6,350	38.3%
Hypothyroidism	990	35.5%	1,330	30.9%	4,760	28.7%
PCOS	90	3.2%	220	5.1%	620	3.7%

HTN; Essential hypertension, PCOS; polycystic ovary syndrome.

S1178

Patients With Non-Alcoholic Fatty Liver Disease Demonstrate Heterogenous Risk Factors but Similar Rate of Progression to Cirrhosis Across the Age Spectrum

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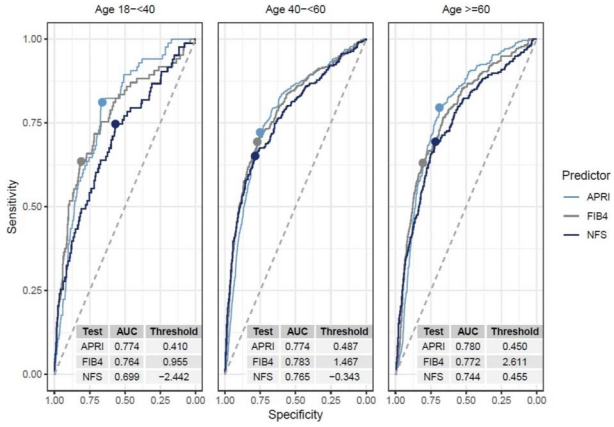
Introduction: Progression of non-alcoholic fatty liver disease (NAFLD) to cirrhosis occurs at varying rates. Reliably detecting advanced fibrosis in NAFLD patients across age groups and accurately predicting those at greatest risk of cirrhosis remains challenging. We aimed to characterize heterogeneity in metabolic and genetic risk factors for prevalent and incident cirrhosis among patients with NAFLD.
Methods: This was a single center analysis of patients with NAFLD seen at Michigan Medicine between 2010-2021. NAFLD was defined by hepatic steatosis on imaging, biopsy, or transient elastography in the absence of other chronic liver disease; the earliest date of hepatic steatosis was defined as the index date. Cirrhosis was determined by validated ICD-9/10 codes. Incident cirrhosis refers to new diagnosis > 1 year from the index date. In the subset of 4359 patients with genetic data, we evaluated frequency of known NAFLD risk alleles. We generated Fine-Gray competing risk models to compare risk of incident cirrhosis between ages.
Results: Of 31505 patients with NAFLD, there were 8252 age 18-< 40, 15035 age 40-< 60, and 8218 age ≥ 60 years at time of steatosis identification, of whom 804 had prevalent cirrhosis and 388 developed incident cirrhosis during 128090 person-years follow-up. Younger patients had a lower prevalence of diabetes but a higher prevalence of obesity class 3. They also had a higher frequency of the NAFLD-promoting *PNPLA3*-rs738409-G allele (GG genotype 11.8%, 9.6%, and 8.8% in age ranges 18-< 40, 40-< 60, and ≥ 60 years; p = 0.016). Frequency of NAFLD risk alleles in *GCKR*, *HSD17B13*, *MBOAT7*, and *TM6SF2* was not different across age groups. APRI, FIB4, and NAFLD fibrosis score (NFS) demonstrated similar performance for identifying prevalent cirrhosis in patients aged 40-< 60 years, but NFS performed more poorly in the 18-< 40 and ≥ 60 years group (AUC 0.691 and 0.744, respectively, p < 0.05 compared to FIB4 and APRI; Fig 1). There was no significant difference in the 10-year risk of incident cirrhosis between age groups overall (p = 0.107) or among several pre-specified subgroups.
Conclusion: In a large NAFLD cohort, a larger portion of younger patients were identified as having the high risk *PNPLA3*-rs738409-G allele. NFS was less accurate in identifying prevalent cirrhosis in those < 40 or ≥ 60 years old. Progression to cirrhosis was similar in patients < 40 years old compared to older patients, suggesting NAFLD in the young should not be considered more benign than in older patients.



[1178] **Figure 1.** Accuracy of Fibrosis-4, AST-to-platelet ratio index, and non-alcoholic fatty liver disease fibrosis score in predicting prevalent cirrhosis, stratified by age group. Point of maximal Youden J statistic is marked on each ROC curve. Optimal cutpoint (threshold) for each test is listed with area under the curve (AUC) in sub-Table of each age group. APRI, AST-to-platelet ratio index. FIB4, Fibrosis-4. NFS, non-alcoholic fatty liver disease fibrosis score.

Table 1. Multivariable model for incident cirrhosis. Race and sex are not shown but were included. Hazard ratios (HR) and 95% confidence interval (CI) are reported

Predictor	HR (95% CI)	P value
Age		
18-< 40 years	(referent)	
40-< 60 years	0.91 (0.66-1.24)	0.546
≥ 60 years	0.97 (0.66-1.44)	0.895
Diabetes	2.01 (1.51-2.67)	<0.001
Hypertension	1.49 (1.09-2.02)	0.011
Hyperlipidemia	1.25 (0.91-1.70)	0.163
Body mass index		
Normal	(referent)	
Overweight	1.67 (0.84-3.33)	0.145
Class 1 obesity	1.88 (0.96-3.69)	0.067
Class 2 obesity	1.63 (0.81-3.29)	0.171
Class 3 obesity	2.80 (1.42-5.54)	0.003
Alanine aminotransferase		
< ULN	(referent)	
1-< 2x ULN	1.63 (0.99-2.66)	0.053
2-< 5x ULN	3.61 (2.24-5.82)	<0.001
≥ 5x ULN	5.50 (3.16-9.58)	<0.001

Normal body mass index (BMI) was defined as BMI <23 in Asians and BMI <25 in non-Asian patients. Upper limit of normal (ULN) for alanine aminotransferase was defined as 19 U/L for women or 30 U/L for men.

S1179

Bulevirtide Monotherapy at Low and High Dose in Patients With Chronic Hepatitis Delta: 24-Week Interim Data of the Phase 3 MYR301 Study

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Introduction: Bulevirtide (BLV) is a first-in-class entry inhibitor for the treatment of chronic hepatitis D virus (cHDV) infection. BLV has shown pronounced virologic and biochemical responses in two Phase 2 trials. We present findings of a predefined 24-week interim analysis of the MYR301 Phase 3 study in HBV/HDV co-infected patients receiving 2 or 10 mg qd BLV monotherapy in comparison to no antiviral treatment.
Methods: 150 patients with cHDV infection were randomized 1:1:1 to no antiviral treatment for 48 weeks followed by 10 mg qd BLV for 96 weeks (arm A, n=51) or to 2 mg qd BLV (arm B, n=49) or 10 mg qd BLV (arm C, n=50) for 144 weeks with a 96-week treatment-free follow-up. The primary endpoint, combined response, was defined as undetectable HDV RNA (< LoD) or decrease by ≥2 $\log_{10}$ IU/mL and ALT normalization at week 48; secondary endpoints included undetectable HDV RNA, decline by ≥2 $\log_{10}$ IU/mL, ALT normalization, and HBsAg decline by ≥1 $\log_{10}$ IU/mL.
Results: *Owing to a communications embargo, Week 48 data were not available for this submission. We will include those data for presentation of this abstract at the ACG conference.* Patient characteristics: 57% were male, 83% were white, mean age was 42 years. Baseline HDV RNA levels were 5.05 $\log_{10}$ IU/mL; mean ALT was 110.9 U/L. BLV was well tolerated over the first 24 weeks; 421 treatment-emergent adverse events (TEAE) were reported: 55 TEAEs in 26 patients in arm A, 121 TEAEs in 32 patients in arm B, and 245 TEAEs in 36 patients in arm C. 48 TEAEs in arm B and 100 in arm C were assessed as possibly related to BLV. One serious TEAE was reported in one patient in arm A. At week 24, the proportions of patients achieving combined virologic and biochemical response were 37% in arm B and 28% in arm C (vs

0% in arm A, p< 0.0001). An HDV RNA decrease by ≥2 log_{10} IU/mL at week 24 from baseline was observed in 55% of patients in arm B and 68% in arm C (vs 4% in arm A, p< 0.0001). At week 24, ALT normalization was reached by 53% of arm B and 38% of arm C (vs 6% of arm A, p< 0.0001). One patient treated with 2 mg BLV achieved an HBsAg reduction ≥1 log_{10} IU/mL at week 24.
Conclusion: This Phase 3 trial confirms that monotherapy with BLV is safe and well tolerated in patients with compensated cHDV infection. 24 weeks of treatment with BLV was associated with significant HDV RNA declines and improvements in biochemical disease activity. These findings further support the conditional approval of BLV.

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S1180 ACG Governors Award for Excellence in Clinical Research

Doppler Ultrasound of the Portal Vein Assessed via Artificial Intelligence With and Without AFP Can Identify Hepatocellular Carcinoma

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Introduction: Recommendations for hepatocellular carcinoma (HCC) surveillance include assessment of the liver via ultrasound with or without measurement of alpha-fetoprotein (AFP). This approach is operator dependent and difficult to implement in resource-limited settings. We aimed at evaluating if a one-time assessment of the portal vein with sound waves analyzed via artificial intelligence (AI) could aid in HCC detection
Methods: We retrospectively evaluated 142 abdominal ultrasound examinations from our center at University of Minnesota, including 71 liver ultrasounds with HCCs and 71 liver ultrasounds from cirrhotic individuals without HCC. All tumors were confirmed by CT or MRI technology within a period of 6 months of ultrasonography. We included Doppler measurements of the portal vein, hepatic artery and the inferior vena cava. We focused on the analysis of the portal vein due to its large size compared to other vessels and simple approach for detection. As it is standard in AI training procedures, we split the data to 80% as train data and 20% as test data. Due to the limited size of our cohort, we adopted a popular image recognition AI model, VGG-16, pretrained on a large-scale dataset, ImageNet, to extract informative patterns from the measurements. We compared this approach to the measurement of AFP in the same patients
Results: Median age and gender were similar between HCC and control cohorts: 61 years (IQR 55-65) and 59 years (IQR 48-64), as well as 72% and 64% males, respectively. Median size of the HCCs was 2.8cm (IQR 2.3-4.4) which is considered early-stage. Assessment of the portal vein at a cutoff of 20 ng/ml showed an area under the receiving operator curve (AUROC) of 0.85 for HCC detection. A single measurement of the portal vein through our AI algorithm yielded an AUROC of 0.81 for HCC detection. Moreover, a combined AFP and single measurement of PV via AI yielded an impressive AUROC of 0.96 for HCC detection. Assessment of either the hepatic artery or inferior vena cava did not provide a significant AUROC or sensitivity for HCC
Conclusion: This is, to our knowledge, the first use of AI for sound analysis in cancer. Our preliminary findings suggest that a single measurement of the portal vein via AI can detect HCC in a similar fashion than AFP and the combination can detect HCC with extremely high accuracy. These findings, if validated in all-size and small HCC, could change our approach to HCC surveillance.

S1181 Presidential Poster Award

Beta-Blockers Protective of Decompensated Congestive Heart Failure (dCHF) in Patients With Cirrhosis After Transjugular Intrahepatic Shunt (TIPSS)

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Introduction: Transjugular intrahepatic portosystemic shunt (TIPSS) is indicated to control complications of portal hypertension. Several studies have shown that hypervolemic states, including peripheral edema and decompensated congestive heart failure (dCHF), are potential complications post-TIPSS. The present study aims to identify risk factors for post-TIPSS dCHF among patients with cirrhosis.
Methods: Data were retrospectively collected for consecutive TIPSS procedures at a tertiary care center from January 2009 to December 2019 in cirrhotic patients. Patient demographics, medications, and echocardiographic parameters were included as part of the baseline characteristics. The primary outcome of dCHF was reviewed up to 6 months post-procedure. Patients lost to follow-up, prior liver transplants, and failed TIPSS insertion were excluded. Patient characteristics were compared using Pearson's chi-squared tests, student's t-test, or Mann-Whitney U tests. Univariate and multivariate Cox proportional-hazard models were performed to identify independent predictors of volume overload.
Results: One hundred sixteen patients were included, of which 56.0% (65/116 patients) were found to have dCHF post-procedure. The incidence of dCHF was significantly higher in those with an elevated serum creatinine (1.36 vs. 1.05 mg/dL; p=0.006), ischemic heart disease (IHD) (15.4% vs. 3.92%; p=0.044), and chronic kidney disease (CKD) (47.7% vs. 23.5%; p=0.007), and significantly lower in those on beta-blocker therapy (27.7% vs. 52.9%; p=0.006). On multivariate analysis, IHD was associated with increased occurrence of dCHF [hazard ratio (HR): 2.43 (1.11-5.33), p=0.026] and beta-blocker therapy with decreased occurrence of dCHF [HR: 0.47 (0.26-0.84), p=0.011].
Conclusion: Ischemic heart disease was a predictor of dCHF in post-TIPSS patients with cirrhosis. Interestingly, beta-blocker therapy was protective of volume overload. Further studies are needed to identify patients at risk for dCHF post-TIPSS and to validate the protective effect of beta-blockers in this setting.

Table 1. Multivariate Cox Regression

Characteristic	HR (95% CI)	p-value
CKD	1.62 (0.96-2.74)	0.069
Beta-blocker usage	0.47 (0.26-0.84)	0.011
IHD	2.43 (1.11-5.33)	0.026
Age, mean ± SD	1.03 (0.99-1.06)	0.139
MELD-Na, median (IQR)	1.04 (0.99-1.08)	0.061

Abbreviations: HR - hazard ratio, CI - confidence interval, CKD - chronic kidney disease, IHD - ischemic heart disease, SD - standard deviation, MELD-Na - Model for End Stage Disease-Sodium, IQR - interquartile range.

S1182 WITHDRAWN

S1183 Presidential Poster Award

Assessment of Hospital Readmissions in Decompensated Cirrhosis: Are We Doing Enough?

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Introduction: The care provided for patients with decompensated cirrhosis is highly variable and associated with high 30 day readmission rates.
Methods: We conducted a single center retrospective analysis reviewing 30 day readmission rates for adults admitted for decompensated cirrhosis between 01/01/2018 and 12/31/2020. The severity of patients' cirrhosis was evaluated utilizing Na-MELD scoring. Patient demographics, etiology of cirrhosis, decompensating event, and outpatient primary care provider (PCP) follow-up were evaluated as possible risk factors for readmission. Descriptive statistics are presented as percentages. Chi-square or Fisher exact tests were used to analyze differences between groups for categorical variables. P-values are 2-sided, and statistical significance was defined as p-value < .05. Analyses were performed using SAS software, version 9.4.
Results: A total of 2,205 patient encounters were reviewed with 423 (19%) readmitted within 30 days of discharge. On average, these patients were readmitted within 12.3 days. The average Na-MELD score was 18.3 ± 7.1. Patients were primarily male (57%), Caucasian (83%), and had Medicare or Medicaid (70%). The age groups with the highest 30 day readmission rates were those 36-50 n=101 (23%) and 51-65

n=170 (22%), p-value .0007. Compared to patients who did not have alcoholic cirrhosis, patients who had alcoholic cirrhosis were significantly more likely to be readmitted within 30 days n=182 (23%) vs n=241 (17%), p-value .0003. The 30 day readmission rate was higher in those with ascites n=140 (25%) vs without ascites n=283 (17%), p-value .0001, and with hepatic encephalopathy n=76 (23%) vs without hepatic encephalopathy n=347 (18%), p-value .0344. In cases of spontaneous bacterial peritonitis (SBP) the 30 day readmission rate was n=140 (25%) vs n=283 (17%) without SBP, p-value .0238. In cases where a PCP evaluated the patient within 30 days after discharge (29%) the readmission rate decreased from n=324 (21%) down to n=99 (15%), p-value .0025.
Conclusion: Our study illustrates the statistically significant increase in 30 day readmission rates in patients with cirrhosis associated with alcohol, ascites, SBP and hepatic encephalopathy. Short interval outpatient follow-up with a PCP also significantly reduces 30 day readmission demonstrating the importance of collaboration between inpatient and outpatient providers.

Table 1. Autoimmune liver disease to include autoimmune hepatitis, primary sclerosing cholangitis, primary biliary cholangitis; 2: Metabolic liver disease to include hemochromatosis, α-1 antitrypsin deficiency, Wilson's disease

Baseline Characteristics	n (%)
Sex	
Female	950 (43)
Male	1255 (57)
Race	
African American/Black	40 (1.8)
American Indian or Alaskan Native	316 (14.5)
Asian	17 (0.8)
Caucasian/White	1803 (82.8)
Pacific Islander	2 (0.1)
Age Group	
18-35	154 (7)
36-50	438 (20)
51-65	784 (35)
65+	829 (38)
Cirrhosis Etiology	
Alcoholic Cirrhosis	780 (35)
Autoimmune Liver Disease[1]	24 (1)
Chronic Viral Hepatitis	121 (6)
Metabolic Liver Disease[2]	18 (1)
Non-Alcohol Fatty Liver Disease	180 (8)
Unclassified/Multifactorial	1082 (49)
Decompensating Event	
Ascites	1,167 (53)
Bleeding Esophageal Varices	143 (7)
Hepatic Encephalopathy	939 (43)
Jaundice	100 (5)

S1184 Acg/Naomi Nakao Gender-Based Research Award
Presidential Poster Award

Females Are at Lower Risk of Mortality as Compared to Males When Admitted for Esophageal Variceal Bleeding: A National Inpatient Sample Analysis

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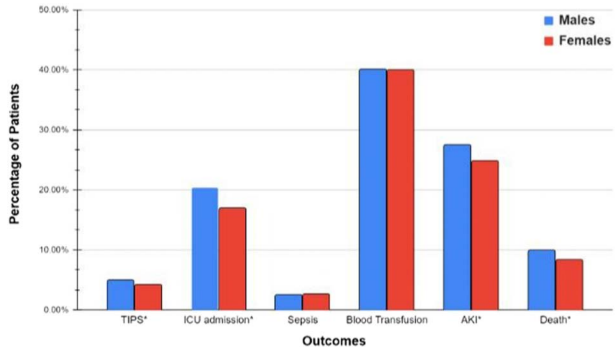
Introduction: The natural history of liver disease differs by gender. Women are significantly less likely to have chronic liver disease, with men accounting for 55–70% of the total cases. Women are thought to have a more favorable clinical course however the effect of gender on outcomes in patients with esophageal variceal bleeding is unknown. In this study, we analyze the effects of gender differences on outcomes in patients with esophageal variceal bleeding in the US.
Methods: The National Inpatient Sample (NIS) database was used to identify patients with a discharge diagnosis of esophageal varices with hemorrhage from 2016 to 2019. The relationship between gender and in-hospital mortality, endoscopy requirement, acute kidney injury (AKI), blood transfusion requirement, sepsis, ICU admission, placement of transjugular intrahepatic portosystemic shunt (TIPS), total hospitalization charge, and length of stay was analyzed using multivariate logistic regression. We adjusted for patient demographics, hospital characteristics, hepatic decompensations, and common etiologies of liver disease.
Results: We identified a total of 166,760 patients with variceal bleeding of which 32.7% were female. A complete list of patient characteristics is presented in Table. The risk of mortality rate in females was higher than males (aOR:0.88, p=0.005). There were no statistical differences between males and females in terms of length of stay (-0.001 days, p=0.982), hospitalization cost, and charge (-$2,332.25, p=0.214, and -$520.99, p=0.249, respectively). Females also had decreased risk of AKI (aOR:0.78, p< 0.001), ICU admission (aOR=0.84 p< 0.001) and TIPS (aOR=0.83 p=0.002). There was no statistically significant difference in the rates of endoscopy (aOR=1.01 p=0.30) and blood transfusion requirement (aOR=1.03 p=0.299) between the two groups. Outcomes stratified by gender are stratified in Table.
Conclusion: Women hospitalized with esophageal variceal bleeding are at a lower risk of death compared to males. Our study also highlights decreased disease severity in females as evidenced by lower rates of AKI, ICU admission and TIPS. Further research is needed to elucidate the factors affecting the outcomes, such as the role of estrogen, in patients admitted with acute variceal bleeding.



[1184] **Figure 1.** Displaying the outcomes in patients with variceal bleeding, stratified by gender use. * - reflects p-value of <0.05

Table 1. Patient characteristics of hospitalized patients with esophageal variceal bleeding stratified by gender

Variables	Men (n (%))	Women (n (%))	p-value
Patient age (yr)	55.65 (+/- 0.09)	58.45 (+/- 0.13)	< **0.001**
Age categories			< **0.001**
Age < 44	19,360 (17.26)	8,200 (15.02)	
Age 45-64	68,055 (60.68)	28,955 (53.03)	
Age >65	24,745 (22.06)	17,445 (31.95)	
Race			< **0.001**
White	68,890 (61.42)	36,635 (67.1)	
African American	8,375 (7.47)	3,640 (6.67)	
Hispanic	25,660 (22.88)	9,780 (17.91)	
Asian or Pacific Islander	2,775 (2.47)	1,365 (2.5)	
Native American	2,245 (2)	1,550 (2.84)	
Other	4,215 (3.76)	1,630 (2.99)	
Primary payer			< **0.001**
Medicare	34,210 (30.5)	21,430 (39.25)	
Medicaid	33,510 (29.88)	14,570 (26.68)	
Private and HMO	27,710 (24.71)	13,115 (24.02)	
Self Pay	11,315 (10.09)	3,720 (6.81)	
Hospital bed size			0.121
Small	18,960 (16.9)	9,255 (16.95)	
Medium	33,555 (29.92)	15,745 (28.84)	
Large	59,645 (53.18)	29,600 (54.21)	
Hospital teaching status			0.074
Non-Teaching	30,075 (26.81)	15,160 (27.77)	
Teaching	82,085 (73.19)	39,440 (72.23)	
Hospital region			**0.001**
Northeast	16,460 (14.68)	7,480 (13.7)	
Midwest	18,825 (16.78)	10,060 (18.42)	
South	46,770 (41.7)	22,715 (41.6)	
West	30,105 (26.84)	14,345 (26.27)	
Hospital location			0.682
Rural	106,630 (95.07)	51,850 (94.96)	
Urban	5,530 (4.93)	2,750 (5.04)	
Elixhauser comorbidities			**0.003**
1	1,030 (0.92)	720 (1.32)	
2	6,730 (6)	3,205 (5.87)	
≥ 3	104,400 (93.08)	50,675 (92.81)	
Liver etiology			
Alcohol related liver disease	69,375 (61.85)	21,925 (40.16)	< **0.001**
NASH	3,105 (2.77)	2,035 (3.73)	< **0.001**
Hepatitis B	2,995 (2.67)	730 (1.34)	< **0.001**
Hepatitis C	26,245 (23.4)	9,310 (17.05)	< **0.001**
Alcohol related hepatitis	16,480 (14.69)	5,955 (10.91)	< **0.001**
Complications of cirrhosis			

Table 1. (*continued*)

Variables	Men (n (%))	Women (n (%))	p-value
Ascites	50,490 (45.02)	23,870 (43.72)	**0.03**
SBP	3,815 (3.4)	1,700 (3.11)	0.17
Hepatorenal syndrome	5,745 (5.12)	2,570 (4.71)	0.1
Coagulopathy	61,685 (55)	28,035 (51.35)	< **0.001**
Hepatocellular carcinoma (HCC)	6,825 (6.09)	1,335 (2.45)	< **0.001**

S1185 Presidential Poster Award

Mortality in Patients With Lean NAFLD: A Systematic Review and Meta-Analysis

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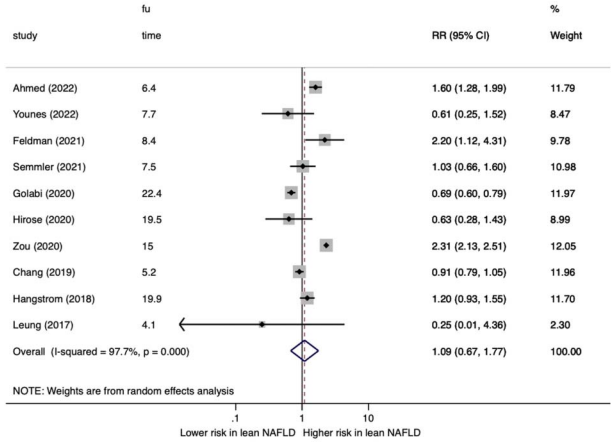
Introduction: While obesity is highly contributory to the development of nonalcoholic fatty liver disease (NAFLD), around 40% of patients with NAFLD are non-obese or lean. However, clinical outcomes of lean NAFLD are not well described, and the magnitude of the risk of mortality in lean patients with NAFLD compared to those who are non-lean remains uncertain.
Methods: PubMed, Embase, and Cochrane library database were searched from inception to May 28, 2022 to identify eligible cohort studies assessing the risk of mortality among lean and non-lean patients with NAFLD. Meta-analysis was performed using random-effects models to obtain pooled relative risks (RRs) with 95% confidence intervals (CIs). Heterogeneity between studies was calculated using the Cochran Q test and I statistics.
Results: Ten cohort studies with 109,151 patients with NAFLD were included. Patients with lean NAFLD had a comparable risk of all-cause mortality (RR, 1.09; 95% CI, 0.67 to 1.77; I-squared, 97.7%) and cardiovascular disease-specific mortality (RR, 1.12; 95% CI, 0.66 to 1.90; I-squared, 86.2%) to those with non-lean NAFLD. The pooled risk of liver disease-specific mortality was 1.88 times (RR; 95% CI, 1.02 to 3.45; I-squared, 29.4%) higher in patients with lean NAFLD.
Conclusion: In patients with NAFLD, lean individuals have a higher risk of liver disease-specific mortality than non-lean individuals, however, the risk of all-cause mortality and cardiovascular mortality did not differ among the two groups. Further understanding of the risk factors, genetic and ethnic variabilities, and metabolic process of lean NAFLD phenotype is warranted. Furthermore, research is needed to determine mechanisms on how lean NAFLD is associated with worse liver mortality and to develop individualized treatment strategies for patients with lean NAFLD.



[1185] **Figure 1.** Comparative risk of all-cause mortality in lean and non-lean patients with NAFLD.

S1186 Presidential Poster Award

Mild Thrombocytopenia as a Predictor of Surgical Outcomes Following Cholecystectomy: A Tool for Perioperative Assessment in Patients With Non-Alcoholic Fatty Liver Disease?

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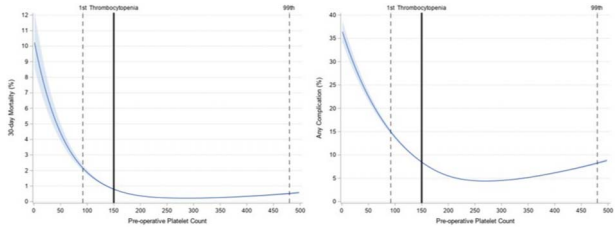
Introduction: As evidenced by its inclusion in estimations of liver fibrosis, thrombocytopenia is a well-defined abnormality in chronic hepatic disease. Studies show that platelet counts fewer than 160 x 109/L are an independent marker for severity of hepatic fibrosis. Non-alcoholic fatty liver disease (NAFLD) is now the most prevalent liver disorder in Western countries making characterization of morbidity increasingly important. There is a paucity of information available to characterize perioperative risk for patients with NAFLD. We used a threshold of 150 x 109 as a surrogate for NAFLD in patients undergoing laparoscopic cholecystectomy to study its effect on perioperative complications and mortality.
Methods: We queried the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database for cholecystectomies occurring from 2005 through 2018. Demographic differences between patients with and without thrombocytopenia were evaluated using the t-test or the chi-square test, whereas differences in outcome risk was evaluated using log-binomial regression models.
Results: We identified 437,630 patients who underwent cholecystectomy, of whom 6.9% had thrombocytopenia. Patients with thrombocytopenia were more often male, older, with chronic disease. As shown in Table and Figure, patients with thrombocytopenia had higher 30-day mortality rates risk ratio (RR) 5.3 (95% CI: 4.8-5.9) and higher complication rates RR 2.4 (95% CI: 2.3-2.5). The most frequent complications included respiratory, need for transfusion, and renal.
Conclusion: Peri-operatively, patients with mild thrombocytopenia undergoing cholecystectomy had higher mortality rates and complications compared to patients with normal platelet counts, and this effect continued as thrombocytopenia became more pronounced. Other etiologies of mild thrombocytopenia could not be excluded; however, aside from cancer (a small proportion) these are unlikely to affect clinical outcomes. Currently, most society guidelines including the AASLD practice guidance do not recommend NAFLD screening in the general population even among high-risk patients with diabetes or obesity. Thrombocytopenia might be a promising, cost-effective tool for NAFLD screening especially if used in high-risk populations (male gender, hypertension or diabetes, with or without high BMI). Furthermore, our study suggests that platelet counts may have utility in predicting peri-operative outcomes in this population.



[1186] **Figure 1.** Estimated rate of 30-day Mortality (left) and having any complication (right; infection, cardiac, respiratory, thrombotic, transfusion, renal, and/or unplanned return to the OR) across observed pre-operative platelet counts. Shaded areas represent 95% confidence intervals. The solid vertical line defines thrombocytopenia threshold at 150 x 109/L. The dashed vertical lines identify the 1st and 99th percentile of pre-operative platelet counts (92 and 480, respectively) indicating that <1% of the pre-operative platelet counts were below 92 or above 480.

Table 1. Unadjusted outcomes

	Thrombocytopenia			
	No	**Yes**	**Ratio (95% CI)**	***p***
Sample Size	407,380	30,250	-	-
30-day Mortality	0.3	1.7	5.3 (4.8-5.9)	<.001
Complication	5.2	12.4	2.4 (2.3-2.5)	<.001
Cardiac	0.2	0.9	3.7 (3.2-4.3)	<.001
Respiratory	0.5	2.2	4.1 (3.8-4.5)	<.001
Thrombotic	0.0	0.0	-	-
Transfusion	0.2	1.2	5.7 (5.0-6.4)	<.001
Renal	0.2	1.0	4.2 (3.7-4.8)	<.001
Return to OR	1.2	2.2	1.9 (1.8-2.1)	<.001
Prolonged Hospitalization	0.1	0.3	2.7 (2.1-3.5)	<.001
Unplanned Readmission	55.0	72.9	1.3 (1.2-1.5)	<.001
Length of Stay				
Same-day Discharge				
Yes	43.4	21.5	0.5 (0.5-0.5)	<.001
No (days)	3.8	5.5	1.5 (1.4-1.5)	<.001

Note. Data presented as estimated percent or days. Thrombocytopenia defined as pre-operative platelet count less than 150 x 109/L. The ratios for 30-day Mortality through Unplanned Readmission are risk ratios. For all ratios, a ratio greater than 1 indicates greater unadjusted outcome for patients with thrombocytopenia.

S1187 Presidential Poster Award

Clinical and Economic Burden of Patients With HRS-AKI Treated With Current Standard of Care: Retrospective Analysis of Real World Data

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Introduction: Hepatorenal syndrome-acute kidney injury (HRS-AKI) is a serious complication in cirrhotic patients, leading to significant morbidity and mortality. The purpose of this study was to evaluate clinical characteristics and treatment (Tx) response of HRS-AKI patients receiving currently available standard of care (SOC) treatment.
Methods: Cerner Real World Data (from 113 U.S. health systems) was used to identify adult HRS-AKI (ICD-10, K76.7) patients hospitalized between 2016 and 2020. Patients with baseline serum creatinine (SCr) >1.5mg/dL treated with midodrine (MID), octreotide (OCT), or norepinephrine (NOR) were included. Tx response was assessed based on baseline SCr and post-Tx SCr readings (Day 14 or Tx discontinuation, whichever came first). Complete response was achieved if post-Tx SCr improved to ≤1.5 mg/dL; partial if decreased by ≥30% but remained >1.5 mg/dL; and no response if decreased by < 30%. Tx response by AKI stage using KDIGO guidelines and several comorbidities during hospitalization were also evaluated, including mechanical ventilation (MV), respiratory failure (RF), and fluid overload.
Results: A total of 3,918 patients with HRS-AKI (64.5% male, mean age: 59.4±12.7 years) were identified. Most common precipitant included diuretic treatment (79.2%), paracentesis (55.7%), and gastrointestinal bleeding (29.7%). Majority of patients received MID or OCT (n=2,013, 51.4%) or MID+OCT without NOR (n=1,168, 29.8%) and 982 (25.1%) received NOR, regardless of other vasopressors. During hospitalization, 658 (16.8%) patients received MV, of whom 454 (11.6%) had RF. Additionally, 363 patients had RF without MV. Other common comorbid conditions included fluid overload (20.6%), pleural effusion (14.1%), and abdominal pain (9.6%). Complete response was observed in 683 patients overall (17.4%) and patients with AKI stage 1 or 2 (n=2,302) had a higher rate of complete response (13.0% vs 7.6%) and partial response (11.0% vs 8.0%) than patients with AKI stage 3. Additional patient and clinical characteristics are shown in Table.
Conclusion: At least one in six HRS-AKI patients required mechanical ventilation, had RF and/or fluid overload during hospitalization. Current SOC for HRS-AKI was ineffective. The results also suggest an inverse relationship between KDIGO-staged AKI and rate of complete response, indicating a benefit for earlier diagnosis and treatment initiation.

Table 1. Additional Patient and Clinical Characteristics

Characteristic	**N=3,918**
Patient Demographics	
Age, years, mean ± SD	59.4 ± 12.7
Male, n (%)	2,528 (64.5)
Ethnicity, n (%)	
White or Caucasian	3,243 (68.2)
Black or African American	325 (6.8)
Other	1,036 (21.8)
Unknown	151 (3.2)
Clinical Characteristics	

Table 1. (*continued*)

Characteristic	N=3,918
Baseline SCr*, mg/dL, mean ± SD	3.0 ± 1.7
Selected treatments, n (%)	
Midodrine or Octreotide without norepinephrine	2,013 (51.4)
Midodrine and Octreotide without norepinephrine	1,168 (29.8)
Norepinephrine (regardless of any other vasopressor)	982 (25.1)
Etiology of liver disease*, n (%)	
Alcoholic cirrhosis/hepatitis	1,779 (45.4)
Viral hepatitis	560 (14.3)
NASH/NAFLD	1,728 (44.1)
Precipitants of HRS-AKI*, n (%)	
Diuretic treatment	3,104 (79.2)
Paracentesis	2,183 (55.7)
Gastrointestinal bleeding	1,163 (29.7)
Other infections	1,101 (28.1)
Spontaneous bacterial peritonitis	690 (17.6)
Hepatocellular carcinoma	374 (9.5)
Use of mechanical ventilation and rate of respiratory failure, n (%)	
Mechanical ventilation	658 (16.8)
Respiratory failure	454 (11.6)
No respiratory failure	204 (5.2)
No mechanical ventilation	3,260 (83.2)
Respiratory failure	363 (9.3)
No respiratory failure	2,897 (73.9)
Response type by KDIGO-staged AKI	
No AKI, n (%)	1,103 (28.2)
Complete response, n (% of no AKI)	345 (31.3)
Partial response, n (% of no AKI)	146 (13.2)
No response, n (% of no AKI)	612 (55.5)
Stage 1 or 2 AKI, n (%)	2,302 (58.8)
Complete response, n (% of Stage 1 or 2 AKI)	299 (13.0)
Partial response, n (% of Stage 1 or 2 AKI)	244 (10.6)
No response, n (% of Stage 1 or 2 AKI)	1,759 (76.4)
Stage 3 AKI, n (%)	513 (13.1)
Complete response, n (% of Stage 3 AKI)	39 (7.6)
Partial response, n (% of Stage 3 AKI)	41 (8.0)
No response, n (% of Stage 3 AKI)	433 (84.4)
Comorbid conditions during hospitalization, n (%)	
Sepsis	846 (21.6)
Respiratory failure	817 (20.9)
Fluid overload	807 (20.6)
Pleural effusion	553 (14.1)
Abdominal pain	354 (9.0)
Diarrhea	199 (5.1)
Bradycardia	123 (3.1)
Dyspnea	89 (2.3)
Nausea	54 (1.4)

*not mutually exclusive. Abbreviations: AKI, acute kidney injury; HRS, hepatorenal syndrome; KDIGO, Kidney Disease Improving Global Outcomes; NAFLD, non-alcoholic fatty liver disease; NASH, non-alcoholic steatohepatitis; SCr, serum creatinine; SD, standard deviation.

S1188 Presidential Poster Award

NAFLD Prevalence in BMI Subclass and Outcomes in 2019

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Introduction: NAFLD has been historically associated with obesity but was recently found to have an association with lean individuals as well. We thereby conducted a nationwide study to identify the prevalence of NAFLD in different BMI categories and their association with mortality.

Methods: We queried the 2019 NIS database to identify all adult (>18 years) patients with NAFLD using appropriate ICD-10-CM codes. We categorized BMI into category I (19.9 or less), category II (20-24.9), category III (25-29.9), category IV (30-34.9), category V (35-39.9), and category VI (> 40) using appropriate ICD-10-CM codes. An univariate screen followed by multivariate logistic regression was performed to adjust for potential hospital and patient level confounders. Stata 17.0 software was used to perform all statistical analyses.
Results: A total of 532,485 NAFLD patients were identified which corresponds to 1.5% of the total US hospitalizations in the year 2019. Of which, 7,964 (1.5%) were category I, 7,530 (1.4%) were category II, 13,450 (2.5%) were category III, 36,650 (6.8%) were category IV, 42,715 (8%) were category V, and 94,425 (17.7%) were category VI. On multivariate analysis, we found that category I NAFLD patients had increased odds of mortality compared to other BMI subgroups [OR 1.71 (1.3-2.2); p< 0.001].
Conclusion: Obesity has been linked with the development of NAFLD. As expected, our study demonstrated an increasing prevalence of NAFLD with higher BMI. However, we found that 2.9% of NAFLD patients were not obese. This group of patients had been termed "lean NAFLD". The hypothesis for lean NAFLD is poorly understood with theories including higher bile production and genetic variations. Interestingly, we found that category I NAFLD patients had higher odds of mortality compared to other BMI groups. These findings could be a result of lean individuals suffering chronic medical conditions or certain malignancies and is beyond the scope of our study. Further studies regarding etiologies for lean NAFLD might bring clarity to this subject.

S1189 Presidential Poster Award

Safety and Efficacy of Oral TLR8 Agonist, Selgantolimod, in Viremic Adult Patients With Chronic Hepatitis B

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Introduction: Selgantolimod (GS-9688, SLGN) is an oral, Toll-like receptor 8 agonist in clinical development for the treatment of chronic hepatitis B (CHB). Here we present the results through week 48 on the safety and efficacy of 24 weeks of SLGN treatment in viremic CHB patients.
Methods: In this multicenter, double-blind, phase 2 study, viremic CHB patients were randomized (2:2:1) to SLGN 3 mg, 1.5 mg, and placebo (PBO) once a week for 24 weeks in combination with tenofovir alafenamide. Safety assessments included monitoring of treatment emergent adverse events (TEAE) and laboratory abnor-malities. The primary efficacy end point was the proportion of patients with ≥1 log10IU/ml decline in HBsAg levels from baseline at week 24. Exploratory end points include changes in pharmacodynamic (PD) markers (e.g. IL-12p40 and IL-1RA) and changes in peripheral T- cell, myeloid and NK-cell subsets.
Results: 67 patients (39 HBeAg-positive) were randomized. Baseline characteristics were similar across groups: majority were Asian (98.5%), male (58%) with a median (IQR) age of 47 (35–54) years, HBsAg level of 4.1 (3.5–4.7) log10IU/ml, and HBV DNA level of 7.5 (5.4–8.3) log10IU/ml. No patients achieved the primary end point of ≥1 log10IU/ml decline in HBsAg levels at week 24; however, 3 (6%) patients in the SLGN-treated achieved HBsAg decline ≥0.5 log10IU/ml compared to none in the placebo group. At week 48, 4 (7.4%) patients in the SLGN-treated group (including the 3 subjects at week 24) while none in the placebo group achieved HBsAg decline ≥0.5 log10IU/ml. Most frequent (≥10% SLGN-treated) TEAE (SLGN v PBO) were: nausea (26% v 0%), headache (15% v 15%), vomiting (17% v 0%), fatigue (15% v 0), and dizziness (11% v 0%). Grade ≥3 TEAE were observed in 0 (SLGN) v 7.7% (PBO) subjects; 1 subject (SLGN 3 mg) discontinued study due to TEAE of vomiting and abdominal pain. Most patients treated with SLGN showed decline of immune cell subsets in the circulation 4 h after dosing, concurrent with increases of circulating IL-12p40 and IL-1RA. Cell populations that decreased in the circulation included effector and memory T cell subsets. These parameters reverted to baseline values at 24 h post-dosing.
Conclusion: Oral SLGN up to 3 mg once weekly for 24 weeks is safe and well-tolerated. SLGN can induce sustained HBsAg declines of ≥0.5 log10IU/ml in some patients out to Week 48. Further evaluation of SLGN in combination with immunomodulatory and antiviral agents is planned.

S1190

Therapeutic Effect of Granulocyte Colony-Stimulating Factor Therapy for Acute-on-Chronic Liver Failure: A Meta-Analysis of Randomized Controlled Trials

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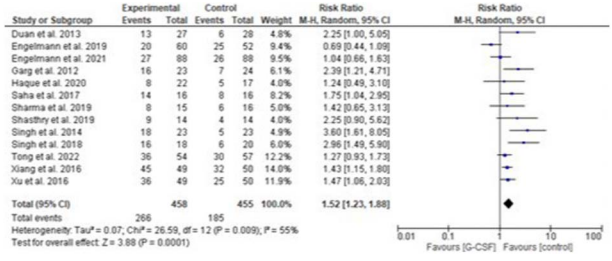
Introduction: Acute-on-chronic liver failure (ACLF) is a condition characterized by acute decompensation of chronic liver disease, accompanied by the failure of one or more extra-hepatic organs and high short-term mortality. Currently, liver transplantation is the only definitive treatment for ACLF but it is not beneficial to all patients due to limited donors, expensive procedure and high risk of adverse effects, so granulocyte stimulating factor (G-CSF) is considered as an alternative treatment. However, its therapeutic effectiveness is still debaTable, so we aimed to conduct a meta-analysis to evaluate the clinical efficacy of G-CSF In patients with ACLF.
Methods: MEDLINE and SCOPUS were queried from inception till June 2022 for randomized controlled trials (RCTs), without any restriction. RCTs evaluating effects of G-CSF on survival rates and occurrence of infection in patients with ACLF were incorporated. The results were reported using a random-effects meta-analysis and the Mantel-Haenszel risk ratio (RR).The Subgroup analysis was done to investigate the influence of study-level factors such as study setting, population and etiology on the outcomes of interest.
Results: Thirteen studies (n = 13) were included in our meta-analysis. The total number of participants in our study was 913, and the median study duration was 3 months. Our pooled analysis demonstrates that G-CSF therapy significantly improved survival rates (RR 1.52; 95% CI 1.23 to 1.88; p = 0.0001; **Figure**) in patients with ACLD. In our subgroup analysis, G-CSF was found to be associated with an improved survival rate in patients with viral hepatitis (RR 1.47; 95% CI 1.27 to 1.69; p < 0.00001). In contrast, results for patients with alcoholic hepatitis were insignificant (RR 1.66; 95% CI 0.88 to 3.16; p< 0.12). Pooled analysis also showed that G-CSF therapy significantly reduces the occurrence rate of infection more than SMT (RR 0.58; 95% CI 0.39 to 0.86; p= 0.006). In the subgroup analysis for viral hepatitis patients, G-CSF therapy was also significantly beneficial in reducing the occurrence rate of infection (RR 0.56; 95% CI 0.35 to 0.89; p=0.01), but in patients with alcoholic hepatitis, results were insignificant (RR 0.55; 95% CI 0.31 to 0.99; p=0.05).
Conclusion: Our findings indicate that G-CSF therapy is beneficial in improving survival rates and reducing the risk of infection in patients with ACLF. Hence, it can be used as an alternative treatment for patients with ACLF.



[1190] **Figure 1.** Survival rates in patients with alcoholic hepatitis and viral hepatitis

S1191

Treatment Response to Terlipressin Plus Albumin Varies by Precipitating Factor in Patients With Hepatorenal Syndrome Type 1

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Introduction: Hepatorenal syndrome (HRS) is a rapidly progressive form of renal failure that occurs in patients (pts) with advanced cirrhosis. Many cases of HRS are believed to be precipitated by an event such as infection, diuretic use, large volume paracentesis (LVP), or gastrointestinal bleeding (GIB). Terlipressin (TERLI) significantly reverses the renal and circulatory dysfunction in pts with HRS more effectively than placebo (PBO), although response rates may vary based on the presence of an underlying precipitant at baseline.
Methods: Using pooled data from 3 Phase III PBO-controlled studies (OT-0401, REVERSE, and CONFIRM), the incidence of HRS reversal—defined as >1 serum creatinine value of ≤1.5 mg/dL while on treatment—and HRS reversal without renal replacement therapy (RRT) by Day 30 after treatment with TERLI + albumin (n=352) vs PBO + albumin (n=256) was evaluated in subgroups of pts with HRS who presented with either infection, LVP (with or without diuretic use), GIB, or no identifiable precipitant.
Results: In the pooled population, pt age (mean±SD) was 54±11 years in each of the TERLI and PBO groups; 61% vs 65% of pts, respectively, were male; baseline MELD score was 33±6 in each group; and alcohol was the cause of cirrhosis in 60% vs 59% of pts, respectively. HRS reversal was achieved by 33% of pts in the TERLI group vs 16% in the PBO group ($P<.001$). HRS reversal without RRT was higher in the TERLI group (30%) vs the PBO group (15%; $P<.001$). Pts in the TERLI group who presented with infection had a higher incidence of HRS reversal and HRS reversal without RRT vs the PBO group ($P=.018$ and $P=.014$, respectively; Table). For LVP/diuretic use, HRS reversal was higher in the TERLI group vs the PBO group ($P=.025$), while a higher trend for HRS reversal without RRT was observed in the TERLI group ($P=.077$). HRS reversal and HRS reversal without RRT were similar between groups in pts with GIB, although the numbers in this group were small ($P=.347$ and $P=.234$, respectively). HRS reversal and HRS reversal without RRT were higher in TERLI-treated pts who presented without an identifiable precipitant vs the PBO group ($P<.001$ and $P=.007$, respectively).
Conclusion: TERLI-treated pts who presented with infection, LVP, or no identifiable precipitant for HRS achieved HRS reversal and avoided RRT more frequently than pts in the PBO group. Few pts who presented with GIB achieved HRS reversal, regardless of treatment. Precipitants for HRS may modify the clinical response to TERLI in pts with HRS.

Table 1. HRS Reversal and HRS Reversal without RRT through Day 30 by Possible Precipitating Factors for HRS and Treatment Group, Pooled ITT Population

Parameter	Infection			LVP and/or Diuretic Treatment			GIB			No Identifiable Precipitant		
	TERLI (n=59)	PBO (n=44)	*P* Value*	TERLI (n=83)	PBO (n=59)	*P* Value*	TERLI (n=19)	PBO (n=16)	*P* Value*	TERLI (n=177)	PBO (n=107)	*P* Value*
HRS Reversal†	24 (41)	8 (18)	.018	30 (36)	11 (19)	.025	4 (21)	1 (6)	.347	61 (35)	17 (16)	< .001
HRS Reversal without RRT through Day 30‡	21 (36)	6 (14)	.014	26 (31)	10 (17)	.077	3 (16)	0	.234	54 (31)	17 (16)	.007

Data are presented as n (%). Data are pooled from the Phase III studies: OT-0401, REVERSE, and CONFIRM.
*Calculated using a Fisher's exact test.
†The incidence of HRS reversal is defined as at least 1 SCr value of ≤1.5 mg/dL on treatment (up to 24 hours after the last dose of study medication). Any SCr values obtained posttransplant or RRT are excluded.
‡For OT-0401 and CONFIRM, dates/times are used to determine 30 days. For REVERSE, RRT is recorded with dates/times through the end of the treatment period at the Day 30 visits without an RRT date.
GIB, gastrointestinal bleeding; HRS, hepatorenal syndrome; ITT, intent-to-treat; LVP, large volume paracentesis; PBO, placebo; RRT, renal replacement therapy; SCr, serum creatinine; TERLI, terlipressin.

S1192

"If You Build It, They Will Come:" A Sengstaken-Blakemore Tube Quality Improvement Initiative

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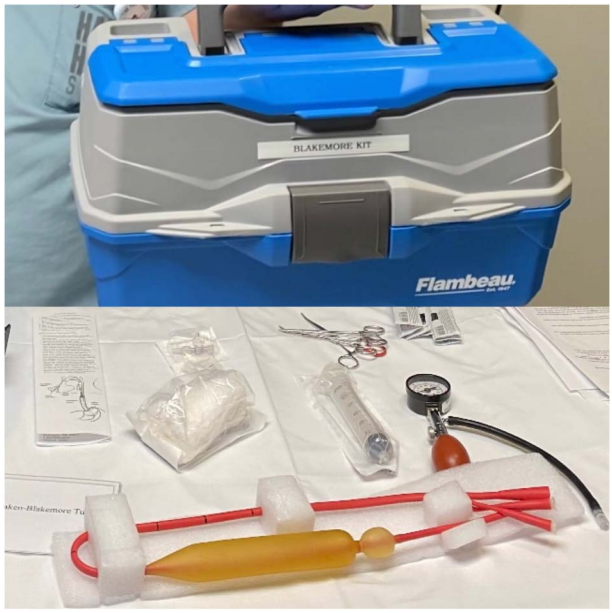
Introduction: Sengstaken-Blakemore Tube (SBT) can be a lifesaving temporizing measure in patients with massive esophageal variceal bleeding (EVB). Several key components are not provided in the SBT box which can be a barrier to timely and successful deployment of SBT. We created a Self-Sustainable Novel Blakemore Kit (SSNBK) that has all the components for placement of SBT along with easy-to-follow instruction cards. Our goal was to maintain a SSNBK in all critical care locations as a departmental stand of practice.
Methods: The SSNBK with all the components is shown in picture 1. We conceptualized that the use of SSNBK would reduce time and increase accuracy of SBT placement. As proof of concept, we conducted a pilot project in a simulated environment for the GI fellows. SSNBK was then deployed in GI lab, Emergency Department, Medical and Surgical ICU. Charge nurses at each location were tasked with restocking and logging the use of SSNBK. Monthly audits of the SSNBK were performed by investigators. Investigators served an advisory role and offered feedback related to the proper stocking and use of the SSNBK. Results from the monthly audits triggered plan-do-study-act (PDSA) cycles when the standard maintenance was not met. Root cause analysis (RCA) and process mapping were done by investigators to identify areas of improvement. (Figure)
Results: Fellows who utilized SNBKK were more likely to place Blakemore tube accurately in under 5 minutes compared to the fellows who did not utilize the kit. Monthly audit results are shown in Table. RCA of third month audit results revealed a lack of knowledge on obtaining certain components of the kit. This was addressed by educating charge nurses at all locations on specifics of attaining all the components from supply storage. At the end of the six-month audit there were 4 fully stocked SNBKK at all locations that were maintained by respective departments.
Conclusion: With our QI initiative based on a PDSA model we were able to successfully deploy a SSNBK in all critical care locations of our hospital. GI fellow speed and accuracy with simulated SBT placement was improved with use of the SSNBK. SSNBK is an easily implemented intervention that can reduce time–to-SBT placement. We also noticed increased utilization of SBT placement for massive variceal bleeding after creation and deployment of SSNBK. Further multicenter long-term studies are required to validate the SSNBK reduction in time to SBT placement, increased use of SBT, and its effect on patient outcomes.



[1192] **Figure 1.** Blakemore kit.

Table 1.

PILOT	Fellow 1 (NSBKK)	Fellow 2 (NSBKK)	Fellow 3 (No Kit)	Fellow 4 (No Kit)		
Time to SBT (Minutes: Seconds)	4.53	4.20	8.45	10.43		
Completion of all the steps (Yes/No)	Yes	Yes	Yes	Yes		
Needed help from Internet search engines	No	No	No	Yes		
Monthly audits	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Number of sites with fully stocked SSNBK (%), n=4	100	100	75	100	100	100
Number of times kits were utilized	0	1	1	0	2	1

S1193

Differences in Prevalence and Treatment of Hepatitis B Virus Infection in Asian and Black Patients

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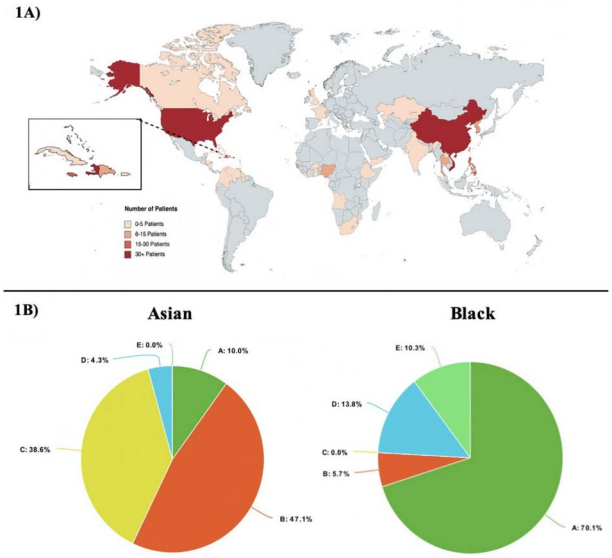
Introduction: Hepatitis B virus (HBV) infection, an important cause of chronic liver disease, has a prevalence of 4.3% in the United States (US) and causes significant morbidity and mortality. Immigrants and racial/ethnic minorities are disproportionately burdened by HBV. Few studies have investigated characteristics of HBV infection and treatment by race; therefore, we sought to understand and compare risk factors, barriers to care, and treatment patterns in Blacks and Asians, the two most disproportionately impacted groups.
Methods: Using informatics, we identified patients with possible HBV based on ICD-10 code B18.1, who were seen between May 2010 and July 2021 at a tertiary referral center. We performed retrospective chart review to confirm infection and captured sociodemographic/clinical data. We used descriptive statistics, Kruskal-Wallis and Pearson's chi squared tests to evaluate for differences between Black and Asian patients. Analyses were conducted using STATA 17.0(College Station, Texas).
Results: Out of 673 patients, 509 had confirmed HBV: 308 Black and 201 Asian patients. Compared to Asians, Blacks were older and more likely to be male and US-born. Top birth countries included Haiti, 22%, US, 18%, China, 16%, and Vietnam, 8% (Fig 1a). Risk factors for HBV differed significantly; 44% of Asians had a family history of HBV compared to 8% of Blacks, $p < 0.001$ (Table). Clinical notes for Black patients were more likely to document history of injection drug use, blood transfusions and tattoos. The predominant HBV genotype was A in Blacks and B in Asians (Fig 1b). Despite no significant differences in prevalence of cirrhosis or infection phenotype, there were treatment differences; 60 % of Blacks vs. 70% of Asians were treated, p 0.04. More Black patients had concurrent HIV or HCV, 14% and 5%, respectively compared to 0-1% of HIV and HCV in Asians. NAFLD was more common in Asians, 27%, vs 12% in Blacks. While 97% of Blacks and 70% of Asians met Hepatocellular carcinoma (HCC) screening criteria, only 67% of Blacks and 44% of Asians of those meeting criteria were screened in the past twelve months.
Conclusion: There are significant differences in risk factors, access to care and treatment between Black and Asian patients in our institution. Future studies should seek to understand barriers to treatment and the determinants of inadequate HCC screening in both Asian and Black patients, given the dire consequences of HBV-related HCC in these communities.



[1193] **Figure 1.** a) Birth Country Distribution of HBV Patients, b) Predominant HBV genotype of Black and Asian Patients

Table 1. Demographics and Clinical Characteristics of Black and Asian Patients with HBV

Variable	Black (n = 308)	Asian (n = 201)	p-value
Median Age, years (IQR)	56.97 (46.21-65.1)	51.54 (42.63-61.86)	0.003
Male Gender, n (%)	199 (64.8)	103 (51.2)	0.002
Hispanic Ethnicity, n (%)	23 (8.1)	3 (1.5)	0.002
English-speakers, n (%)	266 (86.4)	182 (90.6)	< 0.001
US-Born, n (%)	73 (32.9)	9 (5.1)	< 0.001
Insurance Type, n (%)			< 0.001
Private	185 (63.4)	148 (74.8)	
Medicaid/Medicare	93 (31.9)	33 (16.7)	
Uninsured	12 (4.1)	12 (6.1)	
Married (not separated), n (%)	146 (52.1)	143 (72.6)	< 0.001
Risk Factors, n (%)			
Intravenous Drug Use	4 (1.4)	1 (0.5)	< 0.001
Intranasal Cocaine	19 (6.6)	1 (0.5)	< 0.001
Non-IV Drug Use	19 (6.6)	1 (0.5)	< 0.001
Sexually Transmitted Diseases	34 (11.9)	5 (2.5)	< 0.001
Transfusions	54 (19.2)	16 (8.1)	< 0.001
Family history of hepatitis	11 (3.9)	6 (3.1)	< 0.001
Family history of HBV	22 (7.6)	87 (44.4)	< 0.001
Family history of HCC	12 (4.2)	37 (18.9)	< 0.001
Tattoos	26 (9)	9 (4.6)	< 0.001
Other Medical Conditions, n (%)			
Non-alcoholic Fatty Liver Disease (NAFLD)	32 (11.6)	53 (27.2)	< 0.0001
Human Immunodeficiency Virus (HIV)	39 (13.8)	0 (0)	< 0.001
Hepatitis C Virus (HCV)	13 (4.5)	2 (1)	< 0.001
Ever Treated for HBV, n (%)	166 (60.4)	136 (69.7)	0.037
Currently Treated for HBV, n (%)	148 (52.5)	105 (55)	0.59
Phenotype, n (%) Immune tolerant HbeAg positive active (> 20000 DNA) HbeAg negative active (> 2000 DNA) Inactive carrier Indeterminate	 2 (0.8) 7 (2.7) 9 (3.5) 175 (67.6) 66 (25.5)	 1 (0.5) 2 (1) 6 (3.1) 117 (60.3) 68 (35.1)	0.195
Met criteria for HCC Screening, n (%)	299 (97.1)	141 (70.2)	< 0.0001
HCC Screening < 6 months before visit, n (%)	219 (76.6)	91 (46.7)	< 0.001
HCC Screening < 12 months before visit, n (%)	190 (66.7)	86 (44.1)	< 0.001

Demographics and Clinical Characteristics of Black and Asian Patients with HBVp value of <0.05 is considered significant).

S1194

***Clostridium difficile* Infection Increases In-Hospital Mortality, Length of Stay, and Hospital Cost but Not 30-Day Mortality in Cirrhotic Patients: A Systematic Review and Meta-Analysis**

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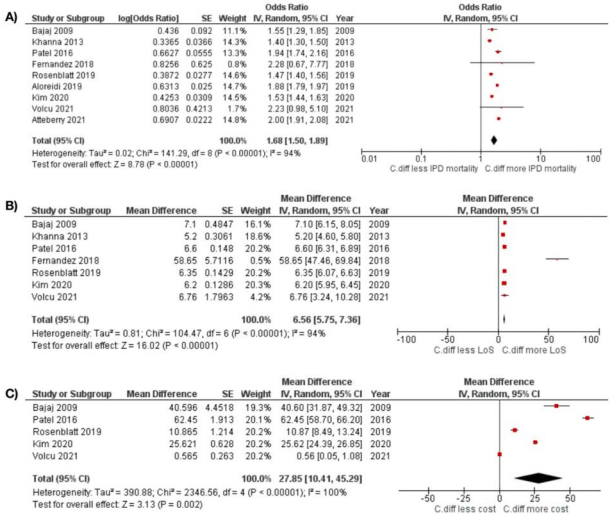
Introduction: *Clostridium difficile* infection (CDI) is a leading cause of nosocomial infection and is associated with higher morbidity and mortality. Cirrhotic patients are more susceptible to CDI because of impaired gut immune response, frequent hospitalization, and use of proton pump inhibitor and antibiotics. We aim to investigate the impact of CDI on cirrhotic patients in terms of in-hospital and 30-day mortality, length of stay, and hospital cost.
Methods: Potentially eligible studies were identified from Embase, Medline, and Web of Sciences databases from inception to April 2022 using search strategy that comprised of terms for "cirrhosis" and "CDI". Eligible study must consist of one group of cirrhotic patients with CDI and control group of cirrhotic patients without CDI. The study must provide odds ratio (OR) and 95% confidence interval (95% CI). We extracted such data from each study to calculate mean difference (MD) or OR. Pooled MD/OR were then calculated by combining MD/OR of each study using random-effects model. Funnel plot was used to assess for the presence of publication bias.
Results: A total of 2,320 articles were identified. After two rounds of independent review by two investigators, nine studies reporting in-hospital mortality and three reporting 30-day mortality of cirrhotic patients with CDI versus those without CDI were included into the meta-analysis. The meta-analysis of nine studies consisting of 7,746,126 patients revealed a significant association between CDI and in-hospital mortality in cirrhotic patients with the pooled OR of 1.68 (95%CI 1.29-1.85, I2 94%, Figure A). Length of stay and hospital cost were also higher in the CDI group (pooled MD of 6.56 days [95% CI 5.75-7.36, I2 94%, Figure B] and 27.85 (x $1,000) [95% CI 10.41-45.29, I2 100%, Figure C] consecutively). The funnel plot for the meta-analysis of the association between CDI and in-hospital mortality was fairly symmetric and was not suggestive of publication bias. From three studies comprising of 3,694 patients, we found that CDI was not associated with 30-day mortality in cirrhotic patients (pooled OR 1.20, 95%CI 0.75-2.24, I2 74%).
Conclusion: CDI is associated with increased in-hospital mortality, length of stay, and hospital costs, but not with 30-day mortality in cirrhotic patients. Aggressive monitoring for CDI during admission is needed in this patient population.



[1194] **Figure 1.** Forest plot of the associations between CDI in cirrhotic patients and A) in-hospital mortality, B) length of stay, C) hospital cost.

S1195

Assessment of TLL1 Variant and Risk of Hepatocellular Carcinoma in Latin Americans

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Introduction: Hepatocellular carcinoma (HCC) is an important global health problem accounting for 800,000 deaths per year. Recently, assessment of host genetics by identification of single nucleotide polymorphisms (SNPs) has shown to play a crucial role in identifying those at risk for HCC. Tolloid like protein 1 (*TLL1*) is one such SNP found on chromosome 4 which has been mainly shown to increase risk in hepatitis C virus (HCV)-associated HCC. However, most studies addressing its risk-association have been performed in Asian populations.
Methods: This was a cross-sectional analysis performed in Latin American individuals through the ESCALON network (www.escalon.eu). We analyzed DNA from 120 HCC patients and 293 cirrhotic controls from Argentina, Chile, Brazil, Colombia, Ecuador, and Peru for the variant rs1704200 in *TLL1*. The pathogenic variant of *TLL1* was genotyped using TaqMan-genotyping assay. Multiple logistic regression was used to evaluate the association between *TLL1* and HCC.
Results: The median age for HCC in Latin Americans was 68 years (IQR 62-72) with 59% being males. The most common cause of HCC was non-alcoholic fatty liver disease (59%) followed by alcohol-use related liver disease (27%). The proportions of individuals who developed HCC with a TLL1 pathogenic variant (AT/TT) was 18% and 26% for cirrhotics without HCC. The calculated Odds-Ratio (OR) for HCC among Latin Americans with the TLL1 variant was 0.699 (CI 0.379-1.291), suggesting non-significant decreased odds for HCC. When examining HCV-associated HCC (11%) we found that the OR for HCV-associated HCC in Latin Americans was 2.07 (CI 0.934-4.586), suggesting a non-significant increased odds of being diagnosed with HCC in Latin Americans with the variant.
Conclusion: *TLL1* mutations do not seem to associate with HCC development in Latin Americans considering all cause of HCC. Preliminary results suggest that there could be an increased risk for HCC in Latin Americans with HCV infection. Our results do not express a significant value as the cohort is limited in size. Currently, a larger study is ongoing.

S1196

Racial/Ethnic Disparities in Long-Term Risks of Cirrhosis Among U.S. Veterans With Metabolic Dysfunction-Associated Fatty Liver Disease

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Introduction: Patients with metabolic dysfunction associated fatty liver disease (MAFLD) have high prevalence of concurrent metabolic co-morbidities such as obesity, diabetes, hypertension, and metabolic syndrome. The long-term risks of advanced fibrosis (AF) or cirrhosis in MAFLD patients is not well understood. U.S. Veterans have a high prevalence of metabolic diseases, and this cohort is ideal to evaluate MAFLD outcomes. We evaluated prevalence and predictors of AF and cirrhosis among a national cohort of U.S. Veterans with MAFLD.
Methods: Adult Veterans with MAFLD were identified using data from the 2010-2021 Veterans Affairs Corporate Data Warehouse, which captures national data on over 6 million Veterans receiving health care across the U.S. MAFLD was identified using established definitions: presence of hepatic steatosis plus ≥1 of the following: 1) obesity, 2) concurrent diabetes mellitus, or 3) >2 metabolic risk factors (hypertension, hypertriglyceridemia, low levels of high-density lipoprotein, insulin resistance, or high-sensitivity C-reactive protein >2 mg/L). Cumulative incidence of AF (fibrosis-4 score >2.67) or cirrhosis (based on ICD-9/10) over a 10-year period was stratified by age, sex, race/ethnicity and other risk factors. Adjusted multivariate Cox proportional hazards models evaluated for predictors of AF or cirrhosis among MAFLD patients.
Results: Overall prevalence of MAFLD among U.S. Veterans was 56.2% (n=2,862,670), among whom the cumulative 10-year incidence of AF was 8.35% and of cirrhosis was 1.69% (Table). Compared to males, females had significantly lower risks of AF (2.46% vs 8.94%, HR 0.55, 95% CI 0.53-0.57) and cirrhosis (0.72% vs 1.79%, HR 0.53, 95% CI 0.50-0.57). Compared to non-Hispanic whites, significantly higher risk of cirrhosis was observed in American Indian/Alaska Natives (HR 1.28, 95% CI 1.14-1.43) and Hispanics (HR 1.14, 95% CI 1.09-1.18), whereas lower risk of cirrhosis was seen in Asians (HR 0.74, 95% CI 0.66-0.82) and African Americans (HR 0.85, 95% CI 0.83-0.88). Significantly higher risk of cirrhosis was seen in those with diabetes (HR 1.68, 95% CI 1.64-1.72).
Conclusion: Among a national cohort of U.S. Veterans with MAFLD, overall 10-year incidence of AF was 8.35% and of cirrhosis was 1.69%. Significant racial/ethnic disparities in long-term risks of AF and cirrhosis were observed, with highest risk of cirrhosis in Hispanics and American Indian/Alaska Natives, whereas lowest risk among Asians.

Table 1. Cumulative incidence of advanced fibrosis and cirrhosis in U.S. Veterans with MAFLD over 10-year period

Cumulative Incidence of Advanced Fibrosis			
	10-year	95% CI	10-year p-value
Total	8.35%	8.31%, 8.38%	n/a
Female	2.46%	2.39%, 2.52%	ref
Male	8.94%	8.90%, 8.98%	< 0.0001
Non-Hispanic White	8.87%	8.82%, 8.91%	ref
Black or African American	6.72%	6.65%, 6.79%	< 0.0001
Hispanic	7.42%	7.30%, 7.53%	< 0.0001
Asian or Pacific Islander	5.11%	4.90%, 5.31%	< 0.0001
American Indian or Alaska Native	7.71%	7.34%, 8.07%	< 0.0001
No Diabetes	7.12%	7.08%, 7.16%	ref
Diabetes	11.40%	11.33%, 11.48%	< 0.0001
No HIV	8.35%	8.32%, 8.38%	ref
HIV	5.22%	4.28%, 6.16%	< 0.0001

Cumulative Incidence of Cirrhosis			
	10-year	95% CI	p-value
Total	1.69%	1.68%, 1.71%	n/a
Female	0.72%	0.69%, 0.76%	ref
Male	1.79%	1.77%, 1.80%	< 0.0001
Non-Hispanic White	1.70%	1.68%, 1.72%	ref
Black or African American	1.68%	1.64%, 1.71%	0.28
Hispanic	1.98%	1.92%, 2.04%	< 0.0001
Asian or Pacific Islander	1.08%	0.99%, 1.18%	< 0.0001
American Indian or Alaska Native	2.12%	1.93%, 2.31%	< 0.0001
No Diabetes	1.29%	1.27%, 1.30%	ref
Diabetes	2.68%	2.64%, 2.71%	< 0.0001
No HIV	1.69%	1.68%, 1.71%	ref
HIV	2.20%	1.59%, 2.81%	0.10

S1197

Demographics of Decompensated Cirrhotic Patients Who Present to an Urban Tertiary Care Hospital

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Introduction: Decompensated cirrhosis is a common condition encountered at our urban, tertiary care center. Patients were admitted to either our primary hepatologist led service (HH), hospitalist led service with a hepatology consult (MH), or hospitalist led service without a hepatology consult (GM). We aim to identify demographic and clinical profiles of patients who presented for decompensated cirrhosis and were admitted to each of these services.
Methods: A retrospective chart review was conducted on 1,058 patients who presented to our tertiary care center for decompensated cirrhosis between January 1, 2016 and December 31, 2020. Patients admitted to the hospital with a complication of cirrhosis such as hepatic encephalopathy, ascites, gastrointestinal bleeding, hepatorenal syndrome, hepatocellular carcinoma, or spontaneous bacterial peritonitis were included in the study cohort. Demographic data, including age, gender, race, ethnicity, and BMI were recorded. We compared patient demographics of each service: HH, MH, and GM. Stata statistical software was utilized for statistical analysis.

Results: 349 patients met study criteria of which 115 patients were on GM, 112 on MH, and 122 on HH services. Most of our patients were male (49.6% on GM, 58.9% on MH, and 62.3% on HH, p = 0.13). Patients on GM services tended to be younger (56.1 years) compared to their MH and HH counterparts (59.2 vs 59.1 years respectively, p = 0.02). Additionally average BMI between the services was similar [GM (27.0), MH (26.7), and HH (28.1); p = 0.37]. Patients on all services were mainly non-Hispanic (56.5% on GM, 60.7% on MH, and 62.3% on HH, p = 0.55). However, when compared against each other, there were differences demonstrated between race on each service. The HH service had a higher number of Caucasian/white patients compared to the GM and MH services (32.7% vs 23.5% and 21.4% respectively, p = 0.02), while the GM services had a higher number of African American/black patients compared to HH services (36.5% vs 22.1%, p = 0.02). (Table)
Conclusion: This study found a difference amongst patients' race on the HH service compared to GM service. The difference may reflect the better establishment of care of white patients at outpatient hepatology clinics, thereby leading to admissions on hepatologist led services which in turn can lead to greater listing of white patients for orthotopic liver transplantation.

Table 1. Demographics of decompensated cirrhosis patients admitted to our hospital under the various services: hospitalist led service without a hepatology consult (GM), hospitalist led service with a hepatology consult (MH), hepatologist led service (HH)

Variable		GM	MH	HH	p-value
N		115	112	122	
Male		57 (49.6%)	66 (58.9%)	76 (62.3%)	0.12
Age, mean (SD)		56.1 (10.4)	59.2 (8.5)	59.1 (10.2)	0.022
Race					
	African American/Black	42 (36.5)	42 (37.5%)	27 (22.1%)	0.024
	Caucasian/White	27 (23.5)	24 (21.4%)	40 (32.8%)	
	Hispanic	37 (32.2%)	40 (35.7%)	36 (29.5%)	
	Asian/Pacific Islander	1 (0.9%)	0 (0.0)	3 (2.5%)	
	Unknown/Other	8 (7.0%)	6 (5.4%)	16 (13.1%)	
Ethnicity					
	Hispanic	39 (33.9%)	39 (34.8%)	36 (29.5%)	0.53
	Non-Hispanic	65 (56.5%)	68 (60.7%)	76 (62.3%)	
	Unknown	11 (9.6%)	5 (4.5%)	10 (8.2%)	
BMI, median		27.0 (23.1 - 31.4)	26.7 (23.7 – 31.3)	28.1 (24.6 – 32.6)	0.37

S1198

Treatment and Hepatocellular Carcinoma Screening Patterns Among Black Patients With Chronic Hepatitis B

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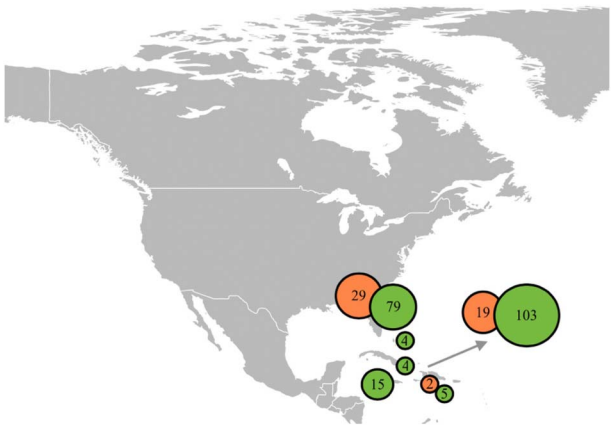
Introduction: Significant racial disparities exist in Hepatitis B virus (HBV) infection across the nation, from screening variability to treatment patterns and clinical outcomes. The Black community bears a disproportionately large disease burden. In this study, we sought to compare the disease courses between Black patients seen at a private tertiary referral center vs. those evaluated at a high-volume county safety net hospital.
Methods: Using informatics, we identified adult patients with chronic HBV based on ICD-10 codes, who had ≥1 clinic visit between January 1, 2010 and December 31, 2020 at University of Miami Hospital (UM) and Jackson Memorial Hospital (JM). We conducted retrospective chart review to gather demographic and clinical data. We used descriptive statistics, Kruskal-Wallis, and Pearson's chi squared tests to evaluate for differences between Black patients at each hospital with the significance interval set to $p < 0.05$. Analyses were conducted using STATA 17.0.
Results: Of 649 Black patients detected by informatics, 364 had confirmed HBV with 306 seen at UM and 58 at JM. Compared to JM, UM patients were significantly older, English speakers, and privately insured ($p < 0.001$) (Table). Most common birth countries included Haiti and the USA, among others (Figure). 78.8% of UM patients were evaluated by Hepatology, compared to 41.1% at JM. More JM patients had active hepatitis, and 15.5% had a high viral load (HBV DNA PCR >20,000) compared to 3.3% at UM. Patients seen at UM were more likely to be treated, 52.9%, vs. 24.6% at JM and placed on newer regimens (ie Tenofovir [TAF] and Entecavir). UM patients were significantly more likely to undergo HbeAg and HbeAb testing, compared to their JM counterparts. Black patients at JM were significantly more likely to have alcoholic liver disease, ascites, and orthotopic liver transplantation. Although more UM patients underwent surveillance for hepatocellular carcinoma (HCC), there was ultimately no significant difference in patients being diagnosed with HCC between hospitals.
Conclusion: These findings suggest that significant differences in demographics, referral patterns, laboratory evaluation, and management exist between Black patients at UM vs. JM, despite both hospitals being affiliated with the same academic institution. Our analysis on JM patients is ongoing and will be crucial to inform future interventions aimed at standardizing and providing evidence-based HBV care across medical centers.



[1198] **Figure 1.** Geographic distribution of Black patients' most common birth countries. Green UM, Orange JM.

Table 1. Comparison of demographics, screening, and management patterns between Black patients at JM vs. those at UM

Variable	Blacks @ JM (*n* = 58)	Blacks @ UM (*n* = 306)	*p*-value
Median Age, years (IQR)	54 (45-63)	59 (47-66)	0.0001
Male Gender, %	68.3	63.7	0.24
US Born, %	50.9	32.7	0.012
Department seen by, %			
Hepatology	41.4	78.8	< 0.001
General Internal Med	62.1	8.8	< 0.001
Gastroenterology	1.7	14.1	0.008
HbeAg / HbeAb checked, %	52.6	78.5	< 0.001
Active hepatitis, %	19	2.9	< 0.001
High viral load (>20,000), %	15.5	3.3	< 0.001
Currently on Treatment, %	24.6	52.9	< 0.001
Tenofovir	13.8	31.4	0.007
TDF	13.7	12.1	0.74
TAF	13.1	1.7	0.0014
Entecavir	13.4	5.2	0.078
Adefovir	0.6	0	0.54
Lamivudine	8.6	1.6	0.003
Alcoholic Liver Disease, %	14	1.8	< 0.001
Ascites, %	22.8	7.3	< 0.001
OLT, %	26.3	1.8	< 0.001
HCC Screening, %			
Fibroscan	17.5	31	0.04
AFP	42.11	78.3	< 0.001
Surveillance imaging (< 6 months)	58.9	77.9	0.003
Diagnosed with HCC	5.1	5.9	0.71

AFP = alpha-fetoprotein; OLT = orthotopic liver transplantation; HCC = hepatocellular carcinoma.

S1199

Risk and Incidence of Cardiovascular Diseases in Patients With Normal Weight and Nonalcoholic Fatty Liver Disease: A Large Population-Based Multicenter Study

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Introduction: Nonalcoholic fatty liver disease (NAFLD) is known as a risk of incident cardiovascular disease (CVD). Patients with NAFLD who are overweight or obese are at increased risk for adverse CVD events and diseases. However, it remains to be elucidated the association between normal-weight patients with NAFLD and risk of CVD. We investigated the risk of incident CVD in normal-weight individuals with NAFLD compared to overweight/obese-NAFLD patients at a population level.
Methods: This multicentre, retrospective cohort study was conducted using the TriNetX platform. Adult patients (>18 years) diagnosed with NAFLD were identified after excluding other chronic liver diseases between March 2008 and April 2022. Patients were stratified by body mass index (BMI) into normal weight (BMI, 18.5-24.9 kg/m2) and overweight/obese (BMI >25 kg/m2). Any patients with a history of CVD events or procedures before March 2008 were excluded. The main outcome was to assess the incidence of major CVD events. We performed a 1:1 propensity score matching (PSM) for demographics, smoking, hypertension, diabetes, hyperlipidemia, and comorbid conditions. We conducted sensitivity analyses by comparing individuals who were normal weight with NAFLD to those who were normal weight without NAFLD. The risk ratio (RR) was calculated to compare the association between weight and the outcome
Results: A total of 5,542,269 patients were analyzed. After PSM, there were 33,245 patients with normal weight or overweight/obesity and NAFLD. Normal weight individuals with NAFLD had a lower risk of CVD such as heart failure(HF), ischemic heart disease(IHD), acute myocardial infarction(AMI), composite MI, cerebrovascular disease, transient ischemic attack, arterial fibrillation (AF), and CVD-related procedures compared to the overweight/obese-NAFLD patients (Table). However, normal-weight individuals with NAFLD had a higher risk of CVD such as HF (RR 1.25, 95% CI 1.15-1.35), IHD(RR 1.19, 95% CI 1.13-1.26), AMI (RR 1.27,95% CI 1.10-1.46), composite MI (RR 1.26,95% CI 1.10-1.45), peripheral vascular diseases (RR 1.18,95% CI 1.12-1.25), and cerebrovascular disease(RR 1.20, 95% CI 1.12-1.29), compared to the normal-weight individuals without NAFLD.
Conclusion: Patients with normal-weight NAFLD are not protected from incident CVD compared to those without NAFLD. However, patients with overweight/obesity and NAFLD appear to be at increased risk for CVD compared to the normal-weight patients.

Table 1. Incidence of cardiovascular diseases (CVD) among patients with normal weight and NAFLD compared to those with overweight/obesity

CVD Outcomes	Primary Analysis to assess the CVD related outcomes		
	Normal weight NAFLD (N=33245), n(%)	Overweight/obese NAFLD (N=33245), n(%)	Risk ratio€ (95% CI)
Primary outcome (cardiovascular diseases)			
IHD	1661(4.9%)	2397(7.2%)	0.69(0.65-0.73)
HF	646(1.9%)	951(2.8%)	0.67(0.61-0.75)
Peripheral vascular disease	669(2.0%)	766(0.40%)	0.87(0.78-0.96)
AMI	268(0.8%)	389(1.1%)	0.68(0.59-0.80)
Composite MI*	519(1.5%)	691(2.0%)	0.75(0.67-0.84)
Cerebrovascular disease	2130(6.4%)	2708(8.1%)	0.78(0.74-0.83)
Stroke	562(1.6%)	565(1.7%)	0.99(0.88-1.17)
TIA	605(1.8)	672(2.0)	0.90(0.80-1.00)
AF	716(2.1%)	1066(3.2%)	0.67(0.61-0.73)
Composite Coronary artery procedures and surgeries	3592(10.8%)	4964(14.9)	0.72(0.69-0.75)

Composite MI was defined based on the Non–ST-segment elevation myocardial infarction, ST-segment elevation myocardial infarction,myocardial infarction type 1, type 2 and type 3.
€- Adjusted for age, sex, ethnicity, race, smoking, alcohol-related diseases, hypertension, diabetes, hyperlipidemia, chronic respiratory diseases, and chronic renal disease.

S1200

Temporal Trends, Outcomes and Predictors of Mortality of Renal Replacement Therapy in Hepatorenal Syndrome Patients: Inpatient Analysis 2000-2019

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Introduction: Hepatorenal syndrome (HRS) is a complication of end-stage renal failure. Liver transplantation (LT) remains the only definitive treatment for hepatorenal syndrome. The initiation of renal replacement therapy (RRT) in patients with HRS has extremely high mortality rates and has been utilized as a bridge to LT. We aimed to analyze temporal trends and outcomes of RRT in HRS patients.
Methods: The National Inpatient Sample (NIS) database from the year 2000 to 2019 was queried for patients to identify HRS patients using ICD codes. We used linear regression for continuous variables, the Cochran-Armitage Trend Test for categorical variables with two levels, and the Cochran-Mantel Haenszel Test for categorical variables with more than two levels. The p-values of < 0.01 were considered significant.
Results: We identified 518,464 patients with HRS, of which 97,037 (18.7%) underwent RRT. During 2000 to 2019, the weighted HRS-RRT prevalence increased from 11.2% to 19.9% with $P_{trend} < .0001$. The mortality of HRS without RRT decreased from 55.9% to 23.2% $P_{trend} < .0001$, and with RRT decreased from 58.3% to 31.5% $P_{trend} < .0001$. The mortality of HRS-RRT female patients decreased from 50.5% to 29.1%, males from 62.4% to 33.1%, Caucasians (CAU) from 60.0% to 30.7%, African Americans (AA) from 65.1% to 33.9%, Hispanics (H) from 58.0% to 26.6%, and Asians from 60.1% to 36.2%, all with $P_{trend} < .0001$. The multivariate analysis showed that older age (aOR:1.89; 99% CI, 1.18 – 3.03 ; P < .0001) for 85+, compared to 18-44, AA (aOR: 1.19; 99% CI, 1.03 – 1.37; P < .0001), compared to CAU, metastatic cancer (aOR: 1.87; 99% CI, 1.48 – 2.37; P < .0001), cerebrovascular disease (aOR: 1.66; 99% CI, 1.28 – 2.16; P < .0001) , CHF (aOR: 1.38; 99% CI, 1.24 – 1.55; P < .0001) , coagulopathy (aOR: 1.43; 99% CI, 1.31 – 1.56; P < .0001) , hypertension (aOR: 1.19; 99% CI, 1.04 – 1.37; P = 0.0010), seizures and epilepsy (aOR: 1.34; 99% CI, 1.09 – 1.65; P < .0001), and neurological disorders (aOR: 1.51; 99% CI, 1.36 – 1.69; P < .0001) were correlated with higher in-hospital mortality.
Conclusion: The mortality of HRS patients decreased over the last two decades. This may be explained by better ICU care and management and also by more access to LT and better post-transplant care during years. HRS patients with RRT showed higher mortality than those without RRT, possibly due to the severity of the disease in HRS-RRT cohort. Older age, male gender, AA and H race are risk factors for mortality in HRS patients going under RRT.

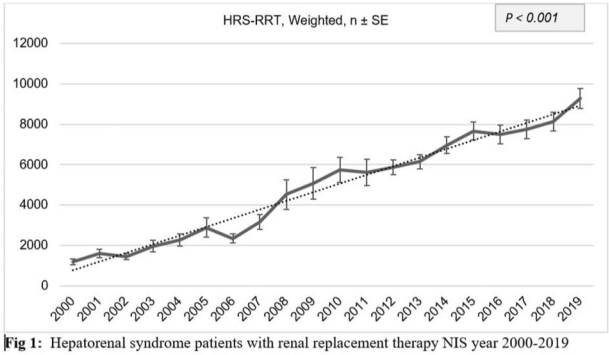

Fig 1: Hepatorenal syndrome patients with renal replacement therapy NIS year 2000-2019

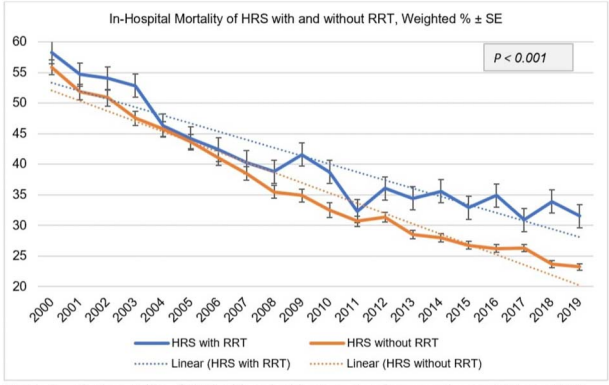

Fig 2: Inpatient mortality of HRS with and without renal replacement therapy NIS year 2000-2019

[1200] **Figure 1.** Weighted Hepatorenal syndrome patients with renal replacement therapy and Inpatient Mortality, NIS 2000 - 2019.

S1201

Epidemiological Data and Anti-Microbial Resistance of Nosocomial Spontaneous Bacterial Peritonitis: A Systematic Review and Meta-Analysis

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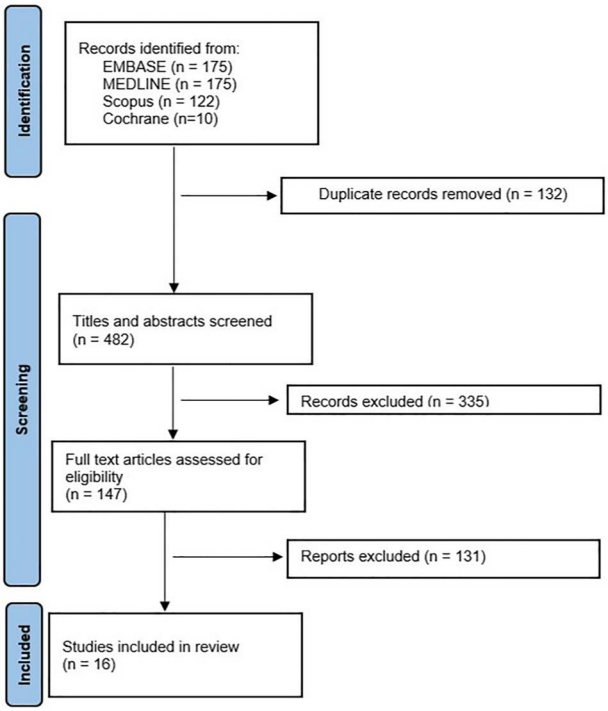
Introduction: Nosocomial Spontaneous Bacterial Peritonitis (NSBP) incidence has been on the rise due to frequent hospitalizations in the cirrhotic population along with rampant antibiotic use. There has been a shift in the bacterial spectrum including resistance profile with emergence of Multi Drug Resistant Organisms. The incidence of NSBP has not been studied. Furthermore, the rate of resistance to first-line agents in the management of SBP is not well reported in NSBP. Thus, we conducted a systematic review and meta-analysis of available literature.
Methods: A comprehensive search of several databases from each database's inception to May 2022 was conducted. The databases included PubMed, EMBASE, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, and Scopus. Studies included in the systematic review met the following inclusion criteria: adult patients, age >18 years, with a diagnosis of NSBP. NSBP was diagnosed as SBP diagnosed ≥ 48 hours of hospitalization. Studies that did not report the prevalence of NSBP or the incidence of anti-microbial resistance in NSBP were excluded. Data synthesis was obtained using random-effects meta-analysis. Pooled estimates were calculated following the restricted maximum likelihood method. Heterogeneity was reported as I2.
Results: After excluding the duplicates, a total of 482 unique titles were screened. Sixteen articles were included (Figure). The study characteristics are shown in Table. Eleven studies reported the prevalence of NSBP. The pooled incidence of NSBP was 9.45% [95% confidence interval (CI) 3.82-21.49%; I^2 99.40%]. Fifteen studies reported the resistance to ceftriaxone and only 8 studies reported the resistance to fluoroquinolones. The pooled incidence of resistance to ceftriaxone was 27.72% (95% CI 2.13-35.26%; I^2 84.52%). Similarly, the pooled incidence of resistance to fluoroquinolones was 24.71% (95% CI 18.19-32.64%; I^2 80.25%).

Conclusion: The incidence of NSBP in patients with cirrhosis is relatively high. The rates of bacterial resistance to the first-line anti-microbial agents used to treat SBP (i.e., ceftriaxone/fluoroquinolones) is exceptionally high in this patient population. Thus, in patients with NSBP who fail to improve, providers should have a high level of suspicion for drug-resistance being a contributing factor. Furthermore, the high resistance rates to fluoroquinolones in NSBP should be taken into consideration when placing this patient population on secondary prophylaxis.



[1201] **Figure 1.** Flow Chart of Literature Search and article selection.

Table 1. Study characteristics

Study	Year of Publication	Age	Sex	Number of Patients with Cirrhosis	Number of NSBP Patients.	Resistant to third generation cephalosporins.	Resistanceto Fluroquinoles.
Friedrich et al	2015	57	NS	311	218 (65%)	Not specified (NS)	Not specified.
Salerno et al	2016	NS	NS	308	24	NS	NS
Shultablers et al	2020	56 +_ 11	NS	514	127	NS	NS
Balaraju et al	2017	48.4+-14	NS	706	21	NS	NS
Jain et al	2019	48 (29-71)	19	870	19	NS	NS
Kim et al	2012	50.1 +- 9.4	16	130	19	1	NS
Kimmann et al	2018	56 (49-63)	128	1011	203	NS	NS
Li et al	2015	NS	NS	6086	99	NS	NS
Song et al	2006	58(8.7)	NS	106	32	14	8
Lan Juan Li et al	2015	55(23-79)	NS	6086	65	11	19
Elshamy et al	2022	45(30-80)	42	NS	68	13	12
Lutz et al	2016	59 (51-69)	56	NS	63	9	14
Bert et al	2003	50 26-80	NS	NS	53	13	22
Ding et al	2019	56.3 +_10.3	127	NS	155	27	23
Chon et al	2014	NS	NS	NS	NS	NS	NS
Piroth et al	2014	NS	NS	1659	NS	72	62

S1202

Drug-Induced Liver Injury (DILI) Ascribed to Non-Steroidal Anti-inflammatory Drugs (NSAIDs) in the USA: An Update With Genetic Correlations From the U.S. Drug-Induced Liver Injury Network (DILIN)

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Introduction: NSAIDs are widely used throughout the world, mainly for management of chronic inflammatory and painful conditions. NSAIDs rarely cause idiosyncratic, non-dose dependent liver injury. Recent evidence from the US DILIN, as well as elsewhere, implicates host immune responses as central to pathogenesis of such idiosyncratic DILI. Previously, we reported the US DILIN experience with NSAID DILI for 2004-2013.[1]
Aim: To update our clinical experience and report on HLA and other genetic factors recently described as important in idiosyncratic DILI.
Methods: The US DILIN, begun in 2004; is comprised of clinical sites [currently 7 in number], a data coordinating center, and the NIDDK. We enroll subjects with suspected DILI and follow them for at least 6 months.[2] We adjudicate causality both with RUCAM, and RECAM[3] and by a Delphic approach[4] and grade severity from mild to fatal or requiring liver transplant.[5] Between Sep 2004 and Mar 2022, we enrolled 2,626 subjects and adjudicated causality at 6 months in 2,498. Following adjudication, we identified 55 [41 (75%) women] as definitely [>95%], highly likely [75-95%], or probably [51-74% likely] due to NSAIDs.
Results: Diclofenac was the causative drug in 29/55 [53%] of cases, followed by celecoxib [7], ibuprofen [5], etodolac and meloxicam [4 each]. Median latency was 51 d. With the notable exceptions of meloxicam and oxaprozin [n=2], the type of liver injury was hepatocellular with median R 15-25. 4 subjects died within 6 mo of onset, and 2 others [1 each due to diclofenac and celecoxib] required liver transplants. 7 had chronic DILI at 6+ mo. HLA DRB1*03:01 was more frequent in those with NSAID DILI than in matched controls, and 6/10 had the ancestral AI extended haplotype. The likelihood of carrying the DRB1*04:03 allele increased with causality score confidence and with more severe DILI [p =0.006].
Conclusion: NSAID DILI is relatively rare in the US. The most common cause is diclofenac, which, if prescribed, should carry with it special warnings of risk and close observation, as in the package insert. The increased frequencies of HLA DRB1*03:01, an HLA type known to be associated with SLE and other auto-immune disorders, and the extended ancestral AI haplotype, suggests that immune-mediated responses are of central importance in pathogenesis.

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S1203

When Is Suspected Drug Induced Liver Injury (DILI) Not DILI? An Analysis of Unlikely Cases from the U.S. Drug Induced Liver Injury Network (DILIN)

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Introduction: The diagnosis of drug induced liver injury (DILI) is difficult as it is largely a clinical diagnosis of exclusion. To aid in diagnostic decision making, we reviewed cases enrolled in DILIN with an initial diagnosis of DILI that were ultimately adjudicated as unlikely with alternative etiologies accounting for the abnormal liver tests.
Methods: The DILIN is an ongoing NIH observational trial in which hepatologists enrolled patients from 2004 to the present with a high suspicion of DILI. Cases were adjudicated by a panel of experts through a structured process and scored from 1 (definite DILI) to 5 (unlikely DILI). Cases that were scored at least probable DILI (1-3) were compared to unlikely DILI (5). Unlikely cases were further reviewed for salient features and trends over time.
Results: From 9/04 to 12/21, 1916 cases were adjudicated; 134 (7%) were unlikely DILI. There were no demographic features to distinguish at least probable cases from unlikely cases. Unlikely cases more often had renal disease (18% vs 9%, p=0.005), HIV (7% vs 2% p< 0.001), hepatitis C (HCV) (12% vs 3% p< 0.001), and hepatitis B (5% vs 1 % p< 0.001). Unlikely DILI vs. true DILI was higher for brief latency between drug use and liver injury (< 1 week 9% vs 5%) or very long latency (>24 weeks 28% vs 16%) p=0.002 overall. The most common alternative diagnoses for unlikely cases were autoimmune hepatitis (AIH) (20%) and HCV (20%) (Table). Among white patients, carriage frequency of two copies of HLA-DQA1*03:01 was greater among those with AIH (13%) compared to DILI (3%) and population controls (1%). Patients with unlikely DILI had greater all-cause (16% vs 7%, p< 0.001) and liver related mortality (10% vs 3%, p< 0.001). Unlikely DILI cases died within six months at a higher rate (14% vs 6%, p=0.004). Transplant rates, hospitalization, and duration of illness were similar.
Conclusion: DILI is difficult to diagnose, even among experienced hepatologists. Demographic factors are not helpful in the initial diagnosis. Very short or very long latency between suspect drug and initial liver injury decreases likelihood of true DILI. HCV PCR testing is critical in presumed DILI. Genetic testing in white patients with AIH vs. DILI may be useful. Longitudinal follow up of patients with DILI is essential to refine the diagnosis, treat an alternative disease, and potentially absolve a medication presumed to have caused DILI.

Table 1. Alternative Diagnoses in 134 Unlikely DILI cases

Diagnosis	N	%	Comments
Autoimmune hepatitis	27	20.1	The most common incorrectly implicated class of medications were antibiotics (9/27) followed by HDS products (8/27). Nearly all had a liver biopsy, but findings were neither diagnostic for DILI nor classic for AIH. Other common themes included 1) prevalent systemic immune mediated disease (systemic lupus erythematous, hypothyroidism, inflammatory bowel disease, etc.) in 8/27 cases; 2) negative or relatively low antinuclear antibody titers (< 1:80) which increased on follow up; 3) a response to steroids in 14/27 with six of these having a flare in enzymes after immunosuppression titration or withdrawal.
Hepatitis C	27	20.1	Of the 24 that were acute cases, 17 were enrolled prior to 2011 and none since 2017. Most of these cases had negative HCV antibodies and were discovered to have a positive HCV viral load later in their clinical course. Three patients had prevalent detectable HCV virus which later cleared spontaneously on follow up.
Gallstones/BiliaryDisease	18	13.4	Eight cases with biliary tract malignancy. Three cases with primary sclerosing cholangitis. Normal imaging in some patients who acutely passed a stone. No differences in the presence of stones (3.3% vs. 6.7% p=0.32), or ductal dilation (3.3% vs. 2.5% p=0.89) between unlikely DILI and probable and higher DILI cases.
Hepatitis E	11	8.2	Diagnosis often delayed as test is a send-out in most centers.
Sepsis	7	5.2	Frequently in Intensive Care Unit on multiple drugs and hypotensive.
Other (>20 diverse etiologies)	44	32.8	Etiologies included alcohol, myopathy, Epstein Barr virus, cytomegalovirus, nonalcoholic steatohepatitis, metastatic cancer, and granulomatous liver disease.

S1204

A Case Series of Combined Portal Vein Recanalization and Transjugular Intrahepatic Portosystemic Shunt Placement in Cirrhotic Patients

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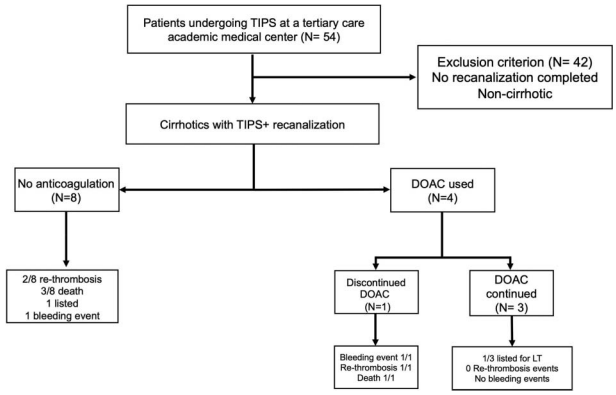
Introduction: Portal venous thrombus (PVT) occurs in an estimated 10-25% of cirrhotics (1). PVT can worsen portal hypertension and be a contraindication to liver transplant (LT). Portal venous recanalization (PVR) procedure after transjugular intrahepatic portosystemic shunt placement (TIPS) can be applied to restore venous patency. We examined the utility of PVR following TIPS in a cirrhotic cohort with PVT.
Methods: We performed a retrospective review of patients who had TIPS placement and PVT between 2011-2021 at a tertiary medical center. Inclusion criteria consisted of combined PVR with TIPS in cirrhotic patients. Demographic data were collected alongside data on etiology of cirrhosis, hepatic decompensations, and anticoagulation use. Model for end stage liver disease (MELD) score was calculated pre and post procedure. Outcome variables included re-thrombosis, post procedure bleeding, mortality, and LT. Descriptive statistics were represented by mean ± SD for continuous variables and frequency percentage for categorical variables.
Results: 12 patients were found with cirrhosis that had combined TIPS with PVR. Average age and BMI at procedure were 59.58 ± 11.82 years and 31.64 ± 7.35 kg/m2. Cirrhosis etiologies included NASH (50%), ETOH (17%), combined NASH/ETOH (8%), or other (25%). Baseline hepatic decompensations included ascites (75%), prior variceal bleed (50%), and hepatic encephalopathy (50%). Four (33%) patients were placed on anticoagulation (AC) post procedure. Overall re-thrombosis rate was 3/12 (25%). Amongst these 3 patients, 1 suffered re-thrombosis after AC had been suspended following variceal bleed. No other post-procedure bleeding or re-thrombosis were reported in the remaining AC cohort. Average pre-procedure MELD score was 14.41 ± 3.11, which increased to 16.44 ± 6.21 at one month, but decreased to 13 ± 2.94 at 6 months. Two patients were listed for LT, with the remaining 10 patients being deemed not candidates. Overall mortality rate was 33%, and no patients received LT.
Conclusion: PVR followed by TIPS placement is an option for cirrhotics with PVT. Our data indicate that re-thrombosis rate post-procedure was 25% overall, but 0% on DOAC therapy. Re-establishment of portal vein patency and flow may facilitate listing patients for LT as shown in our case series. Further studies with a larger patient population are needed to report on outcomes including LT.



[1204] **Figure 1.** A cohort of patients with portal venous thrombosis (PVT) who had transjugular intrahepatic portosystemic shunt placement (TIPS) at a tertiary medical center were retrospectively selected for analysis. Only patients with cirrhosis who had TIPS and portal venous recanalizatoin were included in our study. Data were collected regarding use of direct oral anticoagulants (DOACs), post procedure re-thrombosis, bleeding events, liver transplant (LT) and death.

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S1205

Duodenal Permeability Is Associated With Future Hospitalizations in Patients With Moderately Severe Cirrhosis

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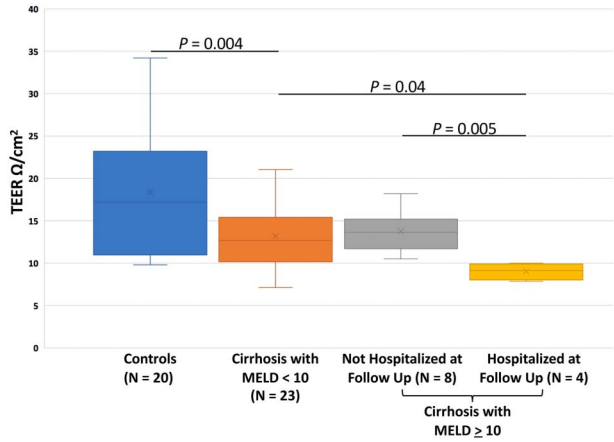
Introduction: Several complications of cirrhosis result from the translocation of bacteria or their products across the intestinal epithelium. We aimed to assess if intestinal permeability and mucosal bacteria associate with hospitalization in patients with cirrhosis.
Methods: We obtained duodenum, ileum, and colon tissue biopsies from patients with cirrhosis and controls without liver disease. Composition of the mucosal microbiota was determined via 16S rRNA gene sequencing and epithelial permeability assessed by measuring transepithelial electrical resistance (TEER). Outcomes of patients with cirrhosis at 6 months were assessed, with and without stratification by MELD score.
Results: We studied 46 patients with cirrhosis (10 alcohol-related) and 33 controls and obtained 62 duodenum, 31 ileum, and 34 colon biopsies. Patients with cirrhosis were similarly aged to controls (60 vs. 58 years) and had a similar number of extra-hepatic comorbidities (2 vs. 2). Patients with cirrhosis had median MELD 8 (IQR 7, 10); 66% were male. Compared to controls, patients with cirrhosis had lower TEER (i.e., increased epithelial permeability) in the duodenum (12.9 ± 3.4 Ω/cm2 vs. 18.5 ± 7.1 Ω/cm2; P = 0.002) but not in the ileum or colon. Among the 45 patients with cirrhosis followed for 6 months post-endoscopy, 13 patients were hospitalized, 4 for liver-related diagnoses, and none died. Duodenal alpha diversity was lower in all patients with cirrhosis who were hospitalized compared to those not hospitalized (inverse Simpson: 5.8 vs. 9.8, P < 0.05). TEER in each gut segment did not predict future hospitalization in the overall cohort of patients with cirrhosis. However, among patients with the highest quartile of MELD (>10; n = 12), duodenal TEER was lower in those who were hospitalized than those not hospitalized (9.0 ± 1.0 Ω/cm2 vs. 13.8 ± 2.5 Ω/cm2, P = 0.005; Figure) and lower in those hospitalized for a liver-related diagnosis than those not hospitalized for a liver-related diagnosis (9.8 ± 0.3 Ω/cm2 vs. 12.7 ± 3.2 Ω/cm2, P = 0.03). Compared to other etiologies, patients with alcohol-related cirrhosis trended towards lower duodenal TEER (11.3 Ω/cm 2 vs. 13.4 Ω/cm2, P = 0.08), even after controlling for MELD.
Conclusion: High duodenal epithelial permeability and low mucosa alpha diversity was associated with hospitalization and liver-related hospitalization in patients with moderately severe cirrhosis. Reversal of duodenal permeability may prevent hospitalizations among patients with cirrhosis.



[1205] **Figure 1.** Duodenal Permeability Varied by Patient Type.

S1206

Diagnostic Performance of Contrast-Enhanced Ultrasound in Diagnosing Hepatic Artery Occlusion After Liver Transplantation: A Systematic Review and Meta-Analysis

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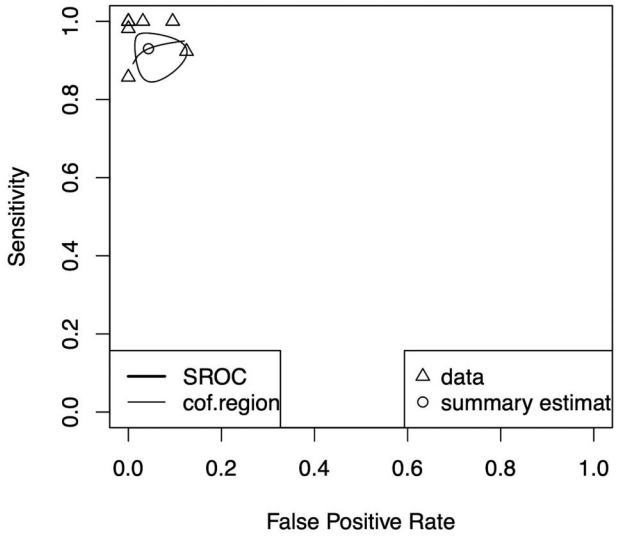
Introduction: Evaluating the patency of hepatic artery after liver transplantation is crucial. Hepatic artery occlusion (HAO) is a common complication in liver transplant patients. Although clinical follow-up, CT angiography, surgery are considered the reference standard tests, but it is time-consuming and have significant costs. Contrast-enhanced ultrasound (CEUS) is the simple and less invasive procedure which can provide the visualization of hepatic artery with high accuracy. The aim of the study is to evaluate the performance of CEUS in detecting hepatic artery occlusion in liver transplant candidates.
Methods: We performed a systemic review and meta-analysis of studies evaluating the performance of CEUS for detection of HAO in adult population. A literature search of EMBASE, Scopus, Medline was performed through March 2022. Pooled sensitivity, specificity, and log diagnostic odd ratio (LDOR) were calculated. Publication bias was assessed by Deeks' funnel plot.
Results: Of the 134 studies identifed in our search, 8 studies meet our inclusion criteria. Total number of liver transplant participants in our study was 1,145 and CEUS was performed in 434 participants. Using CT angiography, follow-up, and surgery as the gold standard, the sensitivity, specificity, and LDOR of contrast-enhanced ultrasound for detection of HAO were 0.97(0.94–0.99), 0.99(0.98–1.00), and 5.73 (4.54-6.93). There was, however, significant publication bias (p=0.0139).
Conclusion: Our analysis demonstrates that CEUS has excellent performance in detecting HAO after liver transplant. CEUS could be a reliable non-invasive alternative to diagnose HAO after liver transparent; however, there was potential publication bias.



[1206] **Figure 1.** Graphical representation of summary receiver operating characteristic curve from the meta-analysis of performance of contrast-enhanced ultrasound in detection of hepatic artery occlusion after liver transplantation.

S1207

Impact of Terlipressin on Serum Sodium Levels in Patients with Hepatorenal Syndrome Type 1 (HRS-1): CONFIRM Study

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Introduction: Hyponatremia is a complication of decompensated advance liver disease and is associated with a poor prognosis. HRS-1 is rapid kidney failure occurring in patients (pts) with decompensated cirrhosis and ascites. Terlipressin was reported to successfully reverse HRS and improve kidney function in eligible pts with HRS-1. However, it was previously reported that terlipressin might worsen hyponatremia.
Methods: Data from CONFIRM—the largest, prospective, randomized, placebo-controlled clinical study of terlipressin in pts with HRS-1 (N=300)—were retrospectively analyzed. Pts were randomly assigned to receive terlipressin plus albumin (Terli) or placebo plus albumin (Pbo). Overall and treatment response-dependent changes in serum sodium (Na) levels were evaluated from baseline to the end of treatment

(EOT). Complete response (CR=HRS reversal) was defined as at least 1 serum creatinine (SCr) value of ≤1.5 mg/dL while on treatment. Partial response (PR) was defined as ≥30% improvement in SCr but not HRS reversal, and no response (NR) meant no change or worsening of SCr. EOT was defined as the last date/time of treatment plus 24 hours.

Results: Baseline characteristics were compatible with decompensated liver disease and similar across treatment groups: in the Terli and Pbo groups, mean Model for End-Stage Liver Disease (MELD) (standard deviation [SD]) scores were 32.7 (6.6) and 33.1 (6.2), respectively. On average, hyponatremia was moderate. Mean (SD) serum Na levels in the safety population were almost identical: 133.1 (5.6) mmol/L and 133.3 (5.5) mmol/L, respectively. By EOT, serum Na levels increased significantly more in the Terli group vs the Pbo group, and in all clinical response categories defined by changes in SCr (Table). The improvement in serum Na was numerically higher in pts who had a CR vs PR; however, they were similar in the CR and NR groups (Table).

Conclusion: In contrast to previous observations, by EOT, hyponatremia in pts with HRS-1 improved to a significantly higher level when treated with Terli vs Pbo in all response categories. The results suggest that the use of Terli is safe with respect to hyponatremia.

Table 1. Change in serum sodium concentrations from baseline to EOT, intent-to-treat population

Group		Change in serum sodium level (mmol/L)		*P* value
		Terli (n=199)	Pbo (n=101)	
	n	194	98	
All	Mean (SD)	4.6 (5.1)	2.4 (5.3)	< .001
Complete response*	n	71	17	
	Mean (SD)	6.6 (5.7)	2.4 (4.8)	.003
Partial response†	n	21	26	
	Mean (SD)	3.9 (5.7)	1.4 (7.3)	.048
No response‡	n	134	50	
	Mean (SD)	5.4 (5.2)	2.5 (4.2)	< .001

*Complete response: HRS reversal.
†Partial response: ≥30% improvement in SCr but not HRS reversal.
‡No response: no change or worsening of SCr.
Pbo, placebo; SD, standard deviation; Terli, terlipressin.

S1208

Prevalence of Hepatitis B Virus (HBV) and Latent Tuberculosis Co-Infection and Risk of Drug-Induced Liver Injury Across Two Large HBV Cohorts in the United States

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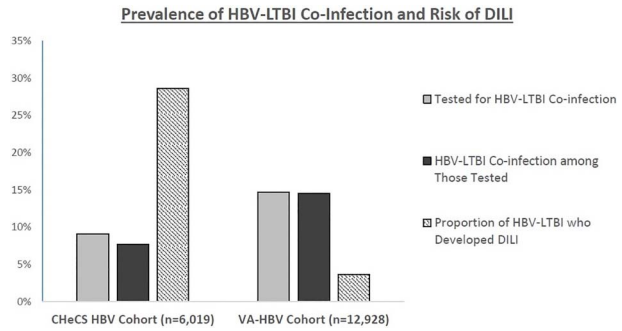
Introduction: Screening for hepatitis B virus (HBV) infection prior to starting tuberculosis (TB) treatment is important because HBV-TB co-infected patients have increased risk of drug-induced liver injury (DILI). However, there are limited real-world data on epidemiology of HBV-latent TB infection (LTBI) in the US. We evaluated prevalence and predictors of HBV-LTBI co-infection and DILI risk among two distinct US chronic HBV cohorts.

Methods: Adults with chronic HBV from 2010–2020 were identified among the Chronic Hepatitis Cohort Study (CHeCS) and the Veterans Affairs national chronic HBV cohort (VA-HBV). HBV-LTBI co-infection was identified based on laboratory data (TB-Quantiferon), ICD-9/10 codes, and prescription data. DILI was identified based on established definitions that incorporated ICD-9/10 codes and changes in alanine aminotransferase levels following start of LTBI treatment.

Results: Among 6,019 chronic HBV patients in the CHeCS cohort (44% female; 47% age 18-39y, 39% age 40-59y, 14% age ≥60y; 47% Asian, 20% non-Hispanic white (NHW), 14% African American (AA), 1% Hispanic; 3% HCV; 6% HIV), 9.1% were tested for TB, among which 7.7% had HBV-LTBI. Significantly higher odds of HBV-LTBI were observed in women vs. men (13% vs. 5%, OR 2.57, 95% CI 1.36-4.85 p< 0.01), but no other significant differences were observed. Among HBV-LTBI patients that received LTBI treatment, 28.6% developed DILI. Among 12,928 predominantly U.S.-born chronic HBV patients in the VA-HBV cohort (94% male; 6% age 18-39y, 30% age 40-59y, 65% age ≥60y; 10% Asian, 42% AA, 39% NHW, 2% Hispanic; 86% US-born; 15% HCV; 2.3% HIV), 14.7% were tested for TB, among which 14.5% had HBV-LTBI. Significantly higher odds of HBV-LTBI were observed in AA vs. NHW (15% vs. 12%, OR 1.70, 95% CI 1.18-2.43, p< 0.01) and in non-US born vs. US-born (25% vs. 13%, OR 2.13, 95% CI 1.34-4.00, p< 0.05). Among HBV-LTBI patients that received LTBI treatment, the proportion of patients that developed DILI was 3.6%.

Conclusion: Among two large distinct US cohorts of chronic HBV patients, testing for LTBI was infrequent despite relatively high prevalence of HBV-LTBI. While nearly 30% of HBV-LTBI patients in the predominantly Asian and younger CHeCS cohort developed DILI, only 3.6% in the predominantly older, US born VA-HBV cohort developed DILI. Better understanding risk factors for DILI among HBV-LTBI patients can help guide clinicians to appropriately modify LTBI treatment to reduce DILI risk. Supported by ACG Clinical Research Award (Figure).



[1208] **Figure 1.** Prevalence of HBV-LTBI Co-Infection and Risk of DILI.

S1209

Longer Time to Recovery From Acute Kidney Injury Is Associated with Increased Major Adverse Kidney Events in Patients With Cirrhosis

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Introduction: In patients with cirrhosis, non-recovery from acute kidney injury (AKI) is associated with major adverse kidney events (MAKE). However, in patients with AKI recovery, little is known about how the timing of recovery affects the risk of MAKE. Thus, we aimed to examine the association between timing of recovery and risk of MAKE in patients with AKI recovery.
Methods: Hospitalized patients with cirrhosis and AKI in the Cerner Health Facts database from 1/2009-09/2017 were assessed for AKI recovery and were followed for 180 days for outcomes. The timing of AKI recovery [return of serum creatinine (sCr) < 0.3mg/dL of baseline] from AKI onset was grouped into 0-2, 3-7, 8-14, and >14 days. The primary outcome was MAKE at 90-180 days. Per consensus definition, MAKE was defined as the composite outcome of >25% decline in estimated glomerular filtration rate (eGFR) compared with baseline with CKD stage >3 or progression of CKD (defined as >50% reduction in eGFR compared with baseline) or new hemodialysis. Competing risk multivariable modeling (death/transplant as competing risk) was performed to determine the independent association between timing of recovery and risk of MAKE.
Results: Out of 6,250 eligible patients, 4,655 (75%) achieved AKI recovery. The median age was 60 years [interquartile range (IQR) 25, 70], 71% White and 60% male. The most common etiologies of cirrhosis were non-alcoholic steatohepatitis (38%), alcohol (27%), and hepatitis C (17%), and the median (IQR) MELD-Na score was 23 (16, 28). 60% had ascites and the median baseline sCr was 1.00 (0.70, 1.44) mg/dL. The characteristics of patients who recovered 0-2 (n=2,791, 60%), 3-7 (n=1,455, 31%), , 8-14 (n=255, 5%), and >14 days (n=184, 4%) after AKI are shown in Table. The incidence of MAKE was 12%, 16%, 22%, and 25% for 0-2, 3-7, 8-14, and >14 days recovery groups, respectively. On adjusted multivariable competing risk analysis, compared to 0-2 days, recovery at 3-7, 8-14, and >14 days was independently associated with an increased risk for MAKE: sHR 1.48 (95% CI 1.03-2.14, p=0.036), sHR 2.92 (95% CI 1.11-4.31, p=0.023), and sHR 2.60 (95% CI 1.37-4.96, p=0.004), respectively.
Conclusion: In patients with cirrhosis who recover from AKI, longer time to recovery is associated with an increased risk of major adverse kidney events. Interventions to hasten recovery from AKI should be considered in patients with cirrhosis who develop AKI.

Table 1. Comparison of Patient and Clinical Demographics Between AKI Recovery Groups

Variable	0-2 Days N=2,791	3-8 Days N=1,455	8-14 days N=225	>14 days N=184	P-value
Age	60 (52, 69)	62 (53, 71)	62 (55, 71)	60 (50, 68)	< 0.001
Race, white	71	71	68	68	0.069
Sex, male	61	59	60	59	0.925
Etiology of cirrhosis					
Hepatitis C	17	18	17	21	0.635
Alcohol	29	24	19	27	0.001
NASH	37	40	47	34	0.006
Other	5	6	6	6	0.518
Unknown etiology	12	12	11	12	0.966
Ascites	56	66	68	73	< 0.001
Hepatic encephalopathy	25	27	31	32	0.054
Diabetes	50	55	64	54	< 0.001
Hypertension	57	60	63	9	0.044
Baseline creatinine, mg/dL	0.94 (0.70, 1.44)	1.00 (0.74, 1.42)	1.10 (0.80, 1.74)	1.07 (0.76, 1.82)	< 0.001
MELD-Na at time of AKI	20 (14, 26)	24 (19, 29)	26 (21, 30)	26 (23, 31)	< 0.001
Stage of AKI at diagnosis 1/2/3	87/10/3	69/20/11	61/21/18	63/14/13	< 0.001
Peak AKI stage 1/2/3	75/13/12	48/27/25	20/31/49	16/21/63	< 0.001
Infection	25	30	41	35	< 0.001
Required ICU care	24	28	37	33	< 0.001
Mechanical ventilation use	12	14	24	12	< 0.001
Vasopressor use	14	17	24	23	< 0.001

Continuous variables shown as median interquartile range (IQR); categorical variables presented as %.

S1210

Catching Hepatitis C: Universal Hepatitis C Screening in a Primary Care Setting in California's Central Valley

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Introduction: An estimated 2.4 million people in the United States are living with chronic hepatitis C (HCV). Approximately 40% of HCV patients are unaware of their diagnosis. Socioeconomic status and the ongoing opioid crisis are important risk factors for HCV infection. The rates of intravenous and intranasal drug use in California's Central Valley are among the highest in the nation and many are socioeconomically disadvantaged, creating a perfect scenario for HCV propagation. Identification and treatment of HCV is imperative to prevent morbidity and mortality as well as the spread of infection.
Methods: A universal HCV screening program was implemented in the internal and family medicine teaching clinics at a large federally qualified health center in the Central Valley. The electronic medical record identifies eligible patients based on current CDC guidelines. Once identified, an automatic prompt alerts the provider and HCV labs (HCV antibody test with reflex to genotype and RNA level) are auto-populated and available to be signed at the end of the visit. Patients with active HCV infection (positive RNA level) are contacted by the designed project coordinator, who facilitates linkage to care to a primary care provider as well as to the provider experienced in treating HCV. Linkage to care is defined as, completion of the first medical appointment.
Results: Universal screening was implemented on July 1, 2021. The data here was collected between July 1, 2021 and November 30, 2021. A total of 1152 patients were eligible for screening and 1084 patients completed the screening. Twenty-three patients tested positive for HCV Ab and 11 patients (9 male and 2 female) tested positive for HCV RNA. Most HCV RNA positive patients were Hispanic (36%) and African American (27%). The most common genotype was 1a (45%). Fifty-four percent of HCV RNA positive patients were linked to care.
Conclusion: Prior to the implementation of universal screening, only 54% eligible patients were screened in a 12-month period. Based on preliminary data, we screened 94% eligible patients within a 5-month period. In addition, only 31% of HCV patients prior to universal screening were linked to care compared to the 54% linked to care through our initiative. Our project encouraged providers to screen patients which helped identify HCV in the community. Although data collection is ongoing, we suspect this initiative will surpass the total number of patients screened and linked to care compared to previous practices.

S1211

Peripheral Immune Markers Can Detect Hepatocellular Carcinoma in Blood in a Latin American Cohort

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Introduction: Late detection of hepatocellular carcinoma (HCC) due to suboptimal surveillance with ultrasound is a major problem worldwide but with further importance in resource-limited settings. Blood biomarkers are urgently needed and currently alpha-fetoprotein (AFP) is the only accepted biomarker. However, AFP has poor accuracy for early HCC detection and has mainly been studied in resource-rich settings. We prospectively investigated circulating immune markers to detect HCC in 2 different groups of Latin American patients acting as discovery and validation cohorts.
Methods: Through the ESCALON network we prospectively evaluated a discovery cohort of 127 individuals with HCC and 113 cirrhotic controls from 3 countries in Latin America (Argentina, Brazil and Ecuador) as well as a validation cohort of 145 HCCs and 75 cirrhotic individuals from a different set of institutions in Latin America (Chile, Peru, Argentina, Ecuador, Colombia). Blood samples were analyzed for 37 unique immune markers using the multiplex Bio-Rad platform. Differences between HCC and cirrhosis were analyzed via t-test and ANOVA, and tuned with lasso coefficient-bootstrap computing. We used leave-one-out cross-validation (LOOCV) to compute an ROC curve.
Results: In the discovery cohort 22 markers showed a significant difference between cases and controls for all size tumors and 15 for those tumors $<$ 5cm. A set of 5 markers which were highly differential in HCC vs cirrhosis controls identified via Lasso and bootstrap: HGF, MIP-3a, MIG, CCL-25, and MDC. The AUROC for this top-5 set in detecting HCC was 0.83 (CI 0.78-0.88) for all tumors and 0.75 (CI 0.66-0.83) for tumors $<$ 5cm. In this same cohort, the AUROC for AFP was only 0.69 for all tumors and 0.66 for tumors $<$ 5cm. The addition of AFP to the top-5 markers did not significantly increase the AUROC (0.83 to 0.85). We investigated the set of top-5 markers in the validation cohort and found that they could detect HCC with an AUROC of 0.73 (CI 0.642-0.810). The main differences between both cohorts were in the underlying liver diseases in HCC, with viral hepatitis being the most common in the validation cohort (42%) and non-alcoholic fatty liver disease in the validation cohort (56%).
Conclusion: Our study identified a set of 5 cytokines that can detect HCC by means of blood measurement in a discovery and validation cohort in Latin America. To our knowledge this is the first study assessing immune markers with a high degree of accuracy in a unique Latin American cohort.

S1212

Further Validation of the EVendo Score to Noninvasively Risk Stratify Patients With Child-Turcotte-Pugh Class A, B, and C Cirrhosis Undergoing Index Variceal Screening in a Multicenter Study

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Introduction: Many patients with cirrhosis, especially those with Child-Turcotte-Pugh (CTP) Class A disease, have either no varices (NV) or varices not needing treatment (VNNT) on initial screening endoscopy (EGD). This study invites the use of noninvasive methods to identify and risk stratify patients who may be able to defer initial screening EGD and avoid the procedural risks and increased healthcare costs associated with EGD. The EVendo score was created and validated in 2019 using machine learning to predict the presence of varices and varices needing treatment (VNT) using readily available clinical data in patients with cirrhosis. This study aims to further validate the use of the EVendo Score in a larger multicenter subset of patients presenting for initial variceal screening EGD in all CTP classes of cirrhosis.
Methods: We performed a retrospective cohort study for patients with cirrhosis undergoing initial screening EGD from January 2019 through December 2019 at Olive View UCLA Medical Center, Ronald Reagan UCLA Medical Center, and Greater Los Angeles VA Medical Center. Patient data including sex, age, race/ethnicity, etiology of cirrhosis, MELD-Na score, CTP class, Hgb, platelet count, AST, and BUN were abstracted. Patients with a prior EGD or a prior episode of variceal bleeding were excluded. The EVendo score was calculated for each patient.
Results: A total of 136 patients were included in the study. Of these patients, 93 had CTP Class A, 33 had CTP Class B, and 10 had CTP Class C. Overall,100 patients had NV or VNNT and 36 had VNT on screening EGD. Patients with NV or VNNT were older than patients with VNT (61 [55-67] vs 58 [48-64]), p=0.0247). There were no statistical differences in sex, race/ethnicity, MELD-Na score, or etiology of cirrhosis between the two groups. Using the original EVendo score cutoff, 32 (23.5%) patients had a score $\leq$ 3.90, 2 of which had VNT. A total of 104 (76.5%) patients had an EVendo score $>$ 3.90, 34 of which had VNT. The EVendo score had a sensitivity of 95.7% and negative predictive value of 93.8% (Table). Use of the EVendo score would have reduced low-yield variceal screening EGD by 22.1% (30/136).
Conclusion: This study further validates the use of the EVendo score. Similar to the originally published findings, the EVendo score can be used to defer screening EGD for esophageal varices in patients with EVendo Scores $\leq$ 3.90. Conversely, a high EVendo score predicts when VNT are more likely to be present, making screening EGD higher yield.

Table 1. EVendo Score Performance

Sensitivity	**95.7%**
Specificity	33.7%
Positive Predictive Value	43.3%
Negative Predictive Value	93.8%

S1213

Predictors of Hepatotoxicity in Patients Receiving Immune Checkpoint Inhibitors: A Large Population-Based Study

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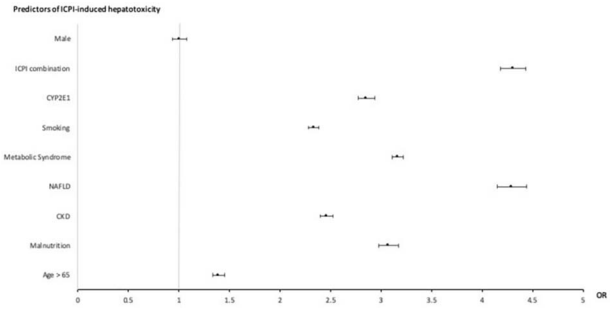
Introduction: Immune checkpoint inhibitors (ICPI) are monoclonal antibodies that interrupt co-inhibitory signaling pathways and promote immune-mediated eradication of cell tumors. ICPI has emerged in recent years as an efficacious treatment for advanced malignancies. Hepatotoxicity is an established adverse event associated with ICPI. The aim of this study is to determine the predictors of hepatotoxicity in patients receiving ICPI.
Methods: We reviewed data from a large database (Explorys IBM) that aggregates health records from 26 large healthcare systems. We identified adults who received ICPI from 2011-2021. We excluded patients diagnosed with alcoholism, viral hepatitis, other drug induced liver injury & biliary disease. Of this cohort, we collected data on hepatocellular injury after the initiation of ICPI. Demographic information & data on potential risk factors were collected including malnutrition, chronic kidney disease (CKD), metabolic syndrome, non-alcoholic fatty liver disease (NAFLD), smoking, concomitant use of cytochrome P450-CYP2E1 inducers & use of ICPI combination. Univariable & multivariable logistic regression analyses were performed.
Results: Out of 69 million adults in the database, 21060 received ICPI (0.03%) of whom 1780 had ICPI-induced hepatotoxicity (8.4%). Men received more ICPI than women (57.4% vs 42.5%). The majority who received ICPI were > 65 yr old (63.7%). Table summarizes the characteristics of patients received ICPI. In multivariable model, NAFLD & the use of ICPI combination were most associated with hepatotoxicity (OR 4.29 [95% CI: 4.15-4.43)] & (OR 4.30 [95% CI: 4.18-4.43]), respectively. These factors were closely followed by metabolic syndrome & malnutrition (OR 3.16 [95% CI: 3.10-3.22]) & (OR 3.07 [95% CI: 2.97-3.16]), respectively. Moreover, ICPI-induced hepatotoxicity was significantly associated with CKD (OR 2.46 [95% CI: 2.39-2.52]), smoking (OR 2.33 [95% CI: 2.28-2.38]), concomitant CYP2E1 inducers (OR 2.85 [95% CI: 2.77-2.93]), and to a lesser extent, with age >65 (OR 1.39 [95% CI: 1.33-1.44]). No significant association with gender was noted (OR 1.00 [95% CI: 0.93-1.07]), Figure.
Conclusion: This large study shows that the highest predictors of ICPI-induced hepatotoxicity were underlying NAFLD & the use of ICPI combination. Other significant factors were age >65, metabolic syndrome, malnutrition, CKD, smoking, & concomitant use of CYP2E1 inducers. Further studies are needed to evaluate pathophysiology and molecular aspects of these relationships.

Table 1. Characteristics and conditions of patients in cohort

	ICPI	ICPI + Hepatotoxicity
Total	21060	1780
	Number (Percentage)	Number (Percentage)
Age		
18-65	7630 (36.3%)	630 (35.4%)
>65	13430 (63.7%)	1150 (64.6%)
Gender		
Female	8960 (42.5%)	760 (42.7%)
Male	12100 (57.4%)	1020 (57.3%)
NAFLD	1530 (7.2%)	270 (15.1%)
Malnutrition	6080 (28.8%)	770 (43.2%)
Metabolic Syndrome	230 (1.09%)	50 (2.8%)
CKD	5140 (24.4%)	550 (30.8%)
Smoking	6400 (30.3%)	640 (35.9%)
CYP2E1 inducers	2140 (10.1%)	330 (18.5%)

Footnote: ICPI: Immune checkpoint inhibitor; NAFLD: Non-alcoholic fatty liver disease; CKD: Chronic Kidney disease.



[1213] **Figure 1.** Forest plot of predictors of ICPI-induced hepatotoxicity

S1214

Effectiveness of a Co-Management Team in the Care of Cirrhosis Patients with Spontaneous Bacterial Peritonitis

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Introduction: Spontaneous bacterial peritonitis (SBP) is a common complication of portal hypertension in cirrhosis patients, which may be associated with increased mortality. Recognition of this complication mandates inpatient admission and there remains variation in clinical practices. A co-management team in this population may reduce variability and improve overall outcomes. The aim of this study was to evaluate utilization of guideline-based management and outcomes with SBP management by a co-management vs. traditional (consultative) based model.
Methods: A retrospective review of 41 patients admitted to the academic medicine service with cirrhosis and SBP from May 1, 2018, to November 17, 2019, was performed. Patients with the aforementioned diagnoses were then distributed to either the co-management team or the other four academic medicine teams. The co-management model consisted of a medicine attending, medicine residents, hepatologist, gastroenterology fellow, and hepatology nurse practitioner. There were formal daily rounds to discuss common patients. The other traditional academic teams interacted indirectly with the hepatology service in consultative form and without formal rounds.
Results: A total of 41 patient met the inclusion criteria (28 patients in the co-management team). Under the co-management model, patients were more likely to be initiated on antibiotics within 6 hours of paracentesis (100% vs 76.9%, p = 0.008). Additionally, there was a trend towards improved outcomes based on the following: administration of Day 1 and Day 3 albumin and discharge on SBP antibiotic prophylaxis.
Conclusion: Our results show that the co-management model is a promising one for the treatment of chronic liver disease patients. Given the complexity of this patient population and the higher mortality rates associated with portal hypertensive complications, such as SBP, this model may help decrease the variability in clinical practice and provide overall improved care.

S1215

Infections in Patients With Cirrhosis Have a Changing Profile Over Time and Are Linked to a Higher Risk of Death Compared to Patients Without Cirrhosis

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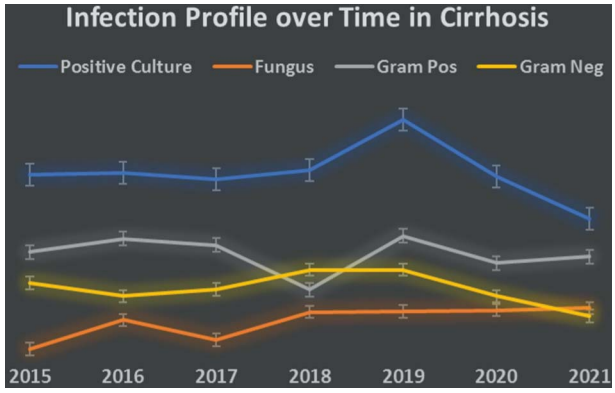
Introduction: Intensive care outcomes in patients with cirrhosis are relatively poor. The comparison between outcomes, especially related to infections, remains unclear in those with and without cirrhosis. With the emergence of resistant and fungal organisms, the changes in infection profiles over time are important to analyze. The aim of this study is to determine the impact of cirrhosis and infections on inpatient death over time in a qSOFA-matched cohort of patients with and without cirrhosis.

Methods: Inpatients admitted to ICUs throughout 2015-2021 were analyzed. Patients with cirrhosis were matched 1:1 by age, gender, and admission qSOFA to patients without; COVID-positive patients were excluded. Admission demographics, labs, the reasons for ICU transfer, infections, and inpatient death or hospice referral were obtained for each patient. Comparisons were made between patients with and without cirrhosis and those who died/referred to hospice versus not. Logistic regression for death/hospice was performed. In patients with cirrhosis, the culture results were compared over the years.

Results: 1669 patients; 833 cirrhosis and 836 non-cirrhosis patients were included. Patients with cirrhosis had higher rates of infection, positive culture, abdominal infection, and bacteremia. They also had higher gram-positive and fungal infections with a higher rate of VRE. They showed a greater organ failure load, death, and hospice referral compared to patients without cirrhosis. Logistic regression showed that cirrhosis (OR 4.0, $p< 0.0001$), admission qSOFA (1.60, $p< 0.0001$), WBC (1.02, $p=0.003$), reasons for ICU (altered mental status 1.69, hypotension 1.79, renal support 2.77, respiratory failure 1.79, CVA 1.96, all $p< 0.0001$) with Infection (1.77, $p< 0.0001$, >1 microbe isolated 1.86, $p=0.05$) were risk factors for death/hospice. The infection trend in the cirrhosis group showed a significant decrease in positive cultures and gram-negative infections and an increase in fungal and gram-positive infections over time.

Conclusion: Despite matching for demographics and qSOFA, patients with cirrhosis had higher risks of death and organ failures. They were more likely to develop gram-positive and fungal infections with multiple organisms and VRE. Time trends in cirrhosis showed lower rates of positive cultures and gram-negative infections and an increase in fungal and gram-positive infections over time, which should encourage re-evaluation of diagnostic and prophylactic strategies in cirrhosis-related infections.



[1215] **Figure 1.** Infection Profile Over Time in Patients With Cirrhosis

Table 1. Demographics and Outcomes

	Cirrhosis Vs No-Cirrhosis			Death or Hospice		
	No Cirrhosis (n=836)	Cirrhosis (n=833)	P value	No (n=1213)	Yes (n=456)	P value
Age	57.0±12.1	57.0±12.1	0.98	56.9±12.2	57.5±11.7	0.32
Male Gender	386 (46.2%)	379 (45.5%)	0.78	538 (44.4%)	227 (49.8%)	0.05
Race (W/AA/As/Oth/U)	359 (42.9%)/414 (49.5%)/12 (1.4%)/51 (6.1%)	490 (58.8%)/253 (30.4%)/6 (0.7%)/84 (10.1%)	< 0.0001	597 (49.2%)/521 (43.0%)/13 (1.1%)/82 (6.8%)	252 (55.3%)/146 (32.0%)/5 (1.1%)/53 (11.6%)	< 0.0001
Latinx Ethnicity	16 (1.9%)	20 (2.4%)	0.50	25 (2.1%)	11 (2.4%)	0.66
QSOFA	2.47±0.69	2.47±0.69	0.93	2.41±0.73	2.63±0.56	< 0.0001
WBC	12.3±9.5	11.6±7.8	0.11	11.3±8.5	13.8±9.0	< 0.0001
Bilirubin	1.06±2.49	7.23±9.92	< 0.0001	2.56±5.29	8.30±11.30	< 0.0001
MELD-Na	13.9±7.5	25.4±9.9	< 0.0001	16.8±9.2	27.1±10.2	< 0.0001
Reason for ICU						
Altered mental status	383 (45.8%)	395 (47.4%)	0.51	515 (42.5%)	263 (57.7%)	< 0.0001
Infection	293 (35.0%)	411 (49.3%)	< 0.0001	427 (35.2%)	277 (60.7%)	< 0.0001
CVA	116 (13.9%)	45 (5.4%)	< 0.0001	130 (10.7%)	31 (6.8%)	0.01
Hypotension	273 (32.7%)	454 (54.5%)	< 0.0001	450 (37.1%)	277 (60.7%)	< 0.0001
Renal support	52 (6.2%)	167 (20.0%)	< 0.0001	94 (7.7%)	125 (27.4%)	< 0.0001
Respiratory failure	474 (56.7%)	399 (47.9%)	< 0.0001	593 (48.9%)	280 (61.4%)	< 0.0001
Post-procedure	129 (15.4%)	98 (11.8%)	0.03	199 (16.4%)	28 (6.1%)	< 0.0001
Type of infection						
Nosocomial?	25 (3.0%)	23 (2.8%)	0.78	27 (2.2%)	21 (4.6%)	0.01
Second infection	21 (2.5%)	26 (3.1%)	0.45	36 (3.0%)	11 (2.4%)	0.54
UTI	64 (7.7%)	71 (8.5%)	0.52	84 (6.9%)	51(11.2%)	0.006

Table 1. (*continued*)

	Cirrhosis Vs No-Cirrhosis			Death or Hospice		
	No Cirrhosis (n=836)	Cirrhosis (n=833)	P value	No (n=1213)	Yes (n=456)	P value
Abdominal	24 (2.9%)	102 (12.2%)	< 0.0001	68 (5.6%)	58 (12.7%)	< 0.0001
Bacteremia	66 (7.9%)	104 (12.5%)	0.002	93 (7.7%)	78 (17.1%)	< 0.0001
Respiratory	143 (17.1%)	163 (19.6%)	0.19	193 (15.9%)	113 (24.8%)	< 0.0001
Skin/soft tissue	22 (2.6%)	23 (2.8%)	0.87	36 (3.0%)	10 (2.2%)	0.38
Organism details						
Positive culture?	169 (20.2%)	225 (27.0%)	0.001	242 (20.0%)	152 (33.3%)	< 0.0001
Gram positive	82 (9.8%)	116 (13.9%)	< 0.0001	120 (9.9%)	78 (17.1%)	< 0.0001
Gram negative	63 (7.5%)	82 (9.8%)	0.09	85 (7.0%)	60 (13.2%)	< 0.0001
Fungus	10 (1.2%)	33 (4.0%)	< 0.0001	21 (1.7%)	22 (4.8%)	0.001
>1 organism	16 (1.9%)	25 (3.0%)	0.15	21 (1.7%)	20 (4.4%)	0.003
VRE	3 (0.4%)	16 (1.9%)	< 0.0001	7 (0.6%)	10 (2.2%)	0.006
MRSA	21 (2.5%)	14 (1.7%)	0.23	20 (1.6%)	15 (3.3%)	0.05
Fluoro res	12 (1.4%)	9 (1.1%)	0.52	16 (1.3%)	5 (1.1%)	0.71
Outcome						
LOS	6.42±7.63	6.48±6.83	0.86	6.18±6.37	7.17±9.12	0.03
Renal failure	44 (5.3%)	163 (19.6%)	< 0.0001	90 (7.4%)	117 (25.7%)	< 0.0001
Brain failure	179 (21.4%)	237 (28.5%)	0.001	254 (20.9%)	12 (2.6%)	< 0.0001
Shock	174 (20.8%)	310 (37.2%)	< 0.0001	257 (21.2%)	227 (49.8%)	< 0.0001
Ventilation	331 (39.6%)	334 (40.1%)	0.83	435 (35.9%)	230 (50.4%)	< 0.0001
Coagulation failure	133 (15.9%)	545 (65.4%)	< 0.0001	374 (30.8%)	304 (66.7%)	< 0.0001
Death or hospice	118 (14.1%)	338 (40.6%)	< 0.0001	-	-	-

S1216

Liver Transplant Provides an Added Benefit to Patients with Cirrhosis Who Have Hepatic Hydrothorax

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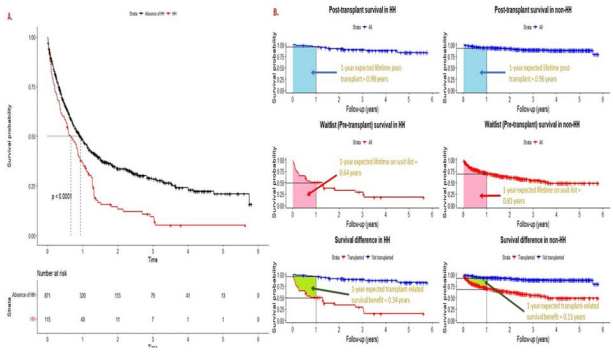
Introduction: Hepatic hydrothorax (HH) is an important complication of portal hypertension. Treatment is associated with high recurrence, morbidity, and mortality rates. To date, liver transplant (LT) is the best treatment modality. We aim to assess the survival benefit LT has on patients with HH.

Methods: A prospectively maintained cohort of 992 adult patients with cirrhosis, being evaluated for LT at our institution, was retrospectively reviewed from 2015-2020. Primary outcome was death. Cox proportional hazard regression modeling was used to identify associations between covariates and outcomes. The cumulative incidence of outcomes was determined by the Kaplan-Meier method. Furthermore, we calculated the years saved due to LT by comparing patients who were on waiting-list but did not receive a LT with patients who ultimately received a LT. This was done by calculating the area under the Kaplan-Meier curve. This was done individually for both HH and non-HH groups. Subjects were followed from the time of LT evaluation (baseline) till death. Censoring occurred at the time of last follow-up or death.

Results: 115 patients had HH. Thirty-nine (33.91%) patients with HH and 221 (25.20%) patients without HH had died at the end of the follow-up duration. The median survival of patients with HH was 0.66 years as compared to 0.94 years in patients without HH (P-value < 0.001) (Figure A). HH was an independent predictor of mortality even after adjusting for other covariates (Hazard Ratio 1.42, 95% Confidence Interval 1.14-1.79; P-value 0.002) (Table). The expected lifetime of patients with HH who got a LT at one year was 0.98 years while those who did not get a LT was 0.64 years. LT thus offered a survival benefit of 0.34 years at the 1-year time point in patients with HH. Similarly, the expected lifetime of patients without HH who got a LT at one year was 0.96 years while those who did not get a LT was 0.81 years. LT thus offered a survival benefit of 0.15 years at the 1-year time point in patients without HH (Figure B). Thus, patients with HH have an added survival benefit of 0.19 years (0.34-0.15) when transplanted as compared to patients without HH.

Conclusion: This is the largest study evaluating the prognostic impact of HH on patients with cirrhosis. HH is an independent predictor of mortality. LT provides an added survival benefit to patients with HH compared to those without HH.



[1216] **Figure 1.** (A) Kaplan Meier curve comparing survival in patients (B) Survival curves demonstrating the life-time expectancy based on presence/absence of hepatic hydrothorax and transplant status

Table 1. Univariable and multivariable analysis of prognostic factors associated with mortality in the entire cohort

Variables	Univariable		Multivariable	
	HR (95% CI)	P-value	HR (95% CI)	P-value
HH	1.62 (1.31-2.00)	< **0.001**	1.42 (1.14-1.79)	**0.002**
Age	1.00 (1.00-1.01)	**0.22**		
Female	0.94 (0.80-1.11)	0.47		
Ascites	1.32 (1.13-1.55)	< **0.001**	0.94 (0.77-1.14)	0.54
Hepatic encephalopathy	1.54 (1.31-1.79)	< **0.001**	1.39 (1.18-1.64)	< **0.001**
Variceal hemorrhage	0.94 (0.75-1.19)	0.61		
HCC	0.72 (0.60-0.88)	< **0.001**	0.82 (0.67-0.99)	**0.04**
SBP	1.49 (1.21-1.84)	< **0.001**	1.28 (1.01-1.63)	**0.04**
MELD	1.03 (1.02-1.04)	< **0.001**	1.03 (1.02-1.04)	< **0.001**

S1217

Cirrhosis Is Associated With Increased Incidence of Mortality, MACE, and Intubation in COVID-19 Patients: A Multi-Center Study of 3,283 Patients

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Introduction: Coronavirus Disease 2019 (COVID-19) is typically associated with pulmonary and cardiac complications. Its relationship to the liver and cirrhosis is unclear. Here we describe outcomes such as mortality, major acute cardiovascular events (MACE), and intubation for a cohort of cirrhotic patients hospitalized with COVID-19.
Methods: Using a multi-center facility database, we evaluated outcomes in 3,283 COVID-19 patients at Methodist Health System from March 2020 to December 2020. We determined diagnosis of cirrhosis by manual review of imaging reports and noted the etiology of cirrhosis. We evaluated the relationship between cirrhosis and the incidence of all-cause mortality, MACE (including heart failure exacerbation, cardiac tamponade, pericardial effusion, pericarditis, myocardial infarction, stroke, pulmonary embolism, deep venous thrombosis, and shock), and intubation during admission. Chi-Square test was used to analyze observed variables. Odds ratios were calculated for variables with a statistically significant difference ($p < 0.05$).
Results: Of the 3,283 patients diagnosed with COVID-19, 54 (1.6%) patients were diagnosed with cirrhosis at the time of admission. Cirrhotic patients were more likely to die compared to non-cirrhotic patients during admission with COVID-19 (27.8% vs. 13.2%, p = 0.002, OR = 2.53, 95% CI = 1.38-4.63). Coincidentally, cirrhotic patients also had higher rates of MACE (42.6% vs. 28.6%, p = 0.03 OR = 1.85, 95% CI = 1.07-3.19) and intubation (29.6% vs. 11.6%, p < 0.001, OR = 3.2, 95% CI = 1.77-5.80) compared to their non-cirrhotic counterparts during admission with COVID-19. Of note, there was no statistically significant difference between these outcomes and cirrhotic patients with Non-Alcoholic Steatohepatitis (NASH) vs. Hepatitis B (HBV) vs. Hepatitis C (HCV) vs. all other etiologies.
Conclusion: Our study suggests that cirrhotic patients who are admitted with COVID-19 infection are more likely to experience death, MACE, and intubation compared to their non-cirrhotic counterparts. By having a deeper level of understanding of the clinical course of cirrhotic patients, health care providers can better evaluate, prepare, and treat patients hospitalized with COVID-19 infection in the inpatient setting. Further studies with higher number of cirrhotic patients can further help differentiate variability between each etiology of cirrhosis.

S1218

Characteristics of Liver Injury Due to Azole Antifungal Drugs in the United States: Results From the Drug Induced Liver Injury Network (DILIN) Prospective Study

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Introduction: The azole antifungal (AA) class of drugs is a rare cause of drug induced liver injury (DILI). AA-DILI most often presents with transient elevations in liver enzymes but has not been well studied or compared to DILI from other agents. The aim of this study is to describe the clinical features and outcomes of patients with AA-DILI in a large prospective registry.
Methods: The DILIN Prospective Study enrolls participants with suspected DILI and determines causality and severity by committee consensus. Between 9/2004 and 6/2021, a total of 1726 participants with high confidence (causality score: definite, highly likely, probable) DILI were enrolled. The clinical course and outcomes of 15 consecutive patients with high confidence AA-DILI were reviewed and compared with DILI due to other agents.
Results: The implicated agents among the 15 cases of AA-DILI were voriconazole (6), fluconazole (5), and ketoconazole (4). The median age was 47 with 53% females, 71% White, and 21% African American. The median (IQR) latency was 37 days (14,93) and the median ALT at DILI onset was 320 (200,906), alkaline phosphatase 176 (146,361), and total bilirubin 1.2 (.7,3). The most common symptoms were nausea 47%, rash 40%, and abdominal pain 33%. The pattern of liver injury included 47% hepatocellular, 40% mixed, and 13% cholestatic. 4 cases met Hy's Law. 1 patient was treated with steroids while 2 died from non-liver related causes. No patients received liver transplantation or developed chronic DILI. Compared to liver injury due to all other agents (n=1711), there were no significant differences in age, sex, or race. Comorbidities were similar except for malignancy which was present in 33% of AA-DILI compared to 11% of other DILI cases. While there was no difference in latency, AA-DILI cases had significantly shorter time from earliest sign to drug stop, likely due to patients starting azoles inpatient or having close follow-up. Clinically, AA-DILI cases had significantly lower total bilirubin at DILI onset and was less likely to present with jaundice. The pattern of liver injury and number of patients treated with steroids did not differ significantly. Rates of all death and liver transplant did not differ. During follow up, AA-DILI had significantly lower peak total bilirubin and significantly shorter time to recovery of ALT and AST compared to other agents.
Conclusion: AA-DILI is characterized by hepatocellular or mixed injury without jaundice. The course of AA-DILI appears to be relatively benign.

Table 1. **Selected characteristics of patients with DILI due to azoles versus other agents**

Characteristic	Azole Cases n=15	Other Agents n=1711	p value
Age (years, median, IQR)	46.8 (34.3, 66.3)	51.8 (37.2, 62.7)	0.972
Female	53%	58%	0.710
Caucasian	71%	78%	0.558
Days from primary drug start to DILI onset/*latency* (median (IQR))	37 (14, 93)	46 (22, 104)	0.256
Days from earliest sign/symptom to primary drug stop (median (IQR))	1 (1,1)	6 (1, 16)	**0.029**
Jaundice at DILI onset	20%	63%	< **0.001**
Treated with prednisone or corticosteroids	7%	23%	0.214
Total bilirubin at DILI onset (mg/dl, median, IQR)	1.2 (0.7, 3)	4.6 (1.3, 9.1)	**0.013**
Pattern of liver injury (Cholestatic/Mixed/Hepatocellular)	13%/40%/47%	23%/22%/55%	0.288
Peak total bilirubin (from DILI onset to 6 months) (mg/dl) (median ((IQR))	1.9 (0.9, 4.5)	9.1 (2.3, 19.4)	**0.007**
ALT (days from peak to below upper limit of normal) (IU/mL)	34	64	**0.009**
AST (days from peak to below upper limit of normal) (IU/mL)	28	57	**0.005**
All death	13%	6.4%	0.254
All liver transplant	0%	3.5%	>0.999
Chronic DILI	0%	16.9%	0.236

S1219 WITHDRAWN

S1220

Esophageal Variceal Ligation in Patients on Anticoagulation and Factors That Affect Post-Procedure Bleeding Risk

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Introduction: Anticoagulant medication use in patients with cirrhosis has increased in recent years. However, the presence of esophageal varices and necessity of band ligation (EVL) complicates their use. Optimal agents and recommendations for periprocedural management are lacking. To address this deficiency, we aimed to understand specific risk factors associated with post-EVL bleeding events.
Methods: We conducted a single-center retrospective study of patients with either compensated or decompensated cirrhosis undergoing EVL and requiring concurrent periprocedural anticoagulant management from 1/1/2015 - 2/16/2022. Patients with non-cirrhotic portal hypertension were excluded. Information about bleeding events were collected for four weeks after esophageal variceal ligation. Major and minor bleeding events were defined by the International Society on Thrombosis and Haemostasis criteria. Comparative statistics were performed using the Fisher exact test and Wilcoxon test.
Results: Forty seven procedures were identified that met inclusion criteria. Of those, there were six bleeding events (12.7%) including three from post banding ulcers, one from EV rebleed, and two from PHG/GAVE. Bleeding events occurred between 5-20 days post procedure. Bleeding events were associated patients with more severe liver disease, as represented by higher mean MELD-Na (24 vs. 12, $p < 0.01$) and Child-Pugh score (11 vs. 7 ($p < 0.01$). Bleeding events were not associated with timing of pre-procedural anticoagulation discontinuation ($p=0.30$), timing of anticoagulation initiation or resumption ($p=0.60$), type of anticoagulant (DOAC vs. other, $p=0.60$), subtherapeutic dosing ($p=1.00$), or the presence of high-risk esophageal varices ($p=0.60$). (Table)
Conclusion: We found that bleeding events were not associated with the timing of starting or resuming anticoagulation, type of anticoagulation, subtherapeutic dosing, or high-risk esophageal varices. Rather, bleeding was associated only with severity of liver disease. Our results may help inform recommendations for EVL periprocedural anticoagulation management. Further research involving multiple centers and a larger sample size is needed to more fully characterize the risk factors for bleeding post-EVL.

Table 1. **Characteristics of Bleeding Events in Patients Undergoing Band Ligation while on Anticoagulation**

Bleeding Event	MELD-Na	Child Pugh Score	Anticoagulation	Therapeutic	Days Discontinued Prior	Days Started After	Major Bleed	Days Bleeding Started After Procedure	Cause of Bleed
1	12	6	Apixaban	Yes	2	Unknown	Yes	15	Post banding ulcer
2	30	13	Enoxaparin	Yes	3	1	Yes	9	Post banding ulcer
3	30	11	Enoxaparin	Yes	N/A	1	Yes	5	EV Rebleed
4	17	12	Coumadin	Yes	4	1	Yes	20	PHG/GAVE
5*	25	9	Apixaban	Yes	2	7	No	7	PHG/GAVE
6*	27	9	Apixaban	Yes	Unknown	5	Yes	12	Post banding ulcer

PHG= Portal Hypertensive Gastropathy. GAVE= Gastric Antral Vascular Ectasia. EV=Esophageal Varices.
* indicates event from the same patient.

S1221

Changes in Disease Etiology of Deceased Donor Liver Transplantations Following Acuity Circles Policy Implementation

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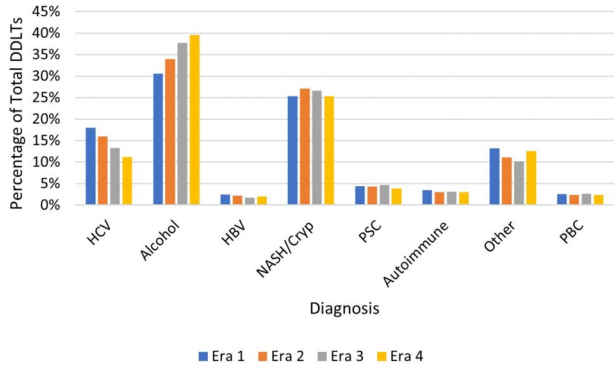
Introduction: The Acuity Circles (AC) allocation policy was implemented on February 4, 2020, with the primary intent of reducing disparities in access to deceased donor liver transplants (DDLTs). Overall, it has been successful at achieving this goal. However, changes in end-stage liver disease etiology following the policy change have not been well-characterized. Our goal was to understand how primary etiology of disease in DDLTs has changed since implementation of AC.

Methods: Data from the Organ Procurement Transplantation Network (OPTN) and United Network of Organ Sharing (UNOS) were analyzed to compare the primary classified etiologies of liver disease for DDLTs overall and based on allocation Model-for-end-stage-liver-disease (aMELD) categories used for AC sharing: aMELD≥37, aMELD 33-36, aMELD 29-32, aMELD 15-28, and aMELD≤14 DDLTs. Time was divided into four equivalent "eras" of 256 days duration by date of transplantation: 1) 9/10/18-5/23/19 (Era 1); 2) 5/24/19-2/3/20 (Era 2); 3) 2/4/20-10/16/20 (Era 3); and 4) 10/17/20-6/29/21 (Era 4).
Results: The percentage of all DDLTs for alcohol-related liver disease (ARLD) increased from 32.3% pre-AC to 38.7% of DDLTs post AC. This was met with a corresponding decrease in the relative percentage of DDLTs related to Hepatitis C Virus (from 17.0% of DDLTs pre-AC to 12.2% post-AC), with the relative differences of other etiologies being a less than 1% difference pre- vs post- AC. There is a consistent increase in the share of DDLTs due to ARLD across each Era. The rise in adult DDLTs for ARLD was most pronounced among aMELD ≥37 recipients, although similar trends were seen among aMELD 33-36 and aMELD 29-32 groups, but not aMELD 15-28 and aMELD ≤14 groups. The median age of adult DDLTs for ARLD decreased consistently over time for the aMELD ≥37 group, but not for the aMELD 33-36 and aMELD 29-32 groups. (Figure) (Table)
Conclusion: Following implementation of AC, there was a relative increase in DDLTs due to ARLD. The younger age and high aMELD scores of these patients suggests these may be largely among patients with acute alcoholic hepatitis. This would align with published data on the overall increase in liver transplantation due to ARLD during the COVID-19 pandemic.



[1221] **Figure 1.** Percentage of DDLTs by Primary Etiology of Liver Disease By Era.

Table 1. Etiology of Liver Disease Among Adult DDLT Recipients by aMELD Category and Era*

aMELD Category	Era	HCV	Alcohol-Related Liver Disease	HBV	NASH/Cryptogenic	PSC	Autoimmune	PBC	Other	Total
aMELD≥37	1	66 (7.4)	401 (45.1)	24 (2.7)	187 (21.0)	39 (4.4)	40 (4.5)	23 (2.6)	109 (12.3)	889
	2	58 (6.7)	414 (47.9)	22 (2.5)	178 (20.6)	37 (4.3)	32 (3.7)	26 (3.0)	98 (11.3)	865
	3	51 (5.6)	494 (54.4)	15 (1.7)	162 (17.8)	30 (3.3)	39 (4.3)	25 (2.8)	92 (10.1)	908
	4	56 (5.3)	599 (57.3)	20 (1.9)	166 (15.9)	30 (2.9)	28 (2.7)	15 (1.4)	130 (12.4)	1044
aMELD 33-36	1	118 (16.6)	242 (34.1)	23 (3.2)	168 (23.7)	32 (4.5)	33 (4.7)	10 (1.4)	83 (11.7)	709
	2	30 (6.1)	222 (44.8)	8 (1.6)	137 (27.7)	20 (4.0)	15 (3.0)	11 (2.2)	52 (10.5)	495
	3	43 (6.5)	334 (50.7)	6 (0.9)	148 (22.4)	31 (4.7)	13 (2.0)	24 (3.6)	60 (9.1)	659
	4	55 (7.4)	338 (45.8)	16 (2.2)	155 (21.0)	28 (3.8)	30 (4.1)	12 (1.6)	104 (14.1)	738
aMELD 29-32	1	218 (21.9)	262 (26.3)	34 (3.4)	240 (24.1)	34 (3.4)	28 (2.8)	26 (2.6)	154 (15.5)	996
	2	200 (19.7)	305 (30.1)	35 (3.5)	244 (24.1)	39 (3.9)	30 (3.0)	11 (1.1)	149 (14.7)	1013
	3	124 (11.0)	436 (38.6)	16 (1.4)	305 (27.0)	65 (5.8)	44 (3.9)	31 (2.7)	109 (9.7)	1130
	4	97 (8.3)	514 (44.2)	18 (1.6)	291 (25.0)	44 (3.8)	42 (3.6)	23 (2.0)	135 (11.6)	1164
aMELD 15-28	1	506 (20.5)	658 (26.7)	46 (1.9)	683 (27.7)	118 (4.8)	72 (2.9)	75 (3.0)	308 (12.5)	2466
	2	535 (18.7)	851 (29.8)	47 (1.6)	860 (30.1)	130 (4.6)	85 (3.0)	75 (2.6)	261 (10.3)	2858
	3	464 (18.3)	742 (29.2)	53 (2.1)	774 (30.5)	123 (4.8)	67 (2.6)	55 (2.2)	261 (10.3)	2539
	4	390 (15.6)	747 (29.9)	52 (2.1)	755 (30.2)	103 (3.12)	69 (2.8)	75 (3.0)	310 (12.4)	2501
aMELD≤14	1	31 (21.8)	29 (20.4)	3 (2.1)	28 (26.8)	5 (3.5)	5 (3.5)	1 (0.7)	20 (21.1)	142
	2	34 (23.0)	36 (24.3)	4 (2.7)	39 (26.4)	2 (1.4)	4 (2.7)	5 (3.4)	24 (16.2)	148
	3	39 (20.2)	42 (21.8)	5 (2.6)	58 (30.1)	6 (3.1)	5 (2.1)	7 (3.6)	32 (16.6)	193
	4	145 (20.0)	164 (22.4)	21 (2.9)	212 (28.9)	26 (3.6)	17 (2.3)	23 (3.1)	125 (17.1)	250

*Data presented as N (%).

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S1222

Appropriate Use of Ascitic Fluid Studies Among Inpatients With Ascites: A Quality Improvement Project

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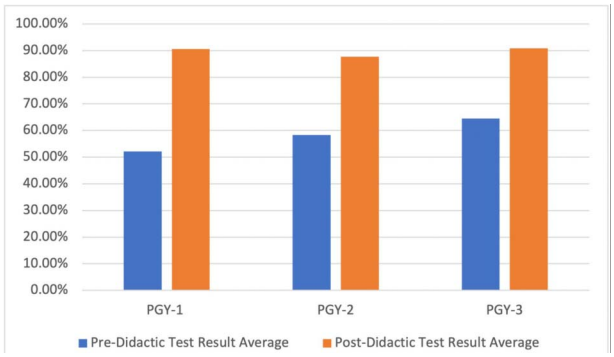
Introduction: Ascites is the most common decompensating event in cirrhosis. Paracentesis is recommended in all patients with new-onset ascites, all patients admitted with ascites and all patients with ascites and signs or symptoms of infection. Standard of care tests from ascitic fluid include cell count with differential, total protein, albumin, and culture. In a limited number of patients, glucose, lactate dehydrogenase, cytology, amylase, pH, and bilirubin will be helpful. However, in clinical practice, a battery of ascitic fluid studies are commonly ordered. Many of these tests have no clinical impact and do not help guide management. Our initiative was to educate the residents enrolled in the internal medicine training program at The Brooklyn Hospital Center on appropriateness of ascitic fluid testing in patients admitted with ascites and improve the testing practices.
Methods: We provided an educational session focused on most recent guidelines on ascitic fluid tests to the residents enrolled in the internal medicine training program at The Brooklyn Hospital Center. Participants included residents first through third year of residency training. The educational session focused on appropriate use of ascitic fluid testing based on the most recent American Association for the Study of Liver Diseases (AASLD) guidelines. All participants completed a questionnaire testing the participant's knowledge on appropriate use of ascitic fluid tests before and after the educational session.
Results: Our results portray a significant improvement in the participants' understanding of the appropriate use of ascitic fluid tests after the educational session (Figure). In the questionnaire completed before the educational session, post-graduate year 3 (PGY-3) participants scored the highest followed by PGY-2 and PGY-1 participants. After the educational session, there was increase in scores from all three category of participants with the highest improvement in the PGY-1 class (38.52%), followed by PGY-2 (29.32%) and PGY-3 participants (26.47%) (Table).
Conclusion: Ordering physician's knowledge and education plays a key role in relevant use of ascitic fluid testing. Our study has demonstrated improved understanding of the appropriate use of ascitic fluid tests after our educational session. As a follow up, we plan on performing a retrospective chart review and post-intervention (post-educational session) chart review to monitor for improvement in the appropriate use of ascitic fluid testing.



[1222] **Figure 1.** Results of Pre-Didactic and Post-Didactic Tests of all Classes

Table 1. Results of Pre-Didactic and Post-Didactic Tests of all Classes

Class	Pre-Didactic Test Result Average	Post-Didactic Test Result Average
PGY-1	52.08%	90.60%
PGY-2	58.33%	87.65%
PGY-3	64.44%	90.91%

S1223 WITHDRAWN

S1224

Outcomes of Transcatheter Tricuspid Valve Replacement in Patients With Liver Cirrhosis

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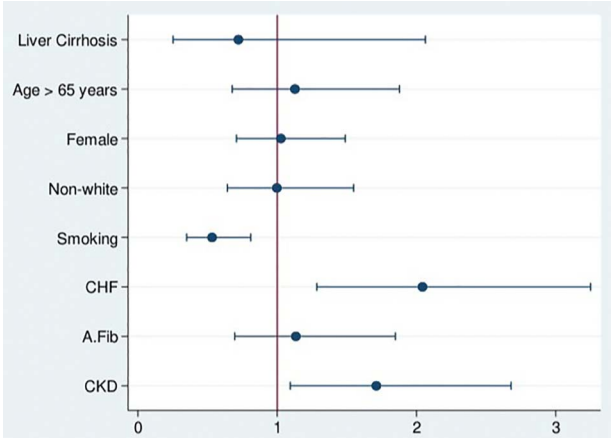
Introduction: Patients with liver cirrhosis who undergo cardiac surgery are at increased risk of postoperative mortality and morbidity. Patients with cirrhosis have pathophysiologic changes that put them at an excessive risk of coagulopathy, hemorrhage, infection, and multiorgan dysfunction. The prevalence of tricuspid valve (TV) disease is rising but it is often undertreated due to increased mortality associated with TV surgery. Liver dysfunction is seen in the majority of patients with TV disease, but there is a lack of data regarding the impact of cirrhosis on prognosis after TV surgery. Our study aimed to look at the clinical outcomes of patients with liver cirrhosis undergoing TV replacement.
Methods: Data were extracted from the National Inpatient Sample (NIS) database from 2016 to 2019. Using the International Classification of Diseases, 10th revision, and Clinical Modification (ICD-10-CM) codes to obtain baseline demographic data, in-hospital mortality, hospital charges, and hospital length of stay (LOS). Statistical analyses were completed using t-test and Chi-squared analysis. Multivariate analysis for the mortality odds ratio (OR) was calculated after adjusting for possible confounders.
Results: A total of 9,360 patients who underwent replacement of TV were identified, and 355 of these patients had liver cirrhosis. The mean age of the cirrhosis vs non-cirrhosis group was 56 years vs. 48 ($P < 0.001$). There was no difference in gender, race, smoking status, and obesity between both groups. However, the cirrhosis group had more prevalence of congestive heart failure (CHF), atrial fibrillation (Afib), hypertension (HTN), chronic obstructive pulmonary disease (COPD), chronic kidney disease (CKD), and alcohol use compared to the non-cirrhotic group. There was no statistically significant difference in mortality between the two groups (OR 0.72; $P = 0.54$). There was no difference in total hospital charge ($414,908 vs. 444,556; $P < 0.56$), or LOS (20 vs. 23 days; $P = 0.22$). CHF and CKD were independently associated with higher odds of mortality.
Conclusion: In our study, we found that cirrhosis did not adversely affect TV replacement outcomes. TV disease is associated with hepatic congestion and TV replacement can potentially improve liver function. So clinicians should consider TV replacement in cirrhotic patients as it is a safe treatment option. However, further large-scale randomized controlled studies are needed to look at the long-term prognosis of these patients.



[1224] **Figure 1.** Multivariate logistic regression for the effect of cirrhosis on patients undergoing TV replacement

Table 1. Demographics and clinical characteristics of the study population

Variable	No cirrhosis	Cirrhosis	P-value
Age (mean, yr)	48	56	< 0.001
Gender (%)			0.2
Male	41.3%	49.3%	
Female	58.7%	50.7%	
Race (%)			0.38
White	71%	63%	
Black	10%	10%	
Hispanic	7%	8%	
Others	12%	19%	
Comorbidities (%)			
Alcoholism	3.3%	17%	< 0.001
Smoking	45%	42%	0.66
Obesity	11%	17%	0.13
DM	13%	21%	0.056
HTN	44%	60%	0.006
CHF	49%	77%	< 0.001
A.Fib	35%	63%	< 0.001
HCC	0.11%	0%	0.77
Cachexia	1.8%	1.4%	0.79
COPD	8.8%	19%	0.001
CKD	21%	36%	0.001

S1225

Relative Adrenal Insufficiency in Decompensated Cirrhosis: A Systematic Review and Meta-Analysis

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Introduction: Relative adrenal insufficiency (RAI) is associated with increased mortality in critically ill patients. It can be seen in patients with cirrhosis, especially with decompensated disease, often described as "hepato-adrenal syndrome". We conducted a systematic review and meta-analysis to assess the true incidence of RAI among decompensated cirrhotics and its effects on outcomes.
Methods: We conducted a comprehensive search of Ovid Cochrane, Ovid Embase, Ovid Medline, Scopus, and Web of Science (inception to July 2021) to identify studies reporting on relative adrenal insufficiency in decompensated cirrhosis. RAI was diagnosed as an increase in serum total cortisol < 9 mcg/dl after standard dose-synacthen stimulation test. The primary outcome was incidence of RAI; secondary outcomes were risk ratio of ascites, hepato-renal syndrome, ICU admission and in-hospital mortality. Standardized mean difference and meta-analysis of proportions was done for outcomes.
Results: Out of 249 studies, 8 were included in final analysis based on inclusion criteria. 710 patients, with 502 males (70.7%), mean age 56.53 ± 3.81 years were analyzed. Pooled incidence of RAI in decompensated cirrhosis was 38% (8 studies; CI: 29.5 - 47.6; I^2= 82.19%). Patients with RAI had higher MELD score with mean difference 0.383 (8 studies; CI: 0.124 - 0.642; I^2 = 58.5%), lower mean arterial pressure -0.182 (5 studies; CI: -0.368 - -0.004; I^2 = 9.09%), serum albumin -0.460 (7 studies; CI: -0.702 - -0.271, I^2 = 38.53%) and sodium -0.254 (6 studies; CI: -0.509 - 0, I^2 = 48.2%). Effects of RAI on outcomes is shown in the Table.
Conclusion: Our meta-analysis reveals a 38% incidence of relative adrenal insufficiency among cirrhotics. Despite a high incidence, RAI did not impact outcomes in terms of ascites, hepato-renal syndrome, ICU admissions, and mortality.

Table 1. Effects of relative adrenal insufficiency on outcomes in non-critically ill decompensated cirrhosis

Outcomes	Number of studies	Risk ratio	I^2	p-value
Ascites	6	1.04 (0.90 - 1.19)	0%	0.59
Hepato-renal syndrome	3	1.31 (0.45 - 3.84)	38.52%	0.62
ICU admission	3	1.79 (0.90 - 3.53)	0%	0.09
In-hospital mortality	5	1.63 (0.94 - 2.83)	0%	0.08

S1226

Sarcopenia Is a Risk Factor for Post-TIPS Hepatic Encephalopathy and Mortality: A Systematic Review and Meta-Analysis

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Introduction: TIPS is a commonly performed procedure in patients with liver cirrhosis to treat portal hypertension-related conditions, including refractory ascites and variceal bleeding. However, currently, there is no widely utilized method to predict those likely to develop post-TIPS complications. Therefore, we conducted a systematic review and metaanalysis to evaluate Sarcopenia as a risk factor for post-TIPS hepatic encephalopathy and mortality.
Methods: A comprehensive search strategy was used to identify post-TIPS HE and post-TIPS mortality reports in Sarcopenia vs. non-sarcopenia patients with liver cirrhosis who received TIPS and was conducted till February 2022. Open Meta Analyst was used to compute the results.

Results: Nine studies, including 1439 patients, met our inclusion criteria and were included in the final meta-analysis. Sarcopenia was associated with significantly higher post-tips HE rate than non-sarcopenia (RR:1.68, CI: 1.33-1.989, p=0.001, I2=0%), as well as a significantly higher post-TIPS mortality rate (RR: 1.75, CI:1.027-2.98, p=0.04, I2=86%).
Conclusion: Our study found significant associations between Sarcopenia and increased rates of post-TIPS HE and mortality. To develop a reliable pre-procedure prognostic method to weigh the risks and benefits of TIPS in patients with cirrhosis, further studies are needed to determine the clinical relevance of important risk factors such as Sarcopenia on post-TIPS outcomes.

S1227 WITHDRAWN

S1228

EUS-Guided Shear Wave Elastography Appears to Be More Accurate Than Transient Elastography in Predicting Liver Fibrosis Staging in Patients With Obesity

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Introduction: Transient elastography (TE) is a non-invasive clinical tool used to assess liver stiffness measurement (LSM) and can be correlated to liver fibrosis staging. Obesity can make elastography challenging to perform due to increased abdominal wall thickness, with high failure rates for TE. Fibroscan XL probes have lower failure rates, though it is unclear if readings are reliable or correlate well with liver biopsies. EUS guided shear wave elastography (EUS-SWE) can potentially circumvent this limitation, as liver parenchyma via EUS can be visualized under a thin subcentimeter gastric or duodenal wall, which does not change appreciably with body habitus. We aim to determine whether TE or EUS-SWE correlate better with liver biopsy fibrosis staging for patients with obesity.
Methods: A retrospective chart review was performed for patients with obesity at a single tertiary hospital from Dec 2021 to May 2022. Patients with obesity (BMI≥30) with LSM concerning for advanced fibrosis (F3 or F4) were referred for EUS-SWE and EUS guided liver biopsy, both of which performed in the left liver lobe. LSM (reported in kPa) were correlated with fibrosis staging on liver biopsy and were considered accurate if they fell within cutoff ranges: kPa ≤7 = F0-1, kPa 7-8 = F2, kPa 8-12 = F3, and kPa >12 = F4. No established cutoffs exist for EUS-SWE, so stiffness values were compared to that for TE on which were closer to TE cutoff ranges.
Results: 12 consecutive patients with obesity underwent TE, EUS-SWE, and EUS guided liver biopsy. The mean age was 55.3 [range 18-69], 9 (75%) were females, and mean BMI was 44.9 [range 30.2-67.8]. LSM ranged from 9.1 to 41.9 kPa. Only 2 (17%) patients' TE results correlated accurately with liver fibrosis staging on biopsy; see **Table.** Assuming similar fibrosis staging cutoff ranges for TE, EUS-SWE accurately downgraded 8 (67%) patients and demonstrated no change for 4 (33%) patients. EUS-SWE was closer to biopsy LSM cutoffs for 9 (75%) patients, while TE was more accurate in only 1 (8%) patient.
Conclusion: In this small cohort of patients with obesity with possible advanced fibrosis, TE appeared to overdiagnose fibrosis stage, while EUS-SWE appeared to downgrade LSM appropriately for patients who were overdiagnosed. Larger cohort studies are ongoing to allow proper interpretation of EUS-SWE stiffness values and compare its utility and accuracy to TE.

Table 1. Individual patient data with basic demographics, transient elastography data, EUS shear wave elastography data, and data comparison and analysis

Patient #	Age	Gender	BMI	TE LSM Value (kPa)	Fibrosis Staging Based on TE Cutoff	Fibrosis Stage on Biopsy (TE cutoffs)	TE LSM as Compared to Fibrosis Staging on Biopsy	EUS-SWE Stiffness (kPa)	Closer to Biopsy Cutoffs? TE vs EUS-SWE	How Did EUS-SWE Compare to TE via Fibrosis Staging ?
1	58	Female	62.4	9.1	F3	F0 (kPa≤7mmHg)	Overstaged	5	EUS-SWE	Downgraded
2	68	Female	39	9.9	F3	F0 (≤7)	Overstaged	4.9	EUS-SWE	Downgraded
3	59	Female	32.6	9.4	F3	F0 (≤7)	Overstaged	6.3	EUS-SWE	Downgraded
4	63	Female	32.8	15.7	F4	F0 (≤7)	Overstaged	7.3	EUS-SWE	Downgraded
5	48	Male	67.8	41.9	F4	F0 (≤7)	Overstaged	7.3	EUS-SWE	Downgraded
6	63	Female	38	9.4	F3	F0 (≤7)	Overstaged	2	EUS-SWE	Downgraded
7	56	Male	43.6	9.6	F3	F3 (8-12)	Appropriate Stage	10.5	EUS-SWE	No Change
8	18	Female	61.1	34.6	F4	F2 (7-8)	Overstaged	19.6	EUS-SWE	Downgraded
9	53	Female	32.6	20.5	F4	F4 (≥12)	Appropriate Stage	21.7	Same	No change
10	55	Male	34.9	12.2	F4	F2 (7-8)	Overstaged	12.2	Same	No Change
11	53	Female	30.2	14	F4	F3 (8-12)	Overstaged	15.2	TE	No Change
12	69	Female	64.1	14.7	F4	F2 (7-8)	Overstaged	10.2	EUS-SWE	Downgraded

S1229

The Feasibility and Safety of Selected Liver Grafts Flushed With Cold Normal Saline (NS) and Comparison With Liver Grafts Flushed With Histidine-Tryptophan-Ketoglutarate Solution in Living Donor Liver Transplantation

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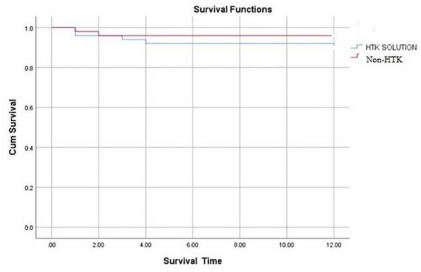
Introduction: Preservation solutions are required for organ viability in deceased donor liver transplantation (LT). However, their role in live donor LT (LDLT) has not been standardized. The aim of this study is to compare the outcomes of selected liver grafts flushed with cold normal saline (NS) with Histidine-Tryptophan-Ketoglutarate (HTK) solution.
Methods: One hundred consecutive adult recipients who underwent right lobe LDLT from February 2020 to December 2020 at Gambat, Pakistan were studied. Recipients were assigned to receive "no preservation solution" (cases/non-HTK group; n=50) based on shorter CIT & no back Table reconstruction work or "HTK group" (controls; n=50) requiring standard back Table reconstruction. Various outcomes, including early graft dysfunction (bilirubin, transaminases, and INR), postoperative complications (biliary & vascular), hospital stay, and one-year survival, were compared between the two groups. The direct cost was also reported.
Results: Demographics and clinical characters were comparable in the two groups. Comparing cases vs. controls, mean bilirubin, ALT, AST, and INR on the 7thpostoperative day were similar in the two groups. 5(10%) cases and 4(8%) controls developed EAD(p=0.72). Post-LT complications (biliary leak 2% in cases vs. 0 in control), strictures (12% in cases vs. 16% in controls), hepatic artery thrombosis (4% vs. 2%) and portal vein thrombosis (0 vs. 2%) were equally distributed. Mean hospital stay (11.02 $\pm$ 2.63 and 12.06 $\pm$ 3.68 days) and 30-day mortality (8% vs 8%) were also comparable in two groups. Finally, 1-year survival (92% vs 90%) based on Kaplan-Meier analysis was also comparable (p-value:0.71). The cost of using a non-HTK-based approach was much lesser than the HTK solution. (Figure)
Conclusion: To our knowledge, this is the first innovative report on avoiding preservative solutions in LDLT recipients. We found that EAD including liver function tests; post-operative complications (biliary and vascular), 30 days' mortality, and 1-year survival were comparable in the two groups. We also found that avoiding the preservative solution has an impact on saving direct costs. (Table). In our study, the postoperative complications and the overall one-year survival rate in the non-preservation group (92%) and the HTK group (90%) were equal and matched with other studies from the region. From an economic perspective, we also found that avoiding the use of preservation solutions is very attractive.

Figure 4: Kaplan-Meier showing comparable survival rate in non-HTK and HTK groups at 1-year post-liver transplantation.



Survival rate for non-HTK group and HTK group was 92% (10.65-12.00 months) and 90% (10.62-11.97 months) respectively, p-value =0.71).

[1229] **Figure 1.** Kaplan-Meier showing a comparable survival rate in non-HTK and HTK groups at 1-year post-liver transplantation

Table 1. Recipient demographics, clinical characteristics, laboratory values, and complications in study groups

Recipient demographics, clinical characteristics, laboratory values, and complications in study groups.			
Variables non-HTK group (n=50) HTK group (n=50) p-value			
Recipients			
Age(years)	39.18+11.69	36.84+6.77	0.224
Gender	44(88%)	46 (92%)	0.741
Male	6(12%)	4 (08%)	
Female			
BMI(kg/m^2)	22.46±4.29	22.84±4.24	0.657
Etiology			
Viral	47 (94%)	45 (90%)	
NASH	2 (04%)	1 (02%)	
Alcoholic	00 (00%)	00 (00%)	
Budd Chiari	00 (00%)	1 (02%)	
PBC	00 (00%)	1 (02%)	
Wilson	1 (02%)	1 (02%)	
PSC	00 (00%)	1 (02%)	
HCC	11 (22%)	02 (04%)	0.015
Co-Morbidities			
DM	4 (08%)	2 (04%)	0.67
HTN	00 (00%)	3 (06%)	0.24
CVD	00 (00%)	00 (00%)	0.00
CTP score			0.59
A	3 (06%)	1 (02%)	
B	9 (18%)	9 (18%)	
C	38 (76%)	40 (80%)	
MELD-Na	19.53±5.51	20.88±4.75	0.19
Operation time (min)	537±70.66	534.60±60.72	0.85
Blood loss(ml)	1622±317.70	1512±300.775	0.07
Hospital stays(days)	11.02±2.63	12.06±3.68	0.10
Mean Post-operative labs (at day 07)			
Total bilirubin (mg/dL)INR (IU/L)ALT (IU/L)AST (IU/L)	2.96 ± 2.97	3.06 ± 3.24	0.91
	1.44 ± 0.24	1.39 ± 0.18	0.82
	186.79 ± 144.95	137.69 ± 97.28	0.05
	119.69 ± 133.45	93.78 ± 85.65	0.26
Complication			
EAD	4 (8%)	5(10%)	0.727
PNF	00	1 (2%)	0.315
ACR	3(6%)	4 (8%)	0.695
HAT	2 (4%)	1(2%)	0.558
Sepsis	5 (10%)	4 (8%)	0.727

Table 1. (*continued*)

Recipient demographics, clinical characteristics, laboratory values, and complications in study groups.			
Variables non-HTK group (n=50) HTK group (n=50) p-value			
PVT	00	1 (2%)	0.315
Biliary complicationsStrictureLeak	6 (12%)1 (2%)	8 (16%)00	0.5640.315
Clavin-dindo Grade>III	11 (22%)	13 (26%)	0.64
30-day Mortality	4 (8%)	4 (8%)	1.00
1-year mortality (excluding 1st month)	00	1 (2%)	0.315

BMI: body mass index; HCC: hepatocellular carcinoma; HTN: hypertension; CVD: cardiovascular disease; CTP: Child Turcotte Pugh; INR: international normalized ratio; ALT: alanine aminotransferase; AST: aspartate aminotransferase; EAD: early graft dysfunction; PNF: primary non-function; ACR: acute cellular rejection; HAT: hepatic artery thrombosis; PVT: portal vein thrombosis.

S1230

Safety and Efficacy of Anticoagulation in Management of Non-Tumoral Portal Vein Thrombosis in Patients With Cirrhosis: A Review of Literature and Meta-Analysis

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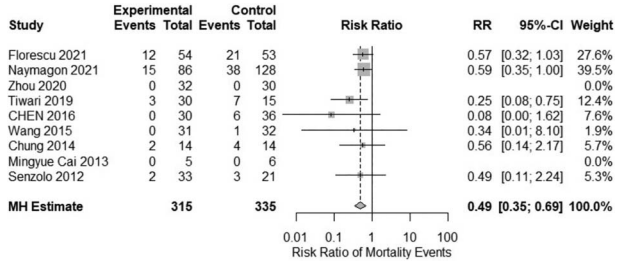
Introduction: Although current guidelines suggest the use of anticoagulation in managing portal vein thrombosis in patients with cirrhosis, however many physicians find this decision a challenging one. Given the limited data regarding the safety of anticoagulation in this high-risk patient population, we aim to investigate the safety and efficacy of anticoagulation in non-tumoral portal vein thrombosis in patients with cirrhosis.
Methods: We conducted a meta-analysis that included 5 prospective and 7 retrospective observational studies which involved 997 patients. We compared the rates of portal vein recanalization, bleeding events, and mortality between patients who received anticoagulation versus those who did not.
Results: The rate of complete portal vein recanalization was significantly higher in patients who received anticoagulation compared to those who did not: 32% vs 16.7%; relative risk (RR) 1.92, 95% confidence interval (CI) 1.35-2.74; P< 0.001. Progression of the portal vein thrombosis was significantly lower in the treatment group with RR 0.49; 95% CI 0.34-0.7; P< 0.001. Variceal bleeding rate was significantly lower in the treatment group with RR 0.63; 95% CI 0.41-0.98; P < 0.05. Mortality was significantly lower in the treatment group versus the no-treatment group: 7.2% vs 15.5%; RR 0.49, 95% CI 0.35-0.69; P< 0.001.
Conclusion: Anticoagulation is safe and effective in the treatment of non-tumoral portal vein thrombosis in patients with cirrhosis. Patients in the anticoagulation group had significantly lower rates of variceal bleeding and mortality, and higher rates of recanalization of the portal vein.



[1230] **Figure 1.** Relative risk of mortality is significantly lower in the treatment group

S1231

Association of Effective Patient Communication With Hepatitis B Vaccine Coverage in the United States

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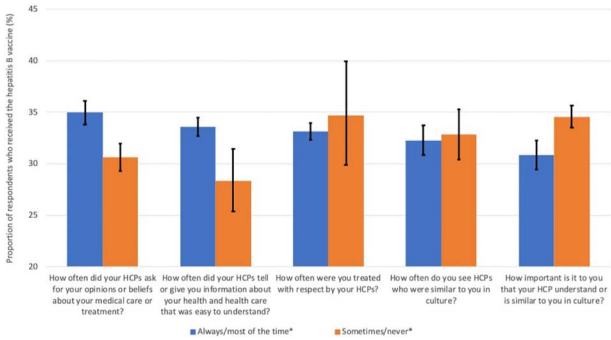
Introduction: In 2018, the prevalence of past or present hepatitis B virus (HBV) infection in the United States was 4.3%. Evidence of HBV infection was highest among foreign-born adults. As of 2012, the prevalence of hepatitis B vaccine-induced immunity was 25% in the US. Meanwhile, the CDC recommends HBV vaccination for adults who are at-risk for contracting the infection, including sexually-active adults with more than one partner in the past 6 months and those exposed to blood among others.
Methods: The NHIS was queried for respondents in 2017—the only year in which a set of questions were included to assess patient access to effective communication in the past 12 months. Sample-weight adjusted multivariable logistic regressions defined adjusted odds ratios (AOR) and 95% confidence intervals (CI) of receiving the hepatitis B vaccine with response to one of the five questions on effective patient communication and cultural competency as the independent variable of interest, while controlling for relevant sociodemographic and clinical variables. Statistical analyses were conducted using Stata/IC 16.1 (StataCorp) with $\alpha=0.05$.
Results: 19,371 participants aged 18 or above responded to the effective patient communication and cultural competency questions, with a median age of 54 (IQR 37-67). 66.79% were non-Hispanic white, 54.51% were female, 6.64% were uninsured, 3.17% were non-English speaking, and 16.04% were foreign-born. Respondents who were asked about their opinions and beliefs regarding their care (aOR 1.28, 95% CI 1.18-1.40, p< 0.001) and those who were given easy-to-understand information (aOR 1.18, 95% CI 1.00-1.40, p=0.04) were significantly more likely to receive HBV vaccination compared to their counterparts. Non-English-speaking participants (aOR=0.64, 95% CI, 0.46-0.89, p=.01), older, and uninsured individuals were less likely to have received any HBV vaccination (p< .001).
Conclusion: Being inoculated against hepatitis B was positively correlated with measures of effective patient communication, and negatively correlated with being a non-English speaker, older, and uninsured. These inequities can be partially explained by implicit biases among healthcare providers, poor health literacy, and lack of healthcare access among others. Lack of effective patient communication contributes to those disparities, while effective patient communication improves outcomes in vaccination, healthcare, and satisfaction. Future studies and policies can build upon these comprehensive findings. (Figure)



[1231] **Figure 1.** Weighted proportions of respondents aged ≥18 years who received the hepatitis B vaccine stratified by answers to the five cultural competency measures from the NHIS 2017. HCP = healthcare provider *asterisk denotes statistical significance at p<0.05 *Very/somewhat important (blue) vs. slightly/not at all important (orange) were respondents' answers to the 5th survey question a Adult respondents self-reported their history of receiving "any hepatitis B vaccine". In addition to answers to one of the five cultural competency survey questions, the models were also adjusted for sociodemographic and clinical variables including age, sex, race (non-Hispanic white, non-Hispanic black, Hispanic, Asian, or other), sexual orientation (heterosexual / "straight, that is, not lesbian or gay" or lesbian / gay / bisexual / "something else" / unknown), insurance status (insured or non-insured), nativity (US mainland-born, non-mainland US territory-born, or foreign-born), language spoken (English speaker or non-English speaker), smoking (smoker vs non-smoker), educational attainment (Grade 8, Grade 12 with no diploma, high school diploma, some college, Bachelor's degree, or advanced degree), usual place of care (with or without), socioeconomic status as the ratio of family income to the poverty threshold (<1.00, 1.00-1.99, 2.00 or greater), presence of comorbidities considered high-risk for worse influenza outcomes according to the Advisory Committee on Immunization Practices (no comorbidity, one comorbidity, or two or more comorbidities).

S1232

COVID-19 Infection Post Liver Transplantation: A Closer Look at Vaccination Efficacy and Breakthrough Infection

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Introduction: There are conflicting reports about coronavirus disease 2019 (COVID-19) infection rate and severity in solid organ recipients. These patients have low immune response after vaccination and therefore susceptible to breakthrough infection (BTI). Studies on efficacy of COVID-19 vaccination in liver transplant (LT) recipients are limited. We aimed to investigate vaccination rate, BTI, mortality rate, and risk factors in COVID-19 infection post LT.
Methods: In a retrospective chart review study, 98 post LT patients were randomly selected since Dec. 2020. BTI was defined as COVID-19 infection ≥14 days after full vaccination (2 doses of mRNA vaccines or 1 dose of viral vector). Data is reported as mean ± SEM. T- test and chi square tests were applied for analyzing the data.
Results: Fifty patients without COVID-19 infection and 48 patients with COVID-19 infection were analyzed. Mean age (58.9 ±1.1 vs. 60.5 ±1.4), gender (66% vs. 77% female), and race (82% vs. 85.4% Caucasian) were not significantly different among two groups. 81.2% of non-infected patients were fully vaccinated as compared to 31.2% of infected patients (p< 0.0001). 50% vs. 10.6% of patients received booster dose, respectively (P< 0.0001). The majority received BNT162b2 mRNA vaccine in both groups (58.5% vs. 56.2%; p >0.05). Presence of chronic kidney disease (CKD), obesity, Type 2 diabetes (T2DM), and hypertension (HTN) were not significantly different among two groups. Among 54 fully vaccinated patients, BTI occurred in 27.7% and only 3.7% died. On the other hand, 82% of non-vaccinated patients became infected and 23% died (p=0.004; OR= 0.128). Age, gender, race, obesity, HTN, and T2DM did not have any correlation with BTI. CKD was significantly higher in those with BTI compared to vaccinated patients without BTI (80% vs. 48.7%; p=0.03). Tacrolimus monotherapy was more frequent among vaccinated patients who did not have BTI (43.5% vs. 13.3%; p=0.03). Those who had booster shots had significantly lower rate of BTI (16.6% vs. 41.6%; p=0.04; OR=0.28).
Conclusion: Our study highlights the efficacy of COVID-19 vaccination and boosters in reducing rate of COVID-19 infection and BTI post LT. There was no correlation between demographic variables, choice of immunosuppression, HTN, CKD, T2DM, and obesity with COVID-19 infection. LT recipients with CKD were at higher risk of BTI. Our data suggests that tacrolimus monotherapy was protective against BTI in vaccinated patients but not in unvaccinated patients.

S1233

Assessment of STAT4 Variant and Risk of Hepatocellular Carcinoma in Latin Americans and Europeans

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Introduction: Assessment of host genetics by identification of single nucleotide polymorphisms (SNPs) has shown to play a crucial role in identifying individuals at a risk for hepatocellular carcinoma (HCC). A point mutation (G for T) in the signal transducer and activator of transcription 4 (*STAT4*) has been found to increase risk in hepatitis B virus (HBV)-associated HCC. However, most studies addressing its risk association have been performed in Asian populations
Methods: This is a cross-sectional study performed in Latin American and European individuals through our ESCALON network. We analyzed 270 HCC blood samples and 343 cirrhotic controls from Argentina, Chile, Colombia, Ecuador, Peru, and the Netherlands for the variant rs7574865 in *STAT4*. A mutation in the *STAT4* was genotyped using TaqMan-genotyping assay. Chi-Squared and Fisher's Exact test were used to evaluate the association between *STAT4* and HCC.
Results: The median age for HCC in South Americans was 68 y/o (IQR 62-72) and in Europeans 67 y/o (IQR 61-71), with 61% and 75% being males, respectively. The proportions of individuals who developed HCC with a risk SNP (GG/GT) in the *STAT4* gene was 85% in the Latin American cohort and 93% in the European one, as well as 85% and 96% respectively for cirrhotics without HCC. The calculated Odds-Ratio (OR) for HCC among Latin Americans with the G/G or G/T mutation in the STAT4 gene was 1.01 (CI 0.53-2.00, p=1) and among Europeans 0.71 (CI 0.16-2.55, p=0.78), suggesting and inverse association risk, but of low significance. When evaluating HBV-related HCC specifically (11% of cases) we found OR of 2.20 (CI 0.16-23.00, p=0.58) in carriers of G mutation for the entire cohort, and OR of 3.00 (CI 0.1-90.96, p=1) for Latin Americans and OR of 2.35 (0.04-44.71, p=0.47) among Europeans. When comparing the TT genotype to GT and GG we found OR of 0.43 (CI 0.02-28.00, p=0.47) suggesting a protective effect in this population.
Conclusion: *STAT4* mutations do not seem to associate with HCC development in Latin American or European populations, likely due to a much higher prevalence of GG alleles than in Asians. In those with HBV-related HCC there seems to be an increased OR for presence of G mutation, but with a large CI (needing further verification). A larger study is ongoing to confirm these findings.

S1234

***Helicobacter pylori* Infection and Cag-A Strain Are Associated With NAFLD Severity**

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Introduction: Recent studies have suggested an association between *Helicobacter pylori* (Hpyl) and non-alcoholic fatty liver disease (NAFLD). However, epidemiologic studies attempting to determine this risk have yielded inconsistent results. The aim of the current study was to examine the association of Hpyl virulence genes and NAFLD in dyspeptic patients.
Methods: This is a prospective study from 2019 to 2020 in northeast Argentina. We evaluated 305 dyspeptic patients who fulfilled the ROME III criteria and underwent gastroscopy. Hpyl positivity (Hpyl-pos) was defined as gastric biopsy by Giemsa positive staining. Biochemical (AST, ALT, ALP, gGT, platelets, anti-HCV; HBsAg, Anti-HBc, Anti-HIV), clinical (BMI, smoking, alcohol intake, diabetes, hypertension), endoscopic and histological parameters were recorded. NAFLD was defined by ultrasonographic detection of hepatic steatosis in the absence of other known causes of liver diseases and significant alcohol consumption. The FIB-4 score was used to determine non-invasive fibrosis. DNA were extracted from Hpyl-pos gastric biopsies and analyzed in 105 subjects for *cag-A, vac s1/s2, vac m1/m2* and *oip-A*.
Results: The prevalence of NAFLD was 39% (120/305), with Hpyl-pos 43% (56/131) and Hpyl-neg 37% (64/174) (p: ns), no associations were observed between Hpyl virulence genes and the presence of liver steatosis by ultrasound. When NAFLD subjects were analyzed, Hpyl-pos status was significantly associated with higher AST (Hpyl-pos: 35±14 UI/mL vs Hpyl-neg: 22±12 UI/mL, p: 0,0008), ALT (Hpyl-pos: 38±18 UI/mL vs Hpyl-neg: 30±17 UI/mL, p: 0,018) and FIB-4 (Hpyl-pos: 1,44±0,6 vs Hpyl neg: 1,16±0,7, p: 0,02). Indeed, Hpyl-pos infection was associated more proportion of patients with FIB-4 >1,3 (Hpyl-pos: 46% n: 30/56 vs Hpyl-neg: 29% n: 19/64, p: 0,0095), no difference was observed in FIB-4 >2,67. Moreover, presence of cag-A and vac-m1 were associated with higher AST (*cag-A* 36±12 UI/mL, p: 0,002; vac-m1: 39±14 UI/mL, p: 0,0003). Also, higher FIB-4 values were observed in *cag-A* positive (1,49±0,5, p: 0,04) with more proportion of patients with FIB-4 >1,3 in *cag-A* positive: 55% (p: 0,04).
Conclusion: In this prospective observational study no associations between Hpyl, virulence genes with NAFLD by ultrasound were observed. However, in NAFLD subjects Hpyl infection was associated with markers of liver injury and fibrosis . *cag-A* positive strain was associated with higher AST and FIB-4 values with more proportion of patients with FIB-4 >1,3.

S1235

Endoscopic Ultrasound-Guided Shear Wave Elastography of the Liver and Spleen to Predict Complications of Cirrhosis and Correlation With EUS-Guided Portal Pressure Gradient

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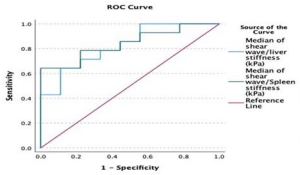
Introduction: Endo-hepatology (EH) is an emerging field which utilizes endoscopic ultrasound (EUS) to evaluate patients with chronic liver disease (CLD). This workup includes EUS-guided liver biopsies, EUS-guided portal pressure gradients (EUS-PPG), EUS-shear wave elastography of the liver (EUS-SWE-L) and spleen (EUS-SWE-S). Our study aimed to determine a correlation between EUS-SWE of the liver , spleen, and EUS-PPG and complications of CLD.
Methods: Retrospective analysis of 28 patients from 2021-22. Pearson correlation (PC) coefficients were used to compare EUS-SWE-L and EUS-SWE-S to EUS-PPG. T tests were used to compare EUS-SWE-L and EUS-SWE-S to complications of CLD such as ascites, presence of esophageal varices, and thrombocytopenia. Receiver Operating Characteristics Curve (ROCC) analysis was done to evaluate the utility of shear wave/liver stiffness and shear wave/spleen stiffness to predict the presence of esophageal varices or ascites.
Results: 23 patients underwent EUS-SWE-S and 20 had EUS-PPG. Significant correlation noted between platelet count and EUS-SWE-L measurement (PC= -0.496, p=0.01). There was a significant difference in EUS-SWE-L measurement in patients with and without thrombocytopenia (28.90 kPa vs. 17.66 kPa, p=0.002) and in those with and without ascites (29.67 kPa vs. 18.64 kPa, p=0.003). There was also a significant difference in EUS-SWE-S measurements in patients with and without ascites (39.44 kPa vs. 30.06 kPa, p= 0.029). There was a weak correlation between EUS-PPG and EUS-SWE-S (PC = -0.45, p=0.05). ROCC analysis determined the best cut-off for EUS-SWE-L to predict the presence of esophageal varices or ascites was > 22.7 kPa with sensitivity of 78.6% and specificity of 55.6%. Best cut-off for EUS-SWE-S to predict the presence of esophageal varices or ascites was > 31.12 kPa with sensitivity of 85.7% and specificity of 55.6%. (Figure)
Conclusion: EUS-SWE of Liver and Spleen showed utility in predicting complications of liver disease such as varices, ascites and thrombocytopenia. There was also a weak, but statistically insignificant correlation between EUS-SWE-S and EUS-PPG. The limitations of our study include small sample size and, therefore, decreased power of the study. Further evaluation with a larger sample size is needed to better elucidate the findings determined in our study regarding EUS-PPG, EUS-SWE-S, and EUS-SWE-L. Our data suggests that these techniques have significant potential in determining those at greatest risk of complications of clinically significant CLD (Table).



Two sample t test with equal variances for EUS-SWE-L and presence of CLD complication			
Variable	Variable present	Variable absent	p value
Ascites, mean kPa (std. dev.)	29.62 (+/- 9.89)	18.64 (+/- 6.95)	0.003
Plt <150, mean kPa (std. dev.)	28.89 (+/- 8.83)	17.66 (+/- 7.71)	0.002
Esophageal varices, mean kPa (std. dev.)	29.93 (+/- 8.60)	21.42 (+/- 9.63)	0.051

Area Under the Curve

Test Result Variable(s)	Area	Std. Error[a]	Asymptotic Sig.[b]
Median of shear wave/liver stiffness (kPa)	.825	.087	.010
Median of shear wave/Spleen stiffness (kPa)	.841	.082	.007

a. Under the nonparametric assumption
b. Null hypothesis: true area = 0.5

Two sample t test with equal variances for EUS-SWE-S and presence of CLD complication			
Variable	Variable present	Variable absent	p value
Ascites, mean kPa (std. dev.)	39.44 (+/- 8.80)	30.06 (+/- 10.42)	0.029
Plt <150, mean kPa (std. dev.)	35.27 (+/- 13.27)	34.55 (+/- 6.04)	0.874
Esophageal varices, mean kPa (std. dev.)	38.73 (+/- 10.37)	33.31 (+/- 10.50)	0.266

[1235] **Figure 1.** Descriptive Statistical Analysis

Table 1. Patient characteristics

Total number of patients, n	28
Age, mean in years (std. dev.)	50.25 (+/- 12.02)
Male, n (%)	16 (57%)
Race- white, n (%)	28 (100%)
BMI, mean (std. dev)	31.53 (+/- 9.85)
Liver biopsy performed, n (%)	22 (78.6%)
Stage ≥ F3 on biopsy, n (%)	16 (72.7%)
Esophageal varices, n (%)	9 (32.1%)
Ascites, n (%)	12 (42.9%)
Plt count < 150, n (%)	16 (57.1%)
MELD-Na, mean (std. dev.)	12.67 (+/- 4.97)
Child score, mean (std. dev.)	6.81 (+/- 1.82)

S1236

Outcomes for Patients on DOACs in Compensated and Decompensated Cirrhosis

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Introduction: Cirrhotic patients are prone to thromboembolism as well as bleeding. Use of novel anticoagulants is well established in patients with compensated cirrhosis and CTP class A patients however data on the efficacy and safety profile of DOACs in decompensated cirrhotic patients is limited. Our AIM was to determine if the clinical outcomes differed in those with compensated cirrhosis receiving DOACS (apixaban, rivaroxaban, edoxaban, and dabigatran) compared to those with decompensated cirrhosis in terms of thromboembolic events, atrial fibrillation (a fib), bleeding events, and TPA administration
Methods: Single center review from 2015-present in all subjects with cirrhosis with/without decompensation at time of DOAC administration. Patients were required to have 90 days of history prior to the DOAC and at least 1 year of follow-up. Decompensation was identified based on ICD codes (ascites, jaundice, gastric and esophageal varices, portal hypertension, hepatorenal syndrome,hepatic encephalopathy). We performed sensitivity analysis for MELD < 11, 11-14 and >14. The cohorts were compared for new onset a fib, bleeding (GI bleed, hemorrhagic stroke, retroperitoneal bleed and other bleeding events), new onset thrombotic events (pulmonary embolism, DVT, occlusive stroke) and new administration of TPA before and after matching for all observable confounders using high dimensionality propensity score matching.
Results: 452 decompensated subjects were compared to 321 compensated subjects. The cohorts were similar in age and sex with decompensated cohort having fewer white patients (53.5% vs 64.8%) and higher baseline comorbidity score. While differences were noted in unmatched analyses, no significant differences in outcomes were noted after matching in the variables studied (Table). For each subgroup of MELD scores (MELD < 11, 11-14 and >14) the findings remained consistent
Conclusion: In a single site observational analysis we identified no difference in thrombotic events, a fib, bleeding, or administration of TPA when comparing compensated and decompensated liver cirrhosis patients who were on a DOAC. We matched patients on all baseline observable confounders at the time they began DOAC administration. For sensitivity analysis we stratified presenting MELD into low, medium, high and for each subgroup the findings were consistent.

Table 1. Event Outcomes for Compensated and Decompensated Patients on DOACS in Unmatched and Propensity Score Matched Analysis

Event	Negative	Positive	(OR 95 CI)	P Value
Thrombosis				
Decompensated (unmatched)	308	144	1 (1.000, 1.000)	NA
Compensated (unmatched)	258	63	0.522 (0.372, 0.733)	0.0001
Decompensated (propensity score matched)	111	39	1 (1.000, 1.00)	NA
Compensated (propensity score matched)	112	38	0.966 (0.575, 1.62)	0.89
TPA administration				
Decompensated (unmatched)	447	5	1 (1.0000, 1.00)	NA
Compensated (unmatched)	319	2	0.561 (0.0531, 3.45)	0.71
Decompensated (propensity score matched)	148	2	1 (1.00000, 1.00)	NA
Compensated (propensity score matched)	149	1	0.498 (0.00837, 9.66)	1
Atrial Fibrillation				
Decompensated (unmatched)	254	198	1 (1.000, 1.00)	NA
Compensated (unmatched)	160	161	1.291 (0.969, 1.72)	0.08
Decompensated (propensity score matched)	65	85	1 (1.000, 1.00)	NA
Compensated (propensity score matched)	78	72	0.706 (0.448, 1.11)	0.133
Bleeding Events				
Decompensated (unmatched)	361	91	1(1.000, 1.000)	NA
Compensated (unmatched)	286	35	0.485 (0.319, 0.739)	0.0005
Decompensated (propensity score matched)	129	211	(1.000, 1.00)	NA
Compensated (propensity score matched)	130	20	0.945 (0.489, 1.83)	0.87

S1237

Association of Liver Biopsy Pathology on Outcome of Patients Undergoing Heart Transplantation

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Introduction: Patients with advanced heart failure needing heart transplant (HT) commonly have some degree of liver dysfunction. Liver biopsies are the gold-standard for evaluating the severity of liver disease and are commonly performed prior to listing a patient for HT. However, there is limited data on the impact of liver fibrosis on outcomes for HT candidates. The objective of this study was to determine the relationship between liver fibrosis severity and mortality rates for patients on the HT waitlist and post-HT.
Methods: A retrospective cohort study of adults listed for HT who underwent a liver biopsy for evaluation of liver fibrosis from 08/12/2004-02/16/2022 at a large heart transplant center was performed. Degree of fibrosis was categorized as either early (only fibrosis expansion of portal areas with or without short fibrous septa or no fibrosis) or advanced (evidence of portal-to-portal bridging or cirrhosis). Trend analysis was performed on clinical, laboratory and mortality data using Cox proportional hazard model, controlling for MELD-XI. At-risk period starts at the time of waitlist and extends into the post-transplant phase. The end of the follow-up period was defined as mortality on the waitlist, mortality post-HT, or administrative censoring at the end of the study period.
Results: Of 42 patients with liver biopsies, 14 (33%) had advanced fibrosis, 28 (67%) had early fibrosis, and 2 (5%) patients had cirrhosis. There was no significant difference in the survival of patients with advanced fibrosis and early fibrosis over time (HR 1.37, CI 0.47- 3.98, p = 0.56). Fifteen waitlisted patients did not eventually receive transplants, and there was no significant difference in survival within group (HR 0.65, CI 0.18-2.32, p = 0.51); 9 of these 15 patients died on the waitlist. Twenty-seven patients did eventually receive transplants, and there was no significant difference in survival within this group (HR 1.00, CI 0.09-11.43, p = 1.00). (Figure)
Conclusion: There was no significant difference in the survival rates between HT candidates with and without advanced fibrosis on the waitlist and post-HT, suggesting that patients on the transplant waitlist may not need liver biopsy for heart transplant workup. However, our sample population was derived from patients who were already on the transplant waitlist. Therefore, our results cannot be extrapolated to the general advanced heart failure population undergoing HT evaluation, many of whom are not waitlisted due to cirrhosis (Table).

Table 1. Predicted survival percentages for transplanted patients, non-transplanted patients, and both groups combined at 30 days, 1 year and 5 years with early liver fibrosis or advanced liver fibrosis from time of listing

	Transplanted Patients (% [CI])	Non-transplanted Patients (% [CI])	Transplanted and Non-transplanted Patients (% [CI])
Early Liver Fibrosis			
30 Days	100 (0-100)	84.6 (66.0-100)	95.8 (90.0-100)
1 Year	96.2 (88.8-100)	53.5 (29.2-97.9)	84.5 (73.2-97.4)
5 Years	88.1 (74.6-100)	17.3 (3.6-84.0)	68.2 (52.4-88.9)
Advanced Liver Fibrosis			

Table 1. (*continued*)

	Transplanted Patients (% [CI])	Non-transplanted Patients (% [CI])	Transplanted and Non-transplanted Patients (% [CI])
30 Days	100 (0-100)	89.7 (75.7-100)	94.3 (86.1-100)
1 Year	96.2 (86.6-100)	66.6 (42.4-100)	79.3 (63.0-99.9)
5 Years	88.2 (67.4-100)	32.1 (9.8-100)	59.2 (37.6-93.1)

CI = confidence interval.

Figure 1:

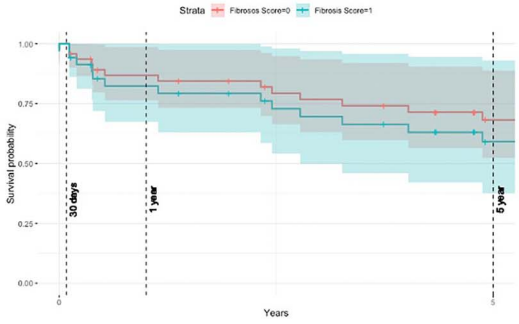


Figure 2:

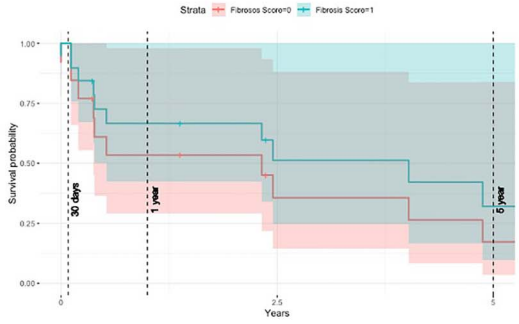
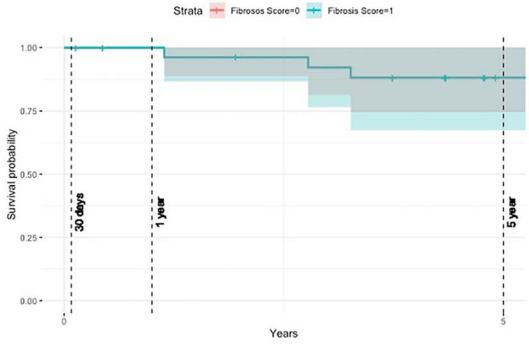


Figure 3:



[1237] **Figure 1.** (1) Survival curve of waitlisted patients with and without advanced liver fibrosis, including patients who received and did not receive transplants. Time 0 is the time of listing. Fibrosis score 0 = early liver fibrosis. Fibrosis score 1 = advanced liver fibrosis. (2). Survival curve of only those patients who did not receive transplants. Time 0 is the time of listing. Fibrosis score 0 = early liver fibrosis. Fibrosis score 1 = advanced liver fibrosis. (3) Survival curve of only those patients who received transplants. Time 0 is the time of listing. Fibrosis score 0 = early liver fibrosis. Fibrosis score 1 = advanced liver fibrosis.

S1238

Trends of Alcohol Withdrawal Delirium in the Last Decade: Analysis of the Nationwide Inpatient Sample

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Introduction: Alcohol use disorder and high-risk drinking have been increasing in the US recently. Approximately half of patients with alcohol use disorder experience alcohol withdrawal when they reduce or stop drinking. This study aimed to describe the epidemiologic trends of alcohol withdrawal delirium (AWD) over the last decade.
Methods: This was a retrospective longitudinal trends study involving hospitalizations with AWD in the US from 2010 to 2019. We sourced data from the Nationwide Inpatient Sample database. The study involved two cohorts of hospitalizations: all hospitalizations complicated by AWD and hospitalizations with AWD as the principal diagnosis for admission. We calculated the crude admission rate and the incidence of AWD per million adult hospitalizations during each calendar year. We used multivariable regression trend analysis to obtain trends in mortality, length of stay (LOS), and total hospital charges (THC) adjusted for age categories, sex, and race.

Results: The incidence of AWD per million hospitalizations increased from 2671.8 in 2010 to 3405.6 in 2019, with an annual percentage change (APC) of 3.1% ($p < 0.001$). AWD admission rate per million hospitalizations increased from 1030.3 in 2010 to 1556.0 in 2019, with an average APC of 5.0% ($p < 0.001$). There were statistically significant trends of increasing inpatient mortality (p trend = 0.044), LOS (p trend = 0.006), and THC (p trend < 0.001). Multivariate analysis showed that younger age, female gender, and Black race were associated with lower inpatient mortality and THC. Younger age and female gender were also associated with shorter LOS. Black race was associated with longer LOS.
Conclusion: High-risk drinking and alcohol use disorder have been increasing in the US. The likelihood of alcohol withdrawal increases with increasing alcohol consumption. The observed trends likely reflect the changes in alcohol consumption observed in the last two decades. The inferior outcomes observed in elderly could be contributed to higher prevalence of comorbidities, higher sensitivity to benzodiazepines, and polypharmacy. Better outcomes in females could be attributed to the more conservative drinking patterns, gender-selective adaptations at the molecular level induced by alcohol, and hormonal factors. Better outcomes in Blacks are likely due to lower rates of binge drinking and genetic factors.

S1239

Utilization of Statins in Primary Care Patients With Chronic Liver Disease

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Introduction: Statins have historically been underutilized in patients with chronic liver disease (CLD) despite studies illustrating their safety and potential benefits in this population. We sought to investigate the association between CLD and statin prescription in a primary care setting.
Methods: This retrospective cohort study comprised of electronic health record data from a patient-centered medical home identified primary care patients with a low-density lipoprotein value and more than one office visit from 2012 through 2018. Individuals prescribed a statin from July 2012 to June 2013 were excluded. Indication for statin therapy was determined using the Third Adult Treatment Panel criteria prior to November 2016 and the atherosclerotic cardiovascular disease risk assessment according to the American College of Cardiology and the American Heart Association guidelines thereafter. Indication for statin prescription and statin therapy by year was determined. Patients with CLD were identified using ICD-9/10 codes. Univariate analyses were done using chi-square and student's t test to identify variables that predicted statin prescription. Logistic regression models were constructed using the CLD status as well as significant predictor variables from the univariate analyses.
Results: 2,119 individuals with an indication for statin therapy were identified. Of these individuals, 354 had CLD. Alcoholic and nonalcoholic fatty liver disease comprised 44.92% and 28.53% of the CLD population, respectively; 27.68% had cirrhosis. The presence of CLD did not significantly influence the decision to prescribe a statin (57.85% vs 59.89%, p=0.48). A diagnosis of CLD was not significantly associated with statin prescription when adjusting for other covariates (OR 1.02; 95% CI 0.78-1.33) (Table). An alanine aminotransferase (ALT) level greater than 45 was a negative predictor of statin prescription (OR 0.62, 95% CI 0.44-0.87).
Conclusion: In a primary care cohort consisting of individuals with an indication for statin therapy, the presence of CLD did not significantly hinder statin utilization compared to those without a CLD diagnosis. Rather, providers were more conscientious of ALT values. Overall, this study suggests a deviation from historic provider tendencies to avoid statins in CLD patients. Nevertheless, adherence to guideline indicated statin therapy remains suboptimal and efforts to increase statin utilization in this high-risk population remains prudent.

Table 1. Estimated odds ratios and 95% confidence intervals for logistic regression models for the outcome of receiving a prescription for a statin

	Model 1		Model 2		Model 3	
Predictors	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
CLD	0.96	0.75-1.22	0.87	0.67-1.12	1.02	0.78-1.33
Age	0.99	0.98-1.00	1.00	0.99-1.01	1.00	0.99-1.01
Male	1.03	0.86-1.24	1.36	1.12-1.66	1.43	1.18-1.75
Black	1.81	1.51-2.17	1.70	1.39-2.08	1.66	1.35-2.03
Coronary artery disease	2.12	1.38-3.25	1.97	1.26-3.07	1.99	1.28-3.11
Cerebrovascular disease	1.96	1.46-2.63	1.92	1.42-2.61	1.91	1.40-2.60
Congestive heart failure	1.53	1.10-2.13	1.28	0.91-1.81	1.34	0.95-1.90
Diabetes			1.95	1.56-2.43	1.99	1.59-2.49
Hypertension			2.40	1.85-3.10	2.42	1.87-3.14
LDL >160			2.67	2.14-3.32	2.72	2.18-3.40
HDL < 40			0.94	0.75-1.18	0.95	0.75-1.19
Triglycerides >200			1.56	1.18-2.07	1.61	1.21-2.15
ALT >45					0.62	0.44-0.87
Platelets < 140					0.57	0.36-0.92
Bilirubin > 1.2					0.83	0.55-1.26

S1240

Quantifying the Negative Impact of Fast-Food Consumption on Liver Steatosis Among U.S. Adults in the General Population

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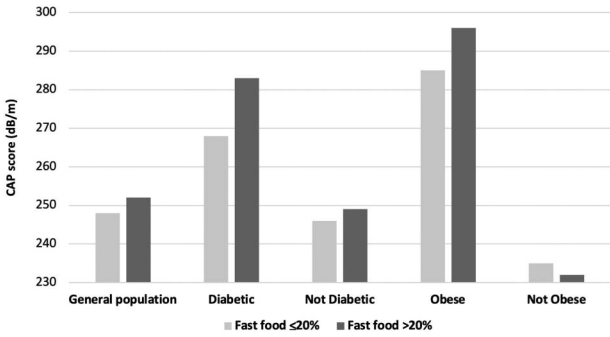
Introduction: Fast food (FF) consumption is highly prevalent in the US and is associated with high caloric intake and greater risk of diabetes. Little is known about the impact of FF consumption on NAFLD risk in healthy adults or whether the effect of FF on steatosis is different among persons with metabolic risk factors, including obesity and diabetes. We aimed to evaluate the quantitative impacts of FF consumption on steatosis risk in these populations.
Methods: Adults (≥20 years) in the U.S. National Health and Nutrition Examination Survey 2017-2018 with valid transient elastography and FF data were included. Liver steatosis was measured continuously using the controlled attenuated parameter score (CAP; dB/m). FF intake was assessed using the two-day food frequency questionnaire and calculated as the percentage of daily calories from FF (either as an average of the two-day total or one day if only one day was available). We used multivariable linear regression to examine the association of FF consumption with steatosis.
Results: 3,954 adults were included, of whom 2037 (52%) consumed any FF and 1,147 (29%) consumed >20% of daily calories from FF. Subjects consuming >20% of daily calories from FF (vs ≤20%) were more likely to be younger (42 vs 50 years), male (53% vs 47%), obese (50% vs 40%), consume sugar-sweetened beverages (SSBs; 43% vs 27%) and less likely to drink coffee (17% versus 24%). In the multivariable models, FF intake >20% of daily caloric intake was associated with a 4.3-point higher CAP (standard error [SE] 1.9) after controlling for age, gender, race/ethnicity, diabetes, body mass index, and consumption of SSBs or coffee. We identified interactions between FF intake >20% and metabolic comorbidities, including obesity ($p< 0.001$) and diabetes (p=0.054). Among diabetics, FF intake >20% (vs ≤20%) was

associated with a 15.7-unit higher CAP (283[4.3] vs 268[4.2]), compared to only a 2.9-unit higher CAP among non-diabetics (249[1.4] vs 246[1.7]; Figure). Among obese persons, FF intake >20% was associated with a 11-unit higher CAP (296[3.1] vs 285[3.4]) compared to a 3-unit lower CAP compared to non-obese persons (232[1.4] vs 235[1.7]).

Conclusion: Fast food consumption is associated with greater liver steatosis in the U.S. population, with striking elevations in risk among obese and diabetic persons. These findings should urge education around magnitude of risk among persons with obesity and diabetes and encourage policy efforts to improve access to healthier food options in the US.

Figure. Adjusted mean CAP score by the amount of fast-food consumption per daily caloric intake



[1240] **Figure 1.** Adjusted mean CAP score by the amount of fast-food consumption per daily caloric intake.

S1241

Diagnostic Accuracy of FibroScan Controlled Attenuation Parameter (CAP) as a Non-Invasive Test for Steatosis in Liver Transplant Recipients

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Introduction: Metabolic syndrome and obesity are common after liver transplantation (LT), leading to hepatic steatosis (HS). We evaluated the accuracy of the FibroScan controlled attenuation parameter (CAP) as a non-invasive test for the detection of steatosis in LT recipients.

Methods: This is a retrospective study comparing the accuracy of the FibroScan CAP to liver biopsy in detecting clinically significant steatosis (CSS) (Stage 2-3). The median time between liver biopsy and Fibroscan was 84 days [IQR: 14-317]. Experienced hepatopathologists did histological grading of the steatosis. The HS grades from liver biopsy were graded as S0 (< 5%), S1 (5–33%), S2 (33–66%), and S3 (>66%). Areas under the receiver operator curves (AUROC), sensitivity, specificity, positive predictive value (PPV), and negative predictive (NPV) values were calculated (STATA16 Software). Optimal cut-off values maximizing specificity and sensitivity were determined.

Results: We evaluated 65 patients with a mean age of 57 years and a mean body mass index of 30 kg/m2. 26 (40%) had diabetes and hypertension of the total patients. After the liver transplant, the median time to liver biopsy was 15 months (IQR: 13-37). We found that 42 patients (64.6%) had no steatosis, 18 (27.7%) had S1, 4 (6.15%) had S2 and 1 (1.54%) had S3 steatosis. Overall, clinically significant steatosis (S2-S3) was present in 5 (7.7%) patients. The AUROC of the FibroScan, to detect CSS was 0.84 (Figure). For specific cut-off value FibroScan (CAP≥271), for detecting CSS has 100% sensitivity, 50% specificity of %, 14.30% PPV and 100% NPV. (Table A, B)

Conclusion: FibroScan CAP is an excellent test to evaluate for CSS in LT recipients and minimize the need for liver biopsy to assess hepatic steatosis.

Table A. Patient Characteristics

Parameter		Value (Total 65 patients)
Age (Years)		57 ± 11
Sex	Male	38 (58%)
	Female	27 (42%)
BMI		30 ± 5 *30 [27.2-33.6]
Race	Black	14 (21.6 %)
	White	48 (73.9%)
	Hispanic	1 (1.5%)
	Asian	1 (1.5%)
	Others	1 (1.5%)
Etiology	NASH	22 (33.9%)
	Alcohol	18 (27.7%)
	HCV	12 (18.5%)
	PSC	2 (3.1%)
	PBC	2 (3.1%)
	AIH	3 (4.6%)
	A1AT-Deficiency	1 (1.5%)
	Biliary Atresia	1 (1.5%)
	Hepatic Fibrosis	1 (1.5%)
	Cryptogenic	3 (4.6%)
Comorbidities	Diabetes	26 (40%)
	Hypertension	39 (60%)
	Hyperlipidemia	26 (40%)
	Coronary Artery Disease	11 (17%)
	H/O MI	4 (6%)
	Hypothyroidism	7 (11%)
	Chronic Kidney Disease	18 (28%)

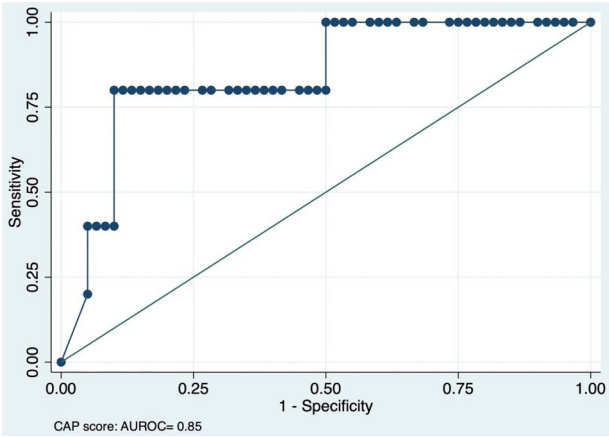
Table A. (*continued*)

Parameter			Value (Total 65 patients)
Time between transplantation and Liver biopsy, Months			* 15 [13-37]
Liver Biopsy	Fibrosis Stage	F0	46 (70.8%)
		F1	20 (20.0%)
		F2	3 (4.6%)
		F3	1 (1.5%)
		F4	2 (3.1%)
	Inflammation	None	20 (30.8%)
		Mild	38 (58.4%)
		Moderate	7 (10.8%)
		Severe	0 (0%)
	Steatosis	None (S0)	42 (64.6%)
		Mild (S1)	18 (27.7%)
		Moderate (S2)	4 (6.2%)
		Severe (S3)	1 (1.5%)

Data presented as n/N (%) or count (%) for categorical variables and mean (standard deviation); *Median for continuous variables.
Abbreviations: NASH, Non-alcoholic steatohepatitis; HCV, Hepatitis C; PSC, Primary sclerosing cholangitis; PBC, Primary biliary cholangitis; A1AT, Alpha -1 anti-trypsin; CAD, Coronary artery disease; DM, diabetes; HTN, hypertension.

Table B. **Sensitivity, Specificity of FibroScan for Detecting for Detecting Significant steatosis (S2-S3) Using Biopsy as a Gold Standard Test**

	Cut-Off value	Sensitivity	Specificity	PPV	NPV	LR+	LR-
CAP Score (dB/m)	≥ 271	100%	50%	14.30%	100%	2.00	0.00



[1241] **Figure 1.** Accuracy of FibroScan in Predicting Clinically Significant Steatosis in Liver Transplant Recipient: Receiver Operating Characteristics (ROC) Analysis

S1242

Metabolic Syndrome and Beta Blocker Use Is Associated With Portal Vein Thrombosis in NASH Cirrhosis

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Introduction: Portal vein thrombosis (PVT) is associated with increased morbidity of patients with cirrhosis due to worsening portal hypertension, increases surgical complications, and may have an increased risk of early graft failure. PVT is associated with non-alcoholic steatohepatitis (NASH). The primary aim of this study was to understand the prevalence of PVT in NASH cirrhosis and understand the risk factors associated with its presence.
Methods: A retrospective cohort review of patients who underwent liver transplant evaluation at a single tertiary liver transplantation center from January 1, 2015 to September 30, 2021. Inclusion criteria were age greater than 18 years and diagnosis of NASH or cryptogenic cirrhosis. Exclusion criteria included non-NASH cirrhosis or PVT secondary to primary coagulopathy. Clinical data was collected including presence of hypertension, hyperlipidemia, Type II diabetes mellitus, obesity and pre-transplant MELD score. Metabolic syndrome was defined using International Diabetes Foundation Criteria. Data was analyzed using SPSS software. The study was approved by the IRB.
Results: Of the 238 patients with NASH cirrhosis, 57 patients had a PVT at time of evaluation for a prevalence of 23.9%. Univariate analysis, demonstrated hyperlipidemia ($p = 0.02$), obesity ($p = 0.02$), metabolic syndrome, and beta blocker use to be associated with portal vein thrombosis. On multivariate analysis presence of metabolic syndrome (OR: 2.37, CI: 1.21-4.63, $p = 0.011$) and beta blocker (OR:2.14, CI: 1.07-4.29, $p = 0.031$) use were independently associated with portal vein thrombosis. The prevalence of PVT was 34% in metabolic syndrome and 20% in beta blocker users. Metabolic syndrome with concurrent BB use did not seem to confer additional risk of PVT (Figure). Metabolic syndrome was found in 71.9% of NASH cirrhosis patients with portal vein thromboses. Beta blockers were found in 66.7% of NASH cirrhosis patients with portal vein thromboses.
Conclusion: This study demonstrates that presence of metabolic syndrome and use of beta blockers in NASH cirrhosis patients is associated with an increased prevalence of portal vein thrombosis. Increased prevalence of PVT in the metabolic syndrome only group suggests that this might be a greater risk factor than BB use. Further prospective studies are needed to consider the role of treatment and mitigation of metabolic syndrome associated factors and the role of beta blockers in the pathogenesis of portal vein thrombosis in patients with NASH.

Groups (# of patients)	Number of patients with PVT (57 total)	Prevalence %
No BB, No MS (56)	4	7
BB, No MS (59)	12	20
MS, No BB (44)	15	34
MS, BB (79)	26	33

[1242] **Figure 1.** Beta blocker (BB) and Metabolic Syndrome (MS) groups and prevalence of Portal Vein Thrombosis (PVT)

S1243

Epidemiology of Hepatocellular Carcinoma (HCC) in a Canadian University Centre

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Introduction: Nearly 85% of HCC cases are reported in Asia and Saharan Africa. This explains why data on risk factors often concerns Asian populations. In fact, hepatitis B and C are among the major risk factors leading to HCC in current literature. We believe our predominant Caucasian population might not be the same given the different incidence of Non-Alcoholic Steatohepatitis (NASH) or alcoholic cirrhosis compared to these countries. In this study, we evaluated the prevalence of risk factors of HCC in our Canadian population in order to prevent and identify the best treatments for our population. Since the cause leading to HCC might modify management in the future, it becomes interesting to describe the epidemiology of our population.
Methods: We retrospectively reviewed 196 files of patients 18 years of age and older diagnosed with HCC by radiological or pathological criteria between 2010 and 2020 from two of our university databases (Registre Local du Cancer and Ned-Écho). The prevalence of cirrhosis, hepatitis B, hepatitis C, alcoholic cirrhosis and NASH were presented using proportion with the Wilson method using 95% confidence interval. Z tests were used to compare the prevalence of our population's HCC risk factors with the literature values. Finally, a Cox model was used to assess the risks factors contributing most to mortality.
Results: 178 patients were included in our study. 94.9% of our population was Caucasian. 83.1% were male.19.6% did not have an underlying cirrhosis. Only 59.6% had a CHILD A cirrhosis limiting accessibility to treatment. Furthermore, the prevalence of hepatitis B was 4.7% compared to 33% in current literature ($p< 0.001$), hepatitis C was 25.1% compared to 21% ($p =0.183$), alcoholism was 45.0% compared to 30% ($p< 0.001$), NASH was 37.8% compared to less than 16% ($p=0.002$). There was no statistical difference in mortality by cancer risk factor.
Conclusion: New evidence suggest that HCC related to NASH may be a favourable prognostic factor in patients treated with lenvatinib. Hence, the choice of a tyrosine kinase treatment might be better for the management of a Caucasian population. Promoting good lifestyle habits might also reduce the incidence of HCC in our Canadian population given the high prevalence of HCC related to NASH and alcoholic cirrhosis. Finally, approximatively half of our population had a CHILD A cirrhosis which emphasizes how crucial it is to adequately screen for HCC before cirrhosis progression as this will have an effect on management and prognostic.

S1244

Reduction in Nosocomial Infections in Patients With Cirrhosis During the COVID-19 Era Compared to Pre-COVID-19 Era: Impact of Masking and Restricting Visitation?

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Introduction: Cirrhosis patients admitted to the ICU have a high incidence of nosocomial infections that worsens prognosis and can impair liver transplant candidacy. Aim: Determine the impact of COVID-19 restrictions on nosocomial infections in patients with cirrhosis admitted to an ICU a year prior to and during 1 year of COVID-19 restrictions.
Methods: ICU patients with cirrhosis at a transplant center from March 2019-2021 were enrolled and divided into pre-COVID (3/2019-2/2020) and COVID (3/2020-2/2021) eras. From March 2020, masking, hand sanitizations, social distancing, and restriction of visitors were implemented. We excluded patients with both cirrhosis and COVID-19; unclear diagnosis of cirrhosis; and prior organ transplant. Admission demographics and labs, hospital course, reason for ICU transfer, type of infection, nosocomial infections, and outcomes were collected. Logistic regression for nosocomial infection development across time periods was performed.
Results: 530 patients; 234 pre and 296 during COVID era were included. Patient characteristics: COVID-era patients were younger, had worse cirrhosis severity and qSOFA variables, and higher WBC on admission (Table). Infection characteristics: UTI was higher in COVID-era patients, but other infection types and overall infection rate was similar across periods. There was a significantly lower nosocomial infection rate, patients with >1 organism cultured, MRSA and ESBL (extended spectrum beta-lactamase) production in the COVID-era (Table). Outcomes: COVID-era patients had a higher ICU LOS, renal, and brain failure, but similar death and hospice referrals. Liver transplant rate was higher in COVID-era patients. Regression for nosocomial infection: The only predictor for nosocomial infection was the study period with lower infections in the COVID-era (OR 0.31, 95% CI 0.14-0.65, p=0.001).
Conclusion: Despite a higher qSOFA, MELD-Na and ICU length of stay, the rate of nosocomial and resistant infections with MRSA and ESBL producers was significantly lower in patients with cirrhosis admitted to the ICU in the COVID era compared to the pre-COVID era. This led to a higher liver transplant rate in this setting. This low rate of nosocomial infections could be due to lower transmission of infectious organisms from staff, visitors, and surrounding environment due to the restriction necessitated by the COVID-19 pandemic and should encourage continuation of these restrictions in patients with cirrhosis and intensive care.

Table 1. Data results for pre-COVID era vs COVID-era

	Pre-COVID-era (n=234)	COVID-era (n=296)	P value
Age	58.6 ± 12.2	55.0±13.7	0.001
Male Gender	103	135	0.72
Latin Ethnicity	7	10	0.92
qSOFA total	1.84 ± 0.60	2.43±0.68	< 0.0001
qSOFA respiration	0.12±0.33	0.81±0.39	<0.0001
qSOFA blood pressure	0.93±0.25	0.87±0.34	0.02
qSOFA brain	0.79±0.41	0.75±0.43	0.33
WBC	10.9±7.6	12.5±8.2	0.02
MELD-Na	23.8±10.1	26.0±10.2	0.01
Reason for ICU:			

Table 1. (*continued*)

	Pre-COVID-era (n=234)	COVID-era (n=296)	P value
Altered Mental Status	117	141	0.59
Infection	115	138	0.56
CVA	12	13	0.69
Hypotension	134	153	0.20
Renal Support	35	88	<0.0001
Respiratory Failure	115	129	0.20
Post-procedure	16	27	0.34
Type of Infection:			
Nosocomial infection	24	10	<0.001
UTI	11	27	0.05
Abdominal	31	32	0.39
Bacteremia	32	28	0.13
Respiratory	48	57	0.72
Skin/Soft Tissue	10	7	0.22
Organism details:			
Gram positive	39	36	0.14
Gram negative	31	25	0.08
Fungus	10	12	0.90
> 1 organism	11	5	0.04
VRE	6	5	0.49
MRSA	7	2	0.04
Fluoro resistance	5	2	0.14
ESBL	11	5	0.04
Outcome:			
ICU length of stay	4.78±4.34	7.66±8.58	<0.0001
Renal Failure	35	83	<0.0001
Grade 3-4 Hepatic Encephalopathy	55	98	0.02
Shock	78	121	0.08
Ventilation	82	115	0.37
Coagulation failure	144	175	0.57
Death or hospice	82	119	0.22
Liver Transplant	6	31	0.001

Key: quick sepsis-related organ failure assessment (qSOFA); white blood cells (WBC); Model for end-stage liver disease-sodium (MELD-Na); intensive care unit (ICU); cerebrovascular accident (CVA); urinary tract infection (UTI); vancomycin resistant enterococcus (VRE); methicillin resistant staphylococcus aureus (MRSA); fluoro (fluroquinolone); extended spectrum beta-lactamase (ESBL).

S1245

Assessing Current TEG Practice in Patients With Cirrhosis: A Single Institution Experience

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Introduction: Thromboelastography (TEG) is a blood test used to evaluate hemostasis by measuring platelet function and coagulation efficacy. Patients with cirrhosis can have dysfunctional clotting abilities that are not accurately assessed by standard coagulation testing such as international normalized ratio (INR) and platelet count, and may be subjected to harm from over-transfusion. The aim of our study is to compare the utilization of blood products in patients with cirrhosis undergoing procedures based on the standard coagulation tests versus TEG, and the associated adverse outcome.
Methods: We retrospectively identified patients with cirrhosis who had a TEG drawn prior to an inpatient procedure. Data from the TEG and standard coagulation tests were gathered along with transfused blood products, type of procedures done, and post-procedural outcomes. This data was used to assess the appropriateness of transfusion based on TEG parameters versus standard coagulation tests.
Results: A total of 36 patients met inclusion criteria. Out of 36 patients with both a platelet count and a TEG, 19 (52.8%) followed TEG-based transfusion strategy, while 17 (47.2%) did not. Of the 33 patients with both an INR and a TEG, 23 (69.7%) were transfused based on TEG. 17 patients with both fibrinogen and a TEG, 12 (70.6%) received appropriate transfusion therapy per TEG criteria. Out of 36 patients, 15 (41.7%) required post-procedural transfusion of packed red blood cells and only 5 (33.3%) were transfused in a TEG-directed manner prior to the procedure.
Conclusion: The majority of post-procedural bleeding events occurred in patients not transfused in a TEG-based approach prior to the procedure. Interestingly, clinicians were not providing TEG-directed transfusion care consistently. It is unclear whether this was related to a lack of knowledge associated with interpretation of TEG or due to other variables. As blood products are limited, they should be used judiciously. Furthermore, excessive transfusion in patients with cirrhosis may lead to adverse outcomes. To improve TEG utilization, we propose a system-wide lecture to advance clinician knowledge of TEG as a strategy to minimize transfusions. An automated reminder in the electronic medical record to facilitate ordering of TEG will also be implemented. A follow up study will also be conducted to determine whether these interventions improved TEG-directed transfusion and to provide a larger cohort to determine the efficacy and safety profile of TEG-directed transfusion.

S1246

Financial Incentives Associated With Hepatitis B Misinformation on Instagram

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Introduction: Online health information is vastly unregulated and often contains mis- and disinformation. Early studies suggest misinformation is often shared on social media by individuals and organizations for a profit. We describe associations of hepatitis B affiliated misinformation with profitability on the social media platform Instagram, which has over one billion monthly users worldwide.

Methods: In December 2021, we searched for publicly available posts using the terms "hepatitis b" and "hep b". We removed duplicates from the top 55 posts for each term and coded N=103 posts using a validated misinformation codebook with 72 variables including: engagement (e.g., number of likes), user characteristics (e.g., # of followers, # following), profitability (e.g., for profit, selling product or service), and claims with misinformation (determined by medical experts). We applied two-tailed z-tests, chi-square tests, and linear regressions to examine associations between profitability and misinformation (outcome).
Results: Nearly a quarter of posts (n=24, 23%) contained misinformation about hepatitis B and/or hepatitis B treatment. Misinformation posts had more engagement on average (1,599 likes vs. 970 likes, p< 0.01), were following more accounts (1,127 vs. 889, p=< 0.01), but had fewer followers (mean: 22,920n vs. 70,442, p< 0.001) than accurate posts. Nearly one-third of posts about hepatitis B referenced a conspiracy theory (30%), were for-profit (29%), and were selling a product or service (34%) through Instagram. Significantly more misinformation posts were for profit (47% vs. 14%, p< 0.01) and were selling a product or service (43% vs. 13% p< 0.01) compared to accurate posts. For-profit accounts (b=713, 95% CI 25-1401, p=0.04) and those selling a product or service (b=843, 95% CI 196-1490, p=0.01) were following significantly more accounts than their counterparts.
Conclusion: Online health misinformation poses direct threat to patients and has broader reach and engagement than accurate information. Hepatitis B misinformation may exacerbate health disparities, given that financial incentives are difficult to distinguish, however our findings suggest that a high number of "following" accounts may be a marker for accounts seeking profitability off of Hepatitis B misinformation on Instagram. More research is needed to understand how exposure to health information can influence patient/caregiver behavior and downstream clinical and financial outcomes.

S1247

Progress in Drug Therapy for Hepatorenal Syndrome: A Systematic Review of Clinical Studies in the Last 3 Years

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Introduction: Rapid deterioration of kidneys in patients with severe liver injury i-e., cirrhosis is termed a hepatorenal syndrome (HRS). Hemodynamic instability due to increased splanchnic blood flow, systemic vasodilation, and renal vasoconstriction might cause HRS, and the goal of the drug therapies is to improve systematic circulation. This article aims to review the efficacy and safety of drug therapies tested in the last 3 years in HRS patients.
Methods: We searched PubMed, Embase, Cochrane, and WOS from 1/1/2019 till 05/15/2022. We screened 520 articles and included 3 clinical trials (N=462) and 5 observational studies (N=1,034) with >5 patients providing data about the safety and efficacy of drugs. All case reports, case series, review articles, meta-analyses, and clinical studies with irrelevant populations were excluded.
Results: In 8 studies, 708 patients were treated with terlipressin +albumin, 73 with noradrenaline, 22 with midodrine + albumin, 28 with midodrine+ albumin+ octreotide, 82 with other vasoconstrictors, and 121 with albumin only. In two clinical studies (N=416), HRS patients treated with terlipressin + albumin had a reversal in 32%-39.7%, liver transplant (LT) in 12.5%-23%, and death in 51% (11% with respiratory failure) of the patients, versus a reversal in 17%, LT in 29% and death in 45% (2% with respiratory failure) with albumin. In three clinical studies (N=382), HRS patients with terlipressin + albumin had a reversal in 40%-50.2%, overall response (OR) in 41.7%-72.9%, and death in 51% versus a reversal in 16.7%-22.7%, OR in 20%-23% and death in 82% with noradrenaline/other vasoconstrictors. In a retrospective study (N=88), HRS patients treated with midodrine+ octreotide+ albumin had a reversal, LT, and death in 25%, 3.6%, and 39.2%, respectively, versus reversal, LT, and death in 10%, 23%, and 43%, respectively, with non-standard treatment. In a pilot study (N=42), recurrence of HRS was 18% with midodrine vs. 50% with albumin only. (Table)
Conclusion: Terlipressin with albumin significantly improved the reversal of HRS and transplants. However, mortality wasn't improved due to treatment-related adverse effects. Terlipressin with albumin significantly improved the outcomes in HRS patients as compared to noradrenaline with albumin. Standardized albumin + midodrine + octreotide was more effective than non-standardized treatment of HRS. Midodrine with albumin reduced the recurrence of HRS in HRS recovered patients as compared to albumin. More RCTs are needed to confirm these results.

Table 1.

Study	Phase	Treatment therapy	N	Outcomes
Trials				
Wong et al. 2021	III (RCT)	Terlipressin + Albumin (90 days)	199	Reversal of HRS (SCr < 1.5mg/dl) =32%, Renal transplant=29% Liver transplant=23%, Death=51% (11% with respiratory failure)
		Placebo	101	Reversal of HRS (SCr < 1.5mg/dl) =17%, Renal transplant=39%, Liver transplant=29%, Death=45% (2% with respiratory failure)
Sharma et al. 2021	Pilot study (on patients recovered with terlipressin + albumin)	Midodrine + albumin	22	Recurrence of HRS=18%, Mean ascitic tap in 2 months=1.9
		Albumin	20	Recurrence of HRS=50%, Mean ascitic tap in 2 months=2.6
Arora et al. 2020	RCT	Terlipressin + albumin	60	Reversal of HRS (SCr within 0.3mg/dl of baseline) = 40%, Any response (7-days) = 41.7% Survived patients=49%
		Noradrenaline+ albumin	60	Reversal of HRS (SCr within 0.3mg/dl of baseline) = 16.7%, Any response (7-days)=20%, Survived patients=18%
Observational studies				
Kulkarni et al. 2022	Prospective	Terlipressin + Albumin	116	Adverse effects leading to discontinuation=21%, Complete response (SCr within 0.3mg/dl of baseline) = 39.7%, Transplant free patient -at 90 days=57.8%, liver transplant=12.5%
Hiruy et al. 2021	Retrospective	Albumin+ midodrine+ octreotide (standardized)	28	Full response (SCr within 0.3mg/dl of baseline) =25%, renal replacement=21%, liver transplant=3.6%, 30-day mortality=39.2%
		Non-standardized treatment	60	Full response (SCr within 0.3mg/dl of baseline) = 10%, renal replacement=45%, liver transplant=23%, 30-day mortality=43%
Moore et al. 2020	Retrospective	Terlipressin+ albumin	203	Complete response (SCr < 1.5mg/dl) =50.2%, overall response=72.9% Renal transplant=12%, liver transplant=2%,
		Other vasoconstrictors	22	Complete response (SCr < 1.5mg/dl) =22.7%, overall response=59.1%
Giovo et al. 2020	Retrospective	Terlipressin+ albumin	24	Response to treatment=67%
		Noradrenaline+ albumin	13	Response to treatment=23%
Nguyen-Tat et al. 2019	Retrospective	Terlipressin + albumin for HRS-1 patients	54	HRS reversal=48%, relapse=8%, median OS=89±53
		Terlipressin + albumin for HRS-2 patients	52	HRS reversal=46%, relapse=50%, mortality=20%, median OS=239±174

RCT= randomized clinical trial, HRS=Hepatorenal syndrome, SCr=serum creatinine.

S1248

Statin Utilization as a Function of Calculated ASCVD Risk in HCV-Infected Patients

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Introduction: HCV infection is an independent risk factor for cardiovascular disease (CVD). Statins remain underutilized in this population despite increasing evidence that they are safe to use in chronic, stable liver disease. Recently, Chew et al examined the use of the Pooled Cohort Equation in HCV-infected veterans and found that it overestimated risk in individuals with calculated risk < 7.5%, but underestimated

risk in those with calculated risk ≥ 7.5%. We aimed to assess statin utilization as a function of calculated ASCVD risk score in HCV-infected individuals to further understand the implications of the inaccuracies with the Pooled Cohort Equation in estimating CVD risk in this population.

Methods: We performed a single-center retrospective study of HCV-infected individuals aged 40-75 years. The 10-year ASCVD risk score was calculated for each subject using the 2013 American College of Cardiology/American Heart Association Pooled Cohort Equation. Statin use was determined by review of prescribed medications from 2019-2021.

Results: A total of 1,077 subjects were included in analysis. The proportions of subjects being treated with a statin were calculated for ASCVD risk groups of < 5%, 5-7.4%, 7.5-9.9%, 10-19.9% and ≥ 20%. Statins were prescribed in 19/237 (8.0%), 18/131 (13.7%), 23/98 (23.5%), 112/361 (31.0%), and 134/250 (53.6%) respectively. For individuals with a 10-year risk ≥ 7.5%, a total of 269/709 (37.9%) were treated with a statin.

Conclusion: Our results indicate that while statin utilization appropriately increases among HCV-infected individuals as 10-year ASCVD risk score increases, statins remain underutilized even in very high-risk individuals. With recent literature suggesting that the Pooled Cohort Equation underestimates CVD risk in HCV-infected individuals with a risk ≥ 7.5%, the importance of increasing efforts to increase statin use for primary CVD prevention in these patients is clear. Considerable retrospective data and limited prospective data are available that support the safety of statins in chronic liver disease, including compensated cirrhosis. Further prospective study to assure the safety and efficacy of statins in preventing CVD in HCV-infected population is warranted. (Table) Chew KW, Bhattacharya D, Horwich TB, Yan P, McGinnis KA, Tseng C, et al. Performance of the Pooled Cohort atherosclerotic cardiovascular disease risk score in hepatitis C virus-infected persons. J Viral Hepat. 2017;24(10):814-22.

Table 1. Characteristics of Subjects for Each Evaluated ASCVD Risk Group

Variable	ASCVD risk < 5% (n=237)	ASCVD risk 5-7.4% (n=131)	ASCVD risk 7.5-9.9% (n=98)	ASCVD 10-19.9% (n=361)	ASCVD risk ≥ 20% (n=250)	P-value
Age (years), mean (SD)	49.5 (6.3)	54.5 (6.0)	56.1 (6.4)	59.6 (6.1)	61.7 (6.0)	< **0.001**
Female sex	65.0%	42.0%	38.8%	30.5%	17.6%	< **0.001**
Black race	24.1%	25.2%	44.9%	54.8%	73.6%	< **0.001**
Total cholesterol (mg/dL), mean (SD)	166.7 (35.8)	169.4 (42.5)	172.9 (36.3)	169.8 (36.7)	168.0 (42.9)	0.704
High-density lipoprotein cholesterol (mg/dL), mean (SD)	59.1 (20.5)	56.7 (20.2)	55.9 (20.0)	52.3 (18.0)	50.6 (19.6)	< **0.001**
Low-density lipoprotein cholesterol (mg/dL), mean (SD)	73.1 (39.6)	73.6 (40.8)	83.4 (42.4)	77.6 (41.8)	75.9 (39.8)	0.266
Diabetes	9.7%	15.3%	27.6%	25.5%	65.2%	< **0.001**
Systolic blood pressure (mmHg), mean (SD)	122.1 (14.4)	125.6 (17.9)	126.3 (17.7)	135.4 (17.1)	145.7 (18.8)	< **0.001**
On anti-hypertensive therapy	36.3%	48.9%	51.0%	62.9%	85.2%	< **0.001**
Body mass index (kg/m^2), mean (SD)	28.8 (7.2)	29.4 (7.0)	29.5 (7.1)	28.6 (6.7)	29.2 (6.5)	0.652
Current smoking	43.5%	59.5%	54.1%	59.8%	68.4%	< **0.001**
FIB-4 > 3.5	13.7%	14.2%	9.6%	14.7%	9.3%	0.286
Diagnosis of cirrhosis	13.5%	13.7%	19.4%	16.1%	15.6%	0.689
Statin therapy	8.0%	13.7%	23.5%	31.0%	53.6%	< **0.001**

S1249

Transjugular Intrahepatic Portosystemic Shunts (TIPS) Outcomes in the Elderly Population: A Systematic Review and Meta-analysis

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Introduction: Trans-jugular intrahepatic portosystemic shunt (TIPS) effectively treats ascites and variceal bleeding (VB). However, it has increased morbidity and mortality in advanced age. Therefore, our goal was to assess TIPS adverse events in the elderly population.

Methods: A search strategy was developed using Embase, Cochrane library databases, and the Web of Science Core Collection. First, we separated patients into two groups: < 65-70 and > 65-70; due to a lack of data on specific outcomes, we ran a combined analysis first, then a sub-group analysis on ages < 65 vs. > 65 and < 70 vs. > 70

Results: Six Studies, which included 1591 patients, met our inclusion criteria and were included in the final meta-analysis. 1194 patients were in the group aged < 65-70 years, and 432 were in the group aged > 65-70 years. A combined analysis revealed a higher 90-day mortality rate after TIPS among patients aged > 65-70 years. Subgroup analyses demonstrated a significantly higher rate of post-TIPS hepatic encephalopathy (HE) (RR:0.42, CI: 0.185-0.953, p=0.03). Overall 30-day (RR:0.37, CI:0.188-0.74, p=0.005), and 90-day mortality (RR:0.35, CI: 0.24-0.49, p=0.001 was higher among patients aged > 70 years vs. < 70 years.

Conclusion: This meta-analysis found that age is not a significant risk factor for increased 30-day all-cause readmission after TIPS. However, the elderly group aged > 70 years was significantly associated with a higher risk of post-TIPS HE. In addition, the overall 30-day and 90-day mortality were considerably higher in patients aged > 70 years than those < 70 years. Other outcomes were comparable but did not achieve statistical significance. In conclusion, TIPS in the elderly is associated with higher overall 30-day and 90-day mortality rates and increased risk for post-TIPS HE, especially in patients aged > 70 years. Though results caution against TIPS in the elderly population, it is inexpedient to draw firm conclusions at this point. Additional studies, particularly large RCTs, are warranted.

S1250

A Pilot Study to Improve Resident Paracentesis Training and Reduce Paracentesis Delay in Admitted Patients With Cirrhosis

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Introduction: Individuals with decompensated cirrhosis are at high risk of hospitalization and readmission yet there are significant gaps in care. There is evidence for obtaining a diagnostic paracentesis in all admitted patients with cirrhosis and ascites. Delayed paracentesis for those with SBP is associated with increased mortality. There is often a delay in performing paracentesis at our institution. The lack of resident paracentesis experience, reflected by our programs average of 1.24 paracentesis performed per resident per year, often leads to outsourcing to interventionalists and delay in care. We implemented a pilot study to increase resident experience in performing paracenteses to improve time to paracentesis for admitted patients with cirrhosis.

Methods: We implemented a pilot quality improvement project over five noncontiguous months at an academic county hospital. The primary endpoint was procedural competency (defined as performing at least five paracentesis) by residents rotating on the inpatient gastroenterology (GI) service for more than one week. Secondary endpoints were assessing the clinical outcomes of paracentesis and reduction in time to paracentesis. The intervention was 1) providing educational material to the resident outlining the logistical and procedural steps to perform a paracentesis and 2) supervising the resident performing the procedure. Competency rates, estimated time delay if performed by a separate interventionalist, and paracentesis findings were recorded.

Results: In five months, five residents rotated on the GI service. 11 paracenteses were performed. No residents were demonstrated competency prior to the rotation and 4 (80%) demonstrated competency by the end. The estimated additional delay was 33 hours per paracentesis (range of 17-69 hours) if the paracentesis were done by a separate interventionalist. Nine paracenteses showed portal hypertension without SBP, one with SBP, and one was due to malignant ascites.

Conclusion: A major barrier to timely paracentesis in our residency is a deficit in procedural training. Many residents are unable to perform paracentesis on their own which leads to deferral of the procedure and delay in care. This pilot study showed that integrating paracentesis training of residents into their GI rotation can reduce the delay in paracentesis and increase resident competency. More data is required to show the long-term benefit on paracentesis rates, delay in paracentesis and the viability of such a model in other institutions.

S1251

Relevance of Post-Hospital Discharge Appointments in Patients With Liver Disease

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Introduction: Post-hospital discharge (PHD) clinics aim to prevent readmissions and cut healthcare costs. This is important in patients with liver disease who require close monitoring of labs, symptoms and complications. We anticipate that by mitigating hospital necessitating treatments, PHD appointments will reduce readmission rates.
Methods: A retrospective chart review was performed of 258 patients scheduled in the post-discharge hepatology clinic, in our urban liver transplant center, between September 2020 and December 2021. We reviewed the 30-day readmission rate for patients who attended the appointments compared to patients who did not (NS). We determined the impact these visits had on preventing readmission risk. Interventions such as medication adjustments and scheduling of outpatient paracentesis were among the metrics reviewed.
Results: The average duration between discharge and appointment was 13 days. Out of 258 patients, 119 versus 139 were scheduled before and after 10 days respectively. Overall, 82 (32%) patients were readmitted regardless of their appointment. We analyzed the readmission rate between NS and attendees; 29/68 (43%) NS were readmitted compared with 53/190 (28%) attendees. Out of 190 attendees, 19 (10%) were readmitted on the same day and 34 (18%) were readmitted within 30 days. Out of all encounters, 38 (15%) patients were scheduled for outpatient paracentesis and 65 (25%) had labs completed before their appointment. Medication adjustments were made in 71/190 (37%) attendees; 14/65 (22%) were based on labs and 39/190 (21%) on symptoms. Medication adjustments were anticipated in 35/190 (18%) pending labs.
Conclusion: The 30-day readmission rate was 28% versus 43% for attendees and NS respectively, demonstrating the direct correlation between PHD clinic attendance and reduced readmissions. The 10% of readmissions on the day of their appointment allowed for urgent intervention but demonstrates a flaw in the discharge process. Attendance facilitated scheduling of outpatient paracentesis medications adjustments based on labs and symptoms. Care was delayed for 18% of attendees who did not complete labs prior to their appointment, demonstrating an avenue for improvement. Our study highlights the importance of PHD visits, safe discharge planning and the importance of labs prior to the appointment. These promote care coordination, timely medication adjustments and resource provision, thus preventing emergent need for hospitalization and morbid outcomes.

S1252

Prevalence of Diagnosed Primary Biliary Cholangitis and Associated Conditions in the United States: Results From a National Electronic Patient Database

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Introduction: Primary biliary Cholangitis (PBC) is an autoimmune disease that is associated with a number of autoimmune disorders. PBC is associated with liver and non-liver organ co-morbidities that contribute to clinical outcomes. Several studies have suggested an increase in the incidence and prevalence of PBC, although this has not been assessed in a large cohort and has not been consistent across all epidemiologic studies. We determined the nationwide prevalence of PBC and its association with other autoimmune and non-liver related conditions in the United States (US).
Methods: A database (Explorys Inc, Cleveland, OH) of electronic health record data from 26 major integrated US healthcare systems was used. Based on Systematized Nomenclature of Medicine – Clinical Terms (SNOMED-CT), patients (age >18 years) with a diagnosis of PBC between 1999 to present were identified. Data were analyzed in patients with/without a diagnosis of PBC. The prevalence of associated diseases was compared in in the 2 groups, and statistical univariate binary logistic model was performed.
Results: Of the 70,383,890 individuals in the database, we identified 11,070 cases of PBC, with a prevalence of 15.7/100,000 persons (0.02%). Prevalence was higher in females than males [odds ratio (OR) 32.84; 95% Confidence Interval (CI) 30.50-35.37, $p < 0.0001$], adults (≥ 65 years) versus adult (18-65 years) (OR) 2.18; 95% CI 2.07-2.30, $p < 0.0001$) and whites versus non-whites (OR 14.54; 95% CI 13.63-15.51, $p < 0.0001$) (Table). PBC patients were at higher odds (Table) of co-morbidities including ischemic heart disease, cerebrovascular accident, congestive heart failure and sarcopenia when compared to non-PBC patients ($p < 0.0001$). PBC patients were more likely than non-PBC patients to have primary sclerosing cholangitis (OR 1061.43) autoimmune hepatitis (OR 537.93), Type 1 diabetes mellitus (OR 240.58), ulcerative colitis (OR 15.25), Crohn's disease (OR 7.84), celiac disease (OR 8.99), autoimmune thyroiditis (OR 7.69), systemic lupus erythematosus (OR 14.66) and other autoimmune disorders (Figure).
Conclusion: Our large nationwide analysis study demonstrates higher prevalence of PBC in the US than previously reported, which is likely a result of diagnosis at an early stage and prolonged survival that may be related to improved management. The high association between PBC and other autoimmune conditions suggest shared common pathogenesis of immune-mediated destruction of end organs in genetically susceptible individuals.

Table 1. Baseline Characteristic of Patients with Primary Biliary Cholangitis and Control Group

	PBC n=11,070 (%)	No PBC n=70,372,820 (%)	OR (95%CI)	p-value
Demographics				
Age 18-65	4,490(41%)	47,940,720(68%)	0.32(0.31-0.33)	<0.0001
Age > 65	6,620(60%)	21,251,790(30%)	3.44(3.31-3.57)	<0.0001
Male	1,610(15%)	31,420,380(45%)	0.21(0.20-0.22)	<0.0001
Female	9,390(85%)	38,453,360(55%)	4.64(4.41-4.89)	<0.0001
Caucasian	8,770(79%)	37,743,080(54%)	3.30(3.15-3.45)	<0.0001
Comorbidities				
T2DM	2,810(25%)	5,650,420(8%)	3.90(3.73-4.07)	<0.0001
HTN	1,950(18%)	3,493,560(5%)	4.09(3.89-4.29)	<0.0001
HLD	5,940(54%)	11,779,380(17%)	5.76(5.55-5.98)	<0.0001
Tobacco use	2,220(20%)	6,486,950(9%)	2.47(2.36-2.59)	<0.0001
Hypothyroidism	3,300(30%)	4,049,030(6%)	6.96(6.68-7.25)	<0.0001
Ischemic Heart Disease	1,240(11%)	2,496,690(4%)	3.43(3.23-3.64)	<0.0001
CHF	1,070(10%)	1,834,510(3%)	4.00(3.75-4.26)	<0.0001
Sarcopenia	4,910(44%)	5,480,850(8%)	9.44(9.09-9.80)	<0.0001
Alcohol abuse	320(3%)	1,090,250(2%)	1.89(1.69-2.11)	<0.0001

Univariate analysis used to calculate OR, OR; odds ratio, CI; confidence interval, T2DM;Type 2 Diabetes Miletus, HTN; Hypertension, HLD; Hyperlipidemia, CHF; Congestive Heart Failure. PBC; Primary Biliary Cholangitis.

Condition	OR	95% CI	p-value
PSC	1061.43	660.91-1704.66	< 0.0001
AIH	507.79	507.79-569.85	< 0.0001
T1DM	240.58	217.08-266.63	< 0.0001
CREST	225.28	196.07-258.84	< 0.0001
AIHA	45.27	36.76-55.75	< 0.0001
Sjogren's Syndrome	44.63	41.42-48.10	< 0.0001
Raynaud's Syndrome	24.81	22.94-26.83	< 0.0001
UC	15.25	13.92-16.71	< 0.0001
CD	7.84	6.99 -8.79	< 0.0001
Celiac Disease	8.99	7.78 -10.37	< 0.0001
SLE	14.66	13.35 -16.09	< 0.0001
ITP	14.74	12.31-17.65	< 0.0001
AIT	7.69	6.82-8.68	< 0.0001
Hashimoto Thyroiditis	7.69	6.71-8.81	< 0.0001
RA	8.74	8.14-9.39	< 0.0001
Psoriasis	5.86	5.29-6.50	< 0.0001
Vitiligo	6.38	4.83-8.43	< 0.0001
MG	5.81	4.06-8.32	< 0.0001

[1252] **Figure 1.** Primary Biliary Cholangitis Associated Autoimmune Disorders. Univariate analysis used to calculate OR, OR; odds ratio, CI; confidence interval, PSC; Primary Sclerosing Cholangitis, AIH; Autoimmune Hepatitis, T1DM; Type 1 Diabetes Miletus, AIHA; Autoimmune Hemolytic Anemia, UC; Ulcerative Colitis, CD; Crohn's Disease, SLE; Systemic Lupus Erythematosus, ITP; Idiopathic Thrombocytopenia Purpura, AIT; Autoimmune Thyroiditis, RA; Rheumatoid Arthritis, MG; Myasthenia Gravis.

S1253

Dual Therapy With Metformin and Sodium Glucose Co-Transporter-2 Inhibitors (SGLT2-i) Improves Mortality in Cirrhotic Patients

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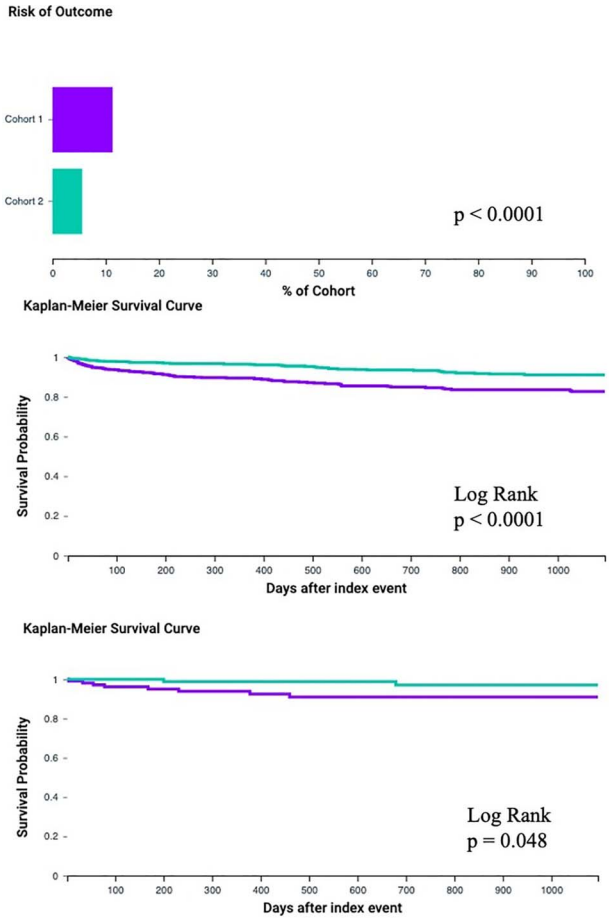
Introduction: Diabetes mellitus (DM) is a common comorbidity of cirrhosis, but there is limited research on the impact of dual diabetes therapy on mortality and hepatic decompensation in cirrhosis, particularly in non-alcoholic fatty liver disease (NAFLD).
Methods: We did propensity score-matched analyses of DM patients with cirrhosis comparing those on metformin with those on both metformin and an GLP1-RA. We queried for people with both Type 2 DM (DM2) and cirrhosis using ICD-10 codes on the TriNetX network. We collected patient demographics—age, sex, race, among others—and our primary outcome was mortality in three years. Our secondary outcome was a composite of hepatic decompensation events over three years.
Results: We identified 841 patients with cirrhosis and DM2 who were on both metformin and an SGLT2-i. This cohort included 547 Whites (65.0%), 373 women (44.4%), had a mean age of 63.8 years, and was matched with a baseline group of patients who were on metformin alone (Table). The monotherapy group had a greater mortality risk (RR 2.0, 95%CI 1.4-2.8, p< 0.0001) with survival probability 82.6% at 3 years compared to the dual therapy group (91.1%, p< 0.0001). We also identified a subset of 116 patients within the dual therapy group that was confirmed to have cirrhosis from non-alcoholic steatohepatitis (NASH) and that included 85 Whites (73.7%), 63 women (54.2%), and had a mean age of 60.8 years. When comparing the NASH cohorts, they had equivalent mortality risk (RR 1.0, 95%CI 0.4-2.3, p=1), though survival at 3 years was shorter for the monotherapy group (90.9% vs. 97.1%, p=0.04). The composite risk for hepatic decompensation was equivalent between both therapy groups (Figure).
Conclusion: We found a potential mortality benefit in cirrhosis patients on dual DM2 therapy with metformin and SGLT2-i compared to metformin alone that was durable over a 3-years and within a subset of NASH patients. This finding was consistent for men, women, White, and non-White patients in our matched cohort analyses. There was no clear effect on the composite risk for hepatic decompensation, so improved mortality maybe be due to beneficial effects on the patients' comorbidities rather than on their liver issues. There may be underreporting of NASH patients in the database since our analysis relied in part on patients' having ICD-10 codes (K76.0, K75.8). Further prospective studies in patients with biopsy-confirmed NASH and from underrepresented populations are needed to investigate our outcomes.

Table 1. Baseline Cohort Demographics after Propensity Score Matching (All Cirrhosis and NASH Cirrhosis Patients)

Demographics (All Cirrhosis Patients)	**Metformin Only (n=841)**	**Metformin + SGLT2-i (n=841)**
Mean Age (Years)	63.5	63.8
Men (n, %)	457 (54.3)	468 (55.6)
Women (n, %)	384 (45.7)	373 (44.4)
White (n, %)	553 (65.8)	547 (65.0)
Black/LatinX/Other (n, %)	288 (34.2)	294 (35.0)
Demographics (NASH Cirrhosis Patients)	**Metformin Only (n=116)**	**Metformin + SGLT2-i (n= 116)**
Mean Age (Years)	60.3	60.8
Men (n, %)	46 (37.2)	53 (45.8)
Women (n, %)	70 (62.8)	63 (54.2)
White (n, %)	86 (76.1)	85 (73.7)
Black/LatinX/Other (n, %)	22 (14.9)	24 (20.3)

SGLT2-i=Sodium-Glucose Co-Transporter-2 Inhibitor; NASH=Non-Alcoholic Steatohepatitis.



[1253] **Figure 1.** 3 Year Cumulative Incidence; Purple=Patients treated with metformin; Green=Patients treated with metformin and an SGLT2-i; A - 3 Year All-Cause Mortality in DM Cirrhosis Patients; B - 3 Year All-Cause Mortality in DM Cirrhosis Patients; C - 3 Year All-Cause Mortality in DM NASH Cirrhosis Patients

S1254

Early (30-Day) Readmissions of Spontaneous Bacterial Peritonitis in the United States: A National Challenge

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Introduction: Spontaneous Bacterial Peritonitis (SBP) is a serious acute bacterial infection of the ascitic fluid usually seen in patients with liver cirrhosis. Despite aggressive use of prophylactic antibiotics, it is often associated with poor clinical outcomes and subsequent hospital readmissions. In this study, we aimed to assess and compare 30-day (30d) readmissions of SBP with index SBP hospitalizations.
Methods: We utilized the National Readmission Database for 2018 to identify all adult (≥18 years) hospitalizations with a primary index diagnosis of SBP and subsequent 30d readmission. Hospitalization characteristics and outcomes for index and 30d readmissions of SBP were highlighted and compared. A multivariate regression analysis was used to determine independent predictors for 30d all-cause readmissions. P-values ≤ 0.05 were considered statistically significant.
Results: In 2018, there were 5,797 index admissions for SBP, of which 1,726 (30%) were readmitted within 30d for all causes. Compared to index admissions, 30d readmissions of SBP had a lower mean age (56.1 vs 58.6 years, p< 0.001) with no statistically significant difference for gender and age (Table). Furthermore, 30d readmissions of SBP were associated with significantly higher odds of inpatient mortality (10% vs 4.9%, OR: 2.15, 95% CI: 1.66–2.79, p< 0.001), and mean total hospital charge [$85,031 vs $56,000, OR: 29,032, 95% CI: 12,867–45,197, p< 0.001] compared to index admissions. However, there was no difference in the mean length of stay [6.2 vs 6.8 days, OR: 0.6, 95% CI: -0.1–1.1, p=0.051] between the two groups. Large bed-sized hospitals had a higher proportion of 30d readmissions of SBP (61.9% vs 58.6%, p=0.012) compared to index admissions (Table). The presence of chronic pulmonary disease (aOR: 1.33, 95% CI: 1.07–1.64, p=0.009) and discharge against medical advice (aOR: 1.78, 95% CI: 1.10–2.88, p=0.018) were identified as independent predictors for 30d readmissions of SBP.
Conclusion: SBP is associated with poor survival outcomes and high mortality rates despite the use of prophylactic antibiotics. In 2018, 30d all-cause readmission rate for SBP was 30%. Inpatient mortality for 30d readmissions of SBP was more than double of that for index admissions, reflecting a greater severity of disease at readmission and worse prognosis. Patients with chronic pulmonary disease and those that leave the hospital against medical advice on index admission were more likely be readmitted within 30d of index admission.

Table 1. Comparative analysis of hospitalization characteristics for index and 30-day readmissions of spontaneous bacterial peritonitis (SBP) in the United States for 2018

VARIABLE	INDEX ADMISSION OF SBP*	THIRTY-DAY READMISSION OF SBP*	p-value
Total Number of Hospitalizations	5,797	1,726	
Mean Age (years) ± Standard Error	58.6 ± 0.6	56.1 ± 1.0	p< 0.001
Gender (%)			p=0.393
Males	59.4	60.7	

Table 1. (*continued*)

VARIABLE	INDEX ADMISSION OF SBP*	THIRTY-DAY READMISSION OF SBP*	p-value
Females	40.6	39.3	
Age Group (%)			p=0.707
Young Adults (18-34 years)	13.8	17.8	
Middle Age (35-64 years)	53.3	55.5	
Elderly (≥65 years)	32.9	26.7	
Hospital Bed Size (%)			p=0.012
Small	16.8	13.3	
Medium	24.6	24.8	
Large	58.6	61.9	

*SBP: Spontaneous Bacterial Peritonitis.

S1255

Change in Alanine Aminotransferase May Serve as an Alternative for Sustained Virologic Response (SVR) in Low and Middle Income Countries

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Introduction: Hepatitis C Virus (HCV) has a prevalence of 70 million cases worldwide. Confirmatory PCR testing to determine sustained virologic response (SVR) after antiviral treatment can be costly in low and middle income countries (LMIC). Our aim was to determine if change in ALT can act as a surrogate for SVR to reduce treatment costs at the population level.
Methods: We conducted a retrospective cohort study of 149 patients in Mumbai, India who had received treatment for Hepatitis C from 2015 to 2021. All patients had confirmed HCV by PCR testing and were treated with different regimens direct acting antivirals (DAA) approved by the FDA equivalent in India for 12 or 24 weeks. Patients were brought for follow up after 12 weeks where they had repeat PCR testing in addition to liver function testing.
Results: 149 patients were included in the study. 128 achieved SVR (86%) and 21(14%) did not. There were no significant differences in SVR across genotypes ($p = 0.93$), diabetes status ($p = 0.77$), hyperlipidemia ($p = 0.54$), thyroid disease ($p = 0.29$), or CKD ($p = 2.0$). History of hypertension was seen in 39% of patients who achieved SVR and 14% who did not ($p = 0.03$). In the SVR group, only 29% were previously exposed to direct acting antivirals (DAA) while 52% were previously exposed in the no SVR group ($p = 0.04$). Multivariable regression analysis of treatment experience vs SVR (OR 1.1 (0.41,2.9) showed that this was not truly significant. Patients with advanced liver disease had lower SVR rates ($p = 0.04$). Multivariable regression analysis also showed that this was not truly significant when comparing no cirrhosis vs decompensated cirrhosis and compensated vs decompensated cirrhosis against SVR (OR 2.8 (0.77,10) and 2.9 (0.89,9.1). The change in ALT between initiation and completion of therapy was significantly different based on SVR status (46.7 vs. 11.5, $p < 0.01$). Additionally, patients with change in ALT > 10 were more likely to achieve SVR (62.5 vs 33.3, $p < 0.01$). Stratifying patients based on absolute value of ALT after completion of treatment also showed significance; ALT value < 20 had a PPV of 97.7 for SVR.
Conclusion: Change in ALT may be a surrogate for negative viral load for confirmation of SVR in LMIC. Additionally, ALT < 20 after completion of treatment may also be a surrogate marker for SVR. Further research is needed to determine if ALT change remains significant in adjusted analyses and across various demographic and clinical parameters.

S1256

The Role of Immunosuppressants, Vaccination, and Monoclonal Antibody Treatment in COVID-19 Outcomes for Liver and Renal Transplant Recipients

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Introduction: Post-transplant immunosuppression may leave solid organ transplant (SOT) recipients at an increased risk of SARS-CoV-2 infection and related morbidity. The effectiveness of vaccination and monoclonal antibody (MAB) treatments remains unclear for this population. We aim to describe how these factors affect outcomes for liver and renal transplant (LRT) recipients infected with SARS-CoV-2.
Methods: A retrospective study of LRT recipients diagnosed with COVID-19 between 3/2020 to 1/2022 was performed. We recorded data on patient demographics, immunosuppressants, vaccine dose numbers, MAB treatment, hospitalization, length of stay (LOS, days), mechanical ventilation (MV) use, as well as 3- and 6-month mortality. Quantitative and qualitative (positive (+) or negative (-)) IgG antibodies were recorded when present. Statistical analysis included Chi Square tests, t-tests and logistic regression.
Results: Demographics of 255 LRT recipients diagnosed with COVID-19 are shown in Table. 68 (26%) liver, 177 (69%) renal, and 10 (4%) dual LRT patients were identified. First, the number of immunosuppressants taken at the time of diagnosis was found to be correlated with the LOS, with an increase of 1.5 days for each addition ($p=0.029$). However, there was no statistically significant correlation found between number of vaccine doses (up to 3) and hospitalization rates ($p=0.948$), LOS ($p=0.688$), 3-month mortality ($p=0.549$), or 6-month mortality ($p=0.595$). 65 (25%) patients were treated with MABs; these had fewer hospitalizations (37% vs 68% $p< 0.001$) and a trend towards reduced mortality at 3 months (11% vs 18% $p=0.177$) and 6 months (11% vs 20% $p=0.092$). There was no significant difference in MV (25% vs 20% $p=0.589$) or LOS (7.92 ± 6.20 vs 8.78 ± 8.51 $p=0.820$). We also analyzed 22 patients with 13 (+) and 9 (-) IgG levels recorded post-vaccination (median 42 days and 88 days, resp.). There was no significant difference in vaccine dosages between (+) and (-) IgGs ($p=0.881$), or an association between (+)/(-) IgG level and hospitalizations ($p=0.338$).
Conclusion: The immunosuppressed state of LRT recipients negatively impacts recovery from COVID-19. Our data demonstrates that MAB treatment significantly reduces hospitalizations and 3- and 6-month mortality. Additionally, the inability to predict any improvement in clinical outcomes offered by a 3-vaccine series suggests the need to consider further therapeutic options such as a fourth mRNA vaccine dose and the use of tixagevimab/cilgavimab for SOT recipients.

Table 1. Demographic Data of LRT Recipients Stratified by Number of Vaccine Doses Before COVID-19 Diagnosis *y: years

Variable	Response	Number of Vaccine Doses Before COVID-19 Diagnosis				
		All (N=255)	0 (N=161)	1 (N=16)	2 (N=56)	3 (N=22)
Age	Mean (SD), y	57.6 (13.56)	57.1 (13.07)	56.2 (13.37)	57.8 (15.28)	61.5 (12.75)
	Median, y	59	58	57	61.5	64.5
Gender	F, n (%)	108 (42)	66 (41)	4 (25)	27 (48)	11 (50)
	M, n (%)	147 (58)	95 (59)	12 (75)	29 (52)	11 (50)
Race	White, n (%)	141 (55)	88 (55)	9 (56)	34 (61)	10 (45)
	Black, n (%)	104 (41)	65 (40)	7 (44)	22 (39)	10 (45)
	Hispanic, n (%)	6 (2)	6 (4)	0 (0)	0 (0)	0 (0)
	Asian, n (%)	4 (2)	2 (1)	0 (0)	0 (0)	2 (9)

S1257

Smoking Increases the Risk for Cirrhosis and Esophageal Varices Among Patients With Non-Alcoholic Fatty Liver Disease

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Introduction: Non-Alcoholic Fatty Liver Disease (NAFLD) is the most common cause of chronic liver diseases worldwide with an overall prevalence of ~25%. NAFLD contributes to an increased overall mortality by 57%, mainly from liver and cardiovascular causes. Some studies have shown a potentially faster progression of NAFLD and higher fibrosis rates among smokers. Our aim is to investigate the prevalence of NAFLD among smokers, assessing whether it's independently associated with worse liver related outcomes.
Methods: We utilized a large multicenter database (Explorys Inc., Cleveland, OH, USA) of aggregated inpatient and outpatient electronic health records of 26 healthcare systems, total of 360 hospitals and more than 70 million patients across the US. A cohort of patients with a SNOMED-CT diagnosis of "Non-Alcoholic Fatty Liver" between 1999-2021 was identified. A second cohort of patients with active smoking and NAFLD was then identified. We excluded patients age < 18 years, and those with viral hepatitis, hemochromatosis, Wilson's disease, biliary cirrhosis, alcoholic cirrhosis, cystic fibrosis, alpha-1-antitrypsin deficiency, and autoimmune hepatitis. Statistical Package for Social Sciences was used for analysis, and for all analyses, a 2-sided p-value of < 0.05 was considered statistically significant. Multivariate analysis was performed to adjust for age, gender, ethnicity, cirrhosis, hepatocellular carcinoma, esophageal varices (EV) and metabolic syndrome.
Results: Among the 79,798,670 screened individuals, a total of 3020 patients with NAFLD were identified, with prevalence rate of 4 per 100,000. Among these, 6.2% had NAFLD-related cirrhosis. Baseline characteristics of study population is shown in **Table.** Compared to non-smokers, patients with smoking history were more likely to develop NAFLD (OR 3.90), and related cirrhosis (OR 1.97). Among patients with NAFLD-cirrhosis, smokers were more likely to have EV (OR 4.30). Smoking history had a higher risk association with hepatocellular carcinoma but was not statistically significant Figure.
Conclusion: This is the largest study to date to evaluate the impact of smoking on NAFLD. Smoking was significantly associated with the development of NAFLD, NAFLD-cirrhosis, and EV compared to those without.

Table 1. Baseline Characteristics of Patients with Non-Alcoholic Fatty Liver Disease and Control Groups

		Non-Alcoholic Fatty liver	Control
		N = 3,020 (%)	N = 79,795,650 (%)
Age	18-65	2,030 (67.2)	47,552,880 (59.6)
Sex	Females	1,700 (56.3)	42,896,680 (53.8)
Race	Caucasian	2,600 (86.1)	41,940,740 (52.6)
	African-American	110 (3.6)	8,077,510 (10.1)
	Asian	40 (1.3)	1,285,600 (1.6)
Comorbidities	HTN	790 (26.2)	3,497,510 (4.4)
	DM	1,240 (41.1)	6,101,650 (7.6)
	HLD	2,080 (68.9)	11,676,640 (14.6)
	Hypertriglyceridemia	270 (8.9)	539,730 (0.7)
	BMI >=25	2,080 (68.9)	16,341,780 (20.5)
	Metabolic syndrome	150 (5.0)	240,790 (0.3)
	Smoking	720 (23.8)	3,874,840 (4.9)

S1258

Menopausal Status and Risk of Nonalcoholic Fatty Liver Disease: A Systematic Review and Meta-Analysis

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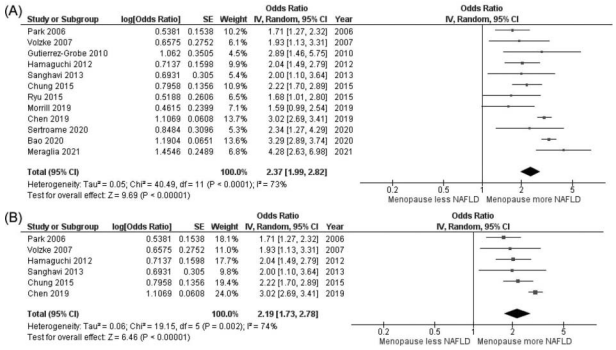
Introduction: Previous studies reported that nonalcoholic fatty liver disease (NAFLD) tended to be associated with menopausal status, although the strength of evidence is limited given the inconsistent results across the studies and limited number of participants included in some studies. This meta-analysis aims to pool data from all previous studies and determine whether menopausal status is a risk factor for NAFLD.
Methods: Potentially eligible studies were identified from Embase, Medline, and Web of Sciences databases from inception to December 2021 using search strategy that comprised of terms for "nonalcoholic fatty liver disease" and "menopause". Eligible study must consist of cases with NAFLD and controls without NAFLD. Then the study must explore history of menopausal status in each group and report effect estimates and 95% Confidence Interval (95% CI) of the association between presence NAFLD and menopausal status. We extracted such data from each study and calculated pooled odds ratio (OR) by combining effect estimates of each study using random-effects model. Funnel plot was used to assess for the presence of publication bias.
Results: A total of 587 articles were identified. After two rounds of independent review by two investigators, 12 studies fulfilled the eligibility criteria and were included into the meta-analysis. The meta-analysis of 12 studies consisting of 160,306 participants revealed the significant association between menopausal status and presence of NAFLD with the pooled OR of 2.37 (95%CI 1.99 – 2.82, I2 73%, Figure A). The association remained significant in a subgroup meta-analysis of 6 studies that reported the association with adjustment for age and metabolic factors with the pooled OR of 2.19 (95%CI 1.73 – 2.78, I2 74%, Figure B). The funnel plot for was fairly symmetric and was not suggestive of publication bias.
Conclusion: The meta-analysis revealed that menopausal status was associated with approximately 2.4 increased likelihood of NAFLD. The association remained significant in a subgroup meta-analysis of studies with adjustment for age and metabolic factors, suggesting that menopausal status could be an independent risk factor for NAFLD.



[1258] **Figure 1.** A) Forest plot of the meta-analysis of the association between nonalcoholic fatty liver disease and menopausal status, B) Forest plot after adjusted for age and metabolic factors

S1259

Patients With Alcoholic Cirrhosis Are Less Likely to Receive Treatment for Alcohol Use Disorder Compared to Their Non-Cirrhotic Counterparts

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Introduction: Effective treatment for alcoholism involves pharmacotherapy and psychosocial support. Naltrexone, Acamprosate, and Disulfiram are FDA-approved for moderate-severe alcoholism. Although abstinence remains the cornerstone in management of alcoholic cirrhosis (AC), these patients often have less access to treatment modalities, including pharmacotherapy. In this study, we sought to investigate the discrepancies in pharmacologic treatment of alcohol use disorder in patients with AC compared to non-cirrhotics.
Methods: We queried a commercial database (Explorys Inc, Cleveland, OH), an aggregate of EHR data from 27 integrated healthcare systems in the United States between 5/2017-5/2022. We identified all patients in the database with AC and alcoholism based on Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT). We compared the prevalence of pharmacologic treatment for alcoholism with Naltrexone, Acamprosate, or Disulfiram at least 30 days following diagnosis of AC to a control cohort of patients with alcoholism without AC.
Results: Of the 31,306,880 patients in the database, 310,470 patients had a diagnosis of alcoholism, excluding AC, and 62,670 patients had AC. Overall prevalence of Acamprosate use was 1.47% in the group with AC and 2.32% in the group with alcoholism with odds ratio (OR) for AC 0.63 [95% CI, 0.59-0.67, p< 0.001]. Odds of treatment with Acamprosate tended to be lower in patients with AC who were Hispanic/Latino (OR 0.38) or had a major mood disorder such as depression (OR 0.27) or bipolar disorder (OR 0.39). Overall prevalence of Naltrexone use was 1.79% in AC and 4.95% in alcoholism with odds ratio (OR) for AC 0.35 [95% CI, 0.33-0.37, p< 0.001]. As with Acamprosate, odds of treatment with Naltrexone tended to be lower in patients with AC who identified as Hispanic/Latino or had a co-existing mood disorder. Though not as commonly prescribed, overall prevalence of Disulfiram use was 0.45% in AC and 1.21% in alcoholism with odds ratio (OR) for AC 0.37 [95% CI, 0.32-0.41, p< 0.001].
Conclusion: In this population-based study, patients with AC were less likely to be treated for their alcohol use disorder with FDA-approved drugs compared to non-cirrhotics. Though incompletely understood, this may be related to the highly stigmatized nature of the disease, provider bias, and patient-related factors such as socioeconomic status and adherence. One possible explanation for naltrexone specifically, is that it is contraindicated in acute hepatitis and advanced cirrhosis. (Table)

Table 1. Top: Prevalence of Acamprosate use after at least 30-days post-Alcoholic Cirrhosis (AC) or Alcoholism diagnosis Middle: Prevalence of Naltrexone use after at least 30-days post-Alcoholic Cirrhosis (AC) or Alcoholism diagnosis Bottom: Prevalence of Disulfiram use after at least 30-days post-Alcoholic Cirrhosis (AC) or Alcoholism diagnosis

X	Alcoholic Cirrhosis (AC)	Prevalence per 100,000	Alcoholism without Cirrhosis	Prevalence per 100,000	Odds Ratio	95% CI	P-value
Total	920	1468	7200	2319	0.63	0.59-0.67	**<0.001**
Adults (age 18-65)	740	1870	5930	2598	0.71	0.66-0.77	**<0.001**
Seniors (age >65)	190	815	1320	1592	0.51	0.44-0.59	**<0.001**
Female	360	1827	3000	3062	0.59	0.53-0.66	**<0.001**
Male	570	1388	4210	2069	0.67	0.61-0.73	**<0.001**
Caucasian	780	1819	6120	3033	0.6	0.55-0.64	**<0.001**
African American	80	1099	640	1352	0.81	0.64-1.02	0.078
Hispanic/Latino	40	897	280	2310	0.38	0.27-0.53	**<0.001**
Anxiety Disorder	670	3018	5710	3803	0.79	0.73-0.85	**<0.001**
Major Depressive Disorder	660	3088	5480	10528	0.27	0.25-0.29	**<0.001**
Bipolar Disorder	230	4675	2220	11028	0.4	0.34-0.46	**<0.001**
x	x	x	x	x	x	x	x
x	**Alcoholic Cirrhosis (AC)**	**Prevalence per 100,000**	**Alcoholism without Cirrhosis**	**Prevalence per 100,000**	**Odds Ratio**	**95% CI**	**P-value**

Table 1. (*continued*)

X	Alcoholic Cirrhosis (AC)	Prevalence per 100,000	Alcoholism without Cirrhosis	Prevalence per 100,000	Odds Ratio	95% CI	P-value
Total	1120	1787	15360	4947	0.35	0.33-0.37	<**0.001**
Adults (age 18-65)	900	2274	13430	5885	0.37	0.35-0.4	<**0.001**
Seniors (age >65)	230	987	1970	2375	0.41	0.36-0.47	<**0.001**
Female	440	2234	6210	6339	0.34	0.31-0.37	<**0.001**
Male	660	1607	9010	4427	0.35	0.33-0.38	<**0.001**
Caucasian	900	2099	12210	6051	0.33	0.31-0.36	<**0.001**
African American	140	1923	1870	3952	0.48	0.41-0.57	<**0.001**
Hispanic/Latino	50	1121	510	4208	0.26	0.19-0.35	<**0.001**
Anxiety Disorder	820	3964	11860	7898	0.45	0.42-0.48	<**0.001**
Major Depressive Disorder	800	3744	11490	22075	0.14	0.13-0.15	<**0.001**
Bipolar Disorder	280	5691	4330	21510	0.22	0.19-0.25	<**0.001**
x	x	x	x	x	x	x	x
x	**Alcoholic Cirrhosis (AC)**	**Prevalence per 100,000**	**Alcoholism without Cirrhosis**	**Prevalence per 100,000**	**Odds Ratio**	**95% CI**	**P-value**
Total	280	447	3770	1214	0.37	0.32-0.41	<**0.001**
Adults (age 18-65)	220	556	3110	1363	0.41	0.35-0.46	<**0.001**
Seniors (age >65)	60	257	670	808	0.32	0.24-0.41	<**0.001**
Female	90	457	1530	1562	0.29	0.23-0.36	<**0.001**
Male	190	463	2240	1101	0.42	0.36-0.48	<**0.001**
Caucasian	230	537	3210	1591	0.33	0.29-0.38	<**0.001**
African American	30	412	220	465	0.89	0.6-1.3	0.535
Hispanic/Latino	20	448	160	1320	0.34	0.21-0.54	<**0.001**
Anxiety Disorder	190	856	2740	1825	0.46	0.4-0.54	<**0.001**
Major Depressive Disorder	190	889	2680	5149	0.17	0.14-0.19	<**0.001**
Bipolar Disorder	80	1626	990	4918	0.32	0.25-0.4	<**0.001**

S1260

Disparities Exist Among the Demographics of Patients with Alcohol-Related Hepatitis Who Leave Against Medical Advice

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Introduction: Alcohol-related hepatitis is one of the most severe manifestations of alcohol-related liver disease and has been associated with significant morbidity, mortality, and financial burden. Patients with alcohol use disorders are at risk of leaving against medical advice (LAMA), however there is lack of data in the literature to show which patients are at higher risk. In this study, we investigate and report the specific demographic factors and comorbidities associated with LAMA.

Methods: Patients with a primary or secondary discharge diagnosis of alcohol-related hepatitis (ICD-10 codes K70.4 and K70.1) between January 2016 to December 2019 were included in this study. Demographics, comorbidities, complications, and interventions were studied for patients who LAMA. Multivariate analysis was conducted to elucidate factors contributing to the increased risk of alcohol-related hepatitis

Results: A total of 538,750 patients were admitted with a diagnosis of alcohol-related hepatitis. Of these, 31,500 (5.84%) patients LAMA. Older age, Hispanic ethnicity, private insurance, and higher income status were associated with decreased risk of LAMA while younger age (aOR-4.39, p< 0.001), African American race (aOR-1.35, p< 0.001), lack of insurance (aOR-1.85, p< 0.001), and patients in the lowest income quartile (aOR-1.25, p< 0.001) were associated with the highest risk of LAMA. A concomitant diagnosis of hepatitis C (aOR-1.38, p< 0.001) or opioid use disorder (aOR-1.39, p-0.053) was also associated with higher risk of LAMA. A complete list of demographics and results of multivariate analysis are depicted in Table.

Conclusion: Our findings demonstrate that significant differences exist between patients with alcohol-related hepatitis who leave against medical advice and those that remain hospitalized until discharge. We believe that this study will help healthcare providers identify patients at risk of LAMA and help promote targeted education of specific subgroups in understanding their disease state to decrease adverse events.

Table 1. **Demographics and results of multivariate logistic regression to identify predictors for LAMA after adjusting for confounding variables**

	Routine Discharge N (%)	LAMA N (%)	p-value	Adjusted Odds Ratio	p-value
Total no.	507,250	31,500			
Age Categories			< 0.001		
18-45	173,880 (34.2)	15,730 (50.0)		4.39	< 0.001
45-65	285,600 (56.3)	15,065 (47.8)		3.02	< 0.001
>65	47,770 (9.4)	705 (2.2)		Reference	
Sex			< 0.001		
Male	338,540 (66.7)	22,845 (72.5)		Reference	
Female	168,710 (33.3)	8,655 (27.5)		0.77	< 0.001
Race			0.003		
White	356,935 (70.4)	21,910 (69.6)		1.3	< 0.001
African American	51,275 (10.1)	3,660 (11.6)		1.35	< 0.001
Hispanic	66,580 (13.1)	3,860 (12.3)		Reference	
Asian/Pacific Islander	6,145 (1.21)	350 (1.1)		1.1	0.556

Table 1. (*continued*)

	Routine Discharge N (%)	LAMA N (%)	p-value	Adjusted Odds Ratio	p-value
Native American	11,825 (2.3)	745 (2.4)		1.28	< 0.05
Other	14,490 (2.9)	975 (3.1)		1.16	0.093
Insurance			< 0.001		
Medicare	103,815 (20.5)	4,125 (13.1)		1.43	< 0.001
Medicaid	191,160 (37.7)	15,470 (49.1)		1.68	< 0.001
Private	131,675 (26)	5,405 (17.2)		Reference	
Uninsured	56,815 (11.2)	4,990 (15.9)		1.85	< 0.001
Income Quartile			< 0.001		
Lowest quartile	141,480 (27.9)	9,940(31.6)		1.25	< 0.001
Second quartile	130,500 (25.7)	7,870 (25)		1.08	0.11
Third quartile	129,805 (25.6)	7,700 (24.4)		1.05	0.255
Highest quartile	105,465 (20.9)	5,995 (19.0)		Reference	
Charlson Comorbidity Index			< 0.001		
0-1	188,205 (37.1)	16290 (51.7)		1.36	< 0.001
2	69165 (13.6)	5130 (16.3)		1.33	< 0.001
3 or more	249,880 (49.3)	10080 (32)		Reference	
Comorbidities					
HIV/AIDS	1,715 (0.3)	155 (0.50)	0.0412	0.87	< 0.001
Hepatitis B	3,790 (0.75)	215 (0.7)	0.567	N/A	
Hepatitis C	45,120 (8.90)	3,650 (11.6)	< 0.001	1.38	< 0.001
Opioid use disorder	1,525 (30.1)	225 (71.4)	< 0.001	1.39	0.053
Drug use	71,780 (14.2)	7,340 (23.3)	< 0.001	1.37	< 0.001
Smoking	11,500 (2.3)	915 (2.9)	0.009	1.13	0.116

S1261

Etiologies of Marked Transaminase Elevation: Systematic Review and Proportion Meta-Analysis

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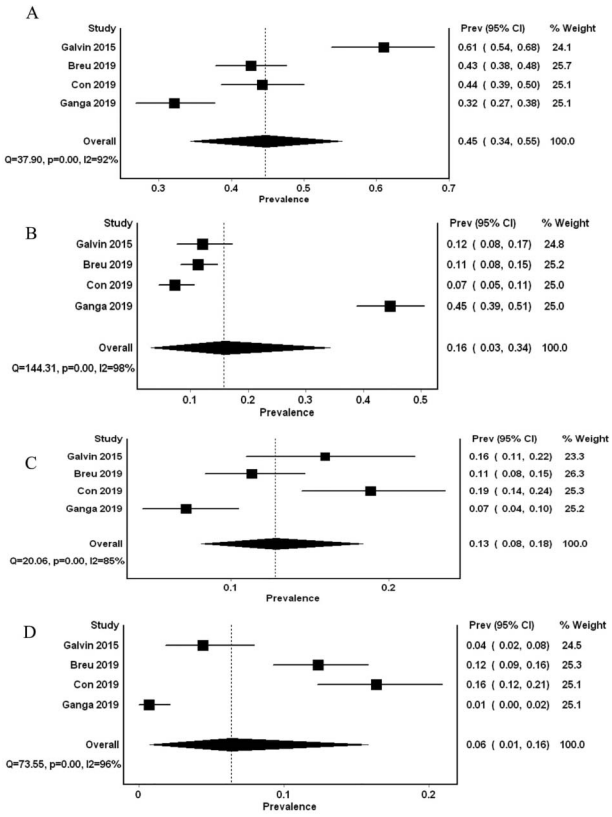
Introduction: Among liver injury causes, only a few result in extreme liver enzyme rise, particularly alanine aminotransferase (ALT) or aspartate aminotransferase (AST) levels exceeding 1000 international units per liter (IU/L). This review aims to summarize common etiologies of marked transaminitis.
Methods: We performed a comprehensive search on PubMed, EMBASE, Cochrane Library, and Google Scholar from inception through April 2022 for relevant studies reporting the frequency of marked transaminitis etiologies (ALT or AST >1000 IU/L). We used a proportion meta-analysis to pool frequencies with the corresponding 95% confidence interval (CI). I2 was used to adjudicate heterogeneity. MetaXl software with the random-effects model was utilized for statistical analysis.
Results: Four relevant studies, comprising 1138 patients, were included in the analysis. The pooled frequency of ischemic hepatitis was 45% (95% CI 34-55%, I^2=92%), of viral hepatitis was 16% (95% CI 3-34%, I^2=98%), of toxin or drug-induced liver injury (DILI) was 13% (95% CI 8-18%, I^2=85%), of acetaminophen-induced liver injury was 8% (95% CI 6-10%, I^2=9%), of pancreaticobiliary causes was 6% (95% CI 1-16%, I^2=96%) (Figure), of other causes (procedure-related, autoimmune, rhabdomyolysis, etc.) was 7% (95% CI 2-15%, I2=94%), and idiopathic was 6% (95% CI 4-7%, I^2=14%). Ganga et al. reported a high prevalence of viral hepatitis (44.6%). This study was reported from South Asia and published as an abstract. In this study, Dengue, an endemic disease in India, was responsible for 52% of viral hepatitis cases; however, it was reported separately due to its multifactorial impact on the liver. A sensitivity analysis excluding this study resulted in a lower overall pooled frequency of viral hepatitis and a higher proportion of extrahepatic biliary obstruction (Tabel 1).
Conclusion: This is the first meta-analysis to examine etiologies of marked transaminase elevation. Liver ischemia is the most common cause of ALT or AST above 1000 IU/L. Other common causes are DILI or toxins, viral hepatitis, and extrahepatic biliary obstruction. Etiologies such as rhabdomyolysis, procedural-related injury, and autoimmune hepatitis accounted collectively for only 7%. A notable finding of this review is the presence of extrahepatic biliary obstruction among the common causes of marked transaminitis. Interestingly, two studies reported it as the second and third most frequent etiology. (Table)

Table 1. **Sensitivity analysis showing the impact of excluding Ganga et al.' study on the primary outcome**

Cause	*Pooled Frequency (95% confidence interval, I squared)*
Ischemic hepatitis	49% (95% CI 38-59%, I^2 89%)
Toxins/drugs	15% (95% CI 11-20%, I^2 73%)
Pancreato-biliary	10.3% (95% CI 5-18%, I^2 89%)
Viral hepatitis	10.1% (95% CI 7-13%, I^2 51%)
Other causes	6.5 % (95% CI 0-18%, I^2 92%)
Unknown	53% (95% CI 4-7%, I^2 0%)



[1261] **Figure 1.** Forest plots summarizing the pooled frequency of (A) ischemic hepatitis, (B) viral hepatitis, (C) drug or toxin injury, and (D) extrahepatic biliary obstruction among patients presenting with extreme transaminase elevation.

S1262

Alkaline Phosphatase Responsiveness to Ursodiol Therapy in Patients With Primary Biliary Cholangitis and Varying Degrees of Liver Fibrosis

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Introduction: Primary biliary cholangitis (PBC) is an inflammatory cholestatic liver disease that destroys the bile duct. PBC is frequently associated with varying degrees of liver fibrosis measured by fibroscan. Various mechanisms such as inflammation, cytokine signaling, and abnormal interaction amongst cholangiocytes and mesenchymal cells contribute to the development of fibrosis. Firstline treatment is ursodiol (UDCA) therapy. This study aims to elucidate the consequences of liver fibrosis on the effectiveness of UDCA therapy indicated by alkaline phosphatase (ALP) levels in PBC patients.
Methods: At a single academic center, a retrospective review was conducted to obtain ALP levels in patients with PBC at the start of UDCA therapy and at 6 and 12 month periods. Degree of liver fibrosis determined by fibroscan was recorded. Patients were categorically separated into the following groups: mild (< 8 kPa), moderate (8-14 kPa), and severe (>14 kPa). Variables were analyzed by chi-squared tests and general linear regression analysis.
Results: In 47 PBC patients treated only with UDCA, the mean age was 59.3 years old (range 30-85). 78.7% (n=37) of the patients were females. The mean liver stiffness as per fibroscans was 9.7 kPa (range 3.0-41.5) with a SD of 6.65. The 3 and 5 year survival were both 100% (n=47). 48.9% (n=23) of patients had mild fibrosis, 36.2% (n=17) of patients had moderate fibrosis, and 14.9% (n=7) of patients had severe fibrosis. Regarding patients with mild fibrosis, ALP < 200 at baseline and at 6 and 12 months was 47.8%, 65.2%, and 78.3%, respectively. Regarding patients with moderate fibrosis, ALP < 200 at baseline and at 6 and 12 months was 41.2%, 70.6%, and 70.6%, respectively. Regarding patients with severe fibrosis, ALP < 200 at baseline and at 6 and 12 months was 28.6%, 34.8%, and 100%, respectively. The results of the chi-square test showed no significant association between ALP >200 and categorical liver fibrosis at 6 and 12 months. Linear regression analysis showed no significant liver fibrosis effect on change in ALP >200 from baseline to 6 and 12 months.
Conclusion: The number of patients with ALP < 200 across all fibrosis groups increased with UDCA therapy at 6 and 12 months compared to baseline. Based on our results, varying degrees of liver fibrosis do not appear to alter the effectiveness of UDCA in PBC patients. If ALP remains >200 after 12 months of UDCA therapy, additional therapeutics should be considered.

S1263

The Prevalence and Patient Characteristics of Hepatic Porphyria: A National Database Study

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Introduction: Hepatic porphyria (HP) is a relatively rare clinical entity that could be a hereditary or acquired condition of defective heme synthesis that lead to the accumulation of heme precursors. Patients with acute HP exhibit episodic symptoms, including severe abdominal, neurologic, psychiatric, or cardiovascular symptoms. Often intensive care is required to treat attacks; hence, early detection and awareness of the prevalence are of dire importance. Our study aimed to assess the prevalence and GI manifestation of HP in the US cohort.
Methods: A large multi-center database (Explorys Inc., Cleveland, OH, USA) of aggregated electronic health records of 26 different healthcare systems with 360 hospitals. The database covers ~25% of the US population. A cohort of patients with a SNOMED-CT diagnosis of "Hepatic porphyria" between 1999 to 2022 was identified. Subsequently, two sub-cohorts of patients were identified: those diagnosed with HP and those who were not.
Results: Among the 70,376,230 individuals screened in this database, there were a total of 1,480 individuals diagnosed with HP—a prevalence rate of 0.21 per 100,000 in the US population. In contrast to those without, patients who were diagnosed with HP tended to be older >65 (OR 1.91), predominantly of Caucasian (OR 4.92) race and to be males (OR 1.58). In terms of neurological manifestations, population with HP was more prone to develop seizures (OR 5.15), hyponatremia (OR 4.94), and acute polyneuropathy (OR 7.78). In addition, the HP cohort was more likely to develop hypertension (OR 4.26), chronic liver disease (CLD) (OR 34.65), hepatocellular carcinoma (HCC) (OR 37.75), and chronic kidney disease (CKD) (OR 6.01) (Table).
Conclusion: This is one of the largest population-based studies, which entails comparative data for GI manifestation of HP in the US population. HP patients have a greater risk of developing liver disease, including CLD and HCC; hence a special focus should be provided for patients who develop GI manifestation.

Table 1. A comparison of the baseline characteristics and GI manifestation of patients with and without Hepatic Porphyria

Variables	Hepatic porphyria (n, %)	Non- Hepatic porphyria (n, %)	OR	CI	p-value
Demographics					
>65	670 (45%)	21,252,540 (0.3%)	1.91	1.73-2.11	< 0.0001
Caucasian	1,260 (85%)	37,846,710 (0.5%)	4.92	4.27-5.68	< 0.0001
Male	830 (56%)	31,417,300 (0.5%)	1.58	1.43-1.76	< 0.0001
Symptoms & Conditions					
Severe abdominal pain	570 (39%)	9,662,680 (0.1%)	3.94	3.54-4.37	< 0.0001
Acute polyneuropathy	180 (12%)	1,231,180 (0.02%)	7.78	6.65-9.09	< 0.0001
Seizures	80 (5%)	773,020 (0.01%)	5.15	4.11-6.45	< 0.0001
Hyponatremia	10 (1%)	96,790 (0.001%)	4.94	2.65-9.20	< 0.0001
Chronic liver disease	460 (31%)	904,290 (0.01%)	34.65	31.03-38.68	< 0.0001
Liver transplantation	20 (1%)	41,800 (0.001%)	23.05	14.82-35.84	< 0.0001
CKD	250 (17%)	2,302,560 (0.03%)	6.01	5.25-6.88	< 0.0001
HTN	270 (18%)	3,500,580 (0.1%)	4.26	3.74-4.86	< 0.0001
HCC	20 (1%)	25,530 (0.004%)	37.75	24.28-58.69	< 0.0001

Univariate analysis used to calculate OR.

S1264

Prevalence and Risk Factors Associated With Non-Alcoholic Fatty Liver Disease in Patients With Celiac Disease

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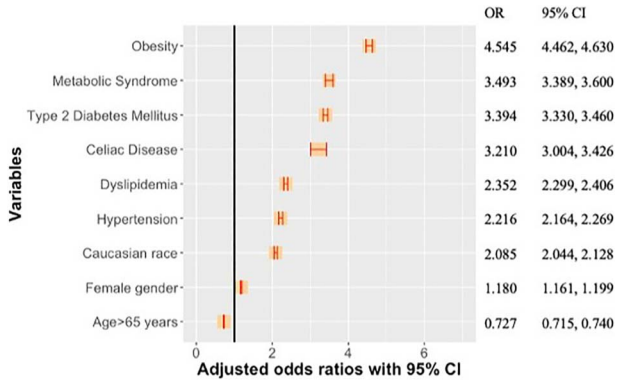
Introduction: Celiac disease, also sometimes referred to as gluten-sensitive enteropathy, is an immune-mediated inflammatory disease affecting the small intestine and is caused by dietary gluten and other related protein sensitivity in individuals who are genetically predisposed. There have been several small studies suggesting an increased prevalence of non-alcoholic fatty liver disease (NAFLD) in patients with celiac disease. However, large population-based studies are lacking. Further, it is unclear if the increased prevalence is secondary to celiac disease itself or due to some other associated factor(s). Hence, we decided to conduct a cross-sectional population-based study to identify the prevalence of NAFLD in patients with celiac disease and assess its risk factors.
Methods: Data were collected from a commercial database (Explorys, Inc, IBM Watson, Ohio). Adults with the diagnosis of "celiac disease," based on the Systematized Nomenclature of Medicine–Clinical Terms, were included in the celiac disease group and the rest of the patients were included in the non-celiac disease group. The prevalence of NAFLD was compared in both groups. Age greater than 65 years, gender, Caucasian race, diabetes mellitus type 2 (T2DM), hypertension (HTN), dyslipidemia, obesity, and metabolic syndrome were considered as variables. Statistical univariate and multivariate analyses were performed using SPSS and R software.
Results: Out of 69,923,870 patients, a total of 137,010 patients were diagnosed with celiac disease (0.2%). Amongst celiac disease patients, NAFLD was present in 955 patients (0.7%) (Table). In univariate analysis, the odds of having NAFLD in patients with celiac disease, T2DM, obesity and metabolic syndrome were 7.92 (95% CI 7.43-8.45), 14.97 (95% CI 14.73-15.2), 16.86 (95% CI 16.6-17.13) and 25.63 (95% CI 24.9-26.39), respectively, as compared to patients without celiac disease. In multivariate analysis, the odds of having NAFLD amongst patients with celiac disease was 3.21 (95% CI 3.01-3.43). While the odds of having NAFLD decreased in patients greater than 65 years of age, they increased in all other variables (Figure).
Conclusion: Patients with celiac disease have increased prevalence and odds of having NAFLD. The odds remained significant when controlled for common risk factors for NAFLD, suggesting that celiac disease may be a risk factor. Hence, these patients may benefit from surveillance for NAFLD, although the frequency, feasibility and costs require further research.

Table 1. Number of patients with NAFLD and its risk factors in celiac and non-celiac disease groups

Parameter	Celiac Patients (n, % of total)	Non-celiac patients (n, % of total)
Age ≥ 65 years	39,550 (28.87%)	20,898,740 (29.89%)*
Female	103,045 (75.21%)	38,314,220 (54.79%)*
Caucasian	113,250 (82.66%)	37,734,150 (53.97%)*
T2DM	19,960 (14.57%)	5,569,340 (7.97%)*
HTN	45,795 (33.43%)	13,875,325 (19.84%)*
Dyslipidemia	51,150 (37.33%)	11,462,960 (16.39%)*
Obesity	33,500 (24.45%)	5,409,610 (7.74%)*
Metabolic Syndrome	2,740 (2%)	237,685 (0.34%)*
NAFLD	955 (0.7%)	61,910 (0.09%)*
TOTAL	137,010	69,923,870

T2DM: Diabetes mellitus type 2; HTN: Hypertension; NAFLD: Non-Alcoholic Fatty Liver Disease.
* p-value is <0.0001.



[1264] **Figure 1.** Prevalence of NAFLD in Celiac Disease- Multivariable Analysis.

S1265

Association of Non-Alcoholic Fatty Liver Disease and Metabolic-Associated Fatty Liver Disease with Mortality in COVID-19 Patients: A Systematic Review and Meta-Analysis

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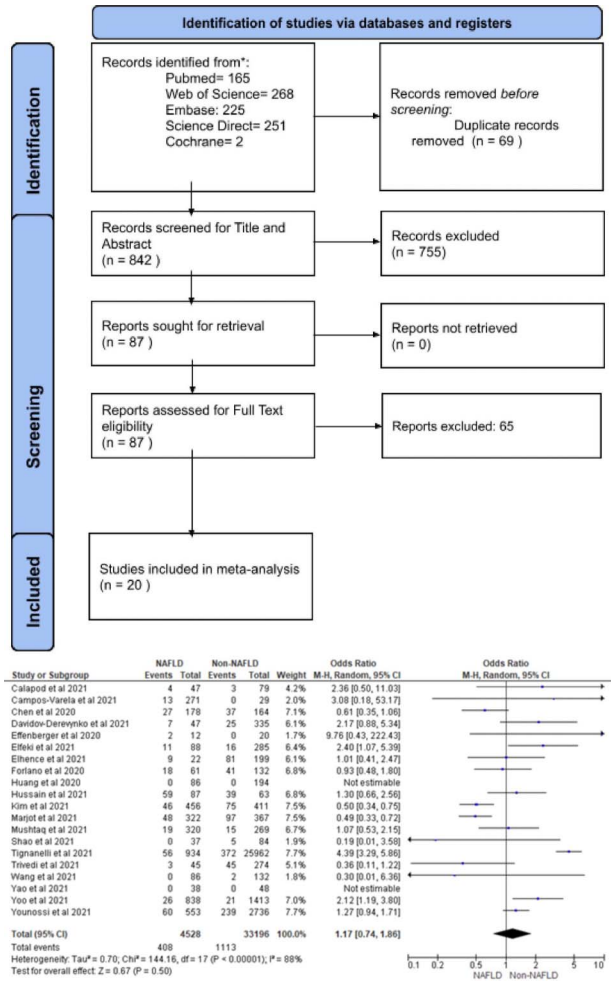
Introduction: Current Literature shows that risk factors like obesity, diabetes, and hypertension which are components of metabolic syndrome lead to worse outcomes in COVID-19 Patients. Metabolic-associated fatty liver disease (MAFLD) is a hepatic manifestation of metabolic syndrome. Non-alcoholic fatty liver disease (NAFLD) and MAFLD like Obesity, these liver diseases are on the rise and are currently estimated to affect around 25% of the US population. This Meta-analysis aims to investigate the association between NAFLD and MAFLD and mortality outcomes among COVID-19 Patients.
Methods: Systematic review of literature databases Pubmed, Cochrane, Embase, Science Direct, and Web of Science was conducted from Jan 2020 to May 2022. Observational studies or clinical trials that studied mortality outcomes in COVID-19 patients were included. Studies that assessed NAFLD/MAFLD using lab assessment (FIB-4, APRI, FIBROSIS score, HSI index, etc), non-invasive imaging (Elastography, Liver Ultrasound or CT scan, MR elastography, Liver stiffness measurement), or liver biopsy was included. The protocol of the study was registered in Prospero (CRD42022313259) and PRISMA guidelines were followed. (Figure) Meta-analysis was performed on studies with mortality outcomes using RevMan software. Mantel-Haenszel odds ratio was generated to describe the overall effect size using random effect models.
Results: A total of 37,724 patients from 20 studies were included in the qualitative analysis. A total of 1521 patients with COVID-19 died; 408 (9%) in the NAFLD group and 1113 (3.35%) in the non-NAFLD group. The odds ratio was 1.17 for mortality, p=0.50 and a 95% Confidence interval (95% CI) of 0.74-1.86, I2 = 88% (Figure). We failed to observe an association between NAFLD/ MAFLD and hospital mortality among COVID-19 patients.
Conclusion: Our Meta-analysis suggests that there is an increased odds of mortality among COVID-19 patients, which did not reach statistical significance. A high level of heterogeneity among the studies needs to be considered for future studies.



[1265] **Figure 1.** PRISMA Flowchart outlining the study search and Forest Plot and meta-analysis of Mortality outcomes in COVID-19 with Fatty Liver disease.

S1266

Elevated Interleukin-6 Activity Is Associated With Adrenal Insufficiency in Outpatients With Decompensated Cirrhosis

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Introduction: Inflammatory cytokines are known to suppress hypothalamic-pituitary-adrenal (HPA) axis activity. While cytokine levels are elevated in patients with cirrhosis, prior literature has not demonstrated an association between cytokine activity and adrenal gland dysfunction. Moreover, these prior studies investigated hospitalized patients whose HPA axis is confounded by acute illness. As the pathophysiology of adrenal insufficiency (AI) in cirrhosis remains incompletely defined, we undertook a prospective study in outpatients to determine if there exists a differential cytokine profile in the absence of acute illness.
Methods: Adult patients with decompensated cirrhosis (Child-Pugh B [CP-B] or C [CP-C]) were recruited from outpatient clinics. Recent alcohol use or medications known to affect the HPA axis were grounds for exclusion. Study participants had standard laboratory chemistries drawn as well as an ACTH level. Thirteen 13 cytokine levels (IL-1a, IL-1b, IL-1RA, IL-2, IL-4, IL-5, IL-6, IL-8, IL-10, IL-17A, IL-18, IFNγ, TNFa) were assessed to encompass a diverse picture of immune system function. Cytokine analysis was performed using the Luminex multiplex immunoassay. Participants then underwent a standard-dose (250μg) cosyntropin stimulation test with AI being defined as an increase in total cortisol level of < 9 μg/dL. All labs and testing were performed between 8-11 AM. Comparative analyses utilized the Mann-Whitney-U test.
Results: Interim analysis of 34 participants revealed a median MELD of 12 (26 CP-B, 8 CP-C). Thirteen participants (38%) met AI criteria; 50% of all CP-C participants (n=4) had RAI vs. 35% of all CP-B (n=9) participants. Baseline characteristics between AI and non-AI groups with respect to disease etiology and severity were similar, as were ACTH levels (13 pg/mL vs. 16 pg/mL, $p = 1.000$). Cytokine analysis revealed significantly higher IL-6 levels in patients with AI (24.12 pg/mL vs. 12.29 pg/mL, $p = 0.046$).
Conclusion: In this hypothesis-generating study, elevated IL-6 levels were associated with the presence of AI in cirrhosis. This raises two possibilities: whether IL-6 suppresses ACTH release (given low-normal levels were found in patients with AI) or whether IL-6 is increased secondary to low circulating cortisol levels (as cortisol inhibits inflammation). Our findings suggest IL-6 may be a useful biomarker for AI in cirrhosis but further research is needed to elucidate its effects. (Table)

Table 1. Cytokine level analysis between normal and adrenally insufficient outpatients with cirrhosis

	Normal adrenal function (n = 21)	Adrenal insufficiency (n = 13)	P-value
IL-1a (pg/mL)	4.56 (4.51, 17.02)	4.51 (4.51, 15.46)	0.771
IL-1b (pg/mL)	38.75 (12.05, 95.52)	29.75 (10.05, 58.97)	0.645
IL-1RA (pg/mL)	18.43 (13.70, 30.59)	14.16 (8.6, 21.05)	0.357
IL-2 (pg/mL)	5.34 (0.62, 21.53)	5.20 (0.74, 18.48)	0.800

Table 1. (*continued*)

	Normal adrenal function (n = 21)	Adrenal insufficiency (n = 13)	P-value
IL-4 (pg/mL)	0.28 (0.28, 7.33)	0.28 (0.28, 4.75)	0.897
IL-5 (pg/mL)	2.89 (1.48, 15.69)	4.55 (2.14, 7.11)	0.954
IL-6 (pg/mL)	***12.29 (5.47, 23.57)***	***24.12 (15.10, 38.91)***	***0.046***
IL-8 (pg/mL)	49.65 (28.24, 81.67)	33.35 (27.51, 60.68)	0.466
IL-10 (pg/mL)	14.91 (8.28, 36.56)	24.64 (13.64, 35.34)	0.378
IL-17A (pg/mL)	10.74 (2.04, 52.78)	5.29 (0.43, 33.00)	0.817
IL-18 (pg/mL)	34.86 (27.71, 69.14)	34.50 (16.01, 57.58)	0.848
IFNγ (pg/mL)	10.78 (1.62, 33.71)	12.43 (2.59, 30.89)	0.659
TNFa (pg/mL)	37.14 (13.94, 108.75)	33.66 (17.25, 69.97)	0.759

IL - interleukin, IFN - interferon, TNF - tumor necrosis factor.

S1267

The Use of Prophylactic Treatment in the Prevention of Hepatic Encephalopathy After Transjugular Intrahepatic Portosystemic Shunt

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Introduction: Transjugular intrahepatic portosystemic shunt (TIPS) procedures are indicated in the treatment of refractory ascites or variceal bleeding in patients with end-stage liver disease. Hepatic encephalopathy (HE) is a major complication of the procedure as ammonia is able to bypass the liver. Previous studies have shown prophylactic use of rifaximin to have significant benefit in primary prevention of HE. The purpose of our study was to evaluate how frequently primary HE prophylaxis medications were prescribed and to assess if this led to decreased incidence of HE.
Methods: We performed a retrospective chart review of 231 patients who received TIPS over the past 10 years at our institution that also had at least one follow up visit. Patient demographics were recorded including age, race, cirrhosis etiology, cirrhotic decompensations, MELDNa, BMI, pre/post TIPS gradients, and use of HE prophylaxis medications. Diagnosis of hepatic encephalopathy was performed through chart review by reviewing both Hepatology clinic notes and all hospital admissions. Variables were analyzed using Chi-Squared test, two sample T test, and multivariate analysis for incidence of hepatic encephalopathy.
Results: Our cohort included 231 patients with 95 females (41.1%) and the majority being elective cases (62.8%). Common indications for TIPS included esophageal varices (51.9%), ascites (35.5%), and hepatic hydrothorax (7.8%). There were 111 patients that were discharged with lactulose, 9 patients discharged with rifaximin, 55 patients discharged with a combination of lactulose and rifaximin, and 57 patients were discharged without HE prophylaxis. Multivariate analysis showed the incidence of HE was significantly reduced in the group of patients discharged with lactulose [Adjusted Odds Ratio (OR): 0.48, 95% CI (0.23-0.99), p=0.049] and a near significant difference in patients discharged with a combination of lactulose and rifaximin [Odds Ratio (OR): 0.48, 95% CI (0.20-1.15), p=0.100]. (Table)
Conclusion: Lactulose as prophylaxis following TIPS procedure was associated with significantly decreased likelihood of developing HE. Lactulose provides a cost effective alternative to rifaximin.

Table 1.

Variable	Unadjusted OR	95% CI	p-value	Adjusted OR	95% CI	p-value
Age	1.019	0.993, 1.045	0.1482	1.027	0.997, 1.058	0.0781
BMI	0.994	0.959, 1.030	0.7428	0.998	0.959, 1.038	0.9097
Pre-TIPS Gradient	1.009	0.954, 1.068	0.7515	0.977	0.906, 1.053	0.5428
Post-TIPS Gradient	1.079	0.970, 1.200	0.1616	1.076	0.937, 1.236	0.2967
Gradient Change	1.016	0.953, 1.082	0.6283	NA		
Gender						
Female	ref			ref		
Male	1.459	0.854, 2.493	0.1664	1.300	0.700, 2.413	0.4066
Ethnicity						
White	ref			ref		
Black	0.491	0.169, 1.426	0.1908	0.373	0.105, , 1.322	0.1265
Other	0.510	0.097, 2.689	0.4274	0.388	0.0622.428	0.3115
TIPS Indication						
EV	ref			ref		
Ascites	0.692	0.388, 1.234	0.2118	0.599	0.285, 1.261	0.1775
Hydrothorax	1.011	0.373, 2.741	0.9823	1.130	0.369, 3.462	0.8301
Volume Overload	NC					
Prior HE						
No	ref			ref		
Yes	0.810	0.4411.489	0.4971	1.380	0.636, 2.992	0.4147
Unknown	0.634	0.1832.190	0.4710	0.804	0.186, 3.469	0.7699
Prior Hep Visit						
No	ref			ref		
Yes	1.103	0.619, 1.966	0.7390	1.064	0.5042.245	0.8701
HE Prophylaxis Meds						
None	ref			ref		
Lactulose	0.491	0.257, 0.939	**0.0316**	0.484	0.235, 0.996	**0.0486**
Rifaximin	1.048	0.255, 4.313	0.9478	1.326	0.234, 7.503	0.7495
Both	0.518	0.244, 1.100	0.0871	0.476	0.197, 1.153	0.1000

Table 1. (*continued*)

Variable	Unadjusted OR	95% CI	p-value	Adjusted OR	95% CI	p-value
Surgery						
Elective	ref			ref		
Emergent	1.483	0.867, 2.538	0.1503	1.523	0.729, 3.180	0.2632

S1268

Increased Hospital Admission Rates From Alcohol-Related Liver Disease Did Not Impact Mortality During the COVID Pandemic

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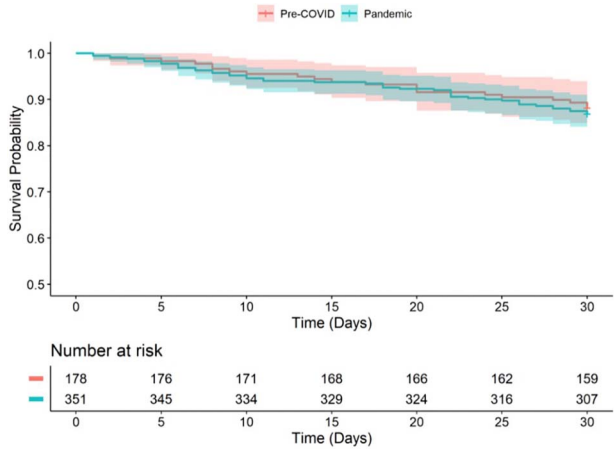
Introduction: Alcohol related liver disease (ALD) is associated with high mortality, accounting for 48% of cirrhosis-related deaths in the US. Studies show excessive alcohol intake has increased by 21% in the US since the COVID pandemic. Our study aims to compare pre-COVID to pandemic hospitalization and mortality rates to assess the burden of COVID on ALD.
Methods: This was a retrospective, IRB approved, study of patients admitted for ALD from January 2019-December 2021. ALD included diagnosis of alcohol cirrhosis, alcohol hepatitis, alcohol fatty liver disease, and acute on chronic liver failure due to alcohol. Pre-COVID admissions ranged January 2019-February 2020 and pandemic ranged March 2020-December 2021. The 30-day mortality was defined as patient death date 30 days or less from admission. The change in ALD admissions through time was analyzed with a local polynomial regression smoothing function plot comparing the average number of monthly pre-COVID ALD admissions to each monthly number of pandemic ALD admissions, and the differences were compared using t-test. Univariate and multivariate analysis with Cox proportional hazards regression model was performed. Pre-COVID and pandemic 30-day mortality rates were compared with Kaplan-Meier survival curve, using a 95% confidence interval. R (version 3.6.2; Vienna, Austria) was used for analyses and p-value$<$ 0.05 was considered statistically significant.
Results: Among 688 ALD admissions, 249 were pre-COVID and 439 were pandemic. Pre-COVID and pandemic patients were similar with males (62% vs 61%), average age (56 vs 55), prior diagnosis of cirrhosis (37% vs 33%, p=0.41) and/or alcohol hepatitis (70% vs 65%, p=0.29), respectively. The average number of monthly ALD admissions pre-COVID was 18. During the pandemic, the number of monthly ALD admissions increased to 23 (range 20-26) after restrictions were first enforced, from May-September 2020, then again increased to 26 (range 20-35) after Omicron restrictions were re-enforced, from December 2020-August 2021 (**Table**). The 30-day mortality rate between pre-COVID and the pandemic was not significantly different by univariate (HR 1.21, CI 0.67-1.88, p=0.67) or multivariate analysis (HR 1.54, CI 0.90-2.64, p=0.11) (**Figure**).
Conclusion: This study demonstrates a significant increase in the number of ALD admissions during the pandemic, particularly following enforcement of public health restrictions. Despite this increase, the 30-day mortality rate has not been impacted.

Table 1. **Number of ALD admissions and the comparison to pre-COVID**

Time Period	Number of ALD Admissions	P-Value
2020 March	10	$<$ **0.001**
2020 April	11	$<$ **0.001**
2020 May	24	$<$ **0.001**
2020 June	20	**0.02**
2020 July	20	**0.02**
2020 August	19	0.169
2020 September	26	$<$ **0.001**
2020 October	16	0.052
2020 November	18	0.801
2020 December	25	$<$ **0.001**
2021 January	14	**0.001**
2021 February	20	**0.02**
2021 March	13	$<$ **0.001**
2021 April	35	$<$ **0.001**
2021 May	23	$<$ **0.001**
2021 June	26	$<$ **0.001**
2021 July	23	$<$ **0.001**
2021 August	30	$<$ **0.001**
2021 September	17	0.363
2021 October	23	$<$ **0.001**
2021 November	17	0.363
2021 December	9	$<$ **0.001**



[1268] **Figure 1.** Kaplan-Meier curve showing 30-day mortality for ALD related admissions pre-COVID (red) compared to Pandemic (blue).

S1269

Unique Aspects of Alcohol-Associated Hepatitis in Unhoused versus Housed Patients

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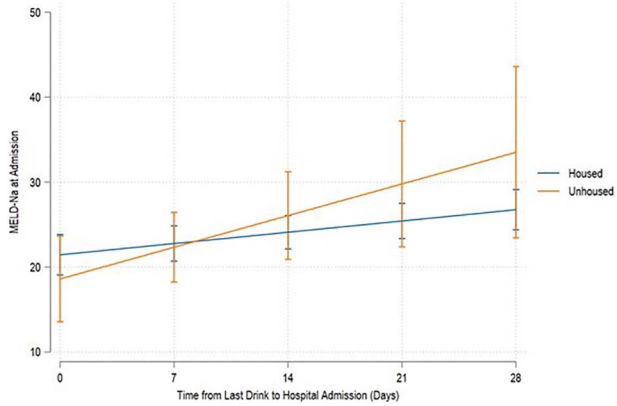
Introduction: Severe AH is associated with substantial morbidity and mortality. Unhoused individuals may be more vulnerable due to lack of access to health care or presence of other comorbidities. We sought to understand the association between housing status and severity of AH at presentation.
Methods: Single center retrospective cohort of patients presenting with a first episode of AH (per NIAAA criteria) in a safety-net hospital from 2017-2021. Admission demographic, clinical, and laboratory data were collected with univariate and multivariable linear regression used to evaluate the association between admission MELD-Na and unhoused status. The interaction between days since last drink and housing status was assessed. Unique factors associated with MELD-Na among the unhoused population were also evaluated.
Results: Of 119 adults with AH, 20 (16.8%) were unhoused. Unhoused adults were more likely to be single (94.4 vs 70.7%, p=0.04), present fewer days since last drink (1.0 vs 4.0, p=0.03), and have lower median MELD-Na (21.8 vs 23.0, p=0.48). Characteristics including age, sex, ethnicity, and comorbidities were similar across both groups. On univariate analysis, mean MELD-Na was 1.8 units lower for unhoused vs housed persons (p=0.48), 4.4 units lower in Hispanics vs non-Hispanics (p=0.09), and 1.4 units higher per week increase since last drink (p=0.001). After adjustment for Hispanic ethnicity and days since last drink, the mean MELD-Na was 0.4 units lower for unhoused vs housed, though not statistically significant (p=0.87). As days since last drink increased, mean MELD-Na increased more dramatically for unhoused vs housed (p=0.13) (Figure). Among the unhoused, mean MELD-Na was 9.4 units higher in those with substance use (current or history) vs without (p=0.048) and 4.7 units lower for Hispanic vs non-Hispanic (p=0.15) in univariate analysis. After adjustment for time since last drink, mean MELD-Na was 9.95-fold (95%CI: 3.4-23.4) higher in those with substance use vs without (p=0.005) reflecting a mean admission MELD-Na of 30.0 (95%CI: 23.9-35.2) vs 20.1 (95%CI: 16.9-23.4) respectively.
Conclusion: Unhoused persons with AH appear to present earlier in the disease course, reflected by lower admission MELD-Na and fewer days since last drink, although those with substance use are at higher risk of severe disease at presentation. Understanding the factors contributing to initial presentation of AH may aid in optimizing inpatient management.



[1269] **Figure 1.** MELD-Na on admission for each additional day since last drink in housed vs unhoused population.

S1270

Reducing Inappropriate Serum Venous Ammonia Ordering: A Quality Improvement Initiative

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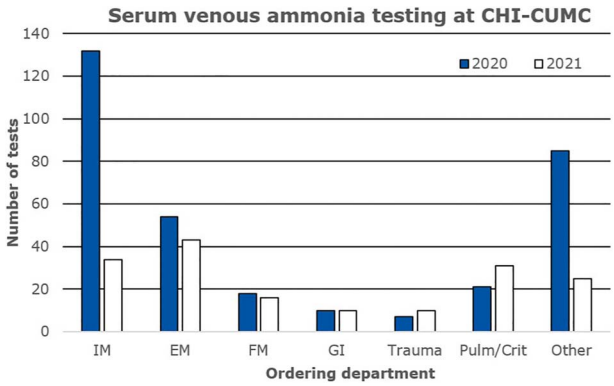
Introduction: Hepatic encephalopathy (HE) is a clinical diagnosis; however, ammonia levels are often ordered for diagnosing, staging, and assessing response to treatment in patients suspected of HE. Additionally, several large studies have found obtaining ammonia levels does not result in decreased length of stay, inpatient mortality, or lactulose volume used. Despite these studies and recommendations by the American Association for the Study of Liver Disease and the American College of Physicians to avoid ordering ammonia levels in patients with cirrhosis and chronic liver disease, the test is commonly ordered and contributes significantly to medical waste. We performed a bulletin board campaign to reduce inappropriate venous ammonia testing. (Figure)
Methods: We prospectively evaluated the effect of a bulletin board campaign in reducing venous ammonia testing at CHI Creighton University Medical Center.
Results: Although not statistically significant across all departments, the intervention was associated with an overall 52% reduction in serum venous ammonia testing, and 75% reduction in internal medicine testing after the intervention (p = 0.191). Total potential savings for patients totaled more than $42,000.

Conclusion: A bulletin board campaign directed predominantly toward emergency, internal, and family medicine was associated with a reduction in inappropriate serum venous ammonia testing. Our findings suggest serum venous ammonia testing is a significant contributor to medical waste. Future efforts to incorporate an electronic decision-making tool will likely allow for sustainable reduction in ammonia testing.

Table 1. Inappropriate serum venous ammonia testing stratified by department and year

Dept.	2020	2021	*P*
Internal medicine	132	34	
Emergency medicine	54	43	
Family medicine	18	16	
Gastroenterology	10	10	
Trauma surgery	7	10	
Pulmonary/critical care	21	31	
Other	85	25	
Total	327	169	0.191



[1270] **Figure 1.** Inappropriate serum venous ammonia testing at CHI-CUMC stratified by ordering department in 2020 and 2021.

S1271

Clinical Characteristics and Outcomes of Patients With Liver Failure Treated With Molecular Adsorbent Recirculating System (MARS): A Single Center Experience

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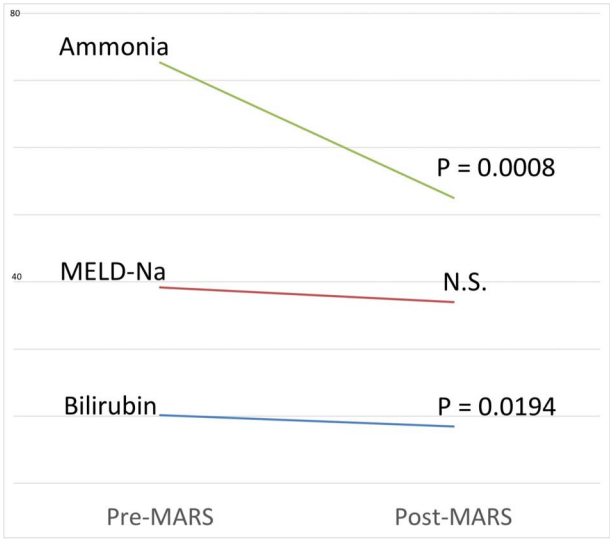
Introduction: Molecular Adsorbent Recirculating System (MARS) is an albumin-based dialysis system has been utilized in patients with severe liver failure with AKI and Hepatic Encephalopathy at our center for the last 2-3 years. The aim of this retrospective study was to identify change in total bilirubin, ammonia, and PSE stage in patients with acute liver failure (ALF) and acute-on-chronic liver failure (ACLF) who received MARS.
Methods: This is a single center retrospective study performed at Methodist Dallas Medical Center. Data included 42 patients with alcoholic hepatitis (AH), ACLF or ALF who underwent at least one session of MARS from January 2019 to March 2022. MARS was performed 12 hrs/day for 5 days – MARS was interrupted in the case of hemodynamic instability, clinical deterioration, or in cases of substantial clinical improvement. Measured outcomes included change in total bilirubin, ammonia, MELD-Na scores and PSE stage pre- and post-MARS. We assessed their overall mortality after receiving MARS. Wilcoxon signed-rank test was used to compare continuous variables. McNemar's test was used for categorical variables.
Results: We studied data on 42 patients. Median age was 47 years old. Etiology of liver failure comprised of 57.1% ACLF and 38.1% ALF; 81.8% had AH. Mean sessions of MARS was 4. 28-day transplant free survival was 38.4% (15/39) – 3 patients underwent liver transplant. Overall survival was 42.8% (18/42). There was a statistically significant difference in total bilirubin (median 20.35 vs 17) and ammonia levels (median 67 vs 31) after MARS. 30 patients had available pre- and post-MARS ammonia levels – this population was not significantly different from the total population. The proportion of patients with stage 3 or 4 PSE significantly decreased after MARS therapy (28/42 vs 15/42). There was no statistically significant difference in MELD-Na pre- and post-MARS (mean 38 vs 37). (Figure)
Conclusion: In this descriptive and exploratory analysis, MARS therapy led to a significant decrease in total bilirubin and ammonia levels, and in the proportion of patients with PSE stage 3 or 4. There was not a significant change in MELD-Na. Overall mortality was 61.6% (The predicted mortality of this group based on this MELD score is 70%). A more meaningful analysis could be achieved with historical controls based on age and MELD, which is in process.



[1271] **Figure 1.** Line graph showing outcomes after treatment with MARS therapy.

S1272

Did the COVID-19 Pandemic Impact Liver Transplant Patients?

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Introduction: Liver transplant patients are a unique population at high risk for opportunistic or viral infections due to chronic immunosuppressive therapy. Our aim was to determine the impact of the COVID-19 pandemic and compliance to immunosuppressive treatment in this cohort.
Methods: Clinicopathological parameters in liver transplant patients before the pandemic and at most recent follow-up during the pandemic were noted. Telephone survey was conducted to supplement chart review.
Results: Of 193 patients, (61% males, 39% females), 15 tested SARS-CoV-2 positive (53% males, 47% females). Mild symptoms were reported in 53%, prolonged symptoms in 53%, hospitalization in 40%, and intensive care (ICU) admission in 7%. Overall survival at 1-, 3-, and 5-year for patients not tested for COVID-19 (85, 66 and 50 months respectively) was higher than those negative (80, 51 and 36 months respectively) ($p< 0.01$). Race, age at liver transplantation, indication for transplant, compliance to medications, and body mass index did not differ in SARS-CoV-2 positive and negative. Compliance was similar before and during the pandemic in 91.67% cases. There was no difference in acute rejection, chronic rejection, and biliary stricture before and during the pandemic. SARS-CoV-2 positive cases had higher ALP and ALT levels after test ($p< 0.05$). None of the positive patients underwent a liver biopsy. On telephone survey, 135 patients were successfully contacted, with 121 participating. 93 patients received atleast 1 dose of vaccine, while 28 were unvaccinated. Of 13 total deaths, none were due to COVID-19.
Conclusion: Our study reports lower ICU admission and mortality (6.7% and 0%) compared to other studies (10 to 33% and 12 to 18% respectively). Patients testing for SARS-CoV-2 having lower survival may be associated with testing performed for hospital visits for symptoms/complications related to liver transplant follow-up. Liver enzymes (ALP and ALT) were elevated after SARS-CoV-2 infection, may be secondary to drug-induced liver injury related to treatment for COVID-19 or systemic inflammation due to infection. The COVID-19 pandemic did not affect compliance nor mortality. A possible reason could be immunosuppressive drugs reducing severe damage related to inflammatory response. Our findings supports reducing immunosuppression is not needed and will help to mitigate fear of the pandemic among patients, towards maintaining better compliance. (Table)

Table 1. Presentation of SARS-CoV2 infection in liver transplant patients

SARS-CoV-2 positive cases	n
Total positive	15/193
None or Mild Symptoms	8/15
Hospitalization	6/15
ICU Admission	1/15
Prolonged symptoms	8/15
Mortality	0/15

S1273

Prevalence of NAFLD and Fibrosis in Unselected Patients With HIV Monoinfection: A Systematic Review and Meta-Analysis

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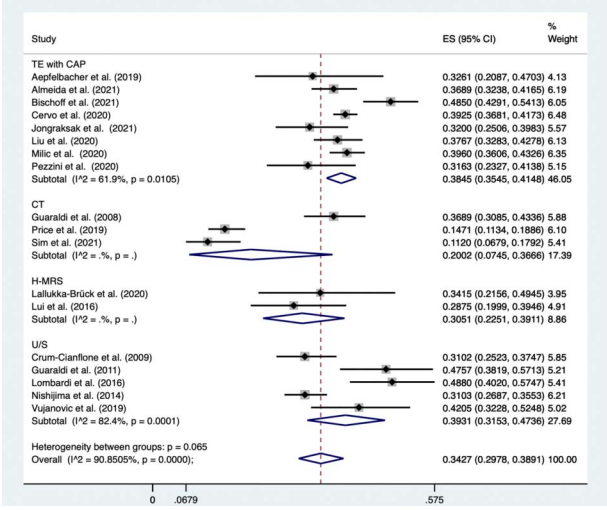
Introduction: Liver disease remains a leading cause of morbidity and mortality among patient with HIV infection. Nonalcoholic fatty liver disease (NAFLD) is an emerging concern for patients living with HIV. The aim of this review is to examine the current literature and provide an accurate estimate of the prevalence of NAFLD and fibrosis in patients with HIV monoinfection.
Methods: This review was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statement (PRISMA). We performed a systematic search of Pubmed and Embase databases to identify studies reporting the prevalence of NAFLD and/or fibrosis in patients with HIV monoinfection. To be considered eligible for inclusion studies should met the following criteria: 1) exclude patients who had concurrent HCV or HBV infection, 2) exclude patients with heavy alcohol use (as defined by each study), 3) HIV patients must be unselected, 4) diagnosis of steatosis and fibrosis should be based on imaging and criteria should be reported. Our primary outcome of interest was the prevalence of NAFLD and fibrosis in unselected HIV monoinfected patients. To estimate the pooled prevalence of NAFLD and fibrosis we performed a random effects meta-analysis.
Results: Our systematic search yielded 3078 studies of which 122 were eligible for full text review. A total of 20 studies met our eligibility criteria and were included in the meta-analysis (Table). The overall pooled prevalence of NAFLD among HIV monoinfected patients was 34.2% (95% CI: 29.7%-38.9%), but significantly varied based on the diagnostic method used (Figure). The prevalence of moderate to severe hepatic steatosis was 15.5% (95% CI: 8.9-23.5%). The overall pooled prevalence of fibrosis (defined as liver stiffness measurement >/ 7.1 kPa on transient elastography) was 12.3% (95% CI: 10.1%-14.7%).

Conclusion: Our study presents the most uptodate information on the prevalence of NAFLD and fibrosis in patients with HIV monoinfection. Our results show that the prevalence of NAFLD and fibrosis remain concerningly high among HIV monoinfected individuals. Several factors, including traditional NAFLD risk factors and HIV related factors, such as lipodystrophy and antiretroviral therapy, are probably contributing to these findings. Future studies should better characterize these factors, while screening for NAFLD and fibrosis should be considered in HIV monoinfected individuals.

Table 1. Studies characteristics

Study	Published	Study Period	Country	Study Type	Population	Patients	Diagnostic Method
Almeida et al.	2021	2015-2019	Brazil	Cross Sectional	Adult	412	TE with CAP
Pezzini et al.	2020	2016-2017	Brazil	Cross Sectional	Adult	98	TE with CAP
Cervo et al.	2020	2013-2018	Canada-Italy	Cross Sectional	Adult	1511	TE with CAP
Liu et al.	2020	2019-2020	China	Cross Sectional	Adult	361	TE with CAP
Kirkegaard-Klitbo et al.	2020	2015-2016	Denmark	Longitudinal Prospective Observational	Adult	453	CT
Lallukka-Brück et al.	2020	2019	Finland	Longitudinal Prospective Observational	Adult	41	H-MRS
Lemoine et al.	2017	2011-2012	France	Cross Sectional	Adult	405	TE with CAP
Bischoff et al.	2021	2013-2018	Germany	Longitudinal Prospective Observational	Adult	301	TE with CAP
Lui et al.	2016	Not Reported	Hong Kong	Cross Sectional	Adult	80	H-MRS
Guaraldi et al.	2011	2007-2008	Italy	Cross Sectional	Adult	103	U/S
Guaraldi et al.	2008	2006-2007	Italy	Cross Sectional	Adult	225	CT
Milic et al.	2020	2018-2019	Italy	Cross Sectional	Adult	707	TE with CAP
Nishijima et al.	2014	2004-2013	Japan	Cross Sectional	>17	435	U/S
Vujanovic et al.	2019	2016-2018	Serbia	Cross Sectional	22-50	88	U/S
Jongraksak et al.	2021	2017-2018	Thailand	Cross Sectional	Adult	150	TE with CAP
Aepfelbacher et al.	2019	2016-2018	USA	Cross Sectional	Adult	46	TE with CAP
Crum-Cianflone et al.	2009	2006-2007	USA	Cross Sectional	Adult	216	U/S
Price et al.	2019	2010-2013	USA	Cross Sectional	40-70	340	CT
Sim et al.	2021	Not Reported	USA	Cross Sectional	18-60	125	CT
Lombardi et al.	2016	2015-2016	Greece	Cross Sectional	Adult	125	U/S

Abbreviations: TE with CAP: Transient elastography with controlled attenuation parameter, CT: Computed Tomography, U/S: Ultrasound, H-MRS: Proton Magnetic Resonance Spectroscopy.



[1273] **Figure 1.** Prevalence of any grade hepatic steatosis.

S1274

Outcomes of Vitamin E Therapy in a Veteran Population With Non-Alcoholic Steatohepatitis Among Groups With and Without Diabetes

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[1]University of Louisville School of Medicine, Louisville, KY; [2]University of Louisville, Louisville, KY.

Introduction: Vitamin E (VitE) is an antioxidant used as a therapy for non-alcoholic steatohepatitis (NASH). Studies indicate a link between the severity of NASH and degree of oxidative stress. VitE can also retard hepatic fibrosis by modulating cell injury and proliferation. VitE has been shown to decrease inflammation, transaminitis and steatosis in NASH patients without Type 2 diabetes (T2DM). Current guidelines do not support its use in patients with T2DM. We conducted a study in a Veteran population to assess trends in transaminases and fibrosis 4 (FIB-4) scores after VitE use in patients with NASH, both with and without T2DM.

Methods: Veterans Affairs (VA) Informatics and Computing Infrastructure was used to build patient cohorts from VA hospitals nationwide. ICD-10 codes identified patients with NASH and T2DM. Retrospective analysis of labs and FIB-4 scores was performed. Before/after analysis was done to study the effect of VitE on outcomes. Wilcoxon signed-rank test with continuity correction analyzed FIB-4 scores, and a linear mixed-effect model assessed aspartate aminotransferase (AST) and alanine aminotransferase (ALT) trends.

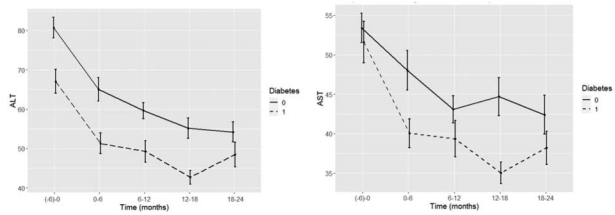
Results: Of 1572 patients with NASH on VitE, 658 had complete data. Mean age was 55.8 years; 588 (89.4%) patients were male and 528 (80.2%) Caucasian. 283 (43.0%) patients had T2DM, and 518 (78.7%) were obese (BMI≥30). Both diabetic and non-diabetic groups had significant decline in mean AST and ALT over 2 years ($p< 0.05$), with no significant difference between the groups in their rate of change.

(Figure) Interestingly, the non-diabetic group had higher baseline AST and ALT. Both groups had significantly lower FIB-4 scores 1 year after VitE, p=0.001 and 0.0005, respectively. (Table) Mean BMI and hemoglobin A1c were lower after two years.

Conclusion: VitE therapy reduced ALT and AST levels in both diabetic and non-diabetic groups. ALT is a reliable marker of liver injury, and FIB-4 score is a validated predictor of liver fibrosis. Lower FIB-4 scores in both groups suggest that VitE may also improve fibrosis, likely via reducing long-term inflammation, though effects were modest. Study limitations include a retrospective model and confounding effects of other medications or weight-reduction strategies that may have lowered BMI and hemoglobin A1c. Even so, VitE may have a role in improving inflammation and fibrosis in NASH in both diabetic and non-diabetic groups. Further prospective studies are needed to clarify the role of VitE in treating NASH patients with T2DM.

Table 1. Fib-4 summary statistics before and after Vitamin E in diabetes and non-diabetes groups

Wilcoxon signed-rank test with continuity correction				
Diabetes Group (p=0.001765)				
Time	count	Q1	median	Q3
before (-26 to 1 week)	283	1.17	1.70	2.55
after (26 to 52 weeks)	283	1.07	1.58	2.45
Non-Diabetes Group (p=0.000549)				
Time	count	Q1	median	Q3
before (-26 to 1 week)	375	0.88	1.25	1.88
after (26 to 52 weeks)	375	0.782	1.19	1.75



[1274] **Figure 1.** Line plots of ALT and AST over time in NASH patients in diabetes and non-diabetes groups.

S1275

Socioeconomic Status and the Risk of Liver Cancer Mortality in the United States: A Surveillance, Epidemiology, and End Results (SEER) Database Population-Based Study 2010-2018

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[1]St. Vincent Charity Medical Center, Cleveland, OH; [2]University Hospitals Case Western Reserve University, Cleveland, OH; [3]MetroHealth Medical Center/Case Western Reserve University, Cleveland, OH; [4]Johns Hopkins University, Baltimore, MD.

Introduction: Hepatocellular carcinoma (HCC) is the sixth most common cancer worldwide and it is tied with gastric cancer as the third leading cause of cancer mortality. Survival in HCC has been established in literature, it varies by the etiology, stage of cancer at diagnosis, patient comorbidities and treatment. However, the impact of socioeconomic status (SES) on HCC survival is less clearly identified.

Methods: The relationship between socioeconomic status (SES) variables and HCC mortality was examined using the Surveillance, Epidemiology, and End Results (SEER) Program 18 registry. We included HCC cases diagnosed between 2010 through 2018. The following SES data were gathered: race, insurance status, and marital status. Covariate survival analyses were conducted using a multivariable Cox proportional hazard model to estimate hazard ratios (HR), 95% confidence interval (CI), and survival curves for SES variables. All analyses were conducted using SPSS software, version 28.0 (IBM).

Results: We have included 45,524 patients diagnosed with HCC between 2010 and 2018. Compared to insured individuals, uninsured and patients receiving Medicaid were at 94% and 29% higher risk of mortality (HR 1.949, 95% CI 1.845-2.059, HR 1.291, 95% CI 1.256-1.328, respectively). The mortality was also significantly higher by 7% in single (never married) and 9% in widowed (HR 1.078, 95% CI 1.037-1.121, and 1.097, 95% CI 1.047-1.150, respectively), while statistically lower by 10.1% in married individuals compared to divorced. Compared to females, males were at higher risk of mortality by 15% (HR 1.152, 95% CI 1.122-1.183). Finally, as regards to racial differences, risk of death was statistically lower in white and other races compared to black by 8.6% and 26% (HR 0.94, 95% CI 0.884-0.945 and HR 0.737 95% CI 0.706-0.769, respectively). (Table)

Conclusion: This study demonstrates the impact of SES variables on HCC mortality, suggesting that SES is an independent predictor of liver cancer mortality. Married and insured had the most favorable survival outcome, while uninsured and single had the lowest. Moreover, white population is at lower mortality risk compared to black. Preventive interventions need to be more focused on the disadvantaged groups in order to reduce health disparities related to liver cancer mortality.

Table 1. The Cox Proportional-Hazards Model associating SES Variables and Hepatocellular Carcinoma Survival

Covariates	**HR (95% CI)**	**p-value**
Insurance Status:		
Insured	Reference	
Any Medicaid	1.291 (1.256-1.328)	< 0.001
Insured/No specifics	1.183 (1.147-1.220)	< 0.001
Uninsured	1.949 (1.845-2.059)	< 0.001
Age	1.023 (1.022-1.024)	< 0.001
Gender		
Female	Reference	
Male	1.152 (1.122-1.183)	< 0.001
Marital status		
Divorced	Reference	
Married (including common law)	0.899 (0.868-0.932)	< 0.001
Separated	1.020 (0.937-1.109)	0.652

Table 1. (*continued*)

Covariates	HR (95% CI)	p-value
Single (never married)	1.078 (1.037-1.121)	< 0.001
Unmarried or Domestic Partner	0.805 (0.661-0.981)	0.031
Widowed	1.097 (1.047-1.150)	< 0.001
Race		
Black	Reference	
White	0.914 (0.884-0.945)	< 0.001

S1276

Frailty Is Associated With Worse Outcomes in Patients Hospitalized With Non-Alcoholic Steatohepatitis (NASH)

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Introduction: Frailty is an important predictor of morbidity and mortality in hospitalized patients. Concurrently, nonalcoholic steatohepatitis (NASH) is the most rapidly growing etiology for liver failure-related hospitalization and use of hospital resources. The Hospital Frailty Risk Score (HFRS) is a validated algorithmic score using International Classification of Diseases codes (ICD-10) for identification of frailty in hospitalized patients. We aimed to study the role of HFRS as a predictor of outcomes and healthcare resource utilization in patients with NASH.
Methods: We performed a retrospective cohort study of hospitalized patients in the National Inpatient Sample (NIS) 2017 to 2019, with a primary discharge diagnosis of NASH. Based on HFRS, we classified patients into 2 groups: NASH with frailty (NASH+frailty, HFRS ≥5) or NASH without frailty (NASH-frail, HFRS < 5). Our primary outcomes were all-cause in-hospital mortality and hospitalization cost. Secondary outcomes included hospital complications and ICU admissions. We performed multivariable logistic regression for outcomes, and discharge-level weights were applied to provide national estimates.
Results: 13,830 hospitalizations met inclusion criteria, of which 49.1% (6,790) were identified as NASH+frailty and 50.9% (7,040) as NASH-frailty. After adjusting for age, gender, race, hospital location and teaching status, insurance, median household income and Charlson Comorbidity Index, patients with NASH+frailty were at higher risk for all-cause inpatient mortality [OR: 4.66, 95% CI (2.70 – 8.05); p< 0.001] and organ-specific complications: cardiac [OR: 1.32, 95% CI (1.08 – 1.61); p=0.006], pulmonary [OR: 1.66, 95% CI (1.35 – 2.04); p< 0.001], and infectious [OR: 12.47, 95% CI (9.01 – 17.08); p< 0.001]. NASH+frailty was associated with higher odds of requiring intensive care [OR: 4.24, 95% CI (2.86 – 6.28); p< 0.001] and had longer length of stay [9.5 days versus 4.4 days (p< 0.001)] along with higher total charges [Difference: $70,087, 95% CI (59,882 – 89,292); p< 0.001] when compared to NASH-frailty (Table).
Conclusion: Frailty was independently associated with worse outcomes and higher health care utilization in patients with NASH, even after adjustment for age and comorbidity. NASH patients with frailty might benefit from more aggressive approach during hospitalization to prevent adverse outcomes.

Table 1. **Baseline characteristics and outcomes of the frail NASH and non-frail NASH group**

Variable	NASH without Frailty n=7,040	NASH with Frailty* n= 6,790	p-value
Female, %	59.80	64.58	**0.011**
Age (years), mean ± SD	62.16 ± 12.10	64.61 ± 11.10	< **0.001**
Age >=65 years, %	46.45	52.80	< **0.001**
Charlson Comorbidity Index, mean ± SD	3.89 ± 2.15	5.23 ± 2.30	< **0.001**
Hospital Frailty Risk Score, mean ± SD	2.36 ± 1.54	8.51 ± 2.98	< **0.001**
In-hospital all-cause mortality, %	1.35	6.19	< **0.001**
Length of Stay (days), mean ± SD	4.47 ± 5.32	9.5 ± 11.65	< **0.001**
Total Charges ($), mean ± SD	68,086 ± 185,054	141,708 ± 288,832	< **0.001**
Cardiac complications, %	17.83	29.31	< **0.001**
Pulmonary complications, %	17.47	27.76	< **0.001**
Gastrointestinal complications, %	7.81	15.61	< **0.001**
Infectious complications, %	3.76	29.23	< **0.001**
Vasopressor use, %	0.71	3.02	< **0.001**
Required intensive care unit care, %	2.63	9.79	< **0.001**

Multivariate Regression Outcomes#

Outcome	Adjusted Odds Ratio (NASH+frailty vs non-frail)	95% CI	p-value
In-hospital mortality	4.66	[2.70 – 8.05]	< **0.001**
Length of stay (Days)	4.75&	[3.72 – 5.58]	< **0.001**
Total charges ($)	70,087&	[50,882.42 – 89,292.91]	< **0.001**
Cardiac complications	1.32	[1.08 – 1.61]	**0.006**
Pulmonary complications	1.66	[1.35 – 2.04]	< **0.001**
Gastrointestinal complications	2.31	[1.75 – 3.04]	< **0.001**
Infectious complications	12.47	[9.10 – 17.08]	< **0.001**
Vasopressor use	4.74	[2.12 – 10.63]	< **0.001**
Required intensive care unit care	4.24	[2.86 – 6.28]	< **0.001**

*Frail =Hospital Frailty Risk Score (HFRS)≥5.
#Analysis adjusted for age, gender, race, hospital location and teaching status, insurance, median household income and Charlson co-morbidity index.
&Adjusted co-efficient representing the average difference in this outcome between NASH+frailty and NASH-frailty.

S1277

The Selection of Donors in Living Donors of Liver Transplantation Based on Results of Thrombophilia Screening Tests and Prophylactic Strategy for Venous Thromboembolic Events (VTE)

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Introduction: Vascular events after living donor liver transplantation (LDLT) are one of the most feared complications that usually lead to graft and donor loss. The main aim of this study was to determine the frequency of hereditary thrombophilia in the Pakistani population and share our centers' safety and venous thromboembolic events (VTE) prophylaxis protocols in the borderline and high-risk groups in live liver donors.

Methods: This prospective, observational study included thrombophilia testing, which was done on 567 living donor candidates between July 2018 and April 2021. Donors were divided into the normal, borderline, and high-risk groups according to the Caprini scoring system. Usual prophylaxis with enoxaparin along with elastic stockings and intermittent pneumatic compression (IPC) was given postoperatively to donors in the borderline and high-risk groups. The safety endpoints were VTE occurrence, bleeding complications, or mortality.

Results: Among 567 donors, 21 (3.7%) donors were deficient in protein C, 14(2.5%) were deficient in anti-thrombin-III and 45(7.9%) were having Leiden factor-V mutation. 31/416 (7.45%) were deficient in factor-II. IgM & IgG Anti-phospholipids antibodies were positive in 2/567(0.4%) and 2/567(0.4%) respectively. Donor operation was performed on 44 candidates in the borderline group and 7 in the high-risk group. Complications after surgery were comparable between the 2 groups ($p > 0.05$). One donor in the normal donor group developed pulmonary embolism, but none of the donors in either borderline or high-risk group developed VTE. (Table)

Conclusion: Early hepatic artery thrombosis (eHAT), deep venous thrombosis, and pulmonary embolism are one of the most common vascular events after liver transplantation.The majority of LDLT centers exclude donors from high-risk groups (according to the Caprini scoring system) and are used to give low molecular weight heparin in borderline donor groups. But we are the only LDLT center where not only did we perform right lobe hepatectomy on high-risk donor group on thrombophilia screening tests, but we also gave usual prophylaxis with enoxaparin (rather than low molecular weight heparin) along with elastic stockings, and intermittent pneumatic compression (IPC) postoperatively to donors in the borderline and high-risk groups (Fifty-one donors) to decrease the risk of VTE.

Table 1. Comparison of demographics, surgical features, and postoperative complications of LLDs in donor groups

Variables	Normal Group (n=516)	Borderline Group (n=44)	High-Risk Group (n=7)	P-value
Mean age (Years)	23.43 ± 5.53	23.91± 5.25	26.86 ± 6.54	0.17
Mean BMI (Kg/m^2)	21.40 ± 7.99	20.5 ± 2.71	21.53 ± 3.29	0.69
Gender				
Male	290(56.2%)	24(54.5%)	4(57.1%)	0.97
Female	226(43.7%)	20(45.4%)	3(42.8%)	
Marital status				
Unmarried	351(68.1%)	25(56.9%)	5(71.4%)	0.06
Married	165 (31.9%)	19 (43.1%)	2(28.5%)	
Donor's relation to recipients				
Son	63 (12.2%)	6 (13.6%)	1(14.2%)	0.008
Brother	99 (19.1%)	5 (11.3%)	2(28.5%)	NS
Nephew	25 (4.8%)	5(11.3%)	1(14.2%)	NS
Daughter	35 (6.7%)	5 (11.3%)	0	NS
Sister	32 (6.2%)	5 (11.3%)	0	0.76
Father	88 (17.1%)	3 (6.8%)	0	
Swap	10 (1.9%)	0	0	
Others	157(30.4%)	11 (25.0%)	3(42.8%)	
Type of Graft	437 (84.6%)	36 (81.8%)	6(85.7%)	
Modified right lobe graft	62 (12.0%)	8 (18.1%)	1(14.2%)	
Modified extended right lobe graft	4 (0.7%)	7 (15.9%)	0	
Left lobe graft	11 (2.1%)	0	0	
Left lateral segment graft	6(1.1%)	0	1.2 ± 0.63	
GRWR	1.26 ± 0.63	1.4 ± 0.68	13.86 ± 7.26	
Mean warm ischemia time (minutes)	10.99 ± 6.09	10.68 ± 4.08	422.86 ± 62.37	
Mean operation time (hours)	407.94 ± 64.86	412.27 ± 89.11	7	
Mean blood loss (ml)	516	44		
Blood transfusions (no of patients/ %)				
Personal History of Thrombosis	0	0	0	–
Total number of complications	62 (12.0%)	15 (34.1%)	2(28.5%)	0.43
Grade 1 & 2				
Wound infections	20 (3.8%)	3 (6.8%)	2(28.5%)	0.12
Wound hematoma	2 (0.3%)	1 (2.2%)	0	
UTI	4 (0.7%)	2 (4.5%)	0	
Fever	3 (0.5%)	2 (4.5%)	0	
Paralytic ileus	2 (0.3%)	1 (2.2%)	0	
Grade 3A				
Bile leakage	6 (1.1%)	1 (2.2%)	0	0.15
Bile duct stricture	3(0.5%)	0	0	
Post-op bleeding	3 (0.5%)	1 (2.2%)	0	
Pleural effusion/Aspiration	9 (1.7%)	1 (2.2%)	0	
ERCP & Stenting	3 (0.5%)	1 (2.2%)	0	
Grade 3B				
Re-open	6(1.1%)	1 (2.2%)	0	0.45
Grade 4A				
Need ICU care/ ventilator	1 (0.1%)	1 (2.2%)	0	0.95
Grade 4B	0	0	0	–
Multi-organ failure				
Grade 5	0	0	0	–
Mean ICU stay (Days)	3 ± 1	2.53 ± 1	3 ± 1	0.15
Mean hospital stay (Days)	6 ± 2	5 ± 2	6 ± 2	0.17
Mortality	0	0	0	–

Abbreviations: BMI: body mass index; GRWR= graft to recipient weight ratio; ICU: Intensive care unit; UTI: Urinary tract infection.

S1278

Increasing Burden of Hepatorenal Syndrome and Acute Kidney Injury Among Hospitalized Patients With Chronic Liver Disease Is Associated With High In-Hospital Mortality and Increased Healthcare Resource Utilization

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Introduction: Hepatorenal syndrome (HRS) is a severe form of acute kidney injury (AKI) that develops in patients with decompensated liver disease and is associated with high morbidity and mortality. Understanding epidemiologic trends in HRS and AKI among chronic liver disease (CLD) patients will provide valuable data to guide healthcare resource planning. We aimed to evaluate trends in hospitalized patients with CLD and HRS or AKI in the US and the impact on in-hospital mortality and healthcare resource utilization (HCRU).
Methods: Hospitalized patients with CLD (including cirrhosis) between 2016 and 2021 were identified using the Premier Healthcare Database, a comprehensive electronic healthcare database that captures data from over 1,041 hospitals/healthcare systems in the US. Among hospitalized CLD patients, annual incidence rates for patients with HRS or AKI (based on ICD-10 codes) were evaluated. Trends in in-hospital mortality and HCRU (hospital length of stay (LOS), total hospitalization charges) were evaluated for CLD patients with HRS or AKI.
Results: A total of 3,580,434 hospitalizations with CLD were identified, representing approximately 6.7% of all hospitalizations during the study period. The proportion of CLD hospitalizations increased from 5.8% in 2016 to 7.7% in 2021. Among hospitalized CLD patients, the proportion with HRS increased from 1.9% in 2016 to 2.4% in 2021 ($p< 0.01$), and the proportion with AKI increased from 25.4% in 2016 to 31.3% in 2021 ($p< 0.01$). Hospitalized CLD patients with HRS or AKI had significant co-morbidities (ascites: 76% (HRS), 25% (AKI); alcohol-related diseases: 58% (HRS), 28% (AKI); diabetes: 36% (HRS), 44% (AKI)). From 2016 to 2021, while mean hospital LOS for CLD patients with HRS or AKI remained stable, mean total hospitalization charges significantly increased from $111,605 to $154,316 in CLD patients with HRS, and from $106,194 to $155,314 in CLD patients with AKI. Compared to overall CLD patients, significantly higher in-hospital mortality was observed in CLD patients with HRS (26.3% vs. 7.0%, $p< 0.01$) and in CLD patients with AKI (18.3% vs. 7.0%, $p< 0.01$). (Table)
Conclusion: The burden of CLD hospitalizations in the US continues to rise. The increasing burden of hospitalized CLD patients with HRS or AKI is particularly concerning, given that these patients have significantly greater co-morbidities, high HCRU, and high mortality, emphasizing the clinical and economic burden of HRS and AKI among CLD patients in the US.

Table 1. Patient demographics, clinical characteristics, resource use, total charges, and in-hospital mortality

	2016	2017	2018	2019	2020	2021	Total
All CLD admissions N	529,556	597,346	616,434	637,599	591,654	607,845	3,580,434
Patients with HRS N [%]	9,838 [1.9%]	10,955 [1.8%]	11,388 [1.8%]	12,610 [2.0%]	13,513 [2.3%]	14,371 [2.4%]	72675 [2.0%]
Age mean [median]	59.4 [60.0]	59.5 [60.0]	59.6 [60.0]	59.4 [60.0]	58.5 [59.0]	58.1 [59.0]	59.0 [60.0]
Sex female n [%]	3,795 [38.6%]	4,262 [38.9%]	4,429 [38.9%]	4,971 [39.4%]	5,285 [39.1%]	5,577 [38.8%]	28,319 [39.0%]
Ascites n [%]	7,098 [72.1%]	8,140 [74.3%]	8,600 [75.5%]	9,564 [75.8%]	10,442 [77.3%]	11,231 [78.2%]	55,075 [75.8%]
Sepsis n [%]	2,884 [29.3%]	3,360 [30.7%]	3,430 [30.1%]	3,822 [30.3%]	4,317 [31.9%]	4,642 [32.3%]	22,455 [30.9%]
Alcohol n [%]	5,305 [53.9%]	6,032 [55.1%]	6,300 [55.3%]	7,169 [56.9%]	8,195 [60.6%]	8,880 [61.8%]	41,881 [57.6%]
Diabetes n [%]	3,482 [35.4%]	3,994 [36.5%]	4,082 [35.8%]	4,604 [36.5%]	4,600 [34.0%]	4,896 [34.1%]	25,658 [35.3%]
Covid19 n [%]	0 [0.0%]	0 [0.0%]	0 [0.0%]	0 [0.0%]	329 [2.4%]	560 [3.9%]	889 [1.2%]
Medicare Coverage n [%]	4,388 [44.6%]	4,904 [44.8%]	5,061 [44.4%]	5,685 [45.1%]	5,570 [41.2%]	5,608 [39.0%]	31,216 [43.0%]
Length of stay mean [median]	10.2 [7.0]	10.2 [7.0]	10.0 [7.0]	10.3 [7.0]	10.4 [7.0]	10.6 [7.0]	10.3 [7.0]
Total charges mean [median]	$111,665 [$60,802]	$123,493 [$66,826]	$131,775 [$69,044]	$142,023 [$75,711]	$152,298 [$79,024]	$154,316 [$82,604]	$137,856 [$72,860]
In-hospital mortality n [%]	2,703 [27.5%]	3,007 [27.4%]	3,013 [26.5%]	3,176 [25.2%]	3,414 [25.3%]	3,773 [26.3%]	19,086 [26.3%]
Patients with AKI N [%]	134,291 [25.4%]	156,666 [26.2%]	166,400 [27.0%]	178,618 [28.0%]	179,355 [30.3%]	189,957 [31.3%]	1,005,287 [28.1%]
Age mean [median]	61.9 [62.0]	62.1 [63.0]	62.2 [63.0]	62.4 [64.0]	62.1 [63.0]	62.2 [64.0]	62.2 [63.0]
Sex female n [%]	54,088 [40.3%]	63,665 [40.6%]	67,235 [40.4%]	71,977 [40.3%]	71,603 [39.9%]	76,903 [40.5%]	405,471 [40.3%]
Ascites n [%]	31,671 [23.6%]	37,642 [24.0%]	40,716 [24.5%]	44,254 [24.8%]	44,187 [24.6%]	47,476 [25.0%]	245,946 [24.5%]
Sepsis n [%]	42,958 [32.0%]	51,240 [32.7%]	55,004 [33.1%]	58,197 [32.6%]	63,730 [35.5%]	68,420 [36.0%]	339,549 [33.8%]
Alcohol n [%]	36,854 [27.4%]	42,619 [27.2%]	45,380 [27.3%]	48,696 [27.3%]	50,633 [28.2%]	53,584 [28.2%]	277,766 [27.6%]
Diabetes n [%]	56,749 [42.3%]	67,130 [42.8%]	73,140 [44.0%]	78,728 [44.1%]	79,554 [44.4%]	84,586 [44.5%]	439,887 [43.8%]
Covid19 n [%]	0 [0.0%]	0 [0.0%]	0 [0.0%]	0 [0.0%]	11,866 [6.6%]	19,341 [10.2%]	31,207 [3.1%]
Medicare Coverage n [%]	71,777 [53.4%]	85,441 [54.5%]	91,050 [54.7%]	98,562 [55.2%]	96,162 [53.6%]	100,518 [52.9%]	543,510 [54.1%]
Length of stay mean [median]	9.3 [6.0]	9.3 [6.0]	9.3 [6.0]	9.3 [6.0]	9.7 [6.0]	10.3 [6.0]	9.6 [6.0]
Total charges mean [median]	$106,194 [$54,538]	$114,993 [$58,751]	$122,257 [$61,372]	$131,239 [$64,916]	$141,955 [$69,822]	$155,314 [$75,501]	$130,336 [$64,553]
In-hospital mortality n [%]	23,307 [17.4%]	27,602 [17.6%]	28,796 [17.3%]	29,893 [16.7%]	34,368 [19.2%]	39,546 [20.8%]	183,512 [18.3%]

Footnote: HRS: Hepatorenal syndrome, AKI: Acute kidney injury.

S1279

Disparities in Outcomes Among Patients With Cirrhosis and Gastrointestinal Bleeding Undergoing Endoscopy

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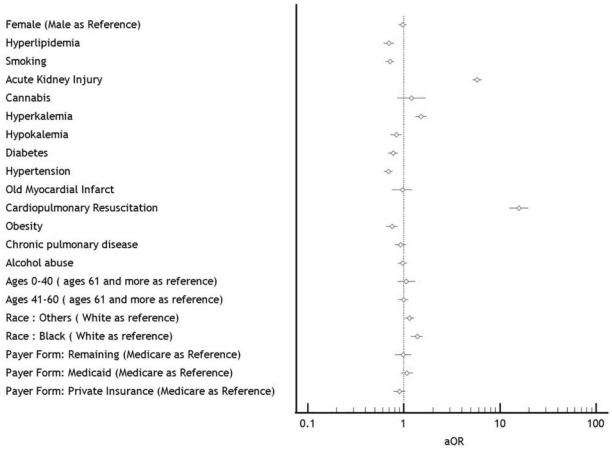
Introduction: Patients with cirrhosis are prone to gastrointestinal (GI) bleeding due to a higher prevalence of varices, and secondary to altered coagulation. The aim of our study is to understand the characteristics of patients with cirrhosis undergoing Endoscopic Treatment (ET) for GI bleeding, and the risk factors associated with mortality.
Methods: We explored the 2019 National Inpatient Sample (NIS) from the Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality, and their partners (https://www.hcup-us.ahrq.gov/nisoverview.jsp) for cases of cirrhosis with a procedural code for "control bleeding in gastrointestinal tract, endo" (classified under endoscopic control of bleeding) (0W3P8ZZ). Patient characteristics were compared using Chi-Square tests and mortality risks were analyzed via multivariate logistic regression.
Results: 24,635 patients with cirrhosis undergoing ET for GI bleeding were included in our final analysis. These patients were more likely to be males (59.5%), age ≥ 61 (57.5%), White (67.2%), and covered by Medicare (50.8%). 40.4% were smokers, 33.2% had a history of alcohol abuse and 2% reported marijuana use. 38.8% reported Acute Kidney Injury (AKI), 10.6% had hyperkalemia and 17.2% had hypokalemia. Comorbidities- 37.1% had diabetes, 58.5% had hypertension, 18.0% were obese and 20.5% had chronic pulmonary disease. (Figure) Our study had mortality rate of 9.4%. After adjusting for variables, AKI (77.3%, aOR 5.799, $p< 0.01$) and hyperkalemia (19.0%, aOR1.516, $p< 0.01$) showed increased risk of mortality. Racial differences were also noticed as Blacks (aOR 1.142, $p=0.027$) had a higher death risk as

compared to Caucasians. Cardiopulmonary resuscitation was also linked with a poor outcome (aOR 15.821, p< 0.01). Meanwhile, hyperlipidemia (aOR 0.702, p< 0.01), smoking (0.719, p< 0.01), hypokalemia (aOR 0.831, p< 0.01), diabetes (aOR 0.773, p< 0.01), hypertension (aOR 0.694, p< 0.01), obesity (aOR 0.754, p< 0.01), showed a reduced mortality risk.
Conclusion: Our study provides a fresh perspective on various risk factors for mortality among patients with cirrhosis undergoing ET for GI bleeding. Physicians should thus be careful and monitor pre and post-procedural occurrences for timely management to improve the outcomes of these patients.



[1279] **Figure 1.** Forest plot showing demographics and risk factors of patients with cirrhosis and GI bleeding.

S1280

Comparing Outcomes of Decompensated Cirrhosis Management on a Primary Hepatologist-Managed Service versus a Hospitalist-Managed Service at an Urban Hospital

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Introduction: While there are treatment guidelines for management of decompensated cirrhosis, limited data exist about adherence to specific quality measures and whether adherence differs based on specialty training (hospitalists versus hepatologists). We aimed to compare outcomes of quality-based practices of hepatology-led versus hospitalist-led services for admissions for management of decompensated cirrhosis.
Methods: 2,009 admissions of patients presenting to our institution with a diagnosis of decompensated cirrhosis from 2016 to 2020 were retrospectively reviewed. 547 admissions of patients admitted for management of hepatic encephalopathy (HE), ascites, bleeding esophageal varices (EV), hepatorenal syndrome (HRS), or spontaneous bacterial peritonitis (SBP) were included. Patients were grouped based on service at the time of discharge: hepatology service (HH), hospitalist service (GM), or hospitalist service with hepatology consult (MH). Quality indicators assessed included admission length of stay, intensive care unit (ICU) admission, and death. Stat was used for statistical analysis.
Results: Of the 547 admissions included, 168 admissions were on GM, 178 on MH, and 201on HH services. On average, GM patients were younger compared to their MH and HH counterparts (56.1, 59.2, 59.1 years respectively, p = 0.02). Additionally average MELD score at admission was higher on GM (23.1) compared to MH (17.6) and HH (20.3; p< 0.001) services. This was similarly reflected in the Child-Pugh Score at admission [GM (10.3), MH (8.9), and HH (9.6; p< 0.001)]. GM admissions had a longer hospital stay (9.1 days) compared to HH (6.2 days; p< 0.001) admissions, which remained significant when controlling for MELD score and age (p=0.001). GM admissions had a lower incidence of ICU transfers compared to MH and HH (27.2%, 34.8%, 38.0% respectively; p = 0.007). Patients on MH were less likely to expire prior to discharge compared to GM and HH (1% vs 8.4% and 14.9% respectively, p< 0.001). (Table)
Conclusion: This study demonstrates differences in baseline characteristics and outcomes for decompensated patients admitted to GM, MH, and HH services for management of decompensations. Overall, this study speaks to shorter hospitalizations and decreased incidence of death for patients presenting with decompensated cirrhosis on HH versus GM services, however, further investigations would be needed to determine the rationale for differing patient outcomes, as this was not reflected in ICU transfers.

Table 1. Comparison of reason for admission between hospitalist led service without a hepatology consult (GM), hospitalist led service with a hepatology consult (MH), and a hepatologist led service (HH)

Reason for Admission	GM	MH	HH	P value
Bleeding esophageal varices (EV)	32.5%	29.8%	37.6%	0.054
Hepatic Encephalopathy (HE)	30.4%	36.2%	33.4%	0.054
Spontaneous Bacterial Peritonitis (SBP)	29.5%	33.7%	36.8%	0.058
Ascites	25.8%	35.0%	39.2%	0.036
Hepatorenal Syndrome (HRS)	28.8%	34.4%	36.7%	0.000

S1281

Nosocomial vs Healthcare Associated vs Community Acquired SBP—A Systematic Review and Meta-Analysis

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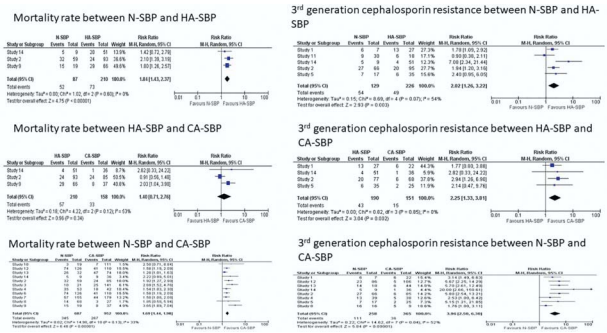
Introduction: Spontaneous bacterial peritonitis (SBP) is a common complication in decompensated liver cirrhosis. SBP is defined as ascitic fluid polymorphonuclear cell count > 250/mm3. Community acquired SBP (CA-SBP) occurs within 48-72 hours after hospital admission. Healthcare associated SBP (HA-SBP) is defined as SBP occurring in patients who were hospitalized in the preceding 90 days to 6 months. Nosocomial SBP (N-NBP) occurs 48-72 hours after hospital admission.
Methods: We conducted a systematic review and meta-analysis on the studies that compared N-SBP, HA-SBP and CA-SBP. We performed a comprehensive database search in PubMed, Embase and Web of Science from inception through May 18, 2022. Randomized controlled trials, prospective and retrospective cohort studies and case series were included. Number of N-SBP, HA-SBP and CA-SBP episodes, ascitic fluid culture results and previous SBP episode data was gathered. The primary outcome was mortality rate in all types of SBP. Secondary outcome was resistance to third generation cephalosporins. The random effects model was used to calculate the risk ratios (RR), mean differences (MD) and confidence intervals (CI). A p value < 0.05 was considered statistically significant. Heterogeneity was assessed using the Higgins I2 index.
Results: Fourteen retrospective and prospective cohort studies comprising of 2302 SBP episodes were included. The mortality rate was statistically significantly higher in N-SBP compared to HA-SBP (RR 1.84, p< 0.0001, CI 1.43- 2.37, I2=0%) and CA-SBP (RR 1.69, p< 0.00001, CI 1.4-1.98, I2= 33%), but not statistically significant between HA-SBP and CA-SBP (RR=1.40, p=0.34, CI=0.71-2.76, I2=53%).

Resistance to third generation cephalosporins was statistically significantly higher in N-SBP compared to HA-SBP (RR=2.02, p=0.003, CI 1.26-3.22, I2=54%) and CA-SBP (RR=3.96, p< 0.00001, CI=2.50-3.60, I2=52%) and also between HA-SBP and CA-SBP (RR=2.25,p=0.002, CI=1.33-3.81, I2=0%). (Figure)

Conclusion: Our meta-analysis demonstrated that mortality rate is higher in N-SBP compared to HA-SBP and N-SBP compared to CA-SBP. Third generation cephalosporin resistance is considerably higher in N-SBP and HA-SBP compared to CA-SBP. Lower threshold to start broad spectrum antibiotics with targeted therapy guided through culture data should be undertaken for appropriate treatment of SBP and to improve mortality in N-SBP and HA-SBP.



[1281] **Figure 1.** Nosocomial vs Community Acquired vs Healthcare associated SBP

S1282 WITHDRAWN

S1283

The Impact of Social Determinants of Health on Survival and Disease Severity in Patients With Hepatocellular Carcinoma

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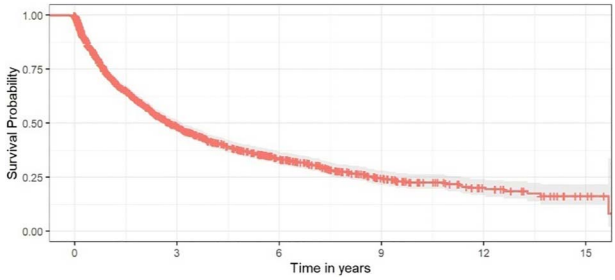
Introduction: While progress has been made in understanding the medical risk factors for hepatocellular carcinoma (HCC), there is still a dearth of data on social risk factors. While racial and income disparities have been studied, less is known about other social determinants of health (SDOH). We aimed to determine the associations between SDOH of patients diagnosed with HCC leading to lower overall survival and more advanced disease at presentation.

Methods: We conducted a retrospective study from a REDCAP database of patients diagnosed with HCC at our tertiary care center from 2015 to 2019. Body mass index (BMI), gender, marital status, race, insurance status, surveillance status for HCC, education level, transportation method, and veteran status were included as SDOH. Outcomes measured included survival, BCLC (Barcelona Clinic Liver Cancer) stage, tumor size, and presence of metastasis at diagnosis. Using multiple imputation for missing data, multivariate analyses examined these SDOH variables on HCC outcomes.

Results: In our cohort of 1655 patients, 73.5% were male and 64.8% were Caucasian. Our cohort is unique given the large number of patients (43.7%) with Medicare or Medicaid as primary insurers. Overall survival was 48.5% at 3 years and 37.3% at 5 years matching national outcomes (Figure). Patients who received surveillance prior to HCC diagnosis (HR 0.73, p < 0.005), were married (HR 0.82, p=0.005) and qualified for first-line HCC treatment (HR 0.46, p< 0.005) were associated with better overall survival. Female patients (HR 0.71, p 0.003) were found to have lower BCLC staging at time of diagnosis, but none of the other predictors were significant. Patients who were female (HR 0.76, p=0.032), married (HR 0.79, p=0.044), and had routine surveillance for HCC prior to diagnosis (HR 0.75, p=0.019) were less likely to have an HCC lesion >5 cm. Interestingly, at the time of diagnosis patients with private insurance were more likely to have metastatic HCC (HR 3.43, p< 0.005). Patients with no insurance (HR 0.34, p=0.037), surveillance for HCC prior to diagnosis (HR 0.09, p< 0.005), and at least some college education (HR 0.97, p=0.045) were less likely to have metastatic HCC.

Conclusion: Certain SDOH at diagnosis, namely gender, marital status, and surveillance were associated with improved overall survival and earlier HCC diagnosis. However, there were also unexpected findings of those who presented with metastatic disease, necessitating further investigation to understand the underlying factors.



[1283] **Figure 1.** Kaplan Meier Curve of Overall Survival

S1284

The Impact of Malnutrition on the Outcomes of Autoimmune Hepatitis

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Introduction: Malnutrition is commonly found among hospitalized patients, and it is generally known to be associated with poor clinical outcomes. However, there is a lack of data on how outcomes of autoimmune hepatitis may differ in patients with malnutrition. Thus, we aim to assess the outcomes of autoimmune hepatitis in patients with malnutrition.

Methods: Adult patients hospitalized with autoimmune hepatitis from the National Inpatient Sample, Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality 2010-2014 were selected. Diagnoses were identified by using ICD-9 CM codes. Patient demographics and outcomes of autoimmune hepatitis were compared between the groups with and without malnutrition. The outcomes of interest were inpatient mortality, length of stay, total hospital charge, cirrhosis, portal hypertension, hepatic encephalopathy, ascites, hepatorenal syndrome, varices/variceal bleeding, spontaneous bacterial peritonitis, and sepsis. Chi-squared tests and independent t-tests were used to compare proportions and means, respectively. Multivariate logistic regression analysis was performed to determine if malnutrition is an independent predictor of the outcomes, adjusting for age, sex, and race.

Results: Patients with malnutrition had longer length of stay (9.7 days vs. 5.3 days, p < 0.05) and higher total hospital charge ($95,283 vs. $47,239, p < 0.05). After adjusting for age, sex, and race, malnutrition was an independent risk factor for cirrhosis (adjusted odds ratio (aOR) 1.49, 95% confidence interval (CI): 1.34-1.64, p < 0.05), portal hypertension (aOR 1.79, 95% CI: 1.59-2.02, p < 0.05), hepatic

encephalopathy (aOR 1.91, 95% CI: 1.69-2.16, p < 0.05), ascites (aOR 2.36, 95% CI: 2.11-2.63, p < 0.05), hepatorenal syndrome (aOR 3.67, 95% CI: 2.87-4.69, p < 0.05), varices/variceal bleeding (aOR 1.40, 95% CI: 1.22-1.61, p < 0.05), spontaneous bacterial peritonitis (aOR 1.49, 95% CI: 1.10-2.02, p < 0.05), sepsis (aOR 2.37, 95% CI: 2.06-2.73, p < 0.05), and inpatient mortality (aOR 2.52, 95% CI: 2.08-3.05, p < 0.05).
Conclusion: Our study indicates that autoimmune hepatitis patients with malnutrition have worse outcomes, including increased odds of inpatient mortality, cirrhosis, portal hypertension, hepatic encephalopathy, ascites, hepatorenal syndrome, varices/variceal bleeding, spontaneous bacterial peritonitis, and sepsis. The results suggest that prompt recognition of nutritional status is warranted to improve the outcomes of autoimmune hepatitis.

S1285

Association Between Distance to a Radiology Center and HCC Surveillance Among Patients With Cirrhosis in Florida

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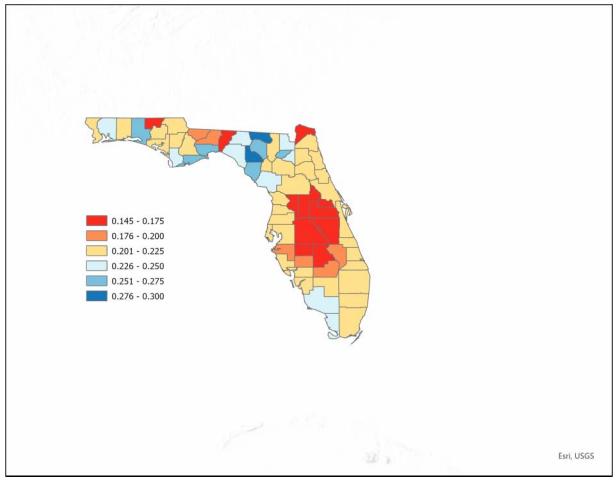
Introduction: Hepatocellular carcinoma (HCC) is a leading cause of morbidity and mortality in patients with cirrhosis, and HCC survival is directly correlated with stage at diagnosis. Current guidelines recommend HCC surveillance with an abdominal ultrasound every 6 months, but unfortunately many patients do not meet this threshold.[1] Our aim was to determine whether distance to a radiology center, measured in travel time, was associated with HCC surveillance rates.
Methods: We included data on adult patients with cirrhosis within the OneFlorida Clinical Research Consortium from October 1, 2015- December 31, 2019. The primary outcome was a continuous measure of the percentage of time up to date with HCC surveillance (PTUDS) based on abdominal ultrasound (US), triple phase CT, and/or MRI with contrast. Travel time was calculated using ArcGIS geomodelling software as the estimated minimum travel time between the geographic centroid of patient's zip code and the nearest American College of Radiology-accredited center for US, CT, and/or MRI. Linear regression models were fit with PTUDS as the outcome; all covariates with a p< 0.05 were included in the final multivariable model. (Figure)
Results: Among 25,299 patients with cirrhosis (median follow-up=4.1 years), the median PTUDS was 10.0% (interquartile range 0-29.9%). Variables found to have a statistically significant association with PTUDS are displayed in Table. Travel time, hepatic encephalopathy at baseline, and ascites at baseline were associated with increased PTUDS. Patients with alcohol-related liver disease, nonalcoholic steatohepatitis, and cryptogenic cirrhosis had lower PTUDS compared with patients with HCV.
Conclusion: Travel time to the nearest radiology center is not associated with lower HCC surveillance rates while race, etiology of liver disease, and disease severity do appear to variably influence surveillance. By establishing factors associated with currently suboptimal surveillance rates, we can create targeted interventions to improve surveillance and, ultimately, patient outcomes.



[1285] **Figure 1.** Median PTUDS by County

Table 1. Multivariable Linear Regression Model of Factors Associated with HCC Surveillance

Variable	Beta Coefficient, 95% CI	P-Value
Travel Time	0.0016 (0.0012-0.0020)	<0.001
Liver Disease Etiology		
Hepatitis C Virus	Reference	-
Hepatitis B Virus	0.0246 (0.0019-0.0473)	0.034
Wilson's Disease	0.0137 (-0.571-0.0845)	0.704
Hemochromatosis	0.0067 (-0.0220-0.0354)	0.647
a1-Antitrypsin Deficiency	0.0673 (0.0200-0.1145)	0.005
Alcohol-Related Liver Disease	-0.0720 (-0.0801- -0.0639)	<0.001
Primary Biliary Cholangitis	-0.0037 (-0.0261- 0.0186)	0.745
Autoimmune Hepatitis	-0.0193 (-0.0406- 0.0019)	0.075
Primary Sclerosing Cholangitis	0.0123 (-0.0462- 0.0708)	0.680
Nonalcoholic Steatohepatitis	-0.0835 (-0.0917- -0.0752)	<0.001
Unknown/Cryptogenic	-0.01566 (-0.1664- -0.1467)	<0.001
Race		
White/Caucasian	Reference	-
American Indian/Alaskan	-0.0207 (-0.0871- 0.0457)	0.541
Asian	0.0531 (0.0258- 0.0805)	<0.001
Black	0.0171 (0.0082- 0.0260)	<0.001
Native Hawaiian/Pacific Islander	-0.0075 (-0.1109- 0.0959)	0.887
Multiple Race	-0.0474 (-0.0781- -0.0168)	0.002

Table 1. (*continued*)

Variable	Beta Coefficient, 95% CI	P-Value
Refuse to answer	0.0904 (0.0212- 0.1596)	0.010
No information	0.0575 (0.0283- 0.0866)	<0.001
Other	0.0050 (-0.0048- 0.0148)	0.318
Unknown	-0.0591 (-0.0837- -0.0346)	<0.001
Disease Severity		
Hepatic Encephalopathy at Baseline	0.0431 (0.0328- 0.0534)	<0.001
Ascites at Baseline	0.0638 (0.0551- 0.0724)	<0.001

REFERENCE
1. Yang JD, Mannalithara A, Piscitello AJ, et al. Impact of surveillance for hepatocellular carcinoma on survival in patients with compensated cirrhosis. Hepatology. 2018;68(1):78-88.

S1286

Impact of Cardiovascular Disease on Liver Transplant Candidacy During Transplant Evaluation in a North American Center With High Obesity Prevalence

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Introduction: There are no large studies that examined the impact of obesity and cardiovascular disease in patients undergoing evaluation for orthotopic liver transplantation (OLT).
Methods: We retrospectively analyzed patients undergoing OLT evaluation between Jan 2012 and Nov 2021 in a liver transplant center in the Mid-West US.
Results: 912 patients underwent OLT evaluation (59% males, mean age 57.4±10.5 years, Mean Na-MELD 18.7±8.7, 82% Caucasian and 8.6% African Americans) etiology of cirrhosis NASH (48.1%), alcohol (37.7%), and hepatitis C (18.5%). 31.8% and 41.7% were overweight and obese respectively. 261 (31.8%) underwent OLT, 554 (60.7%) were denied listing, and 51(5.6%) died during evaluation. 224 patients had coronary artery disease (CAD) and among them, 50% were denied OLT. Of all patients denied listing, 32% were denied OLT due to CAD. Comorbid medical conditions (30%), substance use (15%) and socioeconomic condition (19.3%) were other causes for denial for listing. 239 (26.2%) had metabolic syndrome (MS), of which 143 (59.8%) were denied OLT. Among patients denied, 55(10%) were morbidly obese (BMI >40). Gender, residential location(urban v/s rural), hypertension, diabetes, CAD, BNP levels, atrial fibrillation, chronic kidney disease, hyperlipidemia,MS,6-minute walk test (6MWT) did not correlate with transplant denial on univariate analysis (Table). Ethnicity (African American, p=0.03), vitamin-D deficiency (< 30 ng/ml) and BMI (p=0.038) had significant correlation. On multivariate analysis (MVA), BMI >30), (OR 0.71 [0.51-0.98], p = 0.04) and vitamin-D deficiency (OR 0.21 (0.15-0.29), p < .01) were independent predictors of denial. For predicting death during OLT evaluation, on univariate analysis, 6-minute walk test (6MWT), estimated pulmonary artery pressure (PAP) on transthoracic echocardiography, mean PAP on right heart catheterization, significant coronary obstruction on left heart catheterization were not predictors, but female gender and vitamin-D deficiency were predictors. On stratified analysis of patients denied listing due to CAD, the presence of MS (OR 2.1(1.3-3.5), p=0.003) was an independent predictor of denial, and normal BNP levels (< 100pg/ml) lowered the risk of denial (OR 0.42 (0.20-0.88), p=0.02).
Conclusion: Obesity (BMI >40) and vitamin-D deficiency increased the risk of denial for transplant listing. Presence of metabolic syndrome increased the risk of denial for listing due to CAD and normal BNP levels (< 100pg/ml) significantly lowered the risk of denial from CAD.

Table 1. **Univariate analysis for predictors of liver transplant denial and death in waiting list**

	Transplant denial (p value)	Death during evaluation (p value)
Gender	0.09	**0.04***
Ethnicity	**0.03***	0.21
Location (rural v/s urban)	0.15	0.5
Hypertension	0.86	0.41
Diabetes	0.81	0.98
BMI	**0.04***	0.59
CAD	0.55	0.42
Chronic kidney disease	0.06	0.16
Atrial fibrillation	0.73	0.96
Hyperlipidemia	0.66	0.22
Metabolic syndrome	0.68	0.77
Vitamin-D deficiency	< **0.01***	< **0.01***
6 Minute Walk Test (6MWT)	0.67	0.56
BNP levels	0.19	0.65
Cardiac ejection fraction on echocardiography		0.58
Elevated estimated PAP		0.81
Elevated mean PAP		0.12
Computed tomography calcium score		0.35
Positive dobutamine stress echocardiography		0.68
Significant coronary obstruction in left heart catheterization		0.44

S1287

Therapeutic Effect of Granulocyte Colony Stimulating Factor Therapy on Patients With Cirrhosis: A Systematic Review and Meta-Analysis

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Introduction: Decompensated cirrhosis is an advanced stage of cirrhosis in which liver scarring becomes so extensive that the liver is unable to function properly, leading to complications such as refractory ascites, recurrent infections, and hepatic encephalopathy. Currently, liver transplantation is the only definitive treatment, but it has a number of disadvantages, including high cost, restricted donor pool, and long-term immunosuppression. As a result, granulocyte colony stimulating factor (G-CSF) has emerged as an alternative therapy. However, its clinical efficacy is still debaTable, so the aim of this meta-analysis was to determine the efficacy of G-CSF in patients with cirrhosis.
Methods: MEDLINE and SCOPUS were queried from inception till June 2022 for randomized controlled trials (RCTs) without any restrictions. RCTs examining the impact of G-CSF on survival rates in patients with decompensated cirrhosis and compensated cirrhosis were incorporated. The results were reported using a random-effects meta-analysis and the Mantel-Haenszel risk ratio (RR). A P-value of $<$ 0.05 was considered significant for the analysis. The subgroup analysis was performed to investigate the influence of study-level variables such as etiology on outcomes of interest.
Results: Eight studies (n = 8) were included in our meta-analysis. The total number of participants in our study was 712, and the median study duration was 12 months. Our pooled analysis demonstrates that G-CSF treatment significantly improved survival rates (RR 1.29; 95% CI 1.06 to 1.58; p = 0.01; **Figure**) in patients with compensated cirrhosis and decompensated cirrhosis. In our subgroup analysis, G-CSF was also linked to higher survival rates among people with decompensated cirrhosis (RR 1.35; 95% CI 1.07 to 1.70; p = 0.01; Figure).
Conclusion: Our findings indicate that G-CSF treatment is successful in improving the survival rates in patients with decompensated cirrhosis and compensated cirrhosis. Hence, it can be employed as an alternative therapeutic option.

Figure1: Survival rate in patients with compensated cirrhosis and decompensated cirrhosis

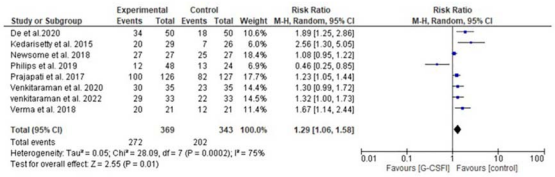
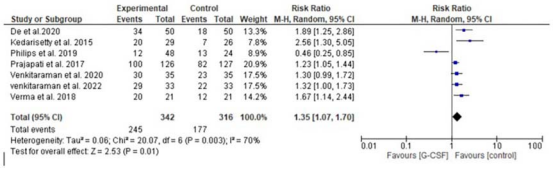


Figure 2: Survival rate in patients with decompensated cirrhosis



[1287] **Figure 1.** Forrest Plots of Analysis

S1288

Disparities in the Prevalence of Acute Myocardial Infarction in Non-Alcoholic Steatohepatitis: A Nationwide Analysis

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Introduction: Non-Alcoholic Steatohepatitis (NASH) is a severe form of Non-Alcoholic Fatty Liver Disease (NAFLD) characterized by intrahepatic and extrahepatic inflammation. Fatty liver disease is also associated with an increased risk of cardiovascular disease, but this association has not been well established. Our study aimed to assess the epidemiological data and association of NASH with Acute Myocardial Infarction (AMI).
Methods: The National Inpatient Sample (NIS) database 2016-2019 was queried using (ICD10-CM) codes to identify a cohort of inpatient admissions with a primary diagnosis of AMI and secondary diagnosis of NASH. Basic demographic variables were analyzed to determine the disparities in the prevalence of AMI among NASH patients. A univariate logistic regression model using demographic characteristics was used to determine the odds of having AMI among NASH patients. Multivariate logistic regression analysis was used to analyze the association of NASH and AMI.
Results: A total of 1455 patients hospitalized with AMI had a concurrent diagnosis of NASH. Among them, 49% (715) were males, and 51% (739) were females. Females were less likely to have AMI than males [OR 0.76, 95% CI 0.59-0.84]. When stratified by age, 89.3% (1300) were above 50, and 10.7% (155) were below 50. Younger patients ($<$ 50) with NASH were less likely to have AMI compared to the older ($>$50) [OR 0.23, 95% CI 0.19-0.27, $p<$ 0.001]. When stratified for the race, 78.83% (1147) were white, 4.6% (67) were Black, 8.4% (122) were Hispanic, 2.26% (33) were Asian or Pacific Islander, 0.89% (13) were Native Americans. Compared to the white population, Blacks [OR 0.26, 95% CI 0.20-0.33, $p<$ 0.001], Hispanics [OR 0.64, 95% CI 0.53-0.78, $p<$ 0.001], Asian and Pacific Islanders [OR 0.70, 95% CI 0.50-0.99, $p<$ 0.001], had lower odds of having an AMI. On multivariate analysis, the patients with NASH had higher odds of AMI [OR 2.09, 95% CI 1.98-2.20, $p<$ 0.001] after adjusting for both sociodemographic and cardiovascular risk factors.
Conclusion: Our study showed that older white males with NASH had a higher prevalence of AMI. In addition, NASH was found to be an independent predictor of AMI. Early identification of risk factors and an aggressive cardiovascular risk modification are required among NASH patients. Future prospective studies with better cohort stratification are required to validate this association.

S1289

EUS-Guided Portal Pressure Measurement Predictive of Clinically Significant Portal Hypertension: A Carilion Clinic Experience

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Introduction: Endoscopic ultrasound-guided portal pressure gradient measurement (EUS-PPGM) is a novel technique that quantifies portal hypertension. Clinically significant portal hypertension is currently defined by hepatic venous pressure gradient (HVPG) $>$ 10mmHg. We aimed to assess the safety, technical success of PPGM and correlation with clinical markers of advanced liver disease.
Methods: This is a single-center retrospective study of patients with suspected chronic liver disease who have undergone EUS-PPG with or without EUS-guided liver biopsy (EUS-Bx). Cases with EUS-PPG were identified at Carilion Roanoke Memorial Hospital a tertiary care hospital in Roanoke, Virginia, between September 2020 and March 2022. The electronic medical record (EMR) was reviewed for patient demographics, non-invasive markers, and clinical indicators of liver disease severity. Data collection and analysis is ongoing.
Results: Of the 73 patients included, 57% were female, with mean age 58, and mean BMI 34.9. The most common indication for the procedure was history of NAFLD/NASH (33/73) and most patients (69/73) did not have previously established cirrhosis. 71/73 (97.3%) of procedures were technically successful, with instances of failure related to inability to cannulate the hepatic or portal vein. No major adverse events were identified. The mean PPG was 5.5 mmHg (SD 4.6, range 0-17.3). Increasing Fib-4 and APRI scores were positively correlated with higher PPG. In patients with Fib-4$<$ 1.3 the mean PPG was 3.2, vs 8.8 in those with Fib-4 $>$2.67. EUS-Bx was performed in 46 patients (63%) and NASH histologically diagnosed in (33/46) with cirrhosis confirmed in 12 (26%). Compared to an overall average fibrosis score of 2.3,the average score was 1.5 in patients with PPG $<$ 5 and 4.0 in patients with PPG $>$10. Average PPG was higher in patients diagnosed with cirrhosis (7.38 vs 3.45).
Conclusion: Our findings are consistent with recent reports, suggesting that EUS-PPGM is a safe and effective method with good correlation to clinical indicators of advanced liver disease. It has the added advantage of allowing EUS-bx and endoscopic assessment of clinical features of portal hypertension during the same procedure. Future research should assess how EUS-PPG measurements can be utilized in routine clinical practice.

S1290

Baseline Characteristics and Comorbidities of a Patient Admitted With Nonalcoholic Steatohepatitis: An Analysis of National Inpatient Sample Database

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Introduction: Non-alcoholic fatty liver (NAFL), non-alcoholic steatohepatitis (NASH), and NASH cirrhosis are all manifestations of non-alcoholic fatty liver disease (NAFLD). In the Western world, NAFLD is the major cause of liver disease. NASH, a chronic and progressive illness that is marked by liver cell damage and fatty liver, is an inflammatory subtype of NAFLD that is linked to the development of cirrhosis, disease progression and the need for a liver transplant. NASH is underappreciated in clinical practise, despite its relevance. As a result, we decided to look for baseline features as well as the prevalence of NASH in adults.
Methods: The National Inpatient Sample database was used to analyze adult patients admitted with NASH from September 2015 to December 2019. The primary outcome was to determine the baseline characteristics of patients admitted with NASH. The disease burden in the hospitalized patient population was determined as a secondary outcome. SAS 9.4 the software was used for statistical analysis.
Results: During the course of our study, a total of 435,8455 patients with NASH were admitted. We also observed an increasing trend in hospitalization secondary to NASH from 2015 to 2019. The NASH cohort comprises predominantly elders, with a mean age of 61.8± 13.1 yrs. The prevalence of NASH was higher in Caucasians (74.7%), and females (62%). NASH is more likely to be associated with a high prevalence of comorbidities such as hypertension (62.5%), diabetes mellitus (61.4%), obesity (36.7%), smoking (31.9%), renal failure (27.3%), and coronary artery disease (23.1%). The majority of hospitalizations were categorized as emergent (87.3%) admissions. Medicare was the primary insurance for more than half of the hospitalized patients (56.7%) (Table).
Conclusion: Analysis of this large national database revealed an increasing trend of NASH hospitalizations over the course of the study period. NASH was more prevalent among caucasians and females. Comorbidities like hypertension, diabetes, obesity, smoking and renal failure were more prevalent among NASH patients. It is crucial for further research in this area for a better understanding of the characteristics and comorbid conditions of NASH patients.

Table 1. Baseline Characteristics and comorbidities of a patient admitted with NASH from September 2015 - December 2019

NASH*	N = 435,845
Age, in years (Mean ± SD*)	61.8 ± 13.1
Age groups, %	
18 - 34 years	3.9%
35 – 49 years	12.6%
50 – 64 years	36.6%
65 - 79	40.2%
>79 years	6.6%
Gender, %	
Male	38%
Female	62%
Race, %	
Caucasians	74.7%
African Americans	4.2%
Others	21%
Comorbidities, %	
Hypertension	62.5%
Diabetes mellitus	61.4%
Congestive heart failure	22.1%
CAD*	23.1%
Peripheral vascular disease	4.6%
COPD*	22.2%
Renal failure	27.3%
Coagulopathy	32.5%
Obesity	36.7%
Drug abuse	2.4%
Alcohol abuse	3.7%
Smoking	31.9%
Atrial fibrillation	14.3%
Stroke	0.8%
VTE*	1.6%
Admission Type, %	
Emergent	87.3%
Elective	12.7%
Insurance type, %	
Medicare	56.7%
Medicaid	11.9%
Private	26.2%
Other	5.1%
Location/Teaching status of the hospital, %	
Rural	7.6%
Urban nonteaching	18.2%
Urban teaching	74.1%

*Abbreviations (NASH - Non-alcoholic steatohepatitis, SD - Standard deviation, CAD - Coronary artery disease, COPD - Chronic obstructive pulmonary disease, VTE - Venous Thromboembolism).

S1291

Low Insulin-Like Growth Factor 1 as a Predictor of Poor Prognosis in Liver Cirrhosis

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Introduction: Insulin-like growth factor 1 (IGF1) disturbances are observed in liver cirrhosis. IGF1 deficiency resulting variety of metabolic complications. Changes in IGF1 concentrations, depending on the clinical stage of liver cirrhosis. This study aimed to prove the role of IGF1 as predictor for prognosis in Liver cirrhosis.
Methods: A cross-sectional analytic study was performed in liver cirrhosis patients. Serum IGF-1 levels were measured using the Bioassay Technology with the Enzyme-Linked Immunosorbent Assay (ELISA) method. The results were expressed in units of ng/ml. Patient's prognosis determine using the Child-Pugh-Turcotte score (CTP). CTP B-C are assigned a poor prognosis with a mortality risk of 20-55% at 1 year. The cut off for IGF1 is determined by the ROC curve. Data were analyzed using computer software.
Results: The research subjects consisted of 62 males (80.5%) and 15 females (19.5%), with a mean age of 47.64 ± 7.47 years. Based on CTP scores, 32 (41.5%) samples had CTP B-C and 45 (58.4%) had CTP A. The mean IGF1 levels were 2.06 ± 1.08 ng/mL (0.46 ng/ml -5.73 ng/ ml). The mean CTP score was 6.84 ± 2.18 (5-13). The mean IGF1 in CTP A and BC was 2.43 ± 1.08 ng/mL and 1.54 ± 0.82 ng/mL ($p< 0.001$; 95% CI 0.43-1.34). Based on the ROC curve, IGF1 levels greater than or equal to 1.62 ng/mL were defined as high levels. There was a significant relationship between IGF1 levels and CTP scores ($p< 0.001$; OR=6.7, 95%CI: 2.4-18.4). Low IGF1 levels are associated with poor prognosis, liver cirrhosis patients with IGF1 values less than 1.62 ng/mL are 6.7 times more likely to have a 20-55% mortality risk at 1 year.
Conclusion: Mean IGF1 levels were significantly lower in CTP B-C than in CTP A, and low IGF1 levels suggest a possibly poorer prognosis in patients with liver cirrhosis. IGF1 concentration decreased with the severity of cirrhosis (Child–Pugh score), reaching significantly low values in class C. The CTP score has been validated as a predictor of postoperative mortality after portocaval shunt surgery and predicts mortality risk associated with other major operations. The CTP score can help predict all-cause mortality risk and development of other complications from liver dysfunction, such as variceal bleeding, as well. Reported the overall mortality for these patients at 1 year was 0% for Child class A, 20% for Child class B, and 55% for Child class C. Based on the results of this study, it can be concluded that low IGF1 is a predictor of poor prognosis in patients with liver cirrhosis.

S1292

Comparison of Radiomic Machine Learning and Deep Learning Survival Models in Patients With Hepatocellular Carcinoma

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Introduction: To compare machine learning (ML) and deep learning (DL) approaches to predict survival outcome in patients with Hepatocellular Carcinoma (HCC).
Methods: The clinical and image data of 82 patients were accessed from the TCGA-LIHC collection in The Cancer Imaging Archive. Patients with incomplete image sequences were excluded to finally include 39 patients. We delineated the following regions of interest: 1) Peritumoral 1 (first 2mm zone around the tumour), 2) Peritumoral 2 (second 2mm zone around the tumour), 3) Tumoral, 4) paravertebral muscles L4, L5, 5) Paravertebral muscles L1, L2, L3, 6) Psoas muscle at the L1, L2 & L3 levels 7) rest of the psoas muscle. The radiomics features were extracted from the CT images using the LIFEx software (www.lifexsoft.org). We evaluated the following models: 1) Cox proportional hazards model by componentwise likelihood based boosting with stepnumber 10 and penalty number 100, 2) Deephit: DeepHit: trains a neural network to learn the estimated joint distribution of survival time and event, while capturing the right-censored nature inherent in data. Analysis was done with frac 0.3, relu activation, 0.1 dropout, 100L epochs and a batch size of 32L, 4) Multitask logistic regression model with ranking based feature selection to predict survival using a logistic regression model and the parameters from each model are estimated simultaneously in the maximization of the joint likelihood function, and 5) random survival forest with 1000 trees. Analyses were done in RStudio, and missing values were imputed using *missRanger* package.[1] The data is split into 80 percent training and 20 precent validation. All models were 5-fold cross validated. Prediciton statistics was calculated for each model developed.
Results: Out of the selected ML and DL models, Multitask logistic regression preformed the best in classifying all regions of interest. Amongst the regions of interest, paravertebral muscles and psoas muscles were trained with higher AUCs than the actual tumour regions themselves. (Table)
Conclusion: CT-derived radiomics were valuable for noninvasively assessing the survival and also the paravertebral and psoas muscles have better predictive capacity to predict survivals apart from the tumour or peritumoral regions themselves.

Table 1. Performance of machine learning and deep learning models for radiomic survival prediction

S.No.	Model specification	AUC	C-i ndex	AUC	C-i ndex	AUC	C-i ndex	AUC	C-i ndex	AUC	C-i ndex	AUC	C-i ndex	AUC	C-i ndex
Region of interest		1	1	2	2	3	3	4	4	5	5	6	6	7	7
1.	Cox boost	0.47	0.45	0.60	0.71	0.73	0.79	0.46	0.63	0.40	0.46	0.60	0.59	0.66	0.71
2.	Deep hit	0.47	0.45	0.60	0.71	0.73	0.79	0.46	0.63	0.40	0.46	0.60	0.59	0.66	0.71
3.	Multitask logistic regression	0.87	0.81	0.86	0.93	0.80	0.80	0.93	0.89	0.93	0.89	0.86	0.93	0.86	0.93
4.	Random survival forest	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

S1293

Prevalence and Trends in Hospitalizations for Suicidal Ideation, Suicide, and Self-Inflicted Harm Among Patients With Cirrhosis: A Nationwide Analysis

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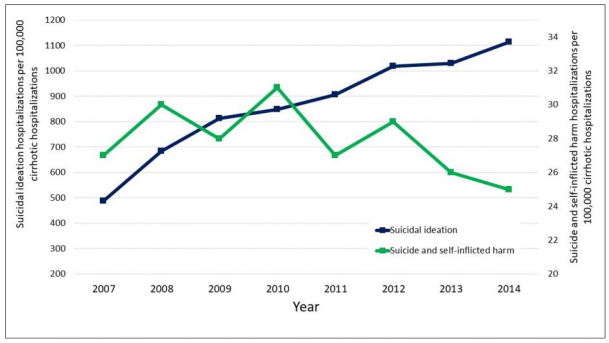
Introduction: Chronic illnesses have been associated with suicidal ideation (SI), suicide and self-inflicted harm (S/SIH). However, suicidality in patients with cirrhosis is understudied. We sought to describe trends, predictors, and outcomes of SI and S/SIH among hospitalized patients with cirrhosis, using a nationally representative dataset.
Methods: Using the 2007-2014 Nationwide Inpatient Sample, we determined trends in cirrhosis-related SI and S/SIH hospitalizations. We compared baseline characteristics between patients with cirrhosis hospitalized with SI and S/SIH vs. those without suicidality. Multivariable regression analysis was used to identify patient-level predictors of SI and S/SIH. We also compared outcomes including all-cause inpatient mortality, hospital length of stay (LOS), and costs
Results: Suicidal ideation and S/SIH-related hospitalizations accounted for 1.2% of all cirrhosis admissions. Hospitalizations for SI increased steadily while those for S/SIH decreased after peaking in 2010 (Figure). The majority of SI and S/SIH hospitalizations occurred in men, Medicaid patients, and among individuals with depression and anxiety [Table]. On multivariable analysis, older age (adjusted odds ratio [aOR] 0.12, 95% Confidence Interval [C.I.] 0.1-0.13), female sex (aOR =0.77, 95%CI= 0.78-0.81), and private payer status (aOR =0.58, 95%CI= 0.54-0.63) were associated with lower odds of SI and S/SIH. Blacks (aOR=0.55, 95%CI=0.5-0.6) and Hispanics (OR=0.63, 95%CI= 0.57-0.7) had significantly lower odds of suicidality compared to White patients. While patients from lower ecological socioeconomic groups, those on Medicaid (aOR=1.21, 95%CI=1.13-1.29), and those with comorbid depression (aOR=1.63, 95%CI=1.52-1.75) and anxiety (aOR=2.58, 95%CI=2.41-2.76) had higher adjusted odds of suicidality. All-cause inpatient mortality was lowest among patients with SI (0.6%) compared to those with S/SIH (2.7%). In addition, patients with SI had longer LOS than those without SI (6.7 vs 6.0 days, $p=0.012$). Hospital costs were also significantly lower for those with SI ($8270) compared to those with S/SIH ($12376) [Table].
Conclusion: In this nationally representative cohort, we observed a rising trend in suicidal ideation among patients with cirrhosis especially patients who were younger, White, from lower socioeconomic backgrounds, with comorbid anxiety and depression. Hospitalizations for suicide and self-inflicted harm appeared to be on the downtrend.



[1293] **Figure 1.** Suicidal ideation and S/SIH-related hospitalizations

Table 1. Baseline characteristics of patients with cirrhosis hospitalized for suicidal ideation, suicide and self-inflicted harm

	None	Suicidal ideation	Suicide and self-inflicted harm	P-value
Weighted, n	3990744	35759	11245	
Age in years, mean (SD)	58.4 (0.06)	50.7 (0.13)	49.3 (0.21)	< 0.001
Age groups				< 0.001
18-39	204102 (5.1%)	3997 (11.2%)	1559 (13.9%)	
40-64	2636301 (66.1%)	29648 (82.9%)	9187 (81.7%)	
65-74	716164 (17.9%)	1747 (4.9%)	411 (3.7%)	
≥75	434176 (10.9%)	367 (1.0%)	87 (0.8%)	
Sex				< 0.001
Male	2446171 (61.3%)	24931 (69.7%)	6884 (61.2%)	
Female	1544233 (38.7%)	10823 (30.3%)	4360 (38.8%)	
Race				< 0.001
White	2370145 (59.4%)	23702 (66.3%)	7686 (68.3%)	
Black/African American	392633 (9.8%)	2702 (7.6%)	628 (5.6%)	
Hispanic	620323 (15.5%)	4491 (12.6%)	1210 (10.8%)	
Others/Missing	607642 (15.2%)	4863 (13.6%)	1721 (15.3%)	
Primary payer				< 0.001
Medicare	1714242 (43.1%)	10978 (30.8%)	3247 (29.0%)	
Medicaid	895128 (22.5%)	13167 (36.9%)	3703 (33.0%)	
Private insurance	865167 (21.7%)	5079 (14.3%)	2055 (18.3%)	
Self-pay	302638 (7.6%)	3874 (10.9%)	1317 (11.7%)	
No charge	34306 (0.9%)	499 (1.4%)	193 (1.7%)	
Other	169630 (4.3%)	2040 (5.7%)	699 (6.2%)	
Hospital size				0.389
Small	460791 (11.6%)	4277 (12.0%)	1232 (11.0%)	
Medium	984649 (24.8%)	8529 (24.0%)	3029 (27.2%)	
Large	2522795 (63.6%)	22709 (63.9%)	6889 (61.8%)	
Income				< 0.001
Q1	1292454 (33.5%)	13066 (38.4%)	3819 (35.4%)	
Q2	1021754 (26.5%)	8568 (25.2%)	3091 (28.7%)	
Q3	875772 (22.7%)	7368 (21.7%)	2341 (21.7%)	
Q4	664196 (17.2%)	4999 (14.7%)	1527 (14.2%)	
Comorbidity index				< 0.001
0	30683 (0.8%)	19 (0.1%)	11 (0.3%)	
1-3	1428084 (35.8%)	13287 (37.2%)	2835 (25.2%)	
>3	2531977 (63.4%)	22453 (62.8%)	8409 (74.8%)	
Depression	468865 (11.7%)	7357 (20.6%)	3047 (27.1%)	< 0.001
Anxiety	246203 (6.2%)	6831 (19.1%)	1768 (15.7%)	< 0.001
All-cause inpatient mortality	251739 (6.3%)	223 (0.6%)	300 (2.7%)	< 0.001
Length of stay (in days)	6.0 (0.02)	6.7 (0.09)	5.6 (0.16)	0.012
s	15409	8270	12376	< 0.001

S1294

Comparison of Different Bedside Scores in Predicting Recurrence Post Trans-Arterial Chemoembolization in Patients With Hepatocellular Carcinoma

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Introduction: Hepatocellular carcinoma (HCC) is one of the most common malignancies with high morbidity and mortality. Recently, the use of inflammatory and molecular biomarkers has been advocated to predict the prognosis in HCC patients after surgical hepatectomy. However, little work has been done to evaluate the use of these inflammatory markers in predicting post TACE HCC recurrence. The aim of our study was to compare different bed side scores in predicting recurrence post TACE in patients with HCC.
Methods: It was a cross-sectional study. All the patients with HCC undergoing TACE were included in the study. AUROC was derived for different scores including Lympocyte to Monocyte Ratio (LMR), Platelet to Lymphocyte Ratio (PLR), Neutrophil to Lymphocyte Ratio (NLR), Platelet to White blood cell Ratio (PWR) and NLR/Albumin(ALB) and their sensitivity, specificity, PPV, NPV and diagnostic accuracy were calculated for predicting post TACE recurrence in HCC patients.
Results: A total of 323 patients were included in the study. Among them, 281 (87%) were males. Mean age was 53±12.5 years. Mostly patients had single tumor 274(84.8%). BCLC stage A was noted in 274(84.8%) and stage B was seen in 49(15.2%) patients. Post TACE, patients were followed up to 1 year. Recurrence was noted in 186(57.6%) patients. On non-invasive investigations, increased neutrophils (p = ≤ 0.001), monocytes (p =0.002), platelets (p = 0.004), serum alpha-fetoprotein (p = ≤0.001) and decreased lymphocytes (p = ≤0.001) and serum albumin (p = ≤0.001) at baseline were significantly associated with post -TACE recurrence. NLR, PLR, LMR, PWR and NLR/Albumin ratio were calculated and multivariate analysis was done showing significant association of PLR, NLR and LMR with post TACE recurrence. Area under the curve was also obtained for these scores. The area under the curve of PLR (AUC:0.90) for predicting recurrence post TACE was higher than that of NLR (AUC:0.84), LMR(AUC:0.82), NLR/Albumin(AUC:0.75) and PWR(AUC:0.60). Sensitivity, specificity, PPV, NPV and diagnostic accuracy for each score was calculated. At a cutoff of >3.4, the sensitivity, specificity, PPV, NPV for PLR were 98.4%,72.3%,82.8%,97% with diagnostic accuracy of 87.3% in predicting post TACE recurrence of HCC.
Conclusion: Different non-invasive scores for prediction of post TACE HCC recurrence have been compared and the diagnostic accuracy was highest for platelet to lymphocyte ratio (87.3%). However, further studies are needed to validate these scores.

S1295

Transjugular Intrahepatic Portosystemic Shunt (TIPS) Placement Prevents Incident Hepatorenal Syndrome

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Introduction: Hepatorenal syndrome (HRS) is a feared complication in patients with cirrhosis with high morbidity and mortality rates, longer length of hospital stay, and greater healthcare costs. There is a clear unmet need to prevent HRS in order to improve patient-oriented outcomes. While transjugular intrahepatic portosystemic shunt (TIPS) has been shown to have a mortality benefit in patients with HRS and is used as a treatment for this condition, whether TIPS performed for other indications reduces the risk of incident HRS remains unknown.
Methods: We performed a retrospective cohort study utilizing the Trinetx global health research network. We examined deidentified data on patients with cirrhosis aged 18-75 using ICD-10 codes. Patients who underwent a liver transplant or with a history of chronic kidney disease were excluded. Patients who underwent TIPS were compared to non-TIPS patients with ascites . Experimental (TIPS) and control groups (non-TIPS) were propensity score matched based on individual components of the MELD-Na score documented 30-days prior to TIPS (experimental group) or ascites development (non-TIPS). The primary outcome was incident HRS.
Results: 1,250 propensity score matched patients were included in analysis. Mean age (55 +/-11 years vs. 54+/-11 years), serum sodium (136+/-5.0 vs. 135+/-5.2), creatinine (0.91+/-0.42 vs. 0.96+/-0.69), total bilirubin (2.3+/-3.6 vs. 4.7+/-7.0), and INR (1.5+/-0.4 vs. 1.6+/-0.8) was similar in both groups. 621 underwent TIPS. Development of HRS in the TIPS group was approximately twice less likely than in the non-TIPS group (OR = 0.512, 95% CI 0.272-0.965; p = 0.0352).
Conclusion: Our results indicate that TIPS has a protective effect on the development of HRS in cirrhotic patients. Given the overall poor prognosis and high healthcare costs in these patients, our findings suggest that TIPS should be more readily considered in cirrhotic patients even prior to the development of HRS as a means to reduce the risk of its development. Further research is warranted to better establish the protective effect of TIPS on HRS and to guide clinical decision-making.

S1296

Comparison of Outcomes in Patients With Budd-Chiari Syndrome Undergoing Transjugular Portosystemic Shunt

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Introduction: Budd-Chiari Syndrome (BCS) is a relatively rare condition with incidence of roughly 0.1 to 10 per million, caused by impaired venous outflow at the level of hepatic veins and inferior vena cava. Management of BCS is based on step wise approach, ranging from systemic anticoagulation therapy, endovascular procedures to establish venous patency, Trans Jugular Portosystemic Shunt (TIPS) to Orthotic liver transplant. Among all the treatment options for BCS, TIPS has got a pivotal role in last decade.
Methods: Adult patients admitted with BCS, who had TIPS and without TIPS were analyzed from September 2015 to December 2020 using the National Inpatient Sample database. The primary outcome was to determine the baseline characteristics of the BCS patients who got TIPS. Secondary outcomes included all-cause in-hospital mortality, length of stay (LOS), and total hospital costs. SAS 9.4 software was used for statistical analysis.
Results: Out of 14210 patients admitted with BCS, 200(1.4%) had TIPS procedure done as a part of their treatment. TIPS cohort consists of patients who are younger in age (38.9 ± 14.7 vs. 52.4 ± 16.4 yrs.). There was no significant gender disparity observed in our study. Comorbidities like hypertension, coronary artery disease, diabetes, peripheral vascular disease, Hep C, metastatic cancer were higher in the group which did not have TIPS procedure done. In the contrary, chronic liver disease, coagulopathy and myeloproliferative disorder noted to be higher in TIPS receiving population. Complications like portal hypertension, vascular graft associated complications, cirrhosis, portal vein thrombosis, Hepatorenal syndrome were noted to be significantly higher in patients receiving TIPS. TIPS subgroup has significantly lower in hospital mortality (2.5% vs 7.5%, p=0.007) with mortality adjusted odds ratio of 0.38(0.15-0.96; p=0.04). Total LOS and hospital cost noted to be higher in TIPS group. Furthermore, our study showed decreased need for acute/subacute rehab facility upon discharge (2.5% vs 12.4%) in patient receiving TIPS (Table).
Conclusion: Our study showed patients with BCS who received TIPS have less comorbidities and more post procedural complications compared to the BCS patients who haven't received TIPS. Significant decrease in mortality was also observed post TIPS. More detailed studies are warranted in this field to determine safety and efficacy of TIPS in BCS patients.

Table 1. Baseline characteristics, comorbidities and Outcomes of BCS patients with TIPS versus BCS patients without TIPS

Variables	BCS* with TIPS* N=200(1.4%)	BCS without TIPS N=14,010(98.6%)	P- Value
Age, in years (Mean ± SD)	38.9 ± 14.7	52.4 ± 16.4	< 0.001
Age groups, %			< 0.001
18 - 40 years	62.5%	26.2%	
41 – 60 years	27.5%	38.6%	
61 – 80 years	10%	31.6%	
>80 years	0%	3.6%	
Gender, %			0.14
Male	42.5%	47.7%	

Table 1. (*continued*)

Variables	BCS* with TIPS* N=200(1.4%)	BCS without TIPS N=14,010(98.6%)	P- Value
Female	57.5%	52.3%	
Race, %			0.46
Caucasians	65%	60.8%	
African Americans	12.5%	14.7%	
Others	22.5%	24.4%	
Comorbidities, %			
Hypertension	30%	41.3%	0.001
Diabetes mellitus	7.5%	20.7%	< 0.001
Congestive heart failure	2.5%	10.8%	0.0002
CAD*	2.5%	10.6%	0.0002
Peripheral vascular disease	5%	6.1%	0.52
COPD*	10%	14%	0.10
Renal failure	10%	12.8%	0.23
Chronic liver disease	77.5%	34.3%	< 0.001
Metastatic cancer	2.5%	10.2%	0.0003
Coagulopathy	52.5%	26.5%	< 0.001
Obesity	12.5%	13.6%	0.64
Alcohol abuse	5%	10.5%	0.01
Smoking	15%	35.3%	< 0.001
Primary hypercoagulable state	5%	9.8%	0.02
Myeloproliferative disorder	25%	6.7%	< 0.001
Hepatitis C	2.5%	7.9%	0.004
Admission Type, %			< 0.001
Emergent	67.5%	90.3%	
Elective	32.5%	9.7%	
Insurance type, %			< 0.001
Medicare	7.5%	35.6%	
Medicaid	20%	21.7%	
Private	62.5%	34.9%	
Other	10%	7.8%	
Location/Teaching status of the hospital, %			< 0.001
Rural	0%	4.8%	
Urban nonteaching	0%	15.1%	
Urban teaching	100%	80.2%	
Outcomes			
In-hospital mortality, %	2.5%	7.5%	0.007
Mortality adjusted odds ratio	0.38(0.15 – 0.96)		0.04
Length of stay, in days (mean ± SD)	8.4 ± 7.6	7.8 ± 10.1	0.6
Total hospitalization cost, in US $ (mean ± SD)	44290 ± 33963	26223 ± 50052	0.001
Complications			
Sepsis	5%	19.6%	< 0.001
Septic shock	2.5%	6.9%	0.01
Hepatorenal syndrome	7.5%	3.3%	0.001
Cirrhosis	50%	33.5%	< 0.001
Ascites	65%	23.8%	< 0.001
Portal Hypertension	62.5%	21.3%	< 0.001
Portal vein thrombosis	35%	24.9%	0.001
Complications of vascular device/ grafts	17.5%	2.4%	< 0.001
Disposition, %			< 0.001
Discharge to home	87.5%	56.3%	
Transfer other: includes Skilled Nursing Facility, Intermediate Care Facility, or another type of facility	2.5%	12.4%	
Home health care	7.5%	17.3%	
Against medical advice	0%	1.1%	

*Abbreviations (BCS - Budd-Chiari syndrome, TIPS - Transjugular intrahepatic portosystemic shunt, SD - Standard deviation, CAD - Coronary artery disease, COPD - Chronic obstructive pulmonary disease).

S1297

Combining Noninvasive Scores May Predict Patient With Advanced Liver Fibrosis More Accurately

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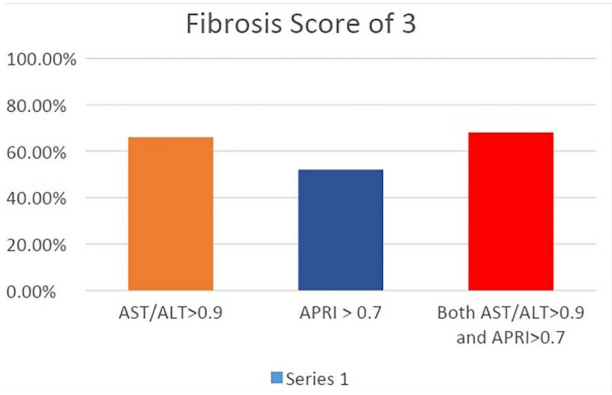
Introduction: Accuracy of diagnosing advanced hepatic fibrosis is an essential step for successful management of patients with liver disease. Many scoring systems has been proposed to help appropriately predict the level of hepatic fibrosis. Scoring systems such as AST/ALT score and APRI score have been compared head to head in the past. In an attempt to increase the predictability and differential accuracy of these non-invasive tests, we planned to combined AST/ALT and APRI scores. Our study attempted to evaluate whether combining AST/ALT score and APRI score will lead to a higher accuracy of identifying patients with advanced liver fibrosis.
Methods: We conducted a retrospective cohort study on patients who had presented to the single gastroenterology clinic who had obtained a Transient elastography (FibroScan) test. Patients were divided into two groups. Group one included patients with fibrosis score of F1 and F2. Group 2 included patients with fibrosis score of F3. AST/ALT score vs. APRI score vs. the combination of AST/ALT and APRI scores were compared head to head in each group.
Results: Total of 189 patients were identified. (Table) Severe Fibrosis was defined as a patient with a Fibrosis Score of 3 on FibroScan. Combining AST/ALT and APRI scores increased the sensitivity, positive likelihood ratio, positive productive value, negative productive value and accuracy compared to using AST/ALT score or APRI score alone.
Conclusion: Our study demonstrates that combining AST/ALT and APRI scores result in higher accuracy of identifying patients with advanced liver fibrosis when it is compared to using AST/ALT score or APRI score alone. However, given our study is retrospective, additional randomized controlled studies are necessary to corroborate the beneficial effects of obtaining LDH in patients presenting with AP on admission (Figure).



[1297] **Figure 1.** Sensitivity of AST/ALT score vs. APRI score vs. Combination of both scores in patients with fibrosis score of 3 (severe fibrosis).

Table 1. Results of comparing AST/ALT score vs APRI score vs the combination of both AST/ALT and APRI scores

Statistic	AST/ALT score	APRI score	Combination of AST/ALT and APRI scores
Sensitivity	65.91%	52.27%	68.18%
Specificity	53.10%	84.83%	84.81%
Positive Likelihood Ratio	1.41	3.45	4.49
Negative Likelihood Ratio	0.64	0.56	0.38
Positive Predictive Value	29.92%	51.14%	57.69%
Negative Predictive Value	83.68%	85.40%	89.77%
Accuracy	56.09%	77.24%	80.94%

S1298

Co-Localized Substance Use and Hepatitis C Treatment

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Introduction: In the United States, there has been a dramatic rise in hepatitis C infection rates over the past decade and a shifting demographic with the highest rates of acute infections in persons aged 20-39 years. Injection drug use is now the most common mode of hepatitis C transmission and has been identified as a primary driver of the increasing incidence of infection. While many novel strategies to expanding hepatitis C treatment have been proposed, there has been little reported progress toward establishing a standardized, wide-scale approach. In response, we developed a pilot quality improvement program combining the elements of screening and initiation of hepatitis C treatment utilizing a simplified algorithm adapted for the office-based opioid treatment (OBOT) setting to provide co-localization of substance use and hepatitis C treatment.
Methods: Patient screening began in January 2021 and was expanded to include Carilion Clinic Psychiatry and OB/GYN OBOT programs throughout the health system by April 2021. Individuals with HIV or HBV co-infection, significantly impaired hepatic function, pregnancy, or fibrosis score >3 were referred to GI for their care. The remaining patients were eligible for active intervention with a DAA and monitoring over the course of their treatment with final follow-up after 8-12 weeks.
Results: As of February 2022, a total of 416 patients were screened for HCV. 90 (21.6%) patients initially tested positive and 294 (70.7%) screened negative for HCV (with 32 pending results). Among patients screening positive for HCV, 7 were referred for specialty care treatment, 36 were in the pre-treatment stage, and 5 had spontaneous negative seroconversion. 27 (31.8%) were actively undergoing DAA treatment. 14 (16.5%) completed their course of treatment among which 6 had obtained confirmatory tests of cure (8 pending).
Conclusion: Initial results revealed a high rate of seroprevalence among screened OBOT patients highlighting several challenges faced by this population including lack of awareness of infection and barriers to accessing care. Within this same group, 48.2% had either initiated or completed their course of DAA treatment within the first 6 months of the intervention phase of the program. Targeting patients in outpatient substance use treatment could identify a subset of at-risk individuals with a high propensity for engaging and following through with hepatitis C treatment.

S1299

Can Alpha Feto Protein Level Be Used as a Prognostic Indicator in Patients With Cirrhosis and Hepatocellular Carcinoma?

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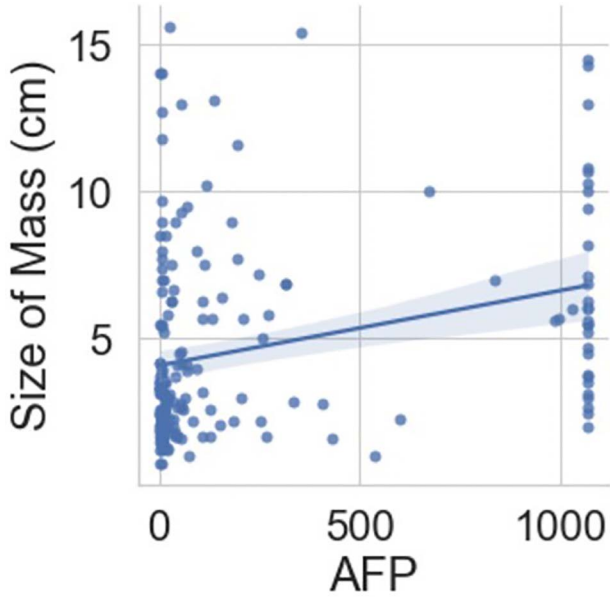
Introduction: Current guidelines recommend staging Hepatocellular Carcinoma (HCC) using the Barcelona-Clinic-Liver Cancer (BCLC) Classification. This staging system uses a set of criteria to stratify patients to guide their management. Albumin-Bilirubin (ALBI) score and alfa-fetoprotein (AFP) levels were recently added to the BCLC classification. Tumor size is one of the main prognostic factors associated with all-cause mortality and recurrence after treatment. Tumor size < /= 3cm is a vital cutoff to define treatment and > 5 years survival. The aim of this study is to determine the correlation between the AFP levels and tumor size at diagnosis in patients with HCC and their prognosis.
Methods: A retrospective study was performed for all patients diagnosed with HCC at Liver Associates of Texas, P.A., between January 2014 to October 2021. All patients underwent laboratory testing, including AFP levels, at the time of diagnosis. The size of the mass was determined at the time of diagnosis using imaging testing such as dynamic abdominal CT/MRI Scan. A linear regression model was used to assess the correlation between levels of AFP and tumor size at diagnosis in patients with HCC. A value of $p < 0.05$ was considered statistically significant.
Results: 231 patients were identified with HCC, of which 191 patients had information for tumor size in cm and AFP level at the time of diagnosis. The mean age was 67.8 years. The study included 191 deceased patients with an average period of survival after diagnosis of 37 months. There were 88 Caucasian, 50 Hispanic, 31 African American, 27 Asian, 4 Native American, and 31 unspecified. 72.3% were female. AFP level at the time of diagnosis was found to have a statically significant ($p = 0.001$) positive correlation of 0.0025 (95% CI: 0.001 to 0.004). For the cutoff value of tumor size > 3 cm, a two-sample t-test was executed and a significant difference was noted in AFP level between the two groups ($p = 0.012$). Patients with tumor size ≤ 3 cm had an average AFP level of 111. 53 (SD = 246.05), and patients with tumor size > 3 cm had an average AFP level of 323.60 (SD = 443.94).
Conclusion: The positive correlation between AFP with tumor size at diagnosis suggests its potential as a prognostic tool for patients with HCC. Given that there is a positive correlation between AFP with tumor size, and tumor size above > 3cm reduces survival, further studies are necessary to validate these results.



[1299] **Figure 1.** AFP is correlated with tumor size. AFP levels were positively correlated with size of mass in patients with HCC

S1300

COVID-19 Impact on Alcohol-Related Cirrhosis and Nonalcoholic Steatohepatitis-Related Cirrhosis on Hospital Admissions

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Introduction: The COVID-19 pandemic has significantly disrupted the healthcare system globally. Patients with alcohol-related and nonalcoholic steatohepatitis (NASH)-related cirrhosis often have multiple comorbidities, and managing these comorbidities is an important step in minimizing disease progression.The purpose of our study was to analyze how the pandemic affected patients with alcohol-related and NASH cirrhosis and NASH cirrhosis in the first year of the pandemic.
Methods: We used the Vizent database clinical database to collect data from 809 United State hospitals from March 2019- March 2021. The pre-pandemic period was defined as March 2019-February 2020 and the post-pandemic period was defined as March 2020-March 2021. Patients with a principal diagnosis of Alcoholic cirrhosis or NASH cirrhosis were included in our study. Patients < 18 years of age and those that required hospice, rehabilitation, or nursing facility placement were excluded. The total number of hospital admissions, the length of stay in days (LOS), and mortality were compared between the pre-pandemic and post-pandemic period.
Results: Pre-pandemic, patients with a diagnosis of Alcohol-related cirrhosis had an observed 118,630 admissions, 7.41 mean LOS, 6,414 cases with 1 or more complication, 8,164 observed deaths with a mortality index of 1.01. Post-pandemic, patient's diagnosed with Alcohol-related cirrhosis had an observed 121,613 admissions, 7.70 mean LOS in days, 7,185 cases with 1 or more complication, 9,989 observed deaths and a mortality index of 1.05. Pre-Pandemic patients with a diagnosis of NASH cirrhosis had an observed 51,033 admissions, 7.27 mean LOS, 2,848 cases with 1 or more complication, and 2,535 observed deaths and mortality index of 0.91. Post-pandemic, patient's diagnosed with NASH cirrhosis had an observed 51,117 admission, 7.67 mean LOS, 2,951 cases with 1 or more complication, and 3,077 observed deaths with a mortality index of 0.95. Both groups showed statistically significance increase in number of cases, LOS and observed deaths Post-pandemic ($P < .01$)
Conclusion: The data from our study suggests that patients with a history of both Alcohol-related cirrhosis and NASH cirrhosis were negatively impacted by COVID-19 pandemic. Our data revealed that patients with a history of both Alcohol-related cirrhosis and NASH cirrhosis were at a high risk of disease progression as well as morbidly and morality and will need aggressive clinical follow up to prevent further progression of disease (Table).

LIVER

S1301

Understanding Barriers to Prescribing Pharmacotherapy for Alcohol Use Disorder: A Shared Responsibility

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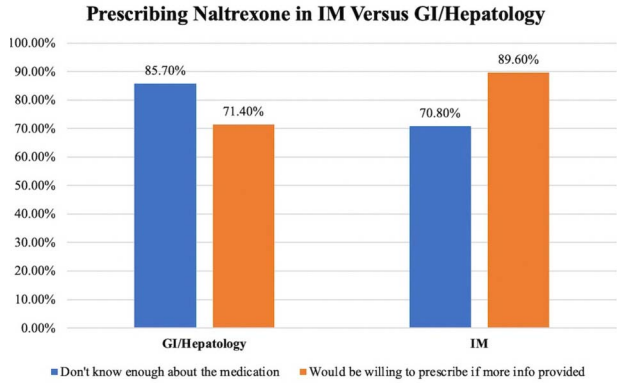
Introduction: Alcohol use disorder (AUD) is becoming more prevalent in the United States and has been accelerated by the global pandemic. It is essential to recognize AUD as a common precursor to the development of alcohol-related liver disease. This confers responsibility on all clinicians, especially those with specialty training in gastroenterology (GI) and hepatology, to mitigate this risk by offering any treatment that aids in abstinence. Pharmacotherapy, also known as medication-assisted treatment (MAT), for AUD is an underutilized but effective intervention that, unlike behavioral therapies, is within reach of most practicing physicians. This study aims to understand the barriers to initiating pharmacotherapy in AUD to help better inform quality improvement initiatives designed to increase the use of MAT.
Methods: A survey was conducted using the RedCap platform and sent to internal medicine (IM) hospitalists and residents, primary care physicians, and attending GI and hepatologists at one urban academic tertiary medical center. We focused on naltrexone as it is the option with the strongest evidence, lowest cost, and fewest interactions of FDA-approved MAT.
Results: The response rate was 19% (7/36) for the GI and hepatology department, 24% (29/120) for the IM residency, and 17% (5/30) for hospitalists. Within internal medicine, most (85.4%) had never prescribed naltrexone for AUD, but 89.6% would if they had more information about how to do so. The most popular barriers identified included: not knowing enough about the medication (70.8%), specifically not knowing the contraindications (56.3%), and prescribing did not occur to them (54.2%). Within GI and hepatology, 0% had prescribed naltrexone, 71.4% said they would be willing, but 85.7% said they didn't know enough about the medication (Figure).
Conclusion: Alcohol use is increasing in the US, and many patients may benefit from assistance with abstinence and reducing cravings by using FDA-approved MAT such as naltrexone. Initiating treatment in the inpatient setting may be a valuable opportunity to reach such populations. This study showed an apparent deficit among participants within IM, GI, and hepatology departments in prescribing naltrexone, primarily due to a lack of knowledge of available medications and their appropriate use. These findings will assist quality improvement initiatives at our institution aimed at increasing inpatient naltrexone initiation and may also help inform other institutions' efforts.



[1301] **Figure 1.** Responses from gastroenterologists, hepatologists, and internal medicine residents and hospitalists, to questions regarding barriers to prescribing naltrexone. GI = gastroenterology; IM = Internal Medicine

S1302

Effect of Bed Size of the Hospital on the Risk of Development of Acute on Chronic Liver Failure (ACLF) in Patients With Decompensated Cirrhosis

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Introduction: The healthcare cost and utilization project has classified hospitals as small, medium, and large bed size. This division is based on the hospital's region, location, and teaching status. To our knowledge, there have been no studies assessing the impact of bed size on the development of acute on chronic liver failure (ACLF) in patients with decompensated cirrhosis. We hypothesize that large bed size hospitals care for a sicker population and admitted patients have a higher incidence and risk of developing ACLF.
Methods: We queried the National Inpatient Sample (NIS) database using ICD-10 codes. ACLF was defined as the presence of renal failure or hepatic encephalopathy and one other organ dysfunction or two non-renal organ failures in patients with cirrhosis and a decompensating event. Decompensating events were defined as presence of ascites, varices, hepatic encephalopathy, or infection. The relationship between hospital bed size and ACLF in patients with decompensated cirrhosis was examined using multivariate analysis.
Results: A total of 1.78 million adult patients were admitted with a diagnosis of acute decompensation of cirrhosis. Of these, 945,440 (52.8%) were admitted to large bed size hospitals. Patients admitted to large bed size hospitals had a higher incidence of hepatic encephalopathy, ascites, and variceal bleeding. Patient demographics are presented in Table. Of the total patients admitted with a decompensating event, 830,365 patients (46.4%) met criteria for ACLF. A total of 453,095 patients (54.6%) who developed ACLF were admitted to large bed size hospitals. Our study found that patients admitted to large bed size hospitals have 20% higher odds of developing ACLF (aOR-1.20, 95% CI-1.17-1.23, p< 0.001). Large bed size hospitals were also associated with a higher risk of developing ACLF grades 2 and 3 (aOR-1.27, 95% CI-1.24-1.32, p< 0.001 and aOR-1.73, 95% CI-1.51-1.98, p< 0.001, respectively).
Conclusion: Our study identifies hospital bed size as a significant predictor for development of ACLF in patients admitted with decompensated cirrhosis. Targeted education and implementation of best practices focused on large hospitals may help reduce the risk of ACLF.

Table 1. Characteristics of patients with decompensated cirrhosis stratified by bed size of the hospital

	Small bed size	Medium bed size	Large bed size	
Age category				< 0.001
18-44	31,090 (9.47)	50,045 (9.73)	101,445 (10.73)	
45-64	171,485 (52.23)	272,360 (52.93)	512,485 (54.21)	
>65	125,725 (38.3)	192,165 (37.34)	331,510 (35.06)	
Gender				< 0.001
Males	189,850 (57.83)	300,920 (58.48)	556,670 (58.88)	

Table 1. (*continued*)

	Small bed size	Medium bed size	Large bed size	
Females	138,450 (42.17)	213,650 (41.52)	388,770 (41.12)	
Race				< 0.001
White	227,390 (69.26)	340,635 (66.2)	625,285 (66.14)	
Black	29,690 (9.04)	48,575 (9.44)	92,860 (9.82)	
Hispanic	50,625 (15.42)	91,275 (17.74)	162,900 (17.23)	
Asian/Pacific Islander	6,020 (1.83)	9,455 (1.84)	21,015 (2.22)	
Primary expected payer				< 0.001
Medicare	162,880 (49.61)	247,930 (48.18)	441,145 (46.66)	
Medicaid	77,670 (23.66)	123,200 (23.94)	244,975 (25.91)	
Private	60,210 (18.34)	96,575 (18.77)	178,480 (18.88)	
Uninsured	16,945 (5.16)	29,410 (5.72)	50,160 (5.31)	
Median household income				< 0.001
Lowest quartile	95,060 (28.96)	172,670 (33.56)	350,665 (37.09)	
Second quartile	90,575 (27.59)	135,295 (26.29)	250,605 (26.51)	
Third quartile	82,330 (25.08)	116,010 (22.55)	207,695 (21.97)	
Highest quartile	60,335 (18.38)	90,595 (17.61)	136,475 (14.44)	
Region of hospital				< 0.001
Northeast	66,420 (20.23)	94,705 (18.4)	129,295 (13.68)	
Midwest	67,370 (20.52)	75,890 (14.75)	208,140 (22.02)	
South	130,055 (39.61)	238,385 (46.33)	365,320 (38.64)	
West	64,455 (19.63)	105,590 (20.52)	242,685 (25.67)	
Location				< 0.001
Rural	16,570 (5.05)	24,690 (4.8)	86,345 (9.13)	
Urban	311,730 (94.95)	489,880 (95.2)	859,095 (90.87)	
Hospital teaching status				< 0.001
Non-Teaching	71,525 (21.79)	150,630 (29.27)	292,045 (30.89)	
Teaching	256,775 (78.21)	363,940 (70.73)	653,395 (69.11)	
Etiology				
Alcoholic liver disease	156,510 (47.67)	244,380 (47.49)	446,455 (47.22)	0.3666
Hepatitis C	34,540 (10.52)	56,480 (10.98)	100,680 (10.65)	0.1372
Decompensations				
Hepatic encephalopathy	115,795 (35.27)	185,220 (36.00)	354,280 (37.47)	< 0.001
Ascites	186,590 (56.84)	300,505 (58.4)	582,875 (61.65)	< 0.001
Varices	24,005 (7.31)	42,230 (8.21)	75,715 (8.01)	< 0.001
Bacterial infections	145,525 (44.33)	221,525 (43.05)	386,985 (40.93)	< 0.001
ACLF	142,565 (43.43)	234,705 (45.61)	453,095 (47.92)	< 0.001

S1303

A Systematic Review of the Behavioral Change Determinants Among Patients With NAFLD Using the Theoretical Domains Framework

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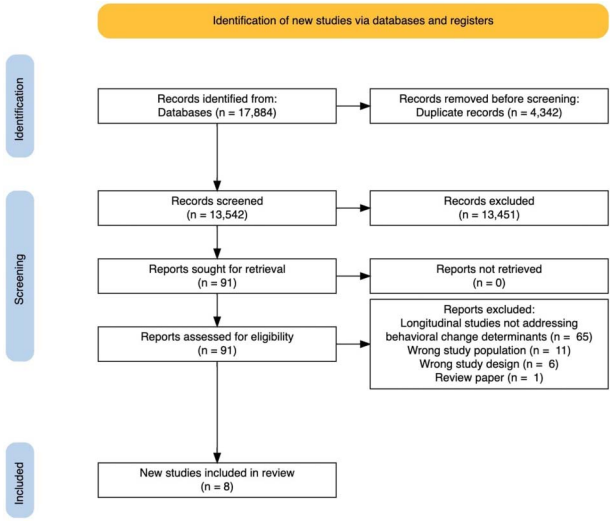
Introduction: Behavioral change, with the goal of clinically significant weight loss, is first line treatment for non-alcoholic fatty liver disease (NAFLD). The first step to develop suitable interventions is to identify the determinants of behavioral changes in physical activity (PA) and diet, which would serve as targets for change techniques. With that objective, we undertook a systematic review to map behavioral determinants in patients with NAFLD using the Theoretical Domains Framework (TDF).
Methods: We searched Medline, EMBASE, Cochrane, PsycINFO, and Web of Science from inception to May 6, 2021 to identify publications that reported the psychosocial determinants of PA and diet among adults with NAFLD. Two independent reviewers screened titles/abstracts, reviewed, and extracted data from included papers. Using thematic content analysis, we summarized and analyzed the data to identify behavioral determinants in patients with NAFLD.
Results: We identified 8 papers evaluating the determinants of behavioral change in adults with NAFLD: 7 addressed PA, 4 addressed diet, and 1 addressed weight loss in general. Findings were mapped to 9 out of 11 relevant TDF domains. Poor knowledge of NAFLD emerged as an important theme: most patients believed their diagnosis of NAFLD had little to no long-term health consequences; moreover, many did not recognize a causal link between their PA and dietary behaviors and NAFLD. Conversely, patients with a family history of liver disease, obesity, diabetes, and elevated transaminases were more likely to perceive NAFLD as a dangerous condition; these patients were also more likely to place greater value on NAFLD treatment. Low PA self-efficacy emerged as a second important theme: although patients perceived PA as beneficial, most were not sufficiently active at baseline, did not know how to increase their PA, and perceived many barriers to increasing PA including a lack of willpower, time, energy, and support from clinicians (Figure).
Conclusion: Through a systematic review of the literature, we found that there are limited data characterizing behavioral determinants in adults with NAFLD, especially regarding diet. More research is needed, particularly addressing outcome expectations, self-efficacy, and social influences of dietary behaviors. The research so far suggests that interventions should target the following in patients: (1) their understanding of NAFLD and its relation to PA and diet, (2) teach them how to exercise, and (3) help them overcome perceived barriers to PA (Table).



[1303] **Figure 1.** PRISMA flow diagram depicting the different phases of the systematic review

Table 1. Key characteristics of the included studies. (1) Knowledge, (2) Skills, (3) Beliefs about capabilities, (4) Beliefs about consequences, (5) Motivation & goals, (6) Memory, attention, & decision processes, (7) Environmental constraints, (8) Social influences, (9) Emotion, (10) Behavioral regulation, (11) Nature of the behaviors.

Study	Origin	Study Design	Study Population	NAFLD Patients (n)	Mean Age (years)	Mean BMI (kg/m^2)	Diabetes Prevalence	Target Behaviors Addressed	TDF Domain
Frith 2010	United Kingdom	Prospective cross-sectional	Hepatology clinic referral	230	58	34	Not reported	Physical activity	2,3,4
Centis 2013	Italy	Prospective cross-sectional	Hepatology clinic referral	138	48	31	18%	Diet, physical activity	5
Stewart 2015	USA	Prospective cohort	Hepatology clinic referral	58	50	33.4	40%	Diet, physical activity	5,9
Zelber-Sagi 2017	Israel	Prospective cross-sectional	Clinical trial	146	48	32	9%	Diet, physical activity	1,3,11
Hallsworth 2020	United Kingdom	Qualitative	Hepatology clinic referral	12	59	Not reported	Not reported	Weight loss in general	1,2,8,10
Stine 2020	USA	Prospective cross-sectional	Hepatology clinic referral	87	52	35	40%	Physical activity	1,4,10,11
Dhaliwal 2021	India	Prospective cross-sectional	Hepatology clinic referral	264	53	28	16%	Diet, physical activity	1
O'Gorman 2021	Ireland	Prospective cross-sectional	Hepatology clinic referral	101	54*	Not reported	Not reported	Physical activity	1,5,10,11

*Median age. Average age not reported.

S1304

Female Representation in the Gastroenterology and Hepatology Literature

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Introduction: Despite making up greater than 50% of medical students, women continue to be underrepresented in the fields of gastroenterology and hepatology. According to a 2017 survey by the Association of American Medical Colleges, only 17% of attending gastroenterologists were women. This underrepresentation is present in both the clinical and research environments. We conducted a literature review to determine trends in female author representation in the gastroenterology and hepatology literature.
Methods: We reviewed all original articles published during 2012 and 2017 in four national gastroenterology and hepatology journals (Gut, Journal of Crohn's and Colitis, Hepatology, and Clinical Gastroenterology and Hepatology). The sex of the authors were recorded.
Results: In total over the two years, 1,414 articles were reviewed. Author sex could not be determined for 8 first authors, 9 supplemental authors, and 6 senior authors. Of the studies for which sex of the first author could be determined, 39.5% (556) had a female first author and 60.5% (850) had a male first author. 87% (1,227) of studies had at least one female supplemental author, while 12.7% (178) had only male supplemental authors. 21.5% (302) of studies had a female senior author and 78.6% (1,106) had a male senior author. The increase in percentage of female authors from 2012 to 2017 was significant for articles with at least one female supplemental author (83.1% to 91.8%, p=0.001) and for articles with female senior authors (18.8% to 24.3%, p=0.016). There was a statistically insignificant increase in percentage of female first authors (38.0% to 41.3%, p=.231).
Conclusion: Male first and senior authors outnumbered female authors in the examined literature, though the difference decreased in the examined years. The higher percentage of female first authors compared to senior authors is likely related to the near equal representation of females in student and trainee roles, which the first author is more likely to be. The lower proportion of female senior authors may be attributed to the limited female representation in research faculty positions. As women continue to gain representation in senior roles, further research may measure how female authorship continues to change over time.

S1305

Thigh Ultrasound Correlates With Bioimpedance Analysis (BIA) on Cirrhotic Patients

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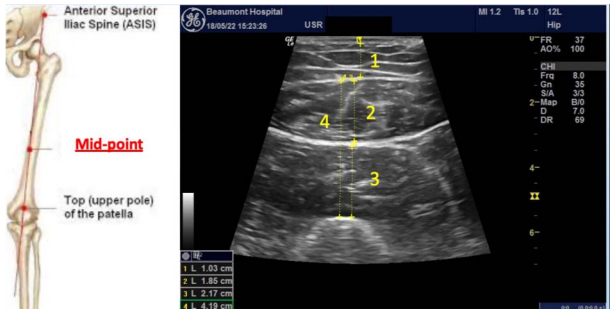
Introduction: Sarcopenia defined by the European Working Group on Sarcopenia (EWGSOP2), comprising low muscle strength, low muscle quantity/quality, and low physical performance. In Chronic Liver Disease, sarcopenia is associated with HE, ascites, infection and is an independent risk factor for reduced survival. Currently CT scan is gold standard tool for diagnosis of sarcopenia. It is expensive, neither readily available nor portable and leads to radiation exposure. Thigh US is a novel non-invasive technique, easy to perform at bed side. BIA is validated for diagnosis of sarcopenia, body composition analysis and nutritional status. We aim for validation of anterior thigh US to quantify sarcopenia in CLD using: Total muscle thickness (TMT) and Superficial fat thickness (SF).
Methods: A prospective cross-sectional study of Functional muscle (hand-grip and sit-to-stand), Performance (gait speed), Muscle mass using B-mode US is being carried out in cirrhotic patients and validated using SECA BIA. Frailty liver index score (https://liverfrailtyindex.ucsf.edu). Stata 17.0 was used for statistical analysis with t-test and Pearson correlation (Table).
Results: 48 individuals recruited to date: 33 cirrhosis and 15 healthy controls. 30% of cirrhotic patients were actively drinking alcohol (Figure). Most patients were male (66%), with mean age 59 yrs (SD=2), BMI 29.44 kg/m2 (SD=1.2) and MELD 11 (SD=4) HC had lower BMI (p=0.06) and waist circumference (p=0.01). Impaired functional muscle strength in cirrhotic patients was noted. HC had lower Sit-to-stand time (8.84 vs 14.36 secs, P= 0.0005) and gait speed (2.78 vs 5.64, P=0.05) hand-grip strength were higher in HCs (P= 0.0004) and HCs were more active (P=0.0001). Higher frailty index scores were associated with lower gait speed (p=0.001), ASMM/height2 (p=0.06) Mean TMT was lower in cirrhotic cohort vs HC (3.69 vs 4.4, SD 0.2 vs 0.2 respectively, p=0.02) Lower TMT was associated with higher frailty index scores in cirrhotic patients (p=0.02) TMT did not correlate with MELD score in cirrhosis (p=0.06) Mean Fat mass measured with BIA was higher in cirrhosis vs HC (29 vs 22 kg, p= 0.04). Validation of Ant. Thigh US use in CLD BIA skeletal muscle mass strongly correlated with anterior thigh muscle thickness (r=0.54, p=0.0001) and BIA fat mass correlated with thigh US-measured SF (r=0.59. p=0.0001).
Conclusion: There were strong correlation between thigh US and BIA measurements. Thigh Ultrasound is novel and potential new technique for diagnosis of muscle mass, fat mass and sarcopenia.



[1305] **Figure 1.** Anterior Thigh US

Table 1.

	Cirrhosis N=33	Healthy controls N=15	P-value
Age (Mean, SD)	59, 2	45, 2	0.0001
Male Gender (n)	22 (66%)	7 (46%)	
Aetiology	ALD (n=22) NASH (n=6) AIH (n=1) PBC (n=1) Cryptogenic (n=1) NASH/ASH/A1AT (n=1) HCV/HIV/ALD (n=1)		
MELD (mean, IQR)	11, 7-12		
Clinical Ascites	Female: 0 Male: 9 (41%)		
Liver frailty index, Frail	Female: 5 (45%) Male: 5 (23%)		
Active alcohol drinking	10 (30%)		
Smoker	16 (48%)	3 (20%)	
BMI kg/m2 (Mean, SD)	29.44, 1.2	26.65, 0.73	0.06
Albumin (mean, IQR)	39, 36-43		
Bilirubin (mean, IQR)	20, 9-41		
INR (mean, IQR)	1.2, 1.02-1.04		
Platelet (mean, IQR)	143, 94-183		
ALT (mean, IQR)	31, 21-36		
Waist circumference (cm) {Mean, SD}	101, 2	91.6, 3	0.01
Waist circumference, excluding ascites (cm) {Mean, SD}	103.6, 3	91.6, 3	0.006
TMT (cm) {mean, SD}	3.69, 0.2	4.4, 0.2	0.02
Vastus intermedius (VI) {Mean, SD}	1.45, 0.9	2.05, 0.1	0.0006
Rectus femoris (RF) {mean, SD}	1.9, 0.8	2.2, 0.1	0.05
SF (cm) {mean, SD}	1.42, 0.2	1.19, 0.1	0.26
Skeletal muscle mass (Kg) {Mean, SD}	24.2, 1.12	25.92, 1.55	0.39
Fat mass (Kg) Mean, SD	29, 3	22, 2	0.04
handgrip strength (Kg) {Mean, SD}	25, 2	38, 3	0.0005
Sit-to-stand (sec) {Mean, SD}	14.36, 1.24	8.84, 0.76	0.0005
Gait speed (sec) {Mean, SD}	5.64, 1.42	2.78, 0.5	0.05
Physical activity level (Mean, SD)	1.75, 0.03	1.92, 0.03	0.0001

S1306

Prevalence and Mortality of Hepatorenal Syndrome in Different Stages of CKD: A Retrospective National Inpatient Sample Database Study

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Introduction: Hepatorenal syndrome (HRS) is a life-threatening complication of advanced cirrhosis with an 85% three-month mortality. However, the prevalence and mortality of HRS in relation to different stages of chronic kidney disease (CKD) are not well studied. Hence, we used the data from the 2019 National Inpatient Sample (NIS) database to compare the mortality in hospitalized patients with HRS across different stages of CKD.
Methods: We utilized the 2019 NIS database to identify all adult (>18 years) patients with CKD (N18) and HRS (K76.7) using appropriate ICD-10-CM codes. We categorized chronic kidney disease into CKD I (GFR >=90 ml/min), CKD II (GFR=60-89 ml/min), CKD III (GFR=30-59 ml/min), CKD IV (GFR=15-29 ml/min) and CKD V (GFR < 15 ml/min) using the ICD codes N18.1, N18.2, N18.3, N18.4 and N18.5 respectively. A univariate screen followed by multivariate logistic regression was performed to adjust for potential hospital and patient level confounders. Stata 17.0 software was used to perform all statistical analyses.
Results: In 2019, there were a total of 46,555 cases of HRS. HRS was found to be more prevalent in males (61.3%) of the white race (67.67%). The total prevalence of patients with HRS was highest among the patients with CKD 3. However, on multivariate analysis, the odds of mortality was higher among patients with CKD stage 2 compared to the other CKD stages (OR 8.1, CI (4.9-13.2), P < 0.01).
Conclusion: We would expect that the odds of mortality from HRS will increase as the CKD stage progresses. However, according to our study, patients with CKD stage 2 were found to have the highest odds of mortality with HRS compared to the other stages. This could be explained by patients with CKD stage 4 being on hemodialysis, which decreases pre-transplant mortality in HRS. The findings also suggest potential comorbidities confounding the higher mortality in patients with advanced-stage CKD. Some limitations of this study would include fewer patients in CKD stage 2, leading to a large confidence interval, thus requiring further evaluation with a possible prospective design.

S1307

Provider Perceptions of Code Status for Patients With End-Stage Liver Disease

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Introduction: Liver transplantation (LT) is the only curative option for patients with end-stage liver disease (ESLD). Patients with ESLD have high rates of in-hospital mortality and low rates of survival to hospital discharge after in-hospital CPR. As ESLD is one of the few diseases where patients are close to death but also to a total cure, some studies suggest that LT listing and hospice referral should not be mutually exclusive. While many centers require that a patient be "full code" for LT listing or evaluation, this is not a United Network for Organ Sharing (UNOS) mandate. This study aims to assess LT providers' awareness of organizational policies and their perspectives on code status requirement, with the eventual goal of providing patients with goal-concordant care while balancing the need of ethical solid organ allocation for transplant.
Methods: Healthcare providers involved in the LT evaluation process at a high-volume transplant center anonymously completed a 13-question survey. Provider specialties are shown in Table. Answers were displayed using descriptive statistics.
Results: Out of 83 providers who filled out the survey, 40% reported that they either often or always discussed code status with patients, often in a hospital setting. 62% were unaware of the institutional protocol that patients had to be full code for LT evaluation or listing, and 95% were unaware that UNOS did not have a full code requirement for the LT process. 93% of participants felt that patients undergoing LT evaluation should discuss code status. 15% felt that patients should remain full code throughout, 54% felt that patient should have their choice of code status during LT evaluation and listing, and 31% felt that patients should have their choice during evaluation but become full code once listed.
Conclusion: These results show a need for increased educational initiatives among providers involved in the LT process, as there is a lack of knowledge among providers regarding policy on code status. Among the subset who was aware of a protocol, knowledge of the actual requirements varied. While most providers believe that a discussion regarding code status is necessary for patients who wish to undergo LT, there was a diverse range of opinions on code status requirement throughout the LT evaluation and listing process. Initiatives to further the dialogue of code status and advanced care planning in a high mortality patient population are needed.

Table 1. **Description of Survey Respondents**

Role on LT team	Number of Respondents
Gastroenterology/Hepatology Attending	6
Critical Care Attending	5
Transplant Surgeon	3
Palliative Medicine Attending	3
Gastroenterology Fellow	9
Internal Medicine Resident	32
Advanced Practice Provider	14
Transplant Coordinator	6
Transplant Selection Committee	1
Social Worker	1
Other	3

S1308

Utility of Endo-Hepatology in Assessing Liver Fibrosis in Patients With Chronic Liver Disease: Data From University Hospital in WV

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Introduction: The clinical utility of EUS and the field of Endo-Hepatology (EH) are expanding. While CT-guided liver biopsy (LB) was once considered the gold standard other modalities such as Transient elastography (TE), EUS-shear wave elastography (EUS-E), and EUS guided liver biopsy (EUS-LB) are becoming more prevalent due to multitude of benefits from cost to patient tolerability and comparable accuracy. We look to add to this growing body of evidence. Our study investigated the accuracy and diagnostic yield of EUS-LB. We then compared LB to TE and EUS-E. Our results add to the clinical utility and strengths of EH.
Methods: In this IRB approved retrospective analysis, 53 patients with chronic liver disease (CLD) were diagnosed with severe fibrosis on TE and underwent EUS guided analysis. EGD indicated for distinct reasons was coupled with EUS-LB to further stage the fibrosis of these high-risk patients. The study evaluated patients between October 2021 – June 2022. Demographic characteristics were collected in each patient. Liver biopsies were reviewed for adequacy. A cutoff of 10 and 14 kPa on TE/EUS-E was used to assess accuracy in predicting fibrosis when compared to EUS-LB. Correction coefficient was used to assess the association between these methods.

Results: Our Appalachian population was unique, as it was predominantly Caucasian, held a BMI >30, and multiple comorbidities equally present in both genders. Our study found a correlation between the EUS-E and TE in KPa (r=0.549, p=0.1) as well as EUS-E KPa and LB fibrosis stage (r=0.6627, p=0.007) as showed in Fig 2. Additionally, a significant correlation was found between the TE and LB in terms of fibrosis stage (r=0.6 p=0.003) and steatosis stage (r=0.5249, p=0.01) in diagnosis of cirrhosis (Table A). This was more consistent in ALD (r=0.5847) in comparison to NAFLD (r=0.4). Interestingly, this correlation seems more consistent in higher fibrosis stages as shown in Table B.
Conclusion: 53 patients underwent EH based procedures without any complications. EUS-LB had adequacy rate of 92.2% and held > 14 portal triads on avg. Our study indicated that various modalities via EH are reliable in identifying severe fibrosis when compared to the previous gold standard and TE. Our study adds to the large body of evidence regarding reliability of TE in detecting severe fibrosis present in various etiologies of CLD.

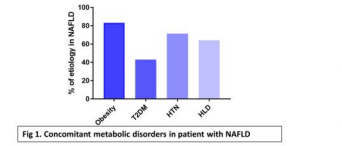

Fig 1. Concomitant metabolic disorders in patient with NAFLD

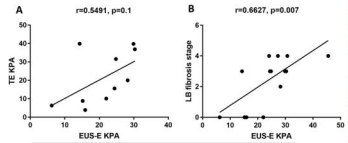

Fig. 2 A, Correlation between TE KPA VS EUS-E KPA. B, Correlation between LB fibrosis stage VS EUS-E KPA. EUS-E, Endoscopic ultrasound Elastography; LB, Liver biopsy, TE, Transient Elastography.

	TE fibrosis VS LB Fibrosis		TE steatosis VS LB steatosis	
	r value	P value	r value	P value
General	0.5949	0.003	0.5249	0.0121
NAFLD	0.4001	0.2215	0.5298	0.1424
ALD	**0.5847**	**0.0043**	**0.6076**	**0.0212**

Table A. Correlation between TE and LB in Fibrosis stage and steatosis with different etiology. LB, Liver biopsy; NAFLD, Non-Alcoholic Fatty Liver disease; ALD, Alcoholic Liver Disease, TE, Transient Elastography

TE Fibrosis stage	LB stage 0-2	LB stage 3-4
0	4	0
1	0	1
2	5	1
3	2	1
4	2	18

Table B. Result of TE fibrosis stage and relative LB stage. TE, Transient Elastography; LB, Liver biopsy

LB steatosis %	TE CAP Score (Mean±SD)	Number of patients
<30%	259±62	32
30%-60%	292±13	2
>60%	339±68	2

Table C. Result of LB steatosis percentage and relative TE CAP score. TE, Transient Elastography; LB, Liver biopsy

[1308] **Figure 1.** Statistical Analysis: Figures and Tables

Table 1. Demographics Result of This Study Population

Total number of cases, n	53
Age, mean ± SD	55.6 ± 12.9
Male, n (%)	26 (49.1%)
Female, n (%)	27 (50.9%)
Race	
White, n (%)	52 (98.1%)
Black, n (%)	1 (1.9%)
BMI, mean ± SD	33.3 ± 9.2
Etiology of Liver Disease	
Non-alcoholic fatty liver disease (NAFLD), n (%)	14 (26.4%)
Viral Hepatitis, n (%)	8 (15.1%)
Alcohol, n (%)	34 (62.2%)
Other (AIH, DILI, PBC), n (%)	10 (18.9%)
Clinical Cirrhosis, n (%)	20 (37.7%)
EV/GV on EGD, n (%)	15 (28.3%)
Fibroscan, Mean ± SD in kPa	23.9 ± 19.2
EUS-SWE, Mean ± SD in kPa	24.3 ± 8.1
Fibrosis stage ³ 3 on biopsy, n (%)	25 (54.3%)
Portal Triad on biopsy, mean ± SD	14 ± 5.6

S1309

Can Sarcopenia Diagnosed by Hand Grip Strength Provide a Better MELD-Na Cutoff in Predicting Complications of Cirrhosis?

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Introduction: Computerized Tomography (CT) measured Skeletal Muscle Index (SMI) is the best investigation to diagnose sarcopenia. However, in developing countries, it is not feasible due to cost and unavailability. Hand grip strength using hand grip dynamometry is a simple, economical and repeaTable bedside tool to assess sarcopenia in cirrhotics. MELD-Na score is a better marker for short term mortality and transplant allocation rather than predicting decompensation events in cirrhotics. In the present study, we showed that hand grip strength with MELD-Na score can correlate with complications of cirrhosis and predict survival.
Methods: A total of 72 patients between December 2019 and June 2021 diagnosed with liver cirrhosis on the basis of imaging were included in our study. Hand grip strength was measured by hand grip dynamometer in the non-dominant hand in sitting position with semi-flexed arm. Mean of three values was taken as final reading. Cut-offs of < 26 kg for men and < 18 kg for women were taken from Asian Working Group for Sarcopenia 2014 consensus. Patients were followed up for a period of 6 months.
Results: In our study, the prevalence of sarcopenia was 83.3%. The mean MELD-Na score was 20. Presence of sarcopenia correlated with complications like bleeding esophageal varices (p = 0.01), Hepatic Encephalopathy (HE) (p = 0.002) and Hepatorenal Syndrome (HRS) (p = 0.006). On univariate analysis, when MELD-Na was > 20.5, sarcopenia was significantly associated with HE [Odd's Ratio (OR), 9.33; 95% confidence interval (CI), 1.86 - 46.68; p = 0.007], bleeding esophageal varices [OR, 4.29; 95% CI, 1.35 - 13.58; p = 0.01] and HRS [OR, 12.43; 95% CI, 1.46 -105.74; p = 0.02]. The MELD-Na score of more than 20.5 with sarcopenia predicted mortality with sensitivity 100%, specificity 65% and p = 0.038. The estimated survival of sarcopenics at 6 months with MELD-Na > 20.5 was 83.3%.
Conclusion: Hand grip strength is a simple, non-expensive test to diagnose sarcopenia. In resource limited countries, it can be used instead of CT scan measured SMI. As a measure of sarcopenia, it shows a statistically significant association with decompensation events of cirrhosis. In patients not yet listed for transplant, hand grip strength measured sarcopenia along with MELD-Na score cut-off of 20.5 can be utilized to optimize medical treatment, to prevent decompensation, recurrent hospitalization and ensure good quality of life.

S1310

Analyzing the Quality of Online Resources on COVID-19 Management in Liver Disease

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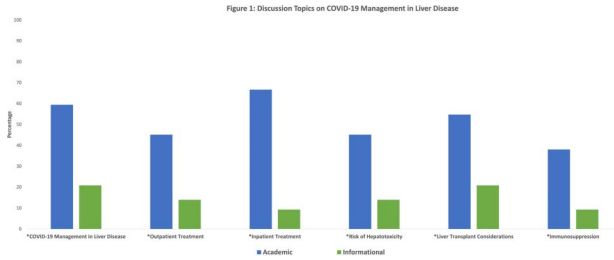
Introduction: The COVID-19 pandemic has had a significant impact on all patients with co-morbidities, including those with liver disease. These patients may have questions regarding the management of COVID-19 specific to their liver disease and many are turning to the internet for additional resources. This study evaluated the quality of online information related to liver disease and COVID-19.
Methods: Google search engine was used to query "liver disease and COVID-19" to access the first 100 websites. Websites that were non-accessible, duplicates or videos without transcripts were excluded. Websites were categorized as academic/professional, informational, personal/blog or commercial. Discussion of pertinent topics related to liver disease and COVID-19 management was reviewed. Discussion of shared decision making and quality of life was noted. Statistical analysis was performed using two-tailed Fisher exact testing with significance set at $p < 0.05$.
Results: Eighty-seven of 100 websites met the inclusion criteria. 42(48.3%) were academic, 43(49.4%) informational and one each (1.1%) personal and commercial. Management considerations of COVID-19 in liver disease were discussed in 34(39.1%) articles, outpatient treatment in 25(28.7%), inpatient treatment in (36.8%), risk of hepatotoxicity in 25(28.7%), liver transplant considerations in 32(36.8%), and immunosuppression considerations in 20(23.0%). All of the above topics were discussed significantly more in academic websites than in informational (p=0.0004, 0.002, 0.0001, 0.002, 0.002, 0.002, respectively) (Figure). Shared decision making was noted in 25(28.7%) websites with significantly more discussion among informational websites (39.5% vs 16.7%; p=0.030).
Conclusion: Our study showed that treatment considerations of COVID-19 in liver disease were discussed far more in academic and professional resources, likely due to journal articles and scientific literature currently having the most up-to-date information online. Academic websites are more likely to discuss the nuances of up-and-coming treatments than informational resources. However, patients with liver disease likely have concerns over the interplay between COVID-19 and their condition and could benefit from more accessible information on treatment considerations. As additional resources on this topic continue to grow, it will be important for websites to include comprehensive, patient-friendly information that emphasizes shared decision making.



[1310] **Figure 1.** Discussion Topics on Management Considerations of COVID-19 in Liver Disease (* denotes a statistically significant difference in discussion of topic among website categories)

S1311

Simple Diagnostic Test to Detect Covert Hepatic Encephalopathy: A Pilot Study

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Introduction: Hepatic encephalopathy if not recognised and treated appropriately can result in increased mortality and morbidity in cirrhosis. The gold standard tests available to diagnose covert hepatic encephalopathy (CHE) such as the Psychometric Hepatic Encephalopathy score (PHES) are prohibitively expensive and time consuming. Therefore we propose a simple memory and computation based test as an alternative to help quickly and efficiently diagnose CHE.
Methods: The 36 cent test is performed by asking them to give 2 different combinations of coins for 36 cents and should be answered within 2 minutes without prompting. If easily able to answer both questions they will be scored 2 points (1 point per combination). However, if the patient is able to answer the questions but takes more time (>2 minutes) or needs repeated prompting, they will be scored 1 point and if they are unable to answer either of the questions they score 0 points. A score of 1 or less is considered to have CHE. Then the PHES tests which includes: line tracing test, serial dotting test, digit symbol test, and number connection test A and B are performed during the same visit. The sum of 5 test scores will be obtained ranging from +6 to -18 and a cut off score of -4 or less is considered to diagnose CHE based on the Spain normality Tables (www.redeh.org). The outcome was measured by calculating the sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).
Results: A total of 10 radiographically or histologically confirmed cirrhotic patients were included in this study. None of them had any prior episodes of encephalopathy. Patients included in this analysis were between the age of 30 - 65 years. Out of the 10 patients, 6 were female and 4 were male. The sensitivity of the 36 cent test was 66% (2 / 3). The 36 cent test had a specificity of 100% (7 / 7). The PPV of this test was 100% (2 / 2). The 36 cent test had a NPV of 87% (7 / 8). These findings are summaries in Table.
Conclusion: The 36 cent test will test the working memory and the ability to process information accurately in a timely manner. This is further supported with the high specificity and moderate sensitivity in this pilot study. We suggest using the 36 cent test, given the advantages of being simple to perform, easy to interpret, and the negligible cost. The 36 cent test can be used as an alternative to diagnose CHE.

Table 1. showing the Statistical analysis

	Test positive	Test negative
CHE present	2	1
CHE absent	0	7

S1312

Investigating Gender Disparities in Liver Transplant Recipients in the United States

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Introduction: Liver transplantation is a lifesaving therapy for patients suffering from end-stage liver disease. EquiTable access to liver transplants is of paramount importance. Unfortunately, the gender gap, with females receiving fewer liver transplants, has increased further even after the validation of the Model for End-Stage Liver disease (MELD) in the United States in 2002. This study aims to evaluate the gender gap in liver transplants across different socioeconomic variables.
Methods: We performed analysis of admission data from the Nationwide Inpatient Sample (NIS) between 2016 and 2019. We identified patients who underwent a liver transplant using the International Disease Classification of Disease 10thProcedure Coding System (ICD-10-PCS). Multivariate logistic regression was used to evaluate the impact of gender on liver transplantation across different demographic groups.
Results: A total of 29,050 heart transplants were performed over the study period, of which 10501 (36.1%) were females. After adjusting for comorbidities, socioeconomic, and demographic factors, White females were less likely to receive a liver transplant compared to White males (adjusted odds ratio [AOR] 0.74, $P < 0.001$). In contrast, Black and Hispanic females did not have a statistically significant difference in transplant compared to their male counterparts (AOR 1.05, P 0.568 and 0.95, P 0.472; respectively). Additionally, females older than 45 also had lower transplant rates than males of the same age group (AOR

0.77, P < 0.001). Females with Medicare or private insurance also had lower rates of transplant (AOR 0.76, P < 0.001 and 0.77, P < 0.001; respectively), while those with Medicaid did not (1.01, P = 0.854). Across all income quartiles and all geographic distributions, the female gender was independently associated with lower transplant rates.

Conclusion: Females who were White, older than 45 years, or had Medicare or Private insurance had lower rates of a liver transplant than their male counterparts. Females also had lower transplant rates regardless of their income or geographic distribution. This study highlights the complex interactions between gender disparities and different socioeconomic variables. Further patient-level research is needed to help understand gender disparities in liver transplants to better advocate for patients suffering from end-stage liver disease (Table).

Table 1. Adjusted odds ratio for receiving a liver transplant in females across different demographic variables. Bolded values are statistically significant

Demographic variable	Adjusted odds ratio	CI lower limit	CI upper limit	P-value
Age				
18-45	0.94	0.82	1.07	0.344
>45	**0.77**	0.72	0.83	0.000
Race				
White	**0.74**	0.69	0.80	0.000
Black	1.05	0.88	1.27	0.568
Hispanic	0.95	0.81	1.10	0.472
Insurance				
Medicare	**0.76**	0.68	0.84	0.000
Medicaid	1.01	0.87	1.18	0.854
Private insurance	**0.77**	0.71	0.84	0.000
Income quartile				
0-25th	**0.82**	0.73	0.93	0.001
26-50th	**0.88**	0.78	0.99	0.032
51-75th	**0.77**	0.69	0.85	0.000
76-100th	**0.75**	0.67	0.85	0.000
Region of hospital				
Northeast	**0.80**	0.70	0.92	0.002
Midwest	**0.72**	0.64	0.81	0.000
South	**0.83**	0.75	0.91	0.000
West	**0.84**	0.72	0.96	0.014

S1313

Diagnostic Performance of FIB-4, APRI, and NFS to Estimate Liver Fibrosis in Hepatic Sarcoidosis

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Introduction: Sarcoidosis is a multi-system granulomatous disease that can affect any organ system. Most patients have some degree of hepatic involvement, which can lead to significant liver fibrosis and cirrhosis in some patients. Liver biopsy is the gold standard for assessing the severity of fibrosis but is invasive, associated with risks, and costly. Non-invasive tests (NITs) using easy-to-obtain clinical variables could be used in sarcoidosis to (1) identify patients at low risk of fibrosis who could avoid unnecessary liver biopsies and (2) detect patients at high risk of fibrosis who should avoid methotrexate, a potentially hepatotoxic medication and the most frequently prescribed steroid-sparing agent in sarcoidosis. While NITs have been studied in other chronic liver diseases, they have not yet been validated in hepatic sarcoidosis.

Methods: We included patients with biopsy-proven hepatic sarcoidosis diagnosed from 2014-2021. Liver pathology reports were reviewed, and subjects were categorized based on fibrosis stage using the METAVIR scoring system (F0-F4). Labs collected closest to biopsy date within a +/-6-month window were used to calculate three NITs: AST to Platelet Ratio Index (APRI), Fibrosis-4 score (FIB-4), and NAFLD Fibrosis Score (NFS). Area under the receiver operating characteristic (AUROC) curves and logistic regression were used to determine optimal NIT thresholds and their predictive accuracy. Two thresholds were then selected for their ability to rule in advanced fibrosis (F3-F4) and rule out advanced fibrosis (≤F2) with optimized accuracy. The performance of previously validated cut-offs was also examined.

Results: The cohort consisted of 45 subjects, including 8 (18%) with advanced fibrosis on liver biopsy. Patients had a median age of 48 years (IQR 40-54), and the cohort overall was 56% female and 69% Black. Median aspartate aminotransferase (AST) was 60 (34-79) U/L, alanine aminotransferase (ALT) was 54 (34-81) U/L, alkaline phosphatase was 177 (97-431) U/L, albumin was 3.9 (3.6-4.2) g/L, and platelet count was 248 (220-280) 10^9/L. The AUROCs for APRI, FIB-4, and NFS were 0.594, 0.728, 0.761. Test characteristics of optimal and validated cut-offs are shown in Table.

Conclusion: In this cohort of patients with hepatic sarcoidosis, FIB-4 and NFS were able to discriminate advanced fibrosis with an acceptable level of accuracy. External validation of these cut-offs for identifying fibrosis will be needed.

Table 1. Thresholds and Test Characteristics for Non-Invasive tests for Determining Advanced Fibrosis. A high threshold (optimized for a specificity of ≥85%) and low threshold (optimized for a sensitivity of ≥85%) were selected to stratify patients as high versus low risk of advanced fibrosis with optimal accuracy. Abbreviations: NIT (Non-invasive test); APRI (AST to Platelet Ratio Index); FIB-4 (Fibrosis-4 score); NFS (NAFLD Fibrosis Score).

NIT	Fibrosis Stage	Optimal Thresholds	Sensitivity (%)	Specificity (%)	Validated Thresholds	Sensitivity (%)	Specificity (%)	AUROC
APRI	F3-F4 ≤ F2	≥1.1789 ≤0.3303	25 88	89 19	≥1.5 ≤1	0 38	92 78	0.594
FIB-4	F3-F4 ≤ F2	≥2.3605 ≤0.7779	38 88	89 19	≥2.67 ≤1.3	38 75	92 54	0.728
NFS	F3-F4 ≤ F2	≥0.928 ≤-2.3224	32 88	90 35	≥0.676 ≤-1.455	50 75	92 43	0.761

S1314

Thromboembolism in Patients With Nonalcoholic Steatohepatitis: Baseline Characteristics and In-Hospital Outcomes

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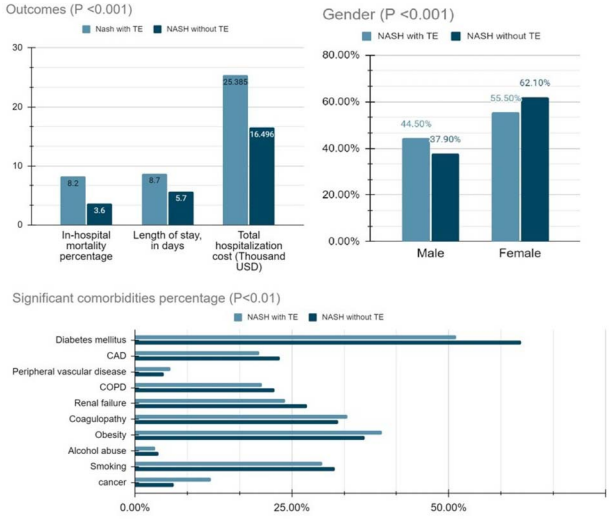
Introduction: At least 3% to 5% of Americans suffer from Non-alcoholic steatohepatitis (NASH), Several studies suggest a status of hypercoagulability in patients with NASH, and its resultant thromboembolism (TE) complications. Nonetheless, further studies to identify the burden of concurrent TE in NASH patients are needed. The TE complications we have looked at include pulmonary embolism and deep venous thrombosis only. We aim to establish the baseline characteristics of NASH patients with and without TE and the hospitalization outcomes such as mortality, length of stay (LOS), and total hospital costs for both strata.

Methods: We analyzed and compared all NASH-related adult hospitalizations with or without TE from September 2015 to December 2020 using the National Inpatient Sample database. The primary outcome was to determine the burden of TE in NASH hospitalization. Secondary outcomes included all-cause in-hospital mortality, length of stay (LOS), and total hospital costs. SAS 9.4 software was used for statistical analysis.

Results: A total of 6820 (1.6%) out of 435,845 NASH hospitalizations suffered from TE. Compared to the NASH without TE arm, the NASH with TE arm tended to occur more in patients older than 60 years (62% vs 59.7%) (p< 0.001). Within the NASH with the TE, Females (55.2%) and Caucasians (77.3%) were affected more (p< 0.001). Patients in the TE arm had a higher prevalence (p< 0.01) of obesity (39.4% vs 36.6%), coagulopathy (33.9% vs 32.4%), cancer (12.1% vs 6.2%), and PAD (5.6% vs 4.6%) than in the non-TE arm. However, the non-TE arm had a higher prevalence (p < 0.001) of diabetes (61.5% vs 51.2%), CAD (23.1% vs 19.8%), COPD (22.2% vs 20.2%), Renal failure (27.4% vs 23.9%), smoking (31.9% vs 29.8%). Nonetheless, the NASH with TE arm had higher mortality (8.5% vs 3.6%) with a mortality-adjusted odds ratio of 2.19 (95% CI: 2.00-2.40) (p< 0.001) in comparison to the non-TE arm. In addition, the mean LOS (8.7 vs 5.7), and mean hospital cost ($ 25385 vs $16496) were also higher in the TE arm (p< 0.001). (Figure)

Conclusion: Our results hint that the presence of TE in NASH patients increases the burden. In the NASH with TE patients having a significantly higher in-hospital mortality, mean length of stay, and hospitalization cost. Our conclusion indicates that further studies are needed to better understand the pathogenesis, establish an early diagnosis, exploration of possible preventive measures, and treatment options geared toward NASH-associated TE (Table).



[1314] **Figure 1.** A) Outcomes of NASH with Thromboembolism versus without thromboembolism B) Gender disparity of NASH with Thromboembolism versus without thromboembolism C) Comorbidities of NASH with Thromboembolism versus without thromboembolism

Table 1. Baseline characteristics, comorbidities and Outcomes of NASH patients with TE versus NASH patients without TE

Variables	NASH* with Thromboembolism** N=6,820(1.6%)	NASH without Thromboembolism** N=429,025(98.4%)	P-Value
Age, in years (Mean ± SD*)	62.5 ± 13.3	61.8 ± 13.1	0.08
Age groups, %			< 0.001
18 - 40 years	6.5%	7.3%	
41 – 60 years	31.4%	33%	
61 – 80 years	55.2%	54.2%	
>80 years	6.8%	5.5%	
Gender, %			< .0001
Male	44.5%	37.9%	
Female	55.5%	62.1%	
Race, %			< 0.001
Caucasians	77.3%	74.7%	
African Americans	6.4%	4.2%	
Others	16.3%	21.1%	
Comorbidities, %			
Hypertension	62.9%	62.5%	0.40
Diabetes mellitus	51.2%	61.5%	< .001
Congestive heart failure	22.5%	22.1%	0.44
CAD*	19.8%	23.1%	< 0.001

Table 1. (*continued*)

Variables	NASH* with Thromboembolism** N=6,820(1.6%)	NASH without Thromboembolism** N=429,025(98.4%)	P-Value
Peripheral vascular disease	5.6%	4.6%	< 0.001
COPD*	20.2%	22.2%	< 0.001
Renal failure	23.9%	27.4%	< 0.001
Coagulopathy	33.9%	32.4%	0.01
Obesity	39.4%	36.6%	< 0.001
Drug abuse	2.3%	2.4%	0.82
Alcohol abuse	3.2%	3.7%	0.04
Smoking	29.8%	31.9%	0.0002
Cancers	12.1%	6.2%	< 0.001
Admission Type, %			< 0.001
Emergent	93.9%	87.2%	
Elective	6.1%	12.8%	
Insurance type, %			0.0002
Medicare	56.5%	56.7%	
Medicaid	10.6%	11.9%	
Private	27.1%	26.2%	
Other	5.8%	5.1%	
Location/Teaching status of the hospital, %			0.06
Rural	7%	7.6%	
Urban nonteaching	17.7%	18.3%	
Urban teaching	75.2%	74.1%	
Outcomes			
In-hospital mortality, %	8.2%	3.6%	< 0.001
Mortality adjusted odds ratio	2.19(2.00 – 2.40)		< 0.001
Length of stay, in days (mean ± SD)	8.7 ± 9.1	5.7 ± 6.7	< 0.001
Total hospitalization cost, in US $ (mean ± SD)	25385 ± 38161	16496 ± 27531	< 0.001
Disposition, %			< 0.001
Discharge to home	41.1%	56.4%	
Transfer other: includes Skilled Nursing Facility, Intermediate Care Facility, or another type of facility	26.1%	17.1%	
Home health care	20.4%	19.1%	
Against medical advice	0.6%	0.7%	

*Abbreviations (NASH - Non-alcoholic steatohepatitis, SD - Standard deviation, CAD - Coronary artery disease, COPD - Chronic obstructive pulmonary disease, TE - Thromboembolism).
**only DVT and PE included.

S1315

Are We Following the Guidelines in the Treatment of Patients With Alcoholic Hepatitis?

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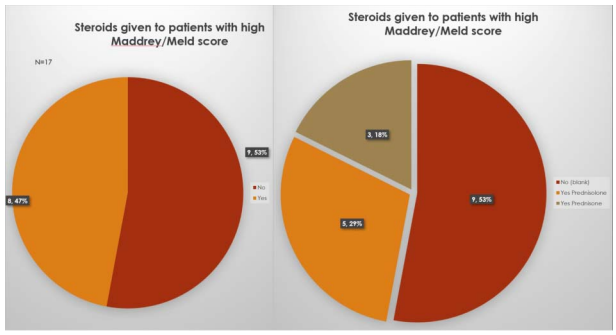
[1]Crozer Chester Medical Center, Brookhaven, PA; [2]Crozer Chester Medical Center, Upland, PA; [3]Crozer Chester Medical Center, Chester, PA; [4]Monmouth Medical Center, Long Branch, NJ.

Introduction: Alcoholic liver disease is one of the leading causes of chronic liver disease worldwide and accounts for up to 48% of cirrhosis-associated deaths in the United States. Corticosteroids provide a short-term survival benefit in about half of treated patients with Severe Alcoholic Hepatitis. The decision is made on the basis of risk stratification by Maddrey or Meld scoring system. We hope to assess how well we are at identifying and treating the patient population at Crozer Chester Medical Center
Methods: We did a retrospective review of patients admitted to Crozer Chester Medical Center from October 2021 to January 2017. We filtered patients based on ICD-10 codes for Alcoholic Hepatitis. We included the patient 18 years and above hospitalized at Crozer Chester Medical Center with the diagnosis of alcoholic hepatitis. We excluded the patients who had sepsis on admission, had active hepatitis B or C, had acute kidney injury present on admission, had upper gastrointestinal bleed present on admission, patients requiring steroids due to some other condition.
Results: We had an initial sample of 431 patients. After clearing duplicates or missing data entries, we were left with 321 patients. After applying the exclusion criteria, we were left with 60 patients, those who did not have any contraindications to steroid use. 90% (N=54) of those patients had no risk calculation score documented. There was no statistically significant difference between the teaching and non-teaching service regarding risk score documentation (p=0.43). We identified 20 patients from the sample who would have benefited from steroids. Out of those, only 47%(N=8) received steroids. Out of those, only 5 (29%) received prednisolone (Figure).
Conclusion: Currently, the American College of gastroenterology guideline recommends using steroids in the high-risk patient population. (2)Various risks calculating criteria like Maddrey's Discriminant Function and MELD score have been developed to determine the patients who fulfill the criteria for severe disease and can benefit from a course of steroids Various strategies can be implemented to improve adherence to guidelines. The scoring system should be documented when admitting patients with alcoholic hepatitis Changes in the electronic medical records can be considered as displaying a popup reminder to calculate the appropriate risk score, to consult a specialist, or to automatically calculate the risk score can be made as it would be beneficial in this maintaining adherence to guidelines.



[1315] **Figure 1.** Steroids given to patients with high Maddrey/Meld score with no contraindications

S1316

Routine Liver Frailty Index Assessment as a Part of Pre-Liver Transplant Evaluation: Feasibility and Outcomes

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Introduction: Frailty is a well-established risk factor for poor patient outcomes in patients with cirrhosis awaiting liver transplantation (LT). We assessed feasibility of routine use of Liver Frailty Index for pre-transplant evaluation.
Methods: Starting in June 2021, Northwell Health staff piloted routine use of LFI assessment as a part of the liver transplant evaluation of cirrhotic patients of different etiologies. Trained dieticians implemented the initial LFI assessment (which consisted of 3 rounds of handgrip strength, time to perform 5 chair stands, and time holding a side, semi-tandem and tandem balance positions) on 91 patients, including 58 from the outpatient setting and 33 from the inpatient setting.
Results: The predominant etiology of cirrhosis was alcohol-related, inpatient, 63.64% and outpatient, 34.48%, followed by non-alcoholic steatohepatitis. Patients evaluated for LFI in the inpatient setting were much sicker with higher MELD Na score (26.45±6.31 vs 15.97±6.73), had significantly higher prevalence of ascites (90.91% vs 51.72%), and more likely to be frail (5.38±1.13 vs 4.21±0.66, p =< 0.0001). The prevalence of Frail, Pre-frail, and robust group as assessed by LFI was 72.73%, 24.24% and 3.03% in the inpatient group as compared to 29.31%, 68.97%, and 1.72% in the outpatient group. The median hospital stay in the groups were 18.5, 6, 6 days in the Frail, pre-frail, and the robust groups (Table).
Conclusion: In this pilot program we have demonstrated that routine use of LFI for pretransplant evaluation is feasible. Frailty was present in 2/3rd of the hospitalized patients being evaluated for Liver Transplantation.

Table 1. Demographic data, indicators of liver integrity, etiology of liver disease, and liver frailty index scores and designation in the study population

	All N=91	Outpatient N=58	Inpatient N=33	P
Age	57.01±10.47	58.72±9.56	54.00±11.43	0.0377
BMI	27.01±25.96	27.12±5.76	26.83±6.02	0.8256
Serum Sodium	136.35±4.50	137±4.70	135.21±3.92	0.0679
Serum Cr	1.24±0.98	1.16±1.10	1.38±1.16	0.3682
Total Bilirubin	5.68±2.50	2.67±3.09	10.99±9.11	< 0.0001
MELD Na	19.77±20	15.97±6.73	26.45±6.31	< 0.0001
AST	78.15±53	57.67±39.74	114.15±179.15	0.0830
ALT	54.06±29.5	38.37±28.91	81.15±163.35	0.1454
Serum Albumin	3.55±0.68	3.78±0.63	3.15±0.57	< 0.0001
Ascites	60	30(51.72)	30(90.91)	0.0001
Dialysis	4	1(1.72)	3(9.09)	0.0993
Liver Transplant	17(18.68)	5(8.62)	12(36.36)	0.001
Etiology of Liver Disease				0.015
<NASH	20(21.98)	17(29.31)	3(9.09)	
<Others	21(23.08)	13(22.41)	8(24.24)	
<HCV	9(9.89)	8(13.79(	1(3.03)	
<Alcohol	41(45.05)	20(34.48)	21(63.64)	
Liver Frailty Index	4.63±1.03	4.21±0.66	5.38±1.13	< 0.0001
Frailty Status				0.0002
< Frail	41(45.05)	17(29.31)	24(72.73)	
< Pre-frail	48(62.75)	40(68.97)	8(24.24)	
< !Robust	2(2.20)	1(1.72)	1(3.03)	
Length of Stay Mean ± SD, Median				
Frail			22.04±14.79, 18.50	
Pre-frail			7.63±5.15, 6.00	
Robust			6.00±0.00, 6.00	

S1317

Health Inequalities in NAFLD Distribution and Outcomes: A Nationwide Analysis Over a Decade

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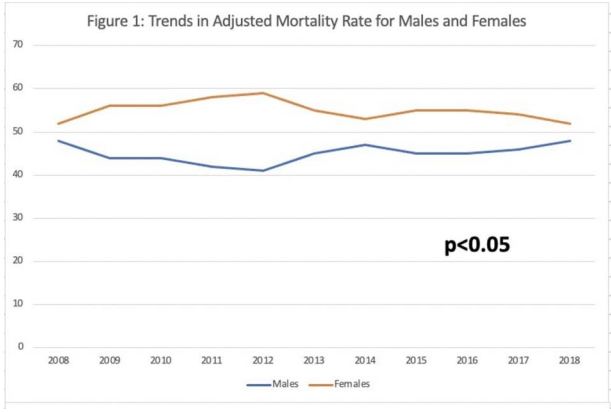
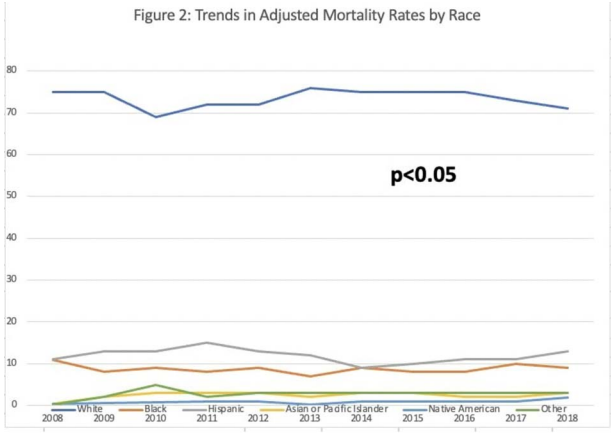
Introduction: Non-Alcoholic Liver Disease (NAFLD) is becoming progressively more prevalent as obesity and DM rise. The massive burden of disease owing to NAFLD has necessitated an effort to understand better the epidemiological, history, and progression of the disease. However, we know little about the distribution of health inequalities in NAFLD. We aim to review and analyze these health disparities and trends over the last decade.
Methods: We conduct a retrospective review of the national inpatient sample from 2008 through 2018. We extracted patient and institutional characteristics directly from the database. International classification of disease (ICD) codes identified variables, including NAFLD. We used the Chi-square test to analyze continuous variables and multivariate logistic regression to analyze independent predictors of mortality, total hospital charges, and length of stay.
Results: A total of 2,473,982 NAFLD patients are included in this analysis, out of which 234,533 survived, and 2,239,449 had died over the ten years. The mean age of mortality is higher than the mean survival age (63 vs. 55 $p< 0.05$). Females had a higher percentage of NAFLD that both survived (56% vs. 44% $p< 0.05$) and died (54% vs. 46% $p< 0.05$) compared to males. Females also had decreased odds of mortality compared to males [0.94 (0.89-0.96) $p< 0.05$]. Whites were the most common race and were also noted to have an increased mortality rate (70% vs. 73%). Interestingly, Hispanics had a higher rate of survival (15% vs. 12% $p< 0.05$) and had lower odds of mortality compared to Whites [0.86 (0.8-0.93) $p< 0.05$]. NAFLD patients with a Charlson Comorbidity Index of 3 or more had a significantly higher mortality rate than those who survived (70% vs. 33% $p< 0.05$). Teaching hospitals had lower mortality rates than non-teaching hospitals (32% vs. 68%). Trends over ten years showed that both Whites and females had a decreasing mortality rate over the decade as seen in Figures 1 and 2 respectively.
Conclusion: Multiple health disparities exist between patients with NAFLD, and these health inequalities affect mortality outcomes. Whites and females have higher rates of prevalence and mortality, while females and Hispanics were both found to have lower odds of mortality. Concomitant comorbidities play a significant role in mortality in this patient population, as does teaching versus non-teaching hospital admission. These findings can help us better educate our scientists, physicians, and leaders to improve care for this population.



[1317] **Figure 1.** Trends in adjusted mortality for males and females



[1317] **Figure 2.** Trends in adjusted mortality rates by race

S1318

Liver Transplant Outcomes and Health Care Utilization Resources in African Americans: Are They EquiTable?

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Introduction: Liver transplantation continues to increase in the United States, and end-stage liver disease in African Americans (AA) has been shown to be associated with higher morbidity and mortality. However, there are scant studies on in-hospital outcomes and hospital healthcare utilization for AA patients who have undergone liver transplant (LT).
Methods: Retrospective review of the Nationwide Inpatient Sample (NIS) database using ICD10CM/PCS codes. A cross-sectional analysis was performed of patients aged 18 years and above that underwent liver transplant in 2018. Univariable logistic regression analysis was used to calculate unadjusted odds ratios (ORs) for the primary and secondary outcomes. Multivariable logistic regression analysis was used to adjust for potential confounders.
Results: A total of 7,290 LTs were performed in 2018; of these, 615 (8.4%) were performed in AA patients. AA patients compared to other races are more likely to be in the lowest quartile of income (40.1% vs 23.2%, $P< 0.01$), have Medicaid as primary payer (20.0% vs. 14.8%, $P=0.04$), to be from the South (56.1% vs 39.8%, $P< 0.01$) or Northeast (20.3% vs 17.3%, $P< 0.01$) region of the country. On univariate

analysis, AA patients do not have increased length of stay (LOS) [OR 2.98; 95%CI (-1.05-7.02)], total charges [OR -18,285; 95%CI (-113,299-76,727)] and total costs [OR 12,128; 95%CI (-9,094-33,350)]. After adjusting for patient and hospital-level confounders, AA patients do not have significantly increased adjusted odds of mortality (aOR 0.48; P=0.59), length of stay (aOR 1.47days; P=0.57), total charges (aOR $-46,196; P= 0.26) or total costs (aOR $6,342; P=0.61). (Table)

Conclusion: In 2018, this nationwide retrospective study does not show significantly higher odds of mortality or healthcare utilization resources in AA patients.

Table 1. General characteristics and crude odds ratio & adjusted differences for primary and secondary outcomes for patients that underwent LT classified by races

General Characteristics								
	Total	White	African American	Hispanic	Asian	Native American	Other	P
No. (%) of patients	7290	4775	615	1065	270	65	220	0.03
Female, (%)	36	35	50	33	37	46	32	0.03
Mean age, years	55.3	56	52	55.0	57.5	56.2	53.2	0.10
Elective admission (%)	19.2	20.4	16.5	17.8	14.8	15.4	13.6	.60
Charlson Comorbidity index score, no. (%)								
≥3	94.0	94.8	90.2	92.5	92.6	100	95.5	.11
Median annual income in patient's zip code, US$ (%)								
1-42,999	23.2	19.3	40.1	35.1	9.2	36.3	14.6	< .01
43,000-53,999	25.8	26.6	22.3	23.1	31.4	36.3	19.5	< .01
54,000-70,999	27.1	29.1	17.21	25.0	20.4	9.1	31.7	< .01
>71,000	23.9	24.9	18.8	16.8	38.9	18.2	34.1	< .01
Insurance type, (%)								
Medicare	34.7	34.5	39.1	34.5	28.0	41.6	34.9	0.01
Medicaid	14.8	11.6	20.0	20.5	34.0	16.6	16.2	.04
Private	53.0	40.8	43.6	38.0	41.7	48.9	40.0	.01
Self-pay	0.8	0.7	0	0.1	0	0	0	.67
Hospital Region (%)								
Northeast	17.3	17.9	20.3	10.3	18.5	7.6	31.8	< .01
Midwest	21.9	25.9	14.6	9.8	20.3	0	22.7	.08
South	39.8	33.9	56.1	38.9	16.6	23.8	29.5	< .01
West	20.9	16.2	8.9	40.8	44.4	69.2	15.9	< .01
Hospital bed size (%)								
Small	2.2	1.7	1.6	4.6	1.8	0	2.2	0.23
Medium	15.5	16.5	24.3	8.4	1.8	0	9.0	.08
Large	82.7	81.6	73.9	86.8	96.3	100	88.6	.31
Hospital location / teaching status (%)								
Urban teaching	99.2	99.3	100	100	100	100	100	0.51
Mortality rate and mean values for secondary outcomes								
Mortality rate (%)	2.2	2.8	2.4	2.3	3.7	15.4	2.2	
Length of stay, *d*	20.2	20.1	20.9	21.5	18.9	15.1	23.9	
Total charges, US$		591743	562748	765958	877081	518387	730274	0.09
Total costs, US$		143594	139471	167842	177460	132274	181499	< .01

Crude Odds Ratio and Adjusted Differences for Primary and Secondary Outcomes for Patients that Underwent LT Classified by Races.					
Race	Mortality	LOS (Days)	Time to transplant (Days)	Total charges (US$)	Total costs (US$)
Crude Odds Ratio (95% Confidence Interval)					
White			Reference		
African American	0.41 (0.05-3.26)	2.98 (-1.05-7.02)	0.95 (-1.49-3.40)	-18,285(-113,299-76,727)	12,128 (-9094-33,350)
Hispanic	1.84 (0.84-4.02)	7.19 (2.27-12.12)	2.07 (0.11-4.02)	306,940 (128,279-485,602)	67,502 (22,361-112,642)
Asian	1.00	-0.86 (-5.38-3.66)	0.62 (-2.94-4.18)	91,986 (-48,261-232,235)	24,409 (-8,251-57,071)
Native American	3.79 (0.93-32.96)	2.02 (-12.53-16.67)	-0.37 (-6.30-5.57)	77038 (-203,265-357,342)	20,459 (-58,338-80,991)
Other	0.77 (0.09-5.33)	10.25 (1.92-18.59)	1.84 (-0.35-4.05)	185,296(-10,542-381,135)	43,111 (5,231-80,991)
Adjusted difference; P value					
White			Reference		
African American	0.48; 0.59	1.47; 0.57	0.50; 0.65	-46,196; 0.26	6,342; 0.61

S1319

Etiologies for In-Hospital Mortality in Patients With Compensated and Decompensated Hepatic Cirrhosis

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Introduction: Cirrhosis is the end-stage of chronic liver disease and is generally associated with poor outcome, increased hospitalizations, and mortality. The occurrence of decompensated cirrhosis further markedly increases mortality. Knowledge regarding the causes of mortality and hospitalization can help risk stratify hospitalized patients with cirrhosis.
Methods: Using the US Nationwide readmissions database 2014, we identified hospitalized patients who had cirrhosis and died during their hospitalization. In this cohort, we identified rates of cirrhotic and non-cirrhotic complications and etiologies for hospitalization. Causes of death were identified by the primary discharge diagnosis. Decompensated cirrhosis was defined as the presence of hepatic encephalopathy (HE), ascites, jaundice, variceal bleeding (VB), spontaneous bacterial peritonitis (SBP), hepatorenal syndrome (HRS), or hepatocellular carcinoma (HCC). Appropriate ICD-9 codes were used to identify all diagnoses and procedures.
Results: We studied 291,368 patients with cirrhosis of whom 38,394 patients (13.2%) died in-hospital. Around 19% of patients who had decompensation (53% of all patients) and 6.7% of patients who had compensated cirrhosis (47%) died during a hospitalization. Decompensated cirrhosis was present in 76.1% (N=29,212) of patients with mortality. Ascites was present in 50.3%, HE in 32.1%, VB in 23.2%, HRS in 19.4%, SBP in 9.1%, jaundice in 5.6% and HCC in 8.7%. In the overall cohort, the most common causes of death were sepsis (31.2%) followed by decompensated cirrhosis (13.6%), viral hepatitis (3.9%), respiratory failure (3.8%), and gastrointestinal bleeding (non-variceal) (3.8%). In patients with compensated cirrhosis, major causes of death were sepsis (33.8%), respiratory failure (6.3%), stroke (5.1%), congestive heart failure (3.4%), and traumatic intracranial injury (3.3%). When decompensation was present, major causes of death were sepsis (30.4%), decompensated cirrhosis (17.9%), gastrointestinal bleeding (4.6%), viral hepatitis (4.5%), and respiratory failure (3.1%).
Conclusion: In the US, 1 in 7 hospitalized patients with cirrhosis, 1 in 5 with decompensated cirrhosis, and 1 in 14 with compensated cirrhosis had in-hospital mortality. Sepsis is the most common cause of death (1/3rd) in cirrhotic patients, in both compensated and decompensated cirrhosis. These data can help risk stratify and improve management strategies of hospitalized patients with cirrhosis.

S1320

Predictors of 30-Day Readmission With *Clostridioides difficile* After Liver Transplant Surgery

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Introduction: Liver transplantation (LT) is a definitive therapy of fulminant liver failure with promising outcomes. It is known to have readmission as a common postoperative complication. We aim to study the readmissions after LT specific to Clostridioides difficile infection (CDI).
Methods: We used the National Readmission Database (NRD) for the year 2018 to identify adult patients readmitted within 30 days after an index admission for LT. All diagnoses and procedures were identified using ICD 10 codes. We identified 30-day readmission rate specific to CDI, mortality, healthcare related utilization resources and independent predictors of CDI specific readmission. We compared patient demographics, diseases, admission/discharge facility factors between those with and without readmission. Risk factors for CDI readmission were calculated using binary logistic regression.
Results: A total of 6,888 adult patients underwent LT between January and November 2018, and were alive at the time of discharge. 157 (2.3%) of them had CDI during the index hospitalization. The 30-day CDI-specific readmission rate was 1.34% (95 cases). Of these, only 20% had CDI during index admission. CDI readmitted patients were relatively younger (mean age 53.6 vs 55.7 $P< 0.05$), more likely to have chronic renal failure (41.1% vs 26.1%, $P< 0.05$), but otherwise had similar comorbidities (congestive heart failure, obesity, diabetes and hypertension), and hospital characteristics (size, teaching status and location) compared to those without CDI specific readmission. They had similar Charlson comorbidity index (mean 6.7 vs 6.6). Patients with readmissions were more likely to be discharged with home health care (51.6% vs 39.3%, $P< 0.05$). Readmitted patients also had longer hospitalization (median length of stay 19 days vs 12 days). Independent predictors of 30-day readmission with CDI were LOS >14 days (OR 1.6), chronic renal failure (OR 1.8) and in-patient hemodialysis (OR 1.9). The total health-care in-hospital economic burden of CDI readmission was $15.2 million in total charges and $3.4 million in total costs. These readmissions accounted for 1,000 cumulative bed days.
Conclusion: Our data shows that following LT, the 30-day CDI specific readmission rate is low but certain factors like prolonged LOS, chronic kidney disease and dialysis requirement could help identify high risk patients.

S1321

Federal Mandates and Trends in Acetaminophen-Opioid Combination Product Supratherapeutic Ingestions at a Large Urban Safety-Net Hospital From 2011-2020

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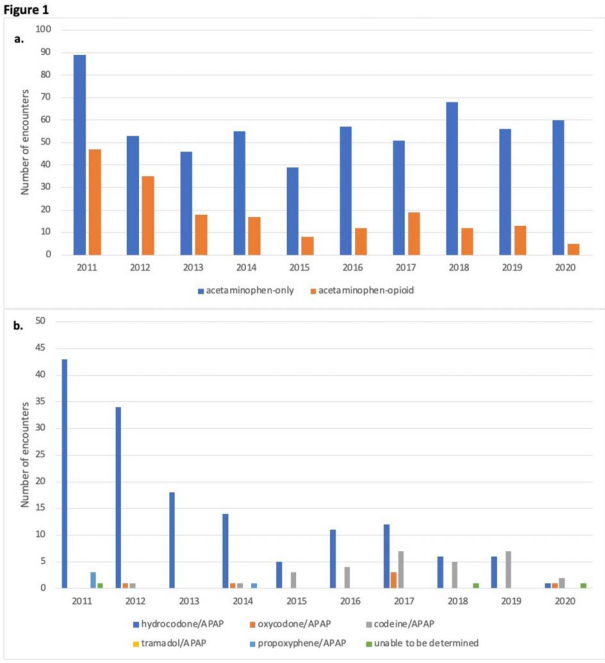
Introduction: Acetaminophen-opioid (APAP-opioid) combination products are ubiquitously used for pain relief. During the ongoing opioid epidemic, people have misused these products causing cases of hepatotoxicity. In 2014, the US Food and Drug Administration limited the amount of acetaminophen (APAP) in combination products to 325 mg, and the US Drug Enforcement Administration changed hydrocodone/APAP from schedule III to schedule II. This project aims to determine whether these federal mandates led to changes in APAP-opioid supratherapeutic ingestions at a large safety-net hospital from 2011-2020.
Methods: Hospital encounters between 1/1/2011-12/31/2020 of patients ≥ 18 years old with reported supratherapeutic ingestions and a detectable APAP level (> 10 mcg/mL) were identified from our electronic health record. We manually screened charts for encounters involving APAP-opioid products and from these extracted demographic information, laboratory values, product(s) ingested, ingestion intent and amount, and disposition. We describe the number of encounters per year.
Results: Of 760 encounters, 186 (25%) involved APAP-opioid combination products. Most patients were Caucasian (83%), non-Hispanic (76%), and female (54%). The number of supratherapeutic APAP-opioid ingestions decreased over the 10-year period (Fig.1a). Most ingestions were acute (64%) and with intent at self-harm (57%). Most patients were discharged from the Emergency Department (37%) and not treated with N-acetylcysteine (65%). Only five cases developed acute liver failure. The most used combination product was hydrocodone/APAP (80%). A downtrend in hydrocodone/APAP accompanied a relative increase in codeine/APAP ingestions from 2015 onwards (Fig.1b).
Conclusion: Our study shows that during the past 10 years the number of APAP-opioid supratherapeutic ingestions declined, especially hydrocodone/APAP likely at least in part due to its re-classification to schedule II. Codeine, schedule III, may have replaced some hydrocodone prescriptions.

Figure 1



[1321] **Figure 1.** Trends in acetaminophen and acetaminophen-opioid ingestions per year a. Number of encounters per year of acetaminophen-only and acetaminophen-opioid supratherapeutic ingestions. b. Number of encounters per year of each acetaminophen-opioid combination product.

S1322

Large Volume Paracentesis in Cirrhotic Patients With Acute Kidney Injury Is Not Associated With Worsening of Renal Function; Analysis of a Multi-Institutional Cohort

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Introduction: Effect of large volume paracentesis on renal function in cirrhotic patients with ongoing acute kidney injury has not been studied in detail, and large volume paracentesis (LVP) is often avoided in these patients due to concerns of worsening renal injury. We studied the association between volume removed on paracentesis and outcomes of acute kidney injury.
Methods: We performed a retrospective cohort study of patients at two institutions. IRB approval was obtained at both institutions. Patients with acute kidney injury at the time of paracentesis were included in the study. A retrospective chart review was then performed, and variables of interest were collected. Data was then de-identified and then pooled for analysis.
Results: One-hundred and sixty-two patients were included in the final cohort. The mean age of study participants was 61.10 years (SD: ±11.70); the population was predominantly male (63.6%). Alcohol was the most common etiology (43%), followed by NASH (30%). One hundred and eleven patients had Child C cirrhosis (68.5%). Pre-renal acute kidney injury was the most common etiology prior to paracentesis (51%); eighty-six patients had KDIGO stage 1 acute kidney injury while 37 patients and 39 patients had Stage 2 and Stage 3 respectively. Forty-eight participants (29.6%) experienced a worsening of creatinine after paracentesis. Large volume paracentesis (4L or greater) was performed on 81 patients while the rest had less than 4L removed; the groups were well matched with no statistically significant difference in baseline characteristics. There was no difference in the proportion of patients experiencing worsening of renal function after paracentesis, in the proportion of patients who experienced eventual complete resolution of acute kidney injury (p-value = 0.55), or in the proportion of patients that requirement renal replacement therapy (p-value = 0.51). Multivariable regression analysis was conducted incorporating age, gender, CKD, MELD-Na score, albumin administration, and amount of volume removed during paracentesis, revealing CKD as the only covariate significantly associated with worsening renal function after paracentesis (p-value = 0.003). Large volume removal during paracentesis was not associated with worsening of renal function (p-value = 0.61).
Conclusion: Large volume paracentesis is not associated with worsening renal function, when compared to small volume paracentesis, in cirrhotic patients with pre-existing acute kidney injury.

S1323

Healthcare-Related Trends of Spontaneous Bacterial Peritonitis in Patients With Liver Disease-A National Inpatient Sample (NIS)-Based Study

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Introduction: Spontaneous Bacterial Peritonitis (SBP) is an acute infection in patients with decompensated cirrhosis and ascites. It can lead to organ failures and death. and it is associated with a 20% in-hospital mortality rate. Although we know about some of the risk factors of SBP such as prior episodes of SBP, increasing age, and proton-pump inhibitors use, further updated characterization of patients withSBP is still needed to better understand trends and guide healthcare resource utilization. The aim of this study was to evaluate the most recent healthcare trends of SBP in patients with decompensated cirrhosis.
Methods: We analyzed Nationwide Inpatient Sample (NIS) and Healthcare Cost and Utilization Project (HCUP) data from 2018 to 2019. We included alcoholic liver disease, hepatitis B and C, and NASH as causes of liver diseases using ICD-10-CM codes and subsequently divided them into SBP and non-SBP groups. We performed weighted analyses using Chi-Square and paired Student's t-test to compare the groups of SBP and non-SBP cases. The co-morbidities were also studied along with demographic data.
Results: We included 324,111 patients with liver disease in the final analysis. Inpatient mortality of those with SBP (15%) was found to be significantly higher than those without SBP (2.4%) with a p-value of < 0.001. It was observed that males were more prone to have SBP (67%) as compared to females (33%). The age group of 48-67 tends to have SBP more than the other age groups (p-value < 0.001). The length of stay (~6 days) and cost of healthcare utilization for the SBP cases ($ 60,551) were higher as compared to the non- SBP cases ($ 38,870). 35% of patients with SBP were from lower household income groups of $1-24,999. Patients with Hepatitis C had higher inpatient admissions due to SBP as compared to other causes of Hepatitis (56% vs 48%, p-value < 0.001) (Table).
Conclusion: Mortality is quite high in SBP patients when they develop sepsis. Appropriate initiation of antibiotics leads to better outcomes. Patients with Hepatitis C, those aged above 50 years, and lower socioeconomic status are associated with a higher incidence of SBP. Despite high mortality and increased healthcare utilization in patients diagnosed with SBP, the incidence of SBP is trending down given vigilance of diagnostic procedures and keeping a low threshold for diagnosing and prophylactically treating SBP in patients with liver cirrhosis.

Table 1. **Trends of Spontaneous Bacterial Peritonitis (SBP)**

		No SBP	SBP	
Variable	N	N = 322,078	N = 2,033	p-value
Age in years at admission	3,24,111	57 (45, 65)	57 (51, 63)	< 0.001
DIED	3,23,903			< 0.001
1		7,715 (2.4%)	297 (15%)	
Elective versus non-elective admission	3,23,767	40,853 (13%)	49 (2.4%)	< 0.001
FEMALE	3,24,091			< 0.001
Male		181,509 (56%)	1,354 (67%)	
Female		140,549 (44%)	679 (33%)	
HOSP_BEDSIZE	3,24,111			< 0.001
Small		64,263 (20%)	337 (17%)	
Medium		92,330 (29%)	527 (26%)	
Large		165,485 (51%)	1,169 (58%)	
HOSP_LOCTEACH	3,24,111			< 0.001
Rural		20,125 (6.2%)	135 (6.6%)	
Urban nonteaching		58,775 (18%)	290 (14%)	
Urban Teaching		243,178 (76%)	1,608 (79%)	
HOSP_REGION	3,24,111			< 0.001
North East		58,680 (18%)	307 (15%)	
Mid West		64,370 (20%)	377 (19%)	
South		120,563 (37%)	741 (36%)	
West		78,465 (24%)	608 (30%)	
Length of stay (cleaned) (days)	3,24,092	4.0 (2.0, 6.0)	6.0 (3.0, 10.0)	< 0.001
Insurance Type	3,23,669			< 0.001
Medicare		117,061 (36%)	696 (34%)	
Medicaid		93,301 (29%)	736 (36%)	
Private Insurance		77,709 (24%)	375 (19%)	
Self Pay		21,712 (6.8%)	132 (6.5%)	
No charge		1,989 (0.6%)	15 (0.7%)	
Other		9,870 (3.1%)	73 (3.6%)	
RACE	3,17,968			< 0.001
White		199,014 (63%)	1,172 (59%)	
Black		46,106 (15%)	263 (13%)	
Hispanic		47,465 (15%)	355 (18%)	
Asian or Pacific Islander		9,571 (3.0%)	91 (4.6%)	
Native American		4,136 (1.3%)	41 (2.1%)	
Other		9,686 (3.1%)	68 (3.4%)	
Total charges (cleaned)	3,22,775	38,870 (21,705, 72,187)	60,551 (32,871, 114,384)	< 0.001
YEAR	3,24,111			0.003
2018		157,447 (49%)	1,061 (52%)	
2019		164,631 (51%)	972 (48%)	
Median household income national quartile for patient ZIP Code	3,14,757			0.009
$1-24,999		105,207 (34%)	687 (35%)	
$25,000-34,999		80,774 (26%)	552 (28%)	
$35,000-44,999		72,759 (23%)	442 (22%)	
45,000 or more		54,043 (17%)	293 (15%)	
NASH	3,24,111			< 0.001
0		167,220 (52%)	1,659 (82%)	
1		154,858 (48%)	354 (18%)	
Hepatitis_B	3,24,111			< 0.001
0		305,217 (95%)	1,814 (89%)	
1		16,861 (5.2%)	219 (11%)	
Hepatitis_C	3,24,111			< 0.001
0		225,016 (70%)	887 (44%)	
1		97,062 (30%)	1,146 (56%)	
Alcoholic_Liver_Disease	3,24,111			0.2
0		257,242 (80%)	1,645 (81%)	
1		64,836 (20%)	388 (19%)	

Table 1. (*continued*)

		No SBP	SBP	
Hepatitis	3,24,111	171,432 (53%)	1,679 (83%)	< 0.001
Liver_Disease	3,24,111	322,078 (100%)	2,033 (100%)	
HTN	3,24,111			< 0.001
0		153,392 (48%)	1,131 (56%)	
1		168,686 (52%)	902 (44%)	
HLD	3,24,111			< 0.001
0		227,415 (71%)	1,782 (88%)	
1		94,663 (29%)	251 (12%)	
DM	3,24,111			< 0.001
0		263,576 (82%)	1,769 (87%)	
1		58,502 (18%)	264 (13%)	
Age_Group	3,24,111			< 0.001
18-27		11,777 (3.7%)	16 (0.8%)	
28-37		34,722 (11%)	131 (6.4%)	
38-47		47,089 (15%)	243 (12%)	
48-57		79,578 (25%)	646 (32%)	
58-67		90,120 (28%)	730 (36%)	
68-77		42,903 (13%)	219 (11%)	
78-87		13,369 (4.2%)	45 (2.2%)	
88 and above		2,520 (0.8%)	3 (0.1%)	

S1324

Gender Disparities in Nonalcoholic Steatohepatitis Patients: Comparison of Patient Characteristics and Inhospital Outcomes

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Introduction: Nonalcoholic steatohepatitis (NASH) is the progressive form of Nonalcoholic Fatty Liver Disease (NAFLD). With the increasing trend in the prevalence of NASH in last decade, it has become important to study each and every aspect of the disease prevalence. Presence of gender disparities have been reported in NASH but there have not been enough studies about that, so we decided to evaluate gender disparities among patients with NASH.
Methods: Adult male and female patients admitted with NASH, were analyzed from September 2015 to December 2020 using the National Inpatient Sample database. The primary outcome was to determine the burden of NASH in both subgroups. Secondary outcomes included all-cause in-hospital mortality, length of stay (LOS), and total hospital costs. SAS 9.4 software was used for statistical analysis.
Results: Out of 435760 patients admitted with NASH, 2,69,980(62%) were female and 1,65,780(38%) were male. Median age in males is 61.3 ± 13 vs 62.2 ± 13.2 in females. Predominantly Caucasian Males and Females were reported compared to other ethnic groups. Comorbidities like hypertension, coronary artery disease, diabetes, peripheral vascular disease, A fib were higher in the male group compared to female. Only Obesity was reported slightly higher (37.2% vs 35.9%) in females. Higher in hospital mortality was observed (3.8% vs. 3.6%, P < 0.001) in male patients with NASH. Male subgroup demonstrated higher burden of A.fib (17.1% vs 12.6%) and VTE (1.8% vs 1.4%) compared to female subgroup. Inpatient hospital stay was found to be almost similar in both subgroups. We noted the cost of hospitalization is higher [18156$ ± 31336 vs. 15701$ ± 25255 p < 0.001] in males with NASH. Furthermore, our study showed increased need for acute/subacute rehab facility upon discharge (18.5% vs 15.1%) in female subgroup (Table).
Conclusion: Our study suggests that incidence of NASH is much higher in Caucasian female despite less comorbidities. Higher in-hospital mortality and cost burden noted in males with NASH. Given the fact that NASH is currently second leading cause of liver transplantation overall and leading cause in female, aggressive risk reduction strategies and proactive screening approaches needs to be established.

Table 1. **Gender Disparity in NASH patients hospitalized between September 2015 and December 2020 - Baseline characteristics, comorbidities and Outcomes**

Variables	Male N=165,780(38%)	Female N=269,980(62%)	P-Value
Age, in years (Mean ± SD*)	61.3 ± 13	62.2 ± 13.2	0.001
Age groups, %			< 0.001
18 - 40 years	7.5%	7.2%	
41 – 60 years	35.2%	31.6%	
61 – 80 years	52.6%	55.2%	
>80 years	4.8%	6%	
Race, %			< 0.001
Caucasians	77.9%	72.7%	
African Americans	3.6%	4.6%	
Others	18.4%	22.7%	
Comorbidities, %			
Hypertension	63.5%	61.9%	< 0.001
Diabetes mellitus	61.5%	61.2%	0.04
Congestive heart failure	22.9%	21.7%	< 0.001
CAD*	29.9%	18.9%	< 0.001
Peripheral vascular disease	5.5%	3.9%	< 0.001
COPD*	18.2%	24.7%	< 0.001

Table 1. (*continued*)

Variables	Male N=165,780(38%)	Female N=269,980(62%)	P-Value
Renal failure	28.9%	26.3%	< 0.001
Coagulopathy	34.3%	31.3%	< 0.001
Obesity	35.9%	37.2%	< 0.001
Drug abuse	2.4%	2.4%	0.39
Alcohol abuse	5.6%	2.5%	< 0.001
Smoking	36.5%	29%	< 0.001
Admission Type, %			< 0.001
Emergent	87.8%	86.9%	
Elective	12.2%	13%	
Insurance type, %			< 0.001
Medicare	53.7%	58.6%	
Medicaid	10%	13.1%	
Private	30.3%	23.7%	
Other	6%	4.6%	
Location/Teaching status of the hospital, %			< 0.001
Rural	7%	8%	
Urban nonteaching	17.6%	18.7%	
Urban teaching	75.4%	73.3%	
Outcomes			
In-hospital mortality, %	3.8%	3.6%	< 0.001
Mortality adjusted odds ratio	0.96(0.93 – 0.99)	0.01	
Length of stay, in days (mean ± SD)	5.8 ± 7.2	5.7 ± 6.5	0.008
Total hospitalization cost, in US $ (mean ± SD)	18156 ± 31336	15701 ± 25255	< 0.001
Atrial fibrillation	17.1%	12.6%	< 0.001
VTE*	1.8%	1.4%	< 0.001
Disposition, %			< 0.001
Discharge to home	58.9%	54.5%	
Transfer other: includes Skilled Nursing Facility, Intermediate Care Facility, or another type of facility	15.1%	18.5%	
Home health care	17.9%	19.9%	
Against medical advice	0.9%	0.6%	

*Abbreviations (NASH - Non-alcoholic steatohepatitis, SD - Standard deviation, CAD - Coronary artery disease, COPD - Chronic obstructive pulmonary disease, VTE - Venous Thromboembolism).

S1325

Association of Alcohol Consumption With Diastolic Hypertension in Patients With Mild Liver Stiffness: Analysis of the National Health and Nutrition Examination Survey 2017-2020

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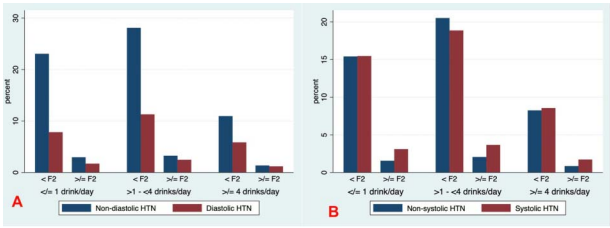
Introduction: While excessive alcohol consumption is associated with arterial hypertension. Cirrhotic patient's risk for hypertension remains unclear due to both vasodilatation and vasoconstriction effect. We aim to examine the association between alcohol consumption and hypertension in patients with different degrees of liver fibrosis.
Methods: A cross-sectional study using the National Health and Nutrition Examination Survey (NHANES) 2017 to March 2020 included adult participants. Association between alcohol consumption and both systolic and diastolic hypertension (SHTN and DHTN) defined as SBP and DBP ≥120 and ≥80 mmHg, respectively were analyzed by multivariate logistic regression. Prespecified subgroup analyses were performed to investigate potential effect modifiers.
Results: A total of 9,693 patients were identified (mean age 50±19 years old; 51% female; 35% white). Among the participants with Fibroscan results, they were stratified into 3 groups based on the number of alcohol drinks per day (0-1 drink per day (G1), 2,126 [36%]; 1-4 drinks per day (G2), 2,612 [45%]; > 4 drinks per day (G3), 1,125 [20%]). After controlling for age, race, gender, body mass index, diabetic status, hyperlipidemic status, serum creatinine, urinary albumin:creatinine ratio, and fibrotic liver stage (< F2 = mild and ≥F2 = significant with fibrosis scores of < 7.5 and ≥7.5 kPa, respectively), the G2 and G3 had greater the odds of having SHTN but not statistically significant. (OR_{G2}1.26; P 0.155; 95%CI 0.9076, 1.760; OR_{G3} 1.30, P 0.180, 95%CI 0.886, 1.909). Both G2 and G3 were significantly more likely to develop DHTN (OR_{G2} 1.53, P 0.018, 95%CI 1.076, 2.172; OR_{3G3} 1.88, P0.002 95%CI 1.259, 2.802). Subgroup analysis revealed a significant increased odds of developing DHTN in G2 and G3 only for those with mild fibrosis (< F2; OR_{G2} 1.45, P 0.048, 95%CI 1.004, 2.151; OR $_{G3}$ 1.83, P 0.006, 95%CI 1.186, 2.833). The magnitude and direction of the association were similar for participants with significant fibrosis (≥F2; OR_{G2}1.64, P 0.363, 95%CI 0.566, 4.728; OR $_{G3}$ 1.86, P 0.308, 95%CI 0.564, 6.168; Figure A). The alcohol – SHTN association remains no statistical significance in all subgroups (Figure B). There was no effect modification observed between alcohol consumption and key covariates.
Conclusion: In this study, there is an association between alcohol intake and DHTN in mild fibrotic liver patients. Longitudinal studies are required to further evaluate this association and possible underlying mechanisms.



[1325] **Figure 1.** Distribution of diastolic (A) and systolic (B) hypertension stratified by the amount of alcohol consumption per day and the severity of liver fibrosis

S1326

Characteristics of Individuals Receiving Hepatitis B Treatment in Ethiopia: 18-Month Follow-Up

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Introduction: Hepatitis B virus (HBV) infection is a major risk factor for hepatocellular carcinoma (HCC) in Africa with higher morbidity and mortality. This is in part due to disparities in access to viral treatment. We aimed to identify characteristics of individuals who were treated versus untreated for HBV in Ethiopia.
Methods: We identified HBsAg positive patients in a referral clinic in Addis Ababa, Ethiopia starting in January 2020. Clinical, laboratory and demographic data were obtained during clinic visits at baseline, 6, 12, 18 months, and recorded in REDCap. The study was approved by the institutional review board of Addis Ababa University. Analyses were performed using Chi-squared test, with p values < 0.05 considered significant.
Results: 150 HBsAg-positive patients were included: 51 treated and 99 untreated for HBV. At baseline, the treated group was more likely to be male (86%, n=44), reported higher quantity of coffee use ($p< 0.05$), and had higher median AST (36 vs. 27 IU), ALT (32 vs. 26 IU), and HBV DNA (25,921 vs. 389 IU/ml) compared to the untreated group. Median age was similar between both groups (35 vs 34 years). Interestingly, the treated group reported a higher level of education (56% vs 42%, p=0.19). The treated group also had higher APRI (median 0.54 vs. 0.31) and FIB4 scores (median 1.79 vs 0.85), likely relating to treatment decision. Treated individuals were more likely to have baseline ascites ($p< 0.01$) and abnormalities on liver ultrasound ($p< 0.01$). Untreated individuals reported more alcohol (5% vs 0%, p=0.1) and khat use (9% vs 0%, p=0.08). At 6 and 12 months, those treated showed a decrease in AST, ALT, FIB4 and APRI scores, with 1 case of HCC reported in that group. HCC developed in 4% (n=4) of the untreated group during the same time. At 12 months (n=55 with follow up), 44% of the untreated group had initiated treatment, and 35% had abnormal ultrasound findings. Interestingly, at 18 months, 30 patients (30%) in the untreated group followed up, whereas only 1 patient (2%) of the treated group followed up. Median APRI and FIB4 at 18 months for those untreated were 0.56 and 1.06 respectively.
Conclusion: Our data from Ethiopia show that individuals on HBV treatment were more likely to be male, and have higher baseline lab findings. Those untreated showed more liver-unhealthy habits such as alcohol and khat consumption and less coffee intake. Untreated individuals developed more HCC at follow up. Interestingly, they were more likely to follow up at 18 months.

S1327

Nonalcoholic Steatohepatitis and Atrial Fibrillation: Baseline Characteristics and Outcomes: A Propensity-Matched Analysis From National Inpatient Sample Database

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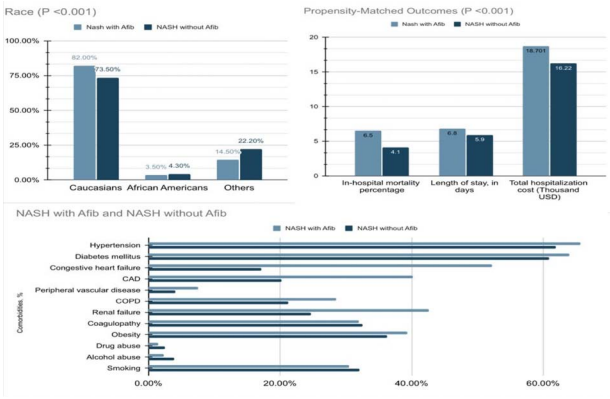
Introduction: Non-alcoholic steatohepatitis (NASH) affects at least 3 to 5% of Americans, which imposes a higher risk of concurrent cardiovascular diseases including arrhythmias, of which atrial fibrillation (Afib) is the most prevalent. Nonetheless, data on the burden of concurrent Afib in NASH patients is still lacking. Our aim is to define baseline characteristics of NASH patients with and without Afib and related in-hospital outcomes such as mortality, length of stay (LOS), and total hospital costs.
Methods: Using the National Inpatient Sample database, we analyzed all NASH-related adult hospitalizations with or without Afib from September 2015 to December 2020. We applied propensity score matching to the 2 groups to balance baseline characteristics. SAS 9.4 software was used for statistical analysis.
Results: Out of 435,845 NASH hospitalizations, 62,335 (14.3 %) had concurrent Afib. The NASH with Afib cohort consisted of older patients (mean age, 69.4 vs. 60.6 years) compared to those without Afib ($p< 0.001$). NASH with the Afib cohort had more females (54.5%) and Caucasians (82.5%). NASH patients with Afib had an almost 3-times higher prevalence of congestive heart failure (52.5% vs. 17.1%)($p< 0.001$) and almost 2-times higher prevalence of coronary artery disease (40.2% vs. 20.2%), Peripheral vascular disease (7.5% vs 4.1%), and Renal failure (42.6% vs 24.7%) ($p< 0.001$). Moreover, NASH patients with Afib had higher prevalence of hypertension (65.7% 61.9%), Diabetes mellitus (64% vs 60.9%), COPD (28.5% vs 21.2%), and obesity (39.3% vs 36.3%). Compared to the NASH without Afib cohort, the NASH with Afib cohort had higher mortality (6.5% vs. 4.1%) with a mortality-adjusted odds ratio of 1.63 (95% CI: 1.55-1.71) ($p< 0.001$). In addition, the mean LOS (6.8 vs. 5.9), and mean hospital cost ($ 18701 vs. $16,220) were also higher ($p< 0.001$). (Figure) (Table)
Conclusion: Our results indicate a higher burden imposed by the presence of Afib in NASH patients. The NASH with Afib cohort had significantly higher in-hospital mortality, mean length of stay, and hospitalization cost. This conclusion supports the need for further studies to better illustrate the pathogenesis, early diagnosis, possible preventive measures, and treatment modalities tailored towards NASH-associated Afib.



[1327] **Figure 1.** A) Racial disparity in NASH with Afib and NASH without Afib. B) Propensity mathced outcomes. C) Comorbidity in Nash with Afib and NASH without Afib

Table 1. Baseline characteristics, comorbidities and Outcomes of NASH patients with Afib versus NASH patients without Afib

Variables	NASH with Afib N=62,335(14.3%)	NASH without Afib N=373,510(85.7%)	P- Value
Age, in years (Mean ± SD)	69.4 ± 10.2	60.6 ± 13.2	< 0.001
Age groups, %			< 0.001
18 - 34 years	0.4%	4.6%	
35 – 49 years	3.3%	14.1%	
50 – 64 years	24.5%	38.6%	
65 - 79	56.0%	37.5%	
>79 years	15.8%	5.1%	
Gender, %			< 0.001
Male	45.5%	36.8%	
Female	54.5%	63.2%	
Race, %			< 0.001
Caucasians	82.0%	73.5%	
African Americans	3.5%	4.3%	
Others	14.5%	22.2%	
Comorbidities, %			
Hypertension	65.7%	61.9%	< 0.001
Diabetes mellitus	64%	60.9%	< 0.001
Congestive heart failure	52.2%	17.1%	< 0.001
CAD	40.2%	20.2%	< 0.001
Peripheral vascular disease	7.5%	4.1%	< 0.001
COPD	28.5%	21.2%	< 0.001
Renal failure	42.6%	24.7%	< 0.001
Coagulopathy	32%	32.5%	0.01
Obesity	39.3%	36.3%	< 0.001
Drug abuse	1.5%	2.5%	< 0.001
Alcohol abuse	2.3%	3.9%	< 0.001
Smoking	30.5%	32.1%	< 0.001
Admission Type, %			< 0.001
Emergent	90.3%	86.8%	
Elective	9.7%	13.2%	
Insurance type, %			< 0.001
Medicare	75.2%	53.6%	
Medicaid	5.4%	13%	
Private	16.4%	27.8%	
Other	3%	5.5%	
Location/Teaching status of the hospital, %			< 0.001
Rural	7.7%	7.6%	
Urban nonteaching	19.5%	18.1%	
Urban teaching	72.8%	74.3%	
Propensity-Matched Outcomes	NASH with Afib N=62175	NASH without Afib N= 62190	p-value
In-hospital mortality, %	6.5%	4.1%	< 0.001
Mortality adjusted odds ratio	1.63 (1.55 – 1.71)		< 0.001
Length of stay, in days (mean ± SD)	6.8 ± 7.5	5.9 ± 6.3	< 0.001
Total hospitalization cost, in US $ (mean ± SD)	18701 ± 28527	16220 ± 26589	< 0.001
Disposition, %			< 0.001
Discharge to home	40.3%	45.3%	
Transfer other: includes Skilled Nursing Facility, Intermediate Care Facility, or another type of facility	26.5%	23.6%	
Home health care	23%	23.7%	
Against medical advice	0.4%	0.4%	

*Abbreviations (NASH - Non-alcoholic steatohepatitis, Afib - Atrial Fibrillation, SD - Standard deviation, CAD - Coronary artery disease, COPD - Chronic obstructive pulmonary disease).

S1328

Examining Associations Between Arsenic Pollution and Hepatocellular Carcinoma in Texas

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Introduction: Alcohol is the major chemical risk factor for hepatocellular carcinoma (HCC) around the world, however other toxins including Arsenic have been shown to promote hepatocarcinogenesis in animals, though the exact mechanism is poorly understood. This ecological study assesses neighborhood-level HCC burden in Texas relative to arsenic exposure.
Methods: Using data from the Texas Cancer Registry, we identified a cohort of individuals diagnosed with HCC between 2011 and 2015. The primary exposure of interest is Arsenic pollution as reported in the 2011 National Air Toxics Assessment (NATA) inventory, this national screening assessment by the Environmental Protection Agency (EPA) uses emissions data to estimate health risks from toxic air pollutants. NATA calculates the concentrations of toxic air pollutants at the census tract (neighborhood) level; the inhalation exposure concentrations of Arsenic are in units of micrograms per cubic meter, however, for analysis, exposure concentrations were divided into deciles. Arsenic concentrations, demographic data, and the Area Deprivation Index (composite measure of neighborhood socioeconomic disadvantage that relies on 17 census variables drawn from these categories: poverty, housing, employment, and education) were included in multivariable Poisson-based modeling using negative binomial regression to evaluate the association between Arsenic exposure and HCC incidence in Texas.
Results: In a univariable model, the association between Arsenic inhalation exposure concentrations and HCC was not significant (IRR = 1.06 [95% CI, 0.98-1.16]). Whereas, in a multivariable model that included selected demographic and socioeconomic factors, results show that variation in census tract HCC incidence across Texas is significantly associated with the inhalation exposure concentrations of Arsenic. Based on our findings, in a typical Texas census tract, a 10-unit increase in decile classification of Arsenic inhalation exposure concentration increases the risk of HCC incidence by a factor of 1.30, while holding other explanatory variables constant (IRR = 1.30 [95% CI, 1.19-1.42]) (Table).
Conclusion: Variation in HCC incidence across Texas's census tracts is significantly associated with the inhalation exposure concentrations of Arsenic at the census tract level, higher Arsenic concentrations are associated with an increased incidence. This ecological finding needs to be further examined in direct association studies.

Table 1. Relationships between HCC incidence in Texas (2011 to 2015) and inhalation exposure concentrations of Arsenic (2011 estimate). Texas census tracts; N = 5,205

	Univariable Models[a]			Multivariable Model[b]		
	IRR	95% CI	*p* value	IRR	95% CI	*p* value
Arsenic concentrations[c]	1.06	0.98-1.16	0.159	1.302	1.194-1.419	0.001
Area Deprivation Index	1.17	1.16-1.20	<0.001	1.618	1.444-1.813	<0.001
% Hispanic or Latino (NH)	1.08	1.07-1.09	<0.001	1.092	1.080-1.105	<0.001
% Non-Hispanic Asians	0.68	0.65-0.71	<0.001	0.892	0.853-0.934	<0.001
% Non-Hispanic African American	1.06	1.05-1.07	<0.001	1.098	1.080-1.116	<0.001
% Others; 2+ races[d]	0.58	0.54-0.63	<0.001		-	
% Population ≥ 60 y.o.	1.19	1.15-1.22	<0.001	1.406	1.359-1.455	<0.001
% Population male	1.05	1.00-1.11	0.064	1.171	1.117-1.226	<0.001
% Non-Hispanic White[e]	0.91	0.90-0.92	<0.001			

[a]Univariable models where Arsenic exposure concentrations was regressed on the HCC incidence separately. Also, each covariate was regressed on the HCC incidence separately.
[b]Multivariable model where Arsenic concentrations and the covariates (P value ≤ 0.10) were regressed on the HCC incidence simultaneously.
[c]The 2011 National Air Toxics Assessment (NATA) inhalation exposure concentrations for Arsenic are in units of micrograms per cubic meter; for analysis, concentrations were divided into deciles.
[d]Variable dropped from the multivariable model run because p value > 0.10.
[e]To avoid model overfitting from multicollinearity among race/ethnicity, Non-Hispanic White excluded from multivariable model.

S1329

Nonalcoholic Fatty Liver Disease in Overweight Primary Care Patients: Comparison of Clinical Diagnosis vs Fibrosis-4 and Hepatic Steatosis Index Scores

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Introduction: More than two-thirds of US adults are overweight or have obesity, a risk factor for nonalcoholic fatty liver disease (NAFLD). NAFLD is asymptomatic until late in the disease. Therefore, the aim of this study was to assess whether early evidence of NAFLD is being appropriately diagnosed in a primary care patient population.
Methods: A retrospective data analysis was performed of overweight (BMI ≥ 23 for Asians or ≥ 25 for other races) patients (age ≥ 18) who had established primary care (defined as ≥ 2 visits in primary care) in a large healthcare system in Minneapolis between 2010 to 2019. Patients with a diagnosis of alcoholic liver disease, and hepatitis B and C virus infections were excluded. The clinical diagnosis of NAFLD was based on ICD-9 and -10 codes (571.8, K75.81, K76.0). Fibrosis 4 (FIB-4) score ≥ 3.25 and hepatic steatosis index (HSI) score ≥ 36 were calculated as markers of hepatic fibrosis and fatty liver disease, respectively. ICD codes were compared to FIB-4 and HSI scores.
Results: 373,917 patients met study criteria; 52% were female, 86% white, average BMI at first primary care visit was 31.1 (SD 6.0) and average age was 46.4 (SD 17.3). At the end of the follow-up period in 2019, 6.6% of patients met criteria for hepatic fibrosis by FIB-4 score and 90.4% met criteria for fatty liver disease by HSI score. Among patients who met criteria for hepatic fibrosis by FIB-4 score, only 10.7% had been diagnosed as having NAFLD/NASH by ICD code; among those who met criteria for fatty liver disease by HSI criteria, only 6% had been diagnosed by ICD code (Table). A formal diagnosis of NAFLD/fatty liver/NASH by ICD code had been made in 4.1% of patients. Out of these patients, 97.7% had fatty liver by HSI score and 11.9% had hepatic fibrosis by FIB-4 score.
Limitations: For 110,994 patients, a FIB-4 or HSI score could not be calculated. Duration of follow up was maximally nine years. Treatment information was not analyzed.
Conclusion: Hepatic fibrosis and fatty liver disease are underdiagnosed in this healthcare system based on abnormal FIB-4 and HSI scores. These results are likely generalizable to other healthcare systems in the US. Given the frequency and reversibility of early NAFLD, primary care providers should have a low threshold to screen using simple labs tests (AST, ALT, platelet count) for fatty liver disease and hepatic fibrosis. Those with abnormal results should pursue intensive lifestyle modification and weight loss treatment.

Table 1. *Data Missing: Data to calculate FIB-4 or HSI score not available

	Yes	Percentage	No	Data Missing	Total (N)
FIB-4 score ≥ 3.25	15,696	6.6	221,093	137,128	373,917
Patients with abnormal FIB-4 score who are diagnosed by ICD code	1,686	10.7	14,010	0	15,696
HSI score ≥ 36	241,357	90.4	25,543	107,017	373,917
Patients with abnormal HSI score who are diagnosed by ICD code	14,470	6.0	226,887	0	241,357
NAFLD/Fatty Liver/NASH diagnosis by ICD code	15,324	4.1	358,593	0	373,917
FIB-4 score ≥ 3.25 among patients who are diagnosed with NAFLD/fatty liver/NASH by ICD code	1,686	11.9	12,468	1,170	15,324
HSI score ≥ 36 among patients who are diagnosed with NAFLD/fatty liver/NASH by ICD code	14,470	97.7	346	508	15,324

S1330

Outcomes of Patients Hospitalized for Acute Alcoholic Hepatitis With Comorbid Generalized Anxiety Disorder

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Introduction: Alcohol use disorder (AUD) is a highly prevalent chronic disorder in the USA. Acute alcoholic hepatitis (AAH) is a common complication of significant alcohol use. Up to half of AUD patients have comorbid generalized anxiety disorder (GAD). GAD is a common form of anxiety in adults. Despite the frequency of GAD in AUD patients, there is little research exploring the impact of GAD on AAH. We assessed the outcomes of AAH with concomitant GAD.
Methods: Patients hospitalized for AAH were selected from the 2014 National Inpatient Sample database. ICD-9 CM codes were used to identify diagnoses. Demographic data and outcomes of AAH were compared between a subgroup with GAD and a subgroup without GAD. The outcomes of interest were inpatient mortality, acute hepatic failure, sepsis, acute respiratory failure, acute renal failure (AKI), hepatic encephalopathy, and hypotension/shock. Independent t-tests and chi-squared tests were used to compare means and proportions respectively. A multivariate logistic regression analysis was conducted to establish if GAD is an independent predictor for the outcomes, after adjusting for age, sex, race, and Charlson Comorbidity Index (CCI).
Results: Among 9,931 AAH patients, 1,954 had comorbid GAD. Patients with comorbid GAD were found to be younger (44.6 years old vs. 47.1 years old, $p< 0.001$), more likely to be male (57.1% vs. 31.5%, $p< 0.001$), more likely to be white (83.2% vs. 69.3%, $p< 0.001$), had a lower hospitalization cost ($28,323 vs. $34,965, $p< 0.001$) and had a lower CCI (0.44 vs. 0.51, $p=0.001$). There was no significant difference in length of stay (4.7 days with GAD vs. 4.9 days without GAD, $p=0.094$). After adjusting for age, sex, race, and CCI, GAD was found to be a risk factor for acute hepatic failure (adjusted odds ratio (aOR) 1.87, 95% confidence interval (CI): 1.25-2.80, $p=0.002$), sepsis (aOR 1.57, 95% CI: 1.15-2.15, $p=0.005$), acute respiratory failure (aOR 1.43, 95% CI: 1.06-1.93, $p=0.020$), AKI (aOR 1.59, 95% CI: 1.30-2.00,$p< 0.001$), hepatic encephalopathy (aOR 1.60, 95% CI: 1.29-1.98, $p< 0.001$) and hypotension/shock (aOR 1.25, 95% CI: 1.10-1.43, $p< 0.001$). The aOR for inpatient mortality was not statistically significant ($p=0.221$). (Table)
Conclusion: Our study found that GAD is an independent risk factor for acute hepatic failure, sepsis, acute respiratory failure, AKI, hepatic encephalopathy, and hypotension/shock in patients hospitalized with AAH. The baseline inflammatory state found in GAD patients may help explain these findings.

Table 1. Title: Multivariate logistic regression analysis of clinical outcomes among acute alcoholic hepatitis patients

Outcomes	Adjusted Odds Ratio*	95% Confidence Interval	p-value
Acute hepatic failure	1.87	1.25-2.80	0.002
Acute renal failure	1.59	1.30-1.95	< 0.001
Acute respiratory failure	1.43	1.06-1.93	0.020
Hepatic encephalopathy	1.60	1.29-1.98	< 0.001
Hypotension/shock	1.25	1.10-1.43	< 0.001
Inpatient mortality	1.32	0.85-2.05	0.221
Sepsis	1.57	1.15-2.15	0.005

*Adjusted for age, sex, race, and Charlson comorbidity index.

S1331

Comparison of Liver Elastography Between Obese and Non-Obese Children: A Systematic Review and Meta-Analysis

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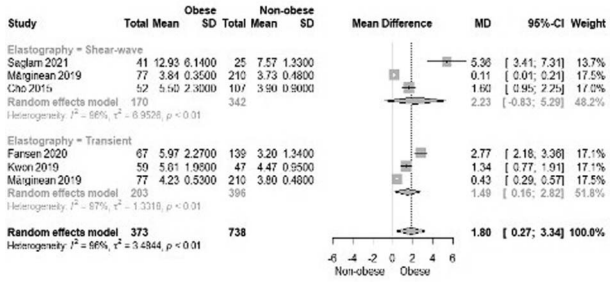
Introduction: Non-invasive Liver fibrosis evaluation in suspected NAFLD has been studied in obese adults, but few studies have addressed the utility of Transient and Shear-wave Elastography assessing early-stage fibrosis in pediatric population. We aimed to perform a systematic review and meta-analysis to compare Liver Elastography findings between obese and non-obese children.
Methods: PubMed, MEDLINE (OVID), Cochrane Library, Embase, Scopus and Web of Science were searched from inception to January 2022 to identify manuscripts that evaluated Liver steatosis/Liver fibrosis on Elastography (Transient or Shear-wave) in obese children compared to non-obese children. Case series, case reports, editorials, and reviews were excluded. Two independent reviewers extracted data. Disagreements were resolved by a third author. Meta-analyses were performed using a random-effect model with the inverse variance method. We used the Paule-Mandel estimator and Hartung-Knapp-Sidik-Jonkman method for $\tau 2$ and 95% confidence intervals calculation. For continuous outcomes we used the Mean Difference (MD). Heterogeneity was assessed by the inconsistency index (I^2).
Results: Among 3182 articles identified, 17 studies were identified for full text review. Five studies were deemed eligible for inclusion with perfect agreement between investigators (kappa=1.0). A total of 296 obese children and 528 non-obese controls were included in the studies (Table). Three studies used Shear-wave Elastography, four used Transient Elastography and one used both. The female proportion was higher in the non-obese group. ALT and AST values were higher in the obese group in most of the studies. On the non-stratified meta-analysis obese children were found to have higher values of Liver Stiffness Measurement (LSM) measured in kilopascals (kPa) compared with non-obese controls (MD: 1.80, 95% CI: 0.27 - 3.34), however, when stratifying this effect was only significant when using only Transient Elastography (MD: 1.49, 95%: 0.16 - 2.82) (Figure).
Conclusion: Our systematic review and meta-analysis demonstrates that obese children present higher values of Liver Stiffness compared to non-obese children. In that sense, this non-invasive testing could be successfully applied as a predictor of NAFLD in the clinical setting. These findings may depend on the elastography type, since it was significant using the Transient Elastography, and more studies are needed to further validate this non-invasive testing.



[1331] **Figure 1.** Forest plot of the effect in Liver stiffness Measurement (kPa)

Table 1. Baseline Characteristics of Included Subjects

Study	Group	Sample size	Age (years)	Female %	ALT	AST	Total Cholesterol	Triglycerides
Saglam (2021)	Obese Non-obese	41 25	11.4 (9.6-13.5) 11.7 (9-13.2)	46.3% 52%	18 (15-22) 13 (10.1-16.2)	21 (19-23) 23 (17.7-25.3)	156 (142-172.75) mg/dl 137.5 (128-149.75) mg/dl	107.5 (87-135.5) mg/dl 68 (59.25-98.25) mg/dl
Zeng Fansen (2020)	Obese Non-obese	67 139	10.9 (6-17.4) 10.2 (5-17)	28.4% 41.7%	59 (23-101) 19 (15-25)	32 (21-58) 27 (16-34)	4.7 (4.3-5.7) mmol/L 3.1 (2.8-3.3) mmol/L	1.4 (0.9-1.9) mmol/L 1.1 (0.8-1.3) mmol/L
Marginean (2019)	Obese Non-obese	77 210	10.4 ± 3.4 11.3 ± 3.83	33.7% 54.8%	26.50 ± 43.1 13.64 ± 6.9	27.33 ± 23.6 22.29 ± 10.9	NA NA	NA NA
Kwon (2019)	Obese Non-obese	59 47	10.9 ± 2.4 10.1 ± 2.8	38% 40%	91.27 ± 97.7 16.28 ± 9.8	57.00 ± 48.5 26.40 ± 11.8	173.97 ± 37.23 mg/dl 146.65 ± 59.07 mg/dl	NA NA
Cho Y (2015)	Obese Non-obese	52 107	13.0 (3.5-17.6) 11.2 (1.3-17)	26.9% 49.5%	75 ± 83 17 ± 14	48 ± 45 24 ± 7	NA NA	149 ± 73 mg/dl 97 ± 65 mg/dl

S1332

Assessment of Risk Factors of Hepatic Steatosis Diagnosed by Vibration Controlled Transient Elastography (VCTE) in Chronic Hepatitis C Virus Infected Patients

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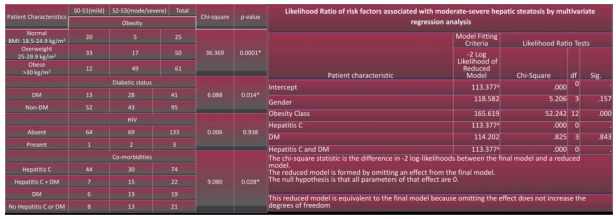
Introduction: In chronic hepatitis C patients, the prevalence of steatosis ranges from 40% to 86%. Our aim was to study the risk factors of moderate/severe hepatic steatosis diagnosed by vibration-controlled transient elastography (VCTE) in these patients.
Methods: This retrospective cross-sectional study included a cohort of 158 adult patients with suspected nonalcoholic fatty liver disease (NAFLD) evaluated in the clinic. Patients with significant alcohol consumption, oral contraceptive use, hepatitis B, autoimmune hepatitis, and primary biliary cirrhosis were excluded. Steatosis was categorized as S0-S1 (mild) and S2-S3 (moderate/severe) based on the controlled attenuation parameter (CAP) grade. Continuous variables were assessed using an unpaired t-test and categorical variables using chi-Square with $p< 0.05$ were considered statistically significant. A multinominal logistic regression analysis was done to study the relationship between the CAP grade (dependent variable) and significant covariates (independent variables) while controlling for the effect of each other. The model fitting criteria used was -2 log-likelihood (LL) which was tested for goodness-of-fit and pseudo R^2 showed a Negelkerke value of 0.520.
Results: 136 patients met inclusion criteria. A moderate/severe steatosis score was associated with various risk factors: obesity ($p< 0.05$), DM ($p< 0.014$), metformin use ($p< 0.0017$), fibrosis ($p< 0.009$). A 4x2 chi-square Table showed 40% of patients with hepatitis C, 68% with hepatitis C + DM, 68% with DM, and 61% non-hepatitis C, non-DM patients (p-0.028) had moderate to severe hepatic steatosis. On regression analysis, the -2 LL of the reduced model in patients with hepatitis C and hepatitis C + DM revealed that omitting the effect of obesity resulted in zero degrees of freedom (df 0). Obesity had a significant association with steatosis (chi-square value 52, df 12). DM had a weak association with steatosis (chi-square value 0.825, df 3). (Figure)
Conclusion: Hepatic steatosis is independently associated with metabolic parameters like obesity and DM. The chi-square analysis initially indicated that hepatitis C is associated with steatosis, but using multivariate analysis, we accounted for potential confounders, i.e., the most significant risk factor for steatosis in untreated hepatitis C patients is their BMI. Thus, the management of obesity in patients with chronic hepatitis C may be necessary for reducing the risk of steatosis progression and improving their fibrosis score.



Patient Characteristics	S0-S1(mild)	S2-S3(mod/severe)	Total	Chi-square	p-value
Obesity					
Normal BMI: 18.5-24.9 kg/m²	20	5	25	36.369	0.0001*
Overweight 25-29.9 kg/m²	33	17	50		
Obese >30 kg/m²	12	49	61		
Diabetic status					
DM	13	28	41	6.088	0.014*
Non-DM	52	43	95		
HIV					
Absent	64	69	133	0.006	0.938
Present	1	2	3		
Co-morbidities					
Hepatitis C	44	30	74	9.080	0.028*
Hepatitis C + DM	7	15	22		
DM	6	13	19		
No Hepatitis C or DM	9	13	21		

Likelihood Ratio of risk factors associated with moderate-severe hepatic steatosis by multivariate regression analysis

Patient characteristic	Model Fitting Criteria: -2 Log Likelihood of Reduced Model	Likelihood Ratio Tests: Chi-Square	df	Sig.
Intercept	113.377ª	.000	0	.
Gender	118.582	5.206	3	.157
Obesity Class	165.619	52.242	12	.000
Hepatitis C	113.377ª	.000	0	.
DM	114.202	.825	3	.843
Hepatitis C and DM	113.377ª	.000	0	.

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model.
The reduced model is formed by omitting an effect from the final model.
The null hypothesis is that all parameters of that effect are 0.

This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom

[1332] **Figure 1.** Results of patient characteristics and multivariate regression analysis

S1333

Acceptability and Feasibility of Hepatitis B Screening Using Dried Blood Spots in a Free Community Health Fair Setting

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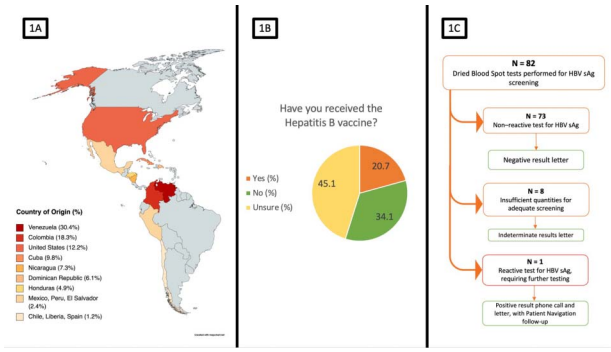
Introduction: Chronic hepatitis B virus (HBV) infection is a major global health problem. Rates of HBV in Florida are higher than the national rate, reflecting immigration patterns. There are pervasive barriers to screening for HBV. In this study, we aimed to assess the feasibility of using dried blood spot (DBS) tests to screen for HBV at medical-student run, free community health fairs and to understand factors influencing acceptability of such testing.
Methods: Participants attended two of the University of Miami's Mitchell Wolfson Sr. Department of Community Service (DOCS) health fairs in December 2021 and April 2022. At these USPSTF-based screening health fairs, patients were invited to participate and complete a questionnaire assessing HBV screening acceptability. Those who agreed to screening had fingerstick performed and DBS testing; DBS cards were shipped to Molecular Testing Labs (Vancouver, WA). Samples were processed for hepatitis B surface antigen and results were returned to DOCS student personnel, who then provided results via letter and/or telephone call according to a pre-specified schema over 3 to 4 weeks. (Figure)
Results: There were 82 participants in this pilot study. While all participants agreed to receive DBS testing, 28.0% reported that aspects made them feel uncomforTable, citing the long turnaround time for results, 78.2%, and lack of financial resources should treatment be necessary, 69.9%. The majority, 72.0%, found the proposed screening acceptable, but proposed that other community members might be uncomforTable with screening due to the lack of immediate results, 33.9%, and lack of resources for treatment, 30.5%. In total, 73 patients had negative tests, 8 patients had insufficient samples for adequate screening; 1 patient received preliminary positive findings for HBV infection.
Conclusion: In a community health fair setting, we found that using DBS to screen for HBV was acceptable among most participants receiving similar health screenings. Offering screening tests with faster turnaround time for results could improve acceptability. The finding of insufficient samples highlights the need for quality improvement training to obtain adequate blood samples. Participant concern regarding lack of financial resources if treatment is needed has been reported in other studies. Future studies will examine acceptability at other health fairs with different demographics and a cost-benefit analysis of routine screening for HBV amongst vulnerable patients.



[1333] **Figure 1.** Figure A shows the geographic distribution of the countries of origin of patients seen at the community health fairs. Figure B displays proportion of patients who have been vaccinated for HBV as well as those who have not been vaccinated and those who are unaware of their vaccination status. Figure C shows testing results and the schema utilized to return results to participants and patients

Table 1. Demographics of patients who underwent HBV Screening

Median age (years)	49.5
Female sex (%)	50
Race/Ethnicity (%)	
Black (African American)	2.4
Black (Hispanic)	4.9
White (Hispanic)	85.4
White (Non-Hispanic)	3.7
Prefer not to answer	3.7
Language Preferences (%)	
Spanish	78
English	22
Country of Origin: United States (%)	12.2
Insurance Type (%)	
Uninsured	58.5
Private	28
Medicare/Medicaid	6.1
Other/Do not know/Refused	7.3

S1334

Pharmacotherapy for Primary Biliary Cholangitis: An Assessment of Medication Candidacy and Rates of Treatment

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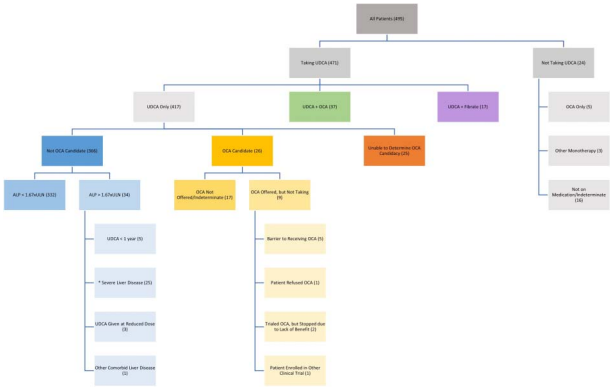
Introduction: Numerous trials have shown that Ursodeoxycholic Acid (UDCA) is effective in improving biochemical indices, delaying progression, and improving survival in patients diagnosed with Primary Biliary Cholangitis (PBC). The alternative therapy, Obeticholic Acid (OCA), is recommended for patients who cannot tolerate UDCA or who have an inadequate response to UDCA monotherapy. Despite the efficacy of these medications, prior investigations suggest that as many as 30% of patients with PBC may have never received treatment. This study aims to characterize usage rates of UDCA and second-line therapies among patients with PBC at a large urban health system with an academic liver transplant program.
Methods: This was an observational, cross-sectional study. Patients were identified according to the ICD-10 code for PBC (ICD-10-CM: K74.3). All patients with a diagnosis of PBC who had any records within the health system were included. Review of medical records was performed to confirm the diagnosis of PBC (defined by AASLD practice guidelines) and determine which medications had been prescribed for treatment of PBC, as well as candidacy for second-line therapies.
Results: 495 patients met inclusion criteria for this study. Of these, 91% self-identified as female, 7% as male, and 2% did not report. 78% self-identified as white/Caucasian, 7% as black/African American, 3% as Asian, 2% as Hispanic, and 9% did not report. Results for medication candidacy and usage are shown in the attached Figure. Notably, 95% of all patients were taking UDCA for treatment of their PBC. 67% of patients had PBC that was well-controlled on UDCA monotherapy. 8% of patients were taking OCA (either as combination or monotherapy). 3% of patients had a persistently elevated alkaline phosphatase despite appropriate treatment with UDCA and would benefit from the addition of OCA but had not been offered the medication. Only 3% of patients were not on any medication for management of PBC.
Conclusion: Despite prior investigations suggesting that a large proportion of PBC patients may be unmedicated for the disease, the data presented here suggest that PBC patients are generally being managed according to guidelines in our health system. The majority of patients have disease that is well-controlled with UDCA monotherapy. However, OCA remains an important adjunctive/alternative therapy in certain cases, and physicians should be aware of indications for its use.



[1334] **Figure 1.** Medication candidacy and usage among patients diagnosed with PBC. UDCA – Ursodeoxycholic Acid; OCA – Obeticholic Acid; ALP – Alkaline Phosphatase; ULN – Upper Limit of Normal. Shown are all patients with a diagnosis of PBC who have records within the health system. Patients were stratified on the basis of medication usage and candidacy for OCA. The number of patients in each category is displayed in parentheses. OCA candidacy is considered to be one or more of the following: failure of ALP to decrease to within 1.67 times the upper limit of normal after one year of therapy with UDCA at appropriate weight-based dosing; inability to tolerate UDCA at appropriate weight-based dosing. * Severe liver disease is defined as one or more of the following: Child-Pugh B/C categorization; presence of portal hypertension; history of liver decompensation. Severe liver disease is a contraindication to the use of OCA

S1335

Tenofovir Disoproxil Fumarate Switching to Tenofovir Alafenamide for Three Years Resulted in Improvement of Hepatic Fibrosis by APRI and FIB-4 Score as Well as Shear Wave Elastography in Patients With Chronic Hepatitis B

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Introduction: Tenofovir Alafenamide (TAF) is one of the first-line treatments (Rx) for chronic hepatitis B (CHB) with comparable antiviral effects, better safety profile than Tenofovir Disoproxil Fumarate (TDF). We have showed switching from TDF to TAF Rx for 96 weeks resulted in further ALT improvement, but data remain lacking on its long-term effects on hepatic fibrosis. The present study assessed effects of TDF switching to TAF for 3 years (144 weeks) on AST to Platelet Ratio Index (APRI), Fibrosis-4 (FIB-4) scores, and shear wave elastography (SWE).
Methods: A single center retrospective study on 53 CHB patients initially treated with TDF, then switched to TAF to determine patterns of ALT, AST, APRI, FIB-4 scores, SWE improvement at Rx week (Rx wk) 144, and the associated factors.
Results: Mean age 55 (28-80); 7.7%, spleen size >12 cm; 11.3%, platelets < 120 x10^9/L; mean baseline ALT, 24.8 (7-108); AST, 25.7 (15-89) IU/L; APRI, 0.37 (0.13-0.92); FIB-4, 1.66 (0.49-5.33). After switching, means of ALT, AST, APRI, and FIB-4 were all improved persistently. Mean ALT was reduced to 20.8 (8-106), 19.1 (7-40), 19.5 (9-42), 19.7 (8-42) (Fig. 1A); mean AST, 21.4 (13-59), 20.3 (14-38), 21.2 (13-41), 21 (13-39) (Fig. 1B); mean APRI, 0.29 (0.09-0.78), 0.28 (0.12-0.69), 0.28 (0.13-0.64), 0.27 (0.11-0.51) (Fig. 1C); mean FIB-4, 1.43 (0.39-3.94), 1.46 (0.49-3.68), 1.43 (0.50-3.33), 1.38 (0.39-2.76) (Fig. 1D); at Rx wk 24, 48, 96, 144, respectively. Mean SWE reading was improved from 7.05 to 6.30 kilopascal (kPa), improvement rate to fibrosis stage 0-1 was increased from 32/50 (64%) to 43/50 (86%) after a mean of 108 wks switching (4-240). Univariate analysis showed pre-Rx spleen >12 cm (p=0.031); platelet < 120 x10^9/L (p=0.018), APRI < 0.5 (p=0.047), but not FIB-4 < 1.45 (p=0.055), ALT < 40 (p=0.460), AST < 40 (p=0.460) at Rx wk 24 were associated with SWE improvement. Multivariate analysis showed hepatic fibrosis improvement by SWE was negatively associated with pre-Rx spleen >12 cm (p=0.016), independently to platelet < 120 x10^9/L (p=0.250), APRI < 0.5 (p=0.448), and FIB-4 < 1.45 (p=0.244) at Rx wk 24.
Conclusion: Our data confirmed switching from TDF to TAF for 3 years results in not only persistent ALT, AST improvement, but also hepatic fibrosis improvement by APRI, FIB-4, as well as by SWE reading. SWE improvement was significantly negatively associated with pre-Rx spleen >12 cm, independent to platelet < 120 x10^9/L, APRI < 0.5, and FIB-4 < 1.45 at Rx wk 24.

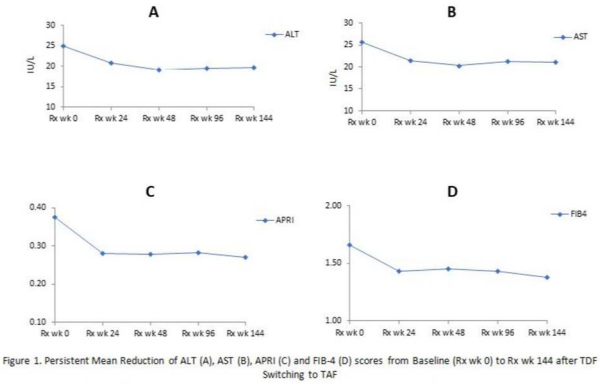

Figure 1. Persistent Mean Reduction of ALT (A), AST (B), APRI (C) and FIB-4 (D) scores from Baseline (Rx wk 0) to Rx wk 144 after TDF Switching to TAF

[1335] **Figure 1.** Dynamic changes in mean reduction of ALT, AST, APRI, and FIB-4 scores from baseline to treatment week 144 after TDF switching to TAF

S1336

Role of FIB-4 Score in Predicting Risk of Hepatocellular Carcinoma in Patients With Cirrhosis due to Nonalcoholic Steatohepatitis

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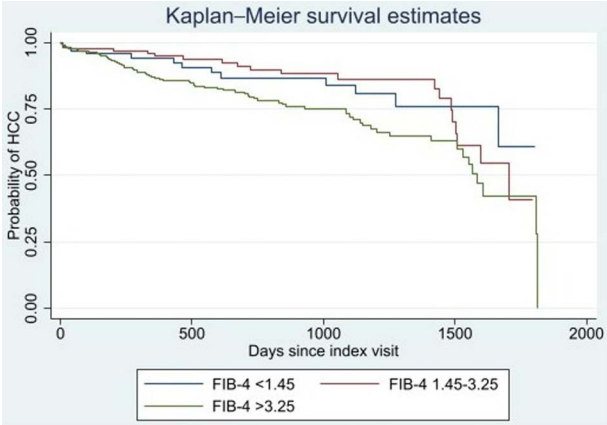
Introduction: Hepatocellular carcinoma (HCC) represents the main cause of death in patients with nonalcoholic steatohepatitis (NASH) cirrhosis and is a leading indication for liver transplantation. Identification of high-risk patients for HCC is essential for long term monitoring of disease progression, early detection, and effective intervention. Fibrosis-4 (FIB-4) is a noninvasive index of readily available laboratory measurements and is widely validated for predicting cirrhosis and HCC. We sought to determine if FIB-4 score is associated with high risk of HCC among patients with NASH cirrhosis.
Methods: We conducted a retrospective cohort study of adult patients with NASH cirrhosis (n=1,441) who were evaluated at our medical center between 2005 and 2015. Those who developed HCC were identified via ICD codes until the end of September 2021. At day of index NASH cirrhosis diagnosis, clinical and biochemical measurements were recorded on each patient. Descriptive statistics were calculated for all factors. Kaplan-Meier analysis was performed to evaluate time to HCC event. Cox regression models were used to evaluate associations between HCC and factors of interest. Models were adjusted for age, sex, number of comorbidities, and laboratory values.

Results: During a median follow-up time of 8.3 years, 218 (15%) patients with NASH cirrhosis developed HCC. At index visit, the study population had a median age 57 years, 44% males, 78.6% White, median BMI 31.5 kg/m^2, 26.7% had diabetes mellitus, 10.4% current smokers, mean FIB-4 score 4.2, and mean MELD score 8.1. Multivariable Cox regression models revealed that age, sex, race/ethnicity, BMI and FIB-4 were independent factors associated with development of HCC in patients with NASH cirrhosis (Table). Compared to patients with FIB-4 < 1.45, patients with FIB-4 between 1.45-3.25 had a similar risk of HCC (95% CI: 0.61-1.86, p=0.82). Patients with FIB-4 > 3.25 had a 2.51 (95% CI: 1.53-4.12, p< 0.001) increased hazard of HCC (Figure).

Conclusion: Age, sex, race/ethnicity, BMI and FIB-4 were independently associated with HCC in NASH cirrhosis. We found that FIB-4 > 3.25 was an independent predictor of HCC risk. Providers should pay attention to FIB-4 for long term monitoring of disease progression. An inexpensive, available, validated marker like FIB-4 is a promising tool for identification of high-risk patients and may be used in routine clinical practice as a simple screening strategy for HCC risk in patients with NASH cirrhosis.



[1336] **Figure 1.** Kaplan-Meier estimates of developing HCC in patients with NASH cirrhosis by FIB-4 score within 5 years of follow up

Table 1. Factors Associated with HCC in NASH Cirrhosis: Univariate and Multivariable Analyses

	Univariate		Multivariable	
Factors	**Unadjusted Hazard Ratio (95% Confidence Interval)**	**p-value**	**Adjusted Hazard Ratio (95% Confidence Interval)**	**p-value**
Age group, yrs				
≤49	1 [reference]		1 [reference]	
>49-59	1.40 (0.96-2.04)	0.08	1.22 (0.74-2.04)	0.43
>59-69	2.13 (1.47-3.11)	0.000	1.72 (1.02-2.90)	0.04
>69	4.26 (2.66-6.80)	0.000	3.03 (1.57-5.88)	0.001
Sex				
Female	1 [reference]		1 [reference]	
Male	2.13 (1.62-2.8)	0.000	2.00 (1.37-2.91)	0.000
Race and ethnicity				
Hispanic	0.72 (0.29-1.7)	0.46	0.42 (0.10-1.74)	0.23
Non-Hispanic				
White	1 [reference]		1 [reference]	
Black	0.62 (0.42-0.91)	0.01	0.70 (0.43-1.13)	0.15
Other*	0.59 (0.19-1.8)	0.36	0.50 (0.12-2.06)	0.34
BMI, Kg/m^2	0.989 (0.97-1.01)	0.24		
BMI category, Kg/m^2				
< 18.5	0.95 (0.22-4.16)	0.95	1.52 (0.34-6.85)	0.59
18.5–24.9	1 [reference]		1 [reference]	
25.0–29.9	1.73 (0.96-3.11)	0.07	1.69 (0.89-3.20)	0.11
30.0–34.9	1.49 (0.81-2.7)	0.20	1.46 (0.76-2.81)	0.26
35.0–39.9	1.59 (0.83-3.02)	0.16	1.63 (0.82-3.26)	0.16
≥40	0.95 (0.47-1.91)	0.89	1.16 (0.53-2.50)	0.71
Diabetes	0.76 (0.55-1.06)	0.11		
Total cholesterol, mg/dL				
125-200	1 [reference]			
≥200	0.78 (0.39-1.6)	0.50		
LDL, mg/dL				
< 130	1 [reference]			
≥130	0.42 (0.17-1.01)	0.05		
MELD score				
≤20	1 [reference]			
>20	1.14 (0.60-2.16)	0.68		
FIB-4 score				

Table 1. (*continued*)

	Univariate		Multivariable	
Factors	**Unadjusted Hazard Ratio (95% Confidence Interval)**	**p-value**	**Adjusted Hazard Ratio (95% Confidence Interval)**	**p-value**
< 1.45	1 [reference]		1 [reference]	
1.45-3.25	1.22 (0.79-1.9)	0.37	1.07 (0.61-1.86)	0.82
> 3.25	2.74 (1.89-3.97)	0.000	2.51 (1.53-4.12)	0.000
Albumin, g/dL	0.685 (0.566-0.828)	0.000		
INR	1.52 (1.19-1.95)	0.001		
Creatinine, mg/dL	0.91 (0.77-1.07)	0.26		
Total Bilirubin, mg/dL	1.04 (1.01-1.07)	0.01		
Platelet count, $\times 10^9$/L	0.997 (0.996-0.999)	0.001		

*Other category included Asian, American Indian-Alaskan or other.

S1337

Hepcidin Levels Are Suppressed Despite an Intact Hepcidin Iron Axis in Chronic Viral Hepatitis: A Meta-Analysis

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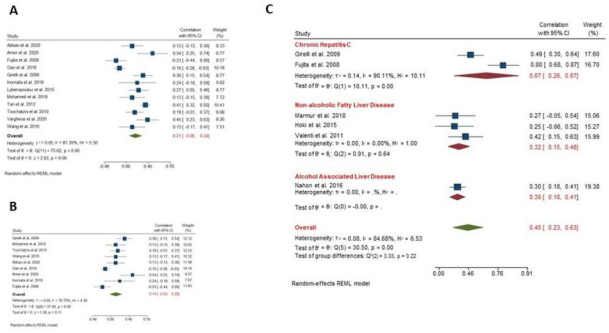
Introduction: Serum Hepcidin levels in chronic liver disease (CLD) are proposed biomarkers for hepatic iron load, inflammation, and fibrosis. Studies correlating serum hepcidin with these factors have yielded variable results. We carried out a meta-analysis to understand the effect on serum hepcidin levels on various aspects of CLD including systemic and hepatic iron levels, inflammation and liver synthetic capacity.
Methods: We searched Pubmed, Embase and Web of Science for studies which measured serum hepcidin levels in patients with CLD from inception till 2020. We included studies where correlation of serum hepcidin levels with serum iron indices, inflammatory markers, grade of inflammation/fibrosis or iron score on liver biopsy was examined. Meta-analysis was done using STATA software applying the random effects model.
Results: We found 1840 studies out of which 33 studies met inclusion criteria. Our meta-analysis showed that overall in patients with CLD, serum hepcidin levels (i) Correlated positively with iron indices, including serum ferritin (r=0.41, p=< 0.0001), hemoglobin (r=0.21, p= 0.011), transferrin saturation (r=0.15, p=0.01) and negatively with total iron binding capacity (r=-0.17, p=0.048). There was no correlation with serum iron levels (r = 0.07, p =0.333) (ii) Correlated positively with serum albumin levels (r=0.19, p =0.007) (iii) Correlated positively with histological iron stores (r = 0.46, p = 0.001) (iv) Correlated positively with liver hepcidin mRNA levels (r=0.51, p=0.001) (v) Did not correlate with grade of inflammation or fibrosis on liver biopsy. On subgroup analysis chronic viral hepatitis differed significantly in that serum hepcidin levels had no correlation with iron indices such as hemoglobin (r=0.14, p=0.534), transferrin saturation (r=0.13, p=0.36) or total iron binding capacity (r=-0.01, p=0.18). There continued to be a positive correlation with ferritin, albumin, hepcidin mRNA and histological iron score. (Figure)
Conclusion: (i) Correlation with hepatic iron levels indicates that hepcidin iron axis is intact in CLD including viral hepatitis (ii) Lack of correlation with iron indices indicates that overall hepcidin production is suppressed in viral hepatitis (iii) Serum hepcidin levels likely depend on hepatic synthetic capacity as indicated by a positive correlation with serum albumin.



[1337] **Figure 1.** Meta-analysis of correlations serum hepcidin levels (A) positive correlation with hemoglobin in chronic liver disease (B) no correlation with hemoglobin in subgroup with chronic viral hepatitis (C) overall positive correlation with histological iron scores

S1338

The Prevalence of Protein-Calorie Malnutrition Among Patients With Alcoholic, Non-Alcoholic and Chronic Viral Cirrhosis in the United States: A Population-Based Study

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[1]Cleveland Clinic Foundation, Cleveland, OH; [2]Royal Jordanian Medical Services, Amman, Al Karak, Jordan; [3]National Institutes of Health, Bethesda, MD; [4]Mutah University, Amman, Al Karak, Jordan; [5]Cleveland Clinic, Cleveland, OH; [6]Cleveland Clinic Foundation, Westlake, OH.

Introduction: Malnutrition is commonly identified among patients with cirrhosis with a wide prevalence rate of 23-60%, and is associated with increased mortality and liver-related complications like hepatic encephalopathy, infections and ascites. Our aim is to identify the prevalence of protein-calorie malnutrition among patients with alcoholic, non-alcoholic and chronic viral cirrhosis in the United States.
Methods: A validated multicenter database (Explorys Inc) of more than 360 hospitals from 26 different healthcare systems and ~70 million patients across the United States was utilized for this study. A cohort of patients with a SNOMED-CT diagnosis of "Protein-Calorie Malnutrition" between 2016-2021 was identified. We excluded all patients with age < 18 years, pregnancy, eating disorders, Roux-en-Y gastrojejunostomy, celiac disease, chronic pancreatitis and liver transplant. Statistical Package for Social Sciences (SPSS version 25, IBM Corp) was used for statistical analysis, and for all analyses, a 2-sided p-value of < 0.05 was considered statistically significant. Multivariate analysis was performed to adjust for multiple factors including age, sex, race, smoking, intravenous drug abuse, alcohol abuse, alcoholic cirrhosis, non-alcoholic fatty liver disease cirrhosis, and chronic hepatitis B or C cirrhosis.
Results: 74,226,890 individuals were screened in the database and 276,720,70 were included in the final analysis. The prevalence of malnutrition was 1.2%. The baselines characteristics of patients with protein-calorie malnutrition is shown in Table. The prevalence of protein-calorie malnutrition among patients with alcoholic, non-alcoholic and chronic hepatitis B or C cirrhosis was 10.9%, 6.9% and 2.0%; respectively. Elderly (OR 4.24), females (OR 1.43) and Caucasians (OR 1.39) were at higher risk for malnutrition. Protein-calorie malnutrition was more common among patients with alcoholic (OR 6.34), non-alcoholic fatty liver (OR 4.27) and chronic hepatitis B or C. Active smoking (OR 3.12), alcoholism (OR 3.45) and IV drug abuse (OR 3.77) were independently associated with higher risk for malnutrition (Figure).
Conclusion: This is the largest study for the prevalence of malnutrition in the U.S. Alcoholic cirrhosis, followed by non-alcoholic and chronic hepatitis B/C cirrhosis are associated with significantly increased risk. Independently of the liver status, active smoking, alcoholism and IV drug abuse are associated with higher risk for protein-calorie malnutrition.

		Odds Ratio (95% CI)	P-value
Demographics	Age >65	4.24 (4.22-4.27)	0.00
	Females	1.43 (1.42-1.44)	0.00
	Caucasians	1.39 (1.37-1.40)	0.00
Substance Use	Active Smoking	3.12 (3.10-3.14)	0.00
	Alcoholism	3.45 (3.41-3.50)	0.00
	Other Substance Abuse	3.77 (3.73-3.81)	0.00
Cirrhosis	Alcoholic	6.34 (6.21-6.47)	0.00
	Non-Alcoholic Fatty Liver	4.27 (4.18-4.35)	0.00
	Chronic Viral Cirrhosis	3.92 (3.85-3.98)	0.00

[1338] **Figure 1.** Multivariate analysis for protein-calorie malnutrition in the study population.

Table 1. Baseline characteristic of patients with protein-calorie malnutrition and control group

		Malnutrition % (N= 331,080)	Control group (N= 27,672,070)
Age	18-65	38.0 (125820)	72.0 (19933640)
	>65	62.0 (205260)	28.0 (7738430)
Sex	Male	47.4 (156890)	42.7 (11817350)
	Females	52.6 (174190)	57.3 (15854720)
Race	Caucasians	68.8 (227750)	58.4 (16161010)
	African-American	18.1 (59840)	11.6 (3219690)
	Asian	1.4 (4480)	1.6 (451960)
Comorbidities	Type 2 Diabetes	38.9 (128930)	12.2 (3388290)
	Hypertension	74.0 (245040)	30.3 (8385810)
	Hyperlipidemia	62.1 (205600)	27.0 (7466270)
	Alcoholic Cirrhosis	4.1 (13420)	0.2 (55270)
	Non-Alcoholic Fatty Liver Cirrhosis	4.6 (15260)	0.3 (96760)
	Chronic Viral Cirrhosis (HBV, HCV)	2.4 (7920)	0.3 (74120)

S1339

Gaps in Confirmatory Fibrosis Risk Assessment in Primary Care Patients With Nonalcoholic Fatty Liver Disease

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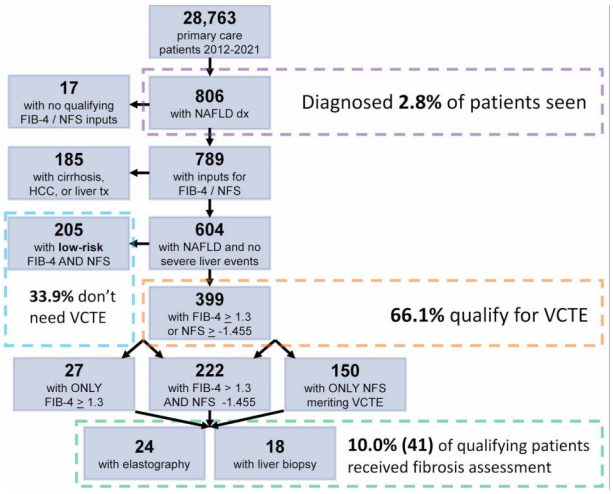
Introduction: As non-invasive fibrosis risk assessment strategies for nonalcoholic fatty liver disease (NAFLD) emerge, it is not known how often they are performed in primary care. We investigated the use of vibration-controlled elastography (VCTE) for fibrosis risk assessment in primary care patients with NAFLD and indeterminate-risk or greater serologic fibrosis risk assessments.
Methods: This retrospective cohort study of electronic health record data from a patient-centered medical home identified primary care patients with ICD-9/10 diagnoses of NAFLD from 2012 through 2021. Patients with a NAFLD diagnosis and qualifying inputs for Fibrosis-4 Index (FIB-4) and NAFLD Fibrosis Score (NFS) calculation within 3 years from the end of the study period were included. FIB-4 and NFS calculations required aminotransferase (aspartate [AST] and alanine [ALT]) results < 350 IU/L and platelet counts within 6 months of the AST and ALT values. Patients with a diagnosis of a severe liver outcome during the study period were excluded. The most recent FIB-4 and NFS scores were calculated and categorized by fibrosis risk. Charts were reviewed to identify the outcome of a confirmatory fibrosis risk assessment by liver elastography or liver biopsy any time during the study period for all patients with indeterminate-risk or higher FIB-4 (>1.3) and NFS (>-1.455) scores. Statistical analyses were performed using SAS version 9.4 (Cary, NC).
Results: The study sample included 604 patients with a diagnosis of NAFLD, inputs for serologic fibrosis risk score calculation, and no prior severe liver outcomes (Figure). Included patients were 60% female, 30% Black, had a mean age of 57 years, and a mean BMI of 32.2 m^2/kg. Of the cohort, 45% had diabetes, 69% had hyperlipidemia, and 26% had cardiovascular disease. Two-thirds of included patients (399) had a FIB-4 or NFS score greater than low-risk, 19% (113) had a high-risk FIB-4 (> 2.67) or NFS (> 0.676) score, and 7% (44) had high-risk FIB-4 and NFS values. Of these 399 patients with an indication for a confirmatory fibrosis test, 10% (41) underwent VCTE (24) or liver biopsy (18) or both (1).
Conclusion: Advanced fibrosis is a key indicator of future poor health outcomes in patients with NAFLD and a critical signal for primary care referral to hepatology. Even though much work is needed to improve NAFLD diagnosis in primary care, opportunities currently exist to improve confirmatory fibrosis risk assessment in patients with NAFLD.



[1339] **Figure 1.** Study population with serologic fibrosis risk scores and confirmatory fibrosis assessment. dx = diagnosis; HCC = hepatocellular carcinoma; tx = transplant

S1340

Spontaneous Bacterial Empyema Is Associated With Increased Mortality and Liver Transplant Has Survival Benefit: A Systemic Review and Meta-Analysis

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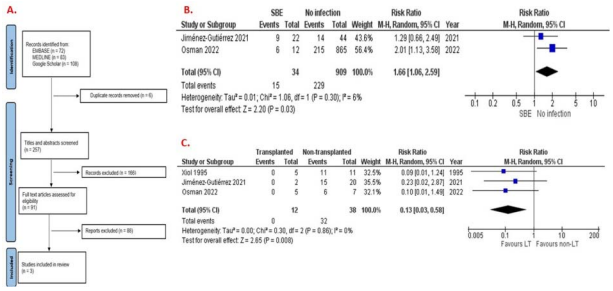
Introduction: Spontaneous bacterial empyema (SBE) is an infection of a pre-existing hepatic hydrothorax in patients with cirrhosis. It is rarely reported in the literature and the prognostic significance of SBE is not clearly illustrated. Liver Transplant (LT) has been suggested to have a survival benefit in patients with SBE, however, this has been limited by very small sample sizes. The aim of this study was to perform a systematic review and meta-analysis to evaluate the effect of SBE on mortality and the survival benefit that LT may provide.
Methods: A comprehensive search of several databases from each database's inception to December 2021 was conducted. Studies included in the systematic review met the following inclusion criteria: adult patients, age >18 years, with a diagnosis of SBE. Manuscripts with < 5 patients were excluded from the study. The databases included Ovid MEDLINE®, Ovid EMBASE, and Google Scholar. Outcomes of interest were mortality and LT. Data synthesis was obtained using random-effects metanalysis and reported as risk ratio (RR) with 95 % confidence intervals (CIs). Heterogeneity was assessed using I2 statistics.
Results: After excluding duplicates, 257 unique titles were screened, ultimately including 3 retrospective cohort studies (Fig A). Study characteristics are shown in Table. Two studies reported mortality as an outcome, with a total of 34 patients with SBE compared to 909 patients without SBE. A total of 943 patients with liver cirrhosis were included. Of which, 34 (3.61%) patients had SBE. SBE is significantly associated with increased mortality (RR 1.66, 95% CI 1.06-2.59, I2=6%) (Fig B). All studies included reported outcomes of LT. 50 patients with SBE were included, of which 12 (24%) patients received a LT – none of which had died at last follow up. LT was significantly associated with reduced mortality (RR 0.13, 95% CI 0.03-0.58, I2=0%) (Fig C).
Conclusion: Patients who develop SBE have a higher risk of mortality. LT may provide a survival benefit in patients with SBE. More studies with larger sample sizes are needed to validate our findings.



[1340] **Figure 1.** (A) Flowchart of the literature review. (B) Forest plot showing that SBE was associated with increased mortality. (C) Forest plot showing that LT was associated with lower mortality among patients with SBE

Table 1. Characteristics of patients with SBE in the literature

Study (year); Location	Age	Females	Etiology of Cirrhosis; Alcohol/Viral/Other	MELD Score	MELD-Na Score	CTP classification: A/B/C (n)	CTP score
Osman (2022); United States of America	53.42 ± 10.11	3 (25.00%)	5/4/3	27.00 ± 5.75	28.92 ± 6.23	0/4/8	11.17 ± 1.85
Jiménez-Gutiérrez (2021); Mexico	58.00 (52.00–64.00)	11 (50.00%)	3/5/14	16.00 (12.20–17.80)	21.50 (17.20–26.00)	0/10/12	0.00 (8.00–11.00)
Xiol (1996); Spain	NR	NR	NR	NR	NR	NR	11 (10.00–11.25)

Abbreviations: n, number; SBE, Spontaneous bacterial empyema; MELD-Na, Model for end-stage liver disease-Sodium; CTP, Child-Turcotte-Pugh; NR, not reported.

S1341

Burden and Independent Predictors of Readmissions in Portal Venous Thrombosis Hospitalizations

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Introduction: Portal vein thrombosis (PVT) is a relatively rare disease.Reliable data on incidence and prevalence is lacking, autopsy studies have reported a population prevalence of 1 percent.30-day readmission rates are an indicator of health care quality and delivery. Repeated admissions have a significant impact on the overall cost of health care. This study aimed to outline the burden of PVT readmissions and identify the modifiable predictors of readmissions.
Methods: The National Readmission Database (NRD) was used to identify PVT admissions from 2016 to 2019. Hospitalization of patients less than 18 years and elective admissions were excluded. After identifying our 30-day and 90-day readmission cohorts, we then assessed the patient demographic and hospital-specific variables within the NRD. We also assessed comorbidities using the validated Elixhauser comorbidity index. Outcomes included inpatient mortality rates, mean length of hospital stay (LOS), mean hospitalization cost (THC) and total cost of hospitalization. We also identified the top causes of readmissions in both 30 and 90-day readmission cohorts. Using a multivariate cox regression analysis we identified the independent predictors of 30-day readmissions. Statistical significance was set at p of < 0.05.
Results: A total of 17971 index PVT admissions for 30-day readmission and 14696 index PVT admissions for the 90-day readmissions study were included. Of these, 2971(16.5%) encounters had readmission within 30 days and 3737(25.4%) encounters had readmission within 90 days. The top five causes readmission in both 30-day and 90-day readmission cohort were PVT, sepsis, hepatocellular cancer, liver failure and alcoholic liver cirrhosis. The following were the independent predictors of 30-day readmission we identified during the study; discharge against medical advice-AMA (aHR of 1.86; p=0.002); renal failure (aHR 1.44 p= 0.014),liver failure (aHR 1.34;p $<$ 0.001), metastatic cancer (aHR1.31; p= 0.016), rheumatoid arthritis and collagen vascular disease (aHR 1.48, =p 0.006) fluid and electrolyte disorders (aHR 1.20, p= 0.004), diabetes mellitus (aHR 1.31,p 0.001) and alcohol abuse (aHR1.31;p=$<$ 0.001).
Conclusion: The independent predictors of 30-day readmissions identified during this study, are of clinical relevance because of their association with potentially reversible readmissions.Some of these conditions can be optimized before discharge and some respond to effective out-patient management.

S1342

The Impact of Acute Hepatic Porphyria on Mental Health: Results From the Porphyria Worldwide Patient Experience Research (POWER) Study

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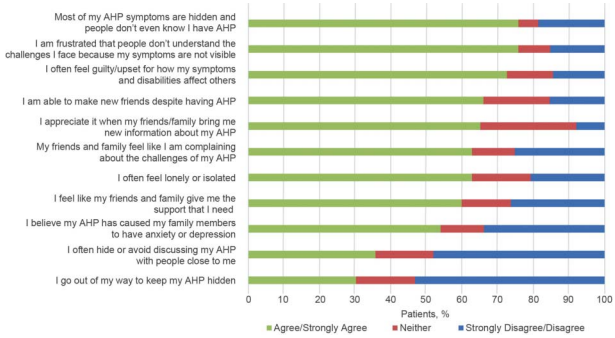
Introduction: Acute hepatic porphyrias (AHPs) are a group of rare genetic diseases of heme biosynthesis characterized by potentially life-threatening attacks and associated with psychiatric symptoms, including depression and anxiety. This study investigated the burden of AHP on mental health, social life, personal life/goals, depression, and anxiety.
Methods: Adults with $>$ 1 AHP attack within the past 2 years or receiving intravenous hemin and/or glucose for attack prevention, were administered in an online survey from January 19 to April 26, 2021. Patients taking givosiran were excluded. Patients were evaluated using the 8-item Patient Health Questionnaire depression scale (PHQ-8; range, 0–24; $\geq$ 10 identified moderate-to-severe depression) and the 7-item Generalized Anxiety Disorder scale (GAD-7; range, 0–21; scores of 5, 10, and 15 identified mild, moderate, and severe anxiety, respectively). Depression and anxiety were also evaluated in those with sporadic vs recurrent attacks (0–5 vs $\geq$ 6 attacks over 2 years), those receiving vs not receiving prophylactic treatment for AHP, and those with active disease duration 0–5 vs $\geq$ 6 years.
Results: Of 92 patients with AHP, mean age was 41.1 years and 90% were female. Impact on social life was substantial; 76.1% of patients reported that most symptoms were hidden and people in their social circle did not know they had AHP. An equal percentage reported frustration at the lack of understanding of the challenges they face. Similarly, 72.8% of patients reported feeling guilty/upset that their symptoms and disabilities affect others (Figure). More than 80% of patients reported having to modify or give up important goals; over half of patients reported that the decline in their mental and physical health feels never-ending, and over one-third reported loss of sense of purpose. PHQ-8 scores indicating moderate-to-severe depression were reported in more than half of patients (58.7%) regardless of attack rate or prophylactic treatment status. GAD-7 scores indicating moderate-to-severe anxiety were reported in 48.9% of patients and were highest in those experiencing recurrent attacks (56.8%).
Conclusion: Patients with AHP experience a high mental health burden, regardless of attack rate, treatment received, or duration of active disease. Approximately half of patients with AHP experience moderate-to-severe anxiety or depression, highlighting the importance of mental health monitoring in disease management for AHP.



[1342] **Figure 1.** Impact of AHP on Social Life

S1343

Accuracy of FibroScan in Assessing Liver Fibrosis in Patients With Nonalcoholic Fatty Liver Disease (NAFLD) in a Community Clinic Setting

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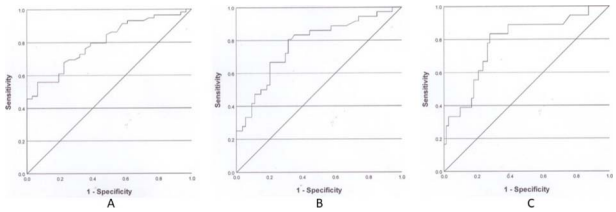
Introduction: Nonalcoholic fatty liver disease (NAFLD) is a common cause of liver disease. Newer modalities such as FibroScan and MR elastography can quantify the amount of steatosis and fibrosis on the liver. FibroScan has gained wide acceptance since it is non-invasive, less costly, and performed in physician's offices. Our study aims to evaluate the accuracy of FibroScan compared to liver biopsy in a community clinic setting.
Methods: Charts of 90 NAFLD patients were reviewed, and data were abstracted on FibroScan liver stiffness measures (LSM) and liver biopsy results. Accuracy of the LSM was defined as concordant with the Metavir fibrosis on biopsy if the difference was less than 1 stage. Diagnostic performance of the LSM was evaluated using area under the curve of the receiver operating characteristic (AUROC) curves with the recommended NAFLD fibrosis cut-off points.
Results: Of the 90 NAFLD patients, 54 (60%) met the diagnostic criteria for NASH with at least 1 point in each of steatosis, inflammation, and ballooning. Concordant LSM was identified in 59 patients (66%) with disconcordant LSM in 31 patients (34%). Under staging happened in 14 subjects (16%) and over staging in 17 subjects (19%). The usefulness of the LSM values based upon AUROC and sensitivity/specificity is in the sufficient to good level (0.6 – 0.7 and 0.7 – 0.8, respectively) (See Figure). The positive predictive value (PPV) was highest in the $\geq$F2 group and the negative predictive value (NPV) was highest in the F4 group (See Table). Therefore, the LSM results are better at identifying those with $\geq$F2 fibrosis and those without F4 fibrosis.
Conclusion: We conclude that FibroScan should not be used as the single method to evaluate the severity of NAFLD and that a multi-modality approach is needed. Potential limitations of our study include small sample size, high percentage of morbidly obese patients, high NAS scores, and elevated liver enzyme levels which are potential confounders. In clinical research studies on other liver diseases, obesity, acute liver inflammation, elevated transaminases, extrahepatic cholestasis, and increased central venous pressure have been found to be independent risk factors affecting FibroScan LSM measurements; these factors may also impact LSM measurement in patients with NAFLD. Further studies are needed to evaluate the role of factors impacting the FibroScan as a fibrosis measurement tool and to develop specific guidelines for use in NAFLD patients in a community clinic setting.



[1343] **Figure 1.** Receiver Operator Characteristic (ROC) Curves for ≥ F2, ≥ F3, and F4 Using the FibroScan Recommended Fibrosis Cut-off Points for NAFLD (Caption: A = ROC curve for ≥ F2; B = ROC curve for ≥ F; C = ROC curve for F4)

Table 1. Accuracy of LSM Values in Diagnosing ≥F2, ≥F3, and F4, as Measured by AUROC, Sensitivity, Specificity, PPV and NPV [Notes: AUROC = area under the receiver operator characteristic curve; CI = confidence interval; PPV = positive predictive value; NPV = negative predictive value; LSM = liver stiffness measure (given in kPa units)]

Fibrosis Stage	AUROC (95% CI)	Sensitivity	Specificity	PPV	NPV	Cut-Off Point (LSM)
≥ F2	0.79 (0.71 - 0.89)	0.73	0.65	0.80	0.56	7.5
≥ F3	0.74 (0.67 - 0.88)	0.69	0.70	0.61	0.78	10.0
F4	0.78 (0.66 - 0.90)	0.61	0.74	0.39	0.89	14.0

S1344

The Impact of Liver Cirrhosis on Patients Admitted With Candidemia: A Nationwide Analysis

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[1]University of Hawaii, Honolulu, HI; [2]Brown University/Kent Hospital, Providence, RI.

Introduction: Cirrhosis has been identified as a risk factor for the development of candidemia, which is associated with high mortality rates. Although the current literature describes poor outcomes in cirrhotic patients with invasive candidiasis, factors contributing to worse outcomes are not well known. We aim to better understand the factors contributing to worse outcomes in cirrhotic patients with candidemia.
Methods: Data were extracted from the National Inpatient Sample (NIS) database from 2016-2019. Using the ICD-10-CM codes, patients diagnosed with candidemia were identified. Baseline demographic data, comorbidities, in-hospital mortality, hospital charges, and hospital length of stay (LOS) were extracted and compared based on the presence or absence of a concurrent diagnosis of cirrhosis. Statistical analyses were done using t-test and Chi-squared analysis. A multivariate analysis for the mortality odds ratio (OR) was calculated to adjust for possible confounders.
Results: A total of 49,130 patients diagnosed with candidemia, and 2,650 of them had a concurrent diagnosis of cirrhosis. There was no difference in the cost of hospitalization ($ 319,472 vs. $ 315,338; p = 0.86) or the LOS (21.6 vs 21.7 days; p = 0.91). Cirrhotic patients had a higher in-hospital mortality than those without cirrhosis (OR 2.43, CI 1.94-3.02; p = 0.01). Moreover, age >65, non-white race, alcoholism, and congestive heart failure were independently associated with a higher in-hospital mortality (Table). In patients with cirrhosis and candidemia, the presence of hepatic failure (OR 2.4, CI 1.63-3.53; p = 0.00) and ascites (OR 1.64, CI 1.11-2.45; p = 0.01) were associated with increased mortality. Other comorbidities such as hepatorenal syndrome, hepatopulmonary syndrome, spontaneous bacterial peritonitis, hepatocellular carcinoma, and esophageal varices did not have an association.
Conclusion: A co-diagnosis of cirrhosis during hospitalization for candidemia may indicate a poor prognosis, especially in those with associated hepatic failure and ascites, and thus a careful clinical judgement should be practiced given the nature of cirrhosis may complicate the management of infection. Modifiable risk factors such as alcoholism and underlying socioeconomic factors may play key roles in disease outcomes and should be addressed to avoid excessively poor healthcare outcomes.

Table 1. Multivariate analysis of potential factors affecting in-hospital mortality in cirrhotic patients admitted with candidemia

Variable	Adjusted OR (CI 95%)	P-value
Cirrhosis	2.43 (1.94-3.02)	< 0.01
Age >= 65	1.47 (1.3-1.65)	< 0.01
Female	0.9 (0.81-1)	0.06
Non-White	1.4 (1.26-1.57)	0.02
Alcoholism	1.55 (1.22-1.96)	< 0.01
Diabetes mellitus	0.65 (0.58-0.73)	< 0.01
Hypertension	0.78 (0.69-0.87)	< 0.01
Congestive heart failure	1.71 (1.53-1.92)	< 0.01
Smoking	0.5 (0.43-0.56)	< 0.01
Obesity (BMI > 30)	0.84 (0.72-0.99)	0.04

S1345

Weight Loss Outcomes With and Without Diabetes in Patients With NAFLD in a Specialty Fatty Liver Disease Program

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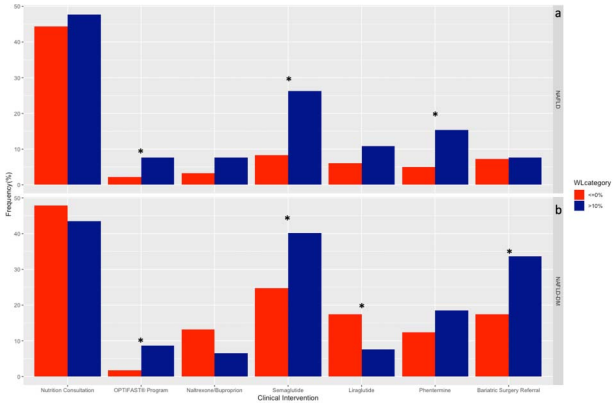
Introduction: Nonalcoholic fatty liver disease (NAFLD) is strongly linked to insulin resistance. As a result, type 2 diabetes mellitus (T2DM) is commonly comorbid in NAFLD and can increase morbidity and reduce weight loss treatment efficacy. We studied weight loss in adult NAFLD patients without and with T2DM (NAFLD-DM) receiving care in the Yale Fatty Liver Disease Program (YFLDP), which focuses on the integration of medical weight management treatments and hepatology care.
Methods: We analyzed retrospective data for adult patients with diagnostic codes for NAFLD and T2DM with complete data on body weight and at least one clinic visit between 5/23/2018 and 5/02/2022. Patients were categorized as NAFLD or NAFLD-DM. Total body weight loss (WL) was quantified using 0%, 5%, and 10% thresholds. Between NAFLD and NAFLD-DM groups, we compared total body weight loss (WL) and across WL threshold groups, we also compared initial weights, follow-up time, medical interventions received, and results of non-invasive liver fibrosis tests.
Results: There were 933 patients with NAFLD, of whom 463 (49.6%) had NAFLD-DM. After a median follow-up of 7.7 months, 632 (67.7%) of all patients achieved any weight loss. Significantly more patients with NAFLD-DM lost weight compared to NAFLD alone (73.9 vs 61.7%, p< 0.0001). Weight loss between NAFLD and NAFLD-DM groups varied, respectively: 0-5% WL: 34.7% vs. 34.8% (p=0.98); 5-10% WL: 13.2% vs. 19.2% (p=0.01), >10% WL: 13.8% vs. 19.9% (p=0.01). Compared to those not losing weight, NAFLD and NAFLD-DM patients with >10% WL had significantly greater proportion of participation in a complete meal replacement program (Optifast®) or treatment with GLP-1 agonist semaglutide. For NAFLD and NAFLD-DM groups, there was no significant difference between initial Fibroscan stiffness or FIB-4 index and subsequent WL percentages (Table).

Conclusion: The majority of NAFLD and NAFLD-DM patients receiving care in a specialty clinic incorporating medical weight management with liver care successfully achieved weight loss in a relatively short period. Patients with NAFLD-DM did not have significantly worse outcomes with weight loss, and NAFLD-T2DM patients lost more weight than NAFLD patients. These findings suggest that an integrative care liver clinic with concurrent weight management care can help patients improve metabolic diseases associated with NAFLD, particularly T2DM, and in turn improve liver-related outcomes.



[1345] **Figure 1.** Comparison of Clinic Interventions between No Weight Loss (WL) versus >10% WL patients with NAFLD (top panel, a) and NAFLD-DM (bottom panel, b). *Statistically significant p-values using chi-square analysis, which can be found in Table

Table 1. Characteristics of and Clinical Interventions for NAFLD and NAFLD-DM Patients in the Yale Fatty Liver Disease Program (YFLDP). There was a significantly lower proportion of patients with NAFLD compared to NAFLD-DM who were able to achieve > 10% Weight Loss (13.8 vs. 19.9, p=0.014), and significantly more NAFLD patients compared to NAFLD-DM who did not achieve any weight loss (38.3 vs. 26.1, p<0.001)

	NAFLD (n=470 patients)			NAFLD-DM (n=463 patients)		
Patient Categories n (%)	No WL 180 (38.3)	>10% WL 65 (13.8)	*p*	No WL 121 (26.1)	>10% WL 92 (19.9)	*p*
Clinic Interventions n (%)						
Nutrition Consultation	80 (44.4)	31 (47.7)	0.652	58 (47.9)	40 (43.5)	0.518
OPTIFAST® Program	4 (2.2)	5 (7.7)	**0.045**	2 (1.7)	8 (8.7)	**0.016**
Naltrexone/Buproprion	6 (3.3)	5 (7.7)	0.146	16 (13.2)	6 (6.5)	0.111
Semaglutide	15 (8.3)	17 (26.2)	< **0.001**	30 (24.8)	37 (40.2)	**0.016**
Liraglutide	11 (6.1)	7 (10.8)	0.217	21 (17.4)	7 (7.6)	**0.037**
Phentermine	9 (5.0)	10 (15.4)	**0.007**	15 (12.4)	17 (18.5)	0.219
Bariatric Surgery Referral	13 (7.2)	5 (7.7)	0.901	21 (17.4)	31 (33.7)	**0.006**
Health Outcomes mean (SD)						
Follow-Up Time, days	256 (276.5)	422 (296.8)	< **0.001**	271 (280.2)	403 (297.3)	**0.001**
Initial FibroScan® Stiffness, kPa	8.63 (6.72)	13.18 (14.01)	0.663	13.18 (14.01)	12.48 (12.49)	0.701
Initial FIB-4 Score	1.32 (1.13)	1.70 (1.98)	0.068	1.70 (1.98)	1.83 (2.11)	0.648
Initial Weight, kg	93.82 (25.45)	102.20 (24.90)	**0.015**	102.20 (24.90)	109.61 (25.07)	0.056

*Denotes statistical significance p<0.05. WL = Weight Loss.

S1346

Is the Mutational Landscape of Hepatocellular Adenoma Distinct in the Setting of Oral Contraceptive Use?

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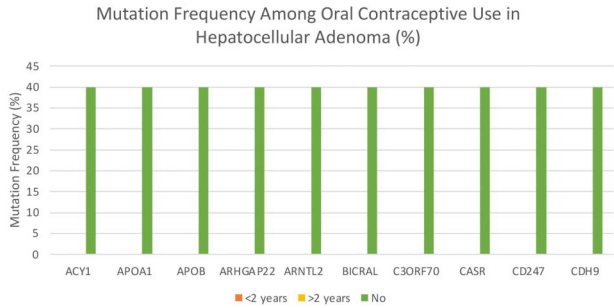
Introduction: Hepatocellular adenomas (HCA) are benign tumors with possible complications of bleeding and malignant transformation. Oral contraceptive us in women of childbearing are most frequently associated with hepatocellular development. This study investigates the multifactorial role of oral contraceptive use and its effect on mutation frequency, mutation count, and nodule size in patients with HCA.
Methods: Using the cBioPortal platform and systematic bioinformatical analysis of the Cancer Genome Atlas (INSERM) Cancer Cell 2014 data for hepatocellular adenoma, 30 HCA patients were included in this study. Of which twenty-one patients had used oral contraception for greater than two years, four patients < 2 years, and five patients had no reported history of oral contraceptive use.
Results: The mutational landscape of the lack of oral contraceptive use associated with HCA was distinct with statistically significant alterations in ACY1, APOA1, APOB, ARHGAP22, ARNTL2, BICRAL, C3ORF70, CASR, CD247, CDH9 mutation frequency (See Figure). Further, the mutation count was statistically significant as patients with oral contraceptive use < 2 years had the lowest mutation count of 6, (See Table). Additionally, the nodule size (mm) in patients with HCA was statistically significant as patients with a history of oral contraceptive use < 2 years had the smallest median nodule size of 37.5 mm (See Table).
Conclusion: The findings in this study highlight the complex multifactorial role of oral contraceptive use in HCA. Further studies are essential for understanding the molecular and pathophysiologic impact of oral contraceptive use on functions of critical genes that exert carcinogenic potential.



[1346] **Figure 1.** The mutational landscape among oral contraceptive use in hepatocellular adenoma

Table 1. Mutation count and nodule size in hepatocellular adenoma with relation to oral contraceptive use

	No OCP use	OCP < 2 years	OCP use > 2 years	P-value
Mutation count	19	6	11	0.03
Nodule size (mm)	70 mm	37.5 mm	70 mm	0.03

S1347

Comparison of Quantification of Hepatic Steatosis Between Liver MRI and Biopsy in Obese Patients in Pre-Transplant Setting

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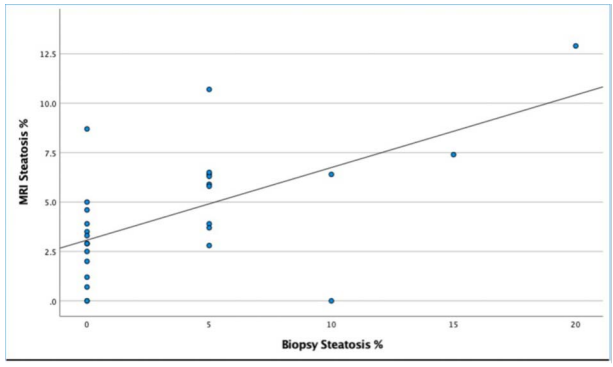
Introduction: Liver biopsy is a gold standard for assessing steatosis in non-alcoholic fatty liver disease (NAFLD). However, it carries risks including bleeding, discomfort, sampling error bias, inter-, and intra-observer variability. Magnetic resonance imaging with proton density fat-fraction (MRI-PDFF) has been explored to quantify steatosis to characterize NAFLD with accuracy and reproducibility. Our study assesses if MRI quantification of hepatic steatosis is consistent with that performed by liver biopsy for obese patients.
Methods: In this study, a bivariate correlation was performed to calculate a Pearson's correlation coefficient for patients with BMI≥30 who underwent screening with liver biopsy and liver MRI to quantify steatosis prior to living donation hepatectomy at Cleveland Clinic between 2019 and 2022. We excluded non-obese patients as well as patients who had contraindications to MRI, high alcohol use, pre-existing liver disease, or bleeding disorders.
Results: We included 28 patients (median [standard deviation]) aged 41.0 [9.89] with BMI 32.3 [2.99] (Table). Patients were predominantly female (n=16, 57.1%), Caucasians (n=24, 85.7%), and with Class 1 Obesity (n=23, 23.2%). Mean MRI steatosis was 3.48 [2.53] while mean biopsy steatosis was 1.79 [3.45]. Bivariate correlation analysis showed that liver MRI and biopsy steatosis quantification to be positively correlated with moderate strength, $R = 0.60$, $p < 0.001$ for patients with BMI≥30.
Conclusion: Our data highlight that liver MRI quantification of hepatic steatosis is consistent with biopsy for obese patients. These findings indicate that a liver MRI could be an accurate alternative for potential living liver donors. Further work is needed to evaluate if a liver MRI is a suitable alternative for individuals across different classes of obesity (Figure).



[1347] **Figure 1.** Correlation between liver biopsy steatosis and MRI steatosis

Table 1. Baseline characteristics of potential liver donors with obesity prior to hepatectomy

Baseline characteristics	*n*	%
Sex		
Female	16	57.1
Male	12	42.9
Race/Ethnicity		
Caucasian	24	85.7
African American	2	7.14
Hispanic	1	3.57
Other	2	7.14
Obesity classification		

Table 1. (*continued*)

Baseline characteristics	*n*	%
Class I (30-34.9)	23	23.2
Class II (35-39.9)	3	3.03
Class III (≥40)	2	2.02

S1348

Patterns of GI Specialty Referral for Primary Care Patients With Nonalcoholic Fatty Liver Disease

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Introduction: Early specialist intervention for patients with significant fibrosis from nonalcoholic fatty liver disease (NAFLD) is important in preventing related morbidity and mortality. For patients with evidence of hepatic steatosis, we aim to determine what proportion received gastroenterology (GI) referral, the reason for referral, and the severity of fibrosis between groups.
Methods: This retrospective study of electronic health record data from 2012-2018 included patients with (i) radiographic reports of liver steatosis (abdominal ultrasound, CT, or MRI) and (ii) no competing, non-NAFLD chronic liver disease diagnoses. Referral to GI any time after imaging was the primary outcome. Chart review was conducted to determine if a patient was referred and the reason for the referral. Fibrosis-4 Index (FIB-4) scores were calculated and categorized by advanced fibrosis risk. Statistical analysis was performed with Student t-tests and Chi-square tests using SAS.
Results: The cohort included 652 patients with a mean age of 55 (SD ± 14) years. Of included patients, 64% were female and 36% identified as Black. One in four patients received a formal diagnosis of NAFLD. FIB-4 scores were high-risk for advanced fibrosis in 12% of patients, indeterminate-risk for 31% of patients, and low-risk for 57% of patients. Overall, 46% of patients received a GI referral, with 32% of these referrals being for colonoscopy. A larger portion of referred patients (33%) received a diagnosis of NAFLD during the study period compared to those not referred (19%, $p < 0.001$). Of patients referred for non-colonoscopy reasons, only 15% of referral orders mentioned steatosis. When fatty liver disease was mentioned at referral, a larger proportion of patients received a formal NAFLD diagnosis compared to all other non-colonoscopy referrals (80% vs. 26%, $p < 0.001$). There was no difference in the proportion of high-risk FIB-4 scores between patients with and without a GI referral ($p = 0.95$).
Conclusion: Appropriate GI referral for NAFLD management remains a concern, even so NAFLD is predicted to be the leading indication for liver transplantation within the next 10 years. Our data suggests hepatic steatosis is infrequently recognized as a notable finding on abdominal imaging and did not prompt excessive GI referral. Use of FIB-4 scoring has been shown to reduce unnecessary referral and improve detection of advanced fibrosis, though FIB-4 scoring did not influence referral likelihood in this cohort.

S1349

Utility of LAD Score for Treatment Response Assessment and Recurrence Monitoring in Patients With Hepatocellular Carcinoma

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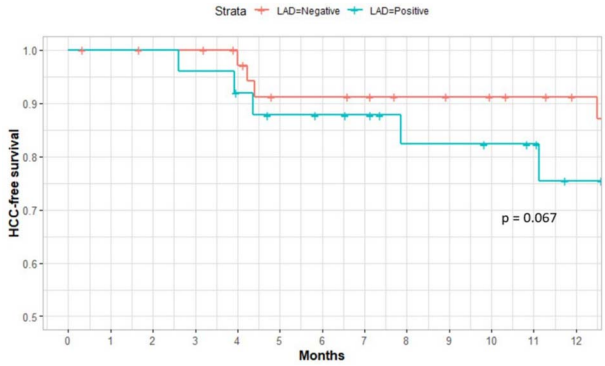
Introduction: The GALAD score, which incorporates the biomarkers AFP, AFP-L3% and DCP, has excellent performance for detection of hepatocellular carcinoma (HCC). However, its accuracy in treatment response assessment and recurrence prediction are unknown. We aimed to evaluate the accuracy of these biomarkers in predicting the presence of post-treatment viable tumor and HCC recurrence.
Methods: We identified patients with cirrhosis or chronic hepatitis B infection who underwent curative surgical or locoregional treatment (Y-90, TACE, ablation) for HCC between May 2019 to May 2022, with GALAD labs obtained greater than 1 month post-treatment. Because the study cohort already has known HCC, we removed the demographic factors to calculate a score based solely on the biomarkers (the "LAD" score). The LAD score is calculated from the following formula: $.04\times(\text{AFP-L3}) + 2.34\times\log(\text{AFP}) + 1.33\times\log(\text{DCP})$. Evidence of viable tumor was determined by imaging, biopsy, or liver explant pathology after transplant. Patients with non-viable tumor on initial post-treatment imaging were further analyzed for tumor recurrence. The sensitivity and specificity of the LAD score in predicting tumor viability were calculated. The optimal receiver operating characteristic (ROC) curve was used to calculate the cutoff for the LAD score.
Results: A total of 78 patients (97 treatments) with surveillance imaging and biomarkers were analyzed. The number of treatments per patient ranged between 1 and 3 (mean 1.2). Mean age at time of HCC detection was 67 years, and a third of patients were female. The most common treatment modality was TACE (48.6%), followed by Y-90 (29.9%), ablation (16.5%), and resection (7.2%). About a third of cases (34.0%) had a viable tumor on initial post treatment images. The optimal LAD cutoff was calculated at 2.23, yielding a sensitivity and specificity of 87.4% and 60.9% for detection of viable tumors, respectively. After median follow up of 21.3 months, 11 cases (17.2%) developed recurrent HCC (mean time to recurrence 3.5 months) among cases with post-treatment non-viable tumor. A total of 7 recurrence cases (64%) had a positive LAD score at negative post-treatment surveillance images. Positive LAD score had a borderline association with recurrence (HR 3.17; 95%CI [0.92, 10.92], $p = 0.067$).
Conclusion: LAD score is increased in most HCC patients with post-treatment viable tumors, suggesting its utility for post treatment response assessment. It might provide risk stratification for HCC recurrence.



[1349] **Figure 1.** Incidence of HCC Recurrence in LAD Positive vs Negative Cases

S1350

In-Hospital Characteristics and Healthcare Utilization of NASH-Related SBP vs Non-NASH-Related SBP-A Study Based on Nationwide Inpatient Database

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Introduction: Spontaneous Bacterial Peritonitis (SBP) incidence in hospitalized patients with chronic liver disease (CLD) and ascites varies from 10%-30% and is associated with an estimated in-hospital mortality rate of 20%. There is a paucity of data on SBP outcomes based on the etiology of CLD. Our aim is to compare in-hospital patient outcomes and healthcare utilization amongst patients with non-alcoholic steatohepatitis (NASH) related SBP and non-NASH related SBP.

Methods: We utilized the Nationwide Inpatient Sample (NIS) database from 2018 and 2019. Adult hospitalizations amongst hepatitis patients due to SBP were identified by previously validated ICD-10-CM codes. SBP patients were divided into two groups: NASH and non-NASH groups. The non-Nash group includes other common etiologies of cirrhosis like Hepatitis B, C, and Alcohol-related liver diseases. Univariate and multivariate logistic regression for categorical variables and linear regression for continuous variables were carried out to identify independent associations at $p < 0.05$. Statistical Analysis was performed using R studio.

Results: A total of 2033 patients met the inclusion criteria. 53% in the NASH-related SBP patient group and 70% in the non-NASH-related SBP group were men, respectively (Table 1A). Hypertension (51% vs 43%), hyperlipidemia (26% vs 9.5%), type II diabetes mellitus (19% vs 12%) and coronary artery disease (1.7%vs 0.5%) were significantly higher in patients with NASH vs non-NASH related SBP, respectively. In the non-NASH group, hepatitis C was the etiology most commonly associated with SBP (68%). On univariate analysis, patients with SBP in the NASH group had a lower crude mortality rate (11% vs 15%) and increased length of stay (7 days vs 6 days) as compared to non-NASH related SBP. On multivariate analysis, there was no statistically significant difference amongst outcomes parameters including crude mortality rate, total charges during hospitalization, and length of stay (Table 1B).

Conclusion: Patients with NASH-related SBP had more comorbidities representing an increased prevalence of metabolic syndrome in these patients. Despite this difference in disease burden, there was no significant difference in SBP-related outcomes, and outcomes were still poor in all etiology groups. Thus, SBP needs to be treated aggressively regardless of the etiology of the underlying liver disease.

Table 1. (1A) Baseline demographics of inpatient SBP patients with NASH and Non-NASH related liver disease. (1B) Outcome of inpatient SBP patients with NASH and Non-NASH related liver disease

Table 1A	Baseline Demographics	NASH SBP, N = 1,770	Non NASH SBP, N = 8,395	p-value
	Age in years at admission	56 (46, 65)	57 (52, 63)	0.11
	Gender			
	MALE	935 (53%)	5,835 (70%)	< 0.001
	FEMALE	835 (47%)	2,560 (30%)	
	Hospital Bedsize			0.3
	Small	255 (14%)	1,430 (17%)	
	Medium	435 (25%)	2,200 (26%)	
	Large	1,080 (61%)	4,765 (57%)	
	Hospital location Teaching			0.6
	Rural	115 (6.5%)	560 (6.7%)	
	Urban, NonTeaching	285 (16%)	1,165 (14%)	
	Urban, Teaching	1,370 (77%)	6,670 (79%)	
	HOSP REGION			0.2
	Northeast	230 (13%)	1,305 (16%)	
	Midwest	395 (22%)	1,490 (18%)	
	South	615 (35%)	3,090 (37%)	
	West	530 (30%)	2,510 (30%)	
	Insurance			< 0.001
	Medicare	625 (36%)	2,855 (34%)	
	Medicaid	440 (25%)	3,240 (39%)	
	Private	475 (27%)	1,400 (17%)	
	Self Pay	150 (8.5%)	510 (6.1%)	
	No charge	5 (0.3%)	70 (0.8%)	
	Other	65 (3.7%)	300 (3.6%)	
	RACE			< 0.001
	White	1,190 (69%)	4,670 (57%)	
	African American	155 (9.0%)	1,160 (14%)	
	Hispanic	240 (14%)	1,535 (19%)	
	Asian/Pacific Islander	35 (2.0%)	420 (5.1%)	
	Native American	35 (2.0%)	170 (2.1%)	
	Other	65 (3.8%)	275 (3.3%)	
	YEAR			0.2
	2018	865 (49%)	4,440 (53%)	
	2019	905 (51%)	3,955 (47%)	
	Median household income			< 0.001
	$1- 24999	450 (26%)	2,985 (37%)	
	$25000-34999	520 (30%)	2,240 (28%)	
	$35000-44999	360 (21%)	1,850 (23%)	
	$45000+	410 (24%)	1,055 (13%)	
	Hepatitis_B	0 (0%)	1,095 (13%)	< 0.001
	Hepatitis_C	0 (0%)	5,730 (68%)	< 0.001
	Alcoholic_Liver_Disease	0 (0%)	1,940 (23%)	< 0.001
	Liver_Disease	1,770 (100%)	8,395 (100%)	
	HTN	895 (51%)	3,615 (43%)	0.01
	HLD	460 (26%)	795 (9.5%)	< 0.001

Table 1. (*continued*)

Table 1A	Baseline Demographics	NASH SBP, N = 1,770	Non NASH SBP, N = 8,395	p-value
	DM	340 (19%)	980 (12%)	< 0.001
	CAD	30 (1.7%)	40 (0.5%)	0.012
	Age_Group			< 0.001
	18-27	30 (1.7%)	50 (0.6%)	
	28-37	205 (12%)	450 (5.4%)	
	38-47	270 (15%)	945 (11%)	
	48-57	470 (27%)	2,760 (33%)	
	58-67	455 (26%)	3,195 (38%)	
	68-77	240 (14%)	855 (10%)	
	78-87	100 (5.6%)	125 (1.5%)	
	88 and above	0 (0%)	15 (0.2%)	
	Outcomes			
	Inpatient Mortality	200 (11%)	1,285 (15%)	0.05
	Total charges	59,325 (36,229, 103,783)	60,908 (31,891, 117,212)	0.8
	Length of stay	7 (4, 11)	6 (3, 10)	0.008
Table 1B	Outcomes (Multivariate Analysis)	aOR	Range	
	Inpatient Mortality	1.35	0.91-2.01	
	Total Charges	1	1	
	Length Of Stay	1.01	1.01-1.02	

S1351

Cost Effectiveness of Checking Immunity for HAV Before Vaccination in HCV Patients

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Introduction: Vaccination against Hepatitis A virus (HAV) is recommended for all patients with chronic liver diseases including chronic hepatitis C virus (HCV) infection. At our institution, we screen HCV patients' HAV immunity and vaccinate those who are not immune. We confirm lack of immunity by serology if previous vaccination is not documented. An alternative approach that some centers with low HAV seropositivity rate have taken is empirically vaccinating all vaccine candidates and eliminating the cost of serology tests. In this study, we compared the cost associated with HAV vaccination after confirming absence of immunity with the cost of empiric vaccination of all HCV patients without checking immunity. We also developed a simple calculation to find the most cost-effective strategy for any cohort.
Methods: Retrospective analysis of patients referred to hepatology clinic for HCV treatment from March 2021 to March 2022 and underwent screening for HAV immunity was done. We assessed prevalence of HAV immunity in this cohort, cost associated with testing for immunity by serology, and cost of administration of vaccination. We compared the cost associated with the two strategies.
Results: 251 patients were referred for HCV treatment in the study period. 30 patients had documentation of previously completed HAV vaccination series. Of the 221 remaining patients, 151 patients (68.3%) had negative and 70 patients (31.7%) had positive anti-HAV antibodies. The patient charge accrued for antibody testing at our facility for Hepatitis A IgG & IgM is estimated to be 10.3% of the cost of a complete vaccination course. Total cost of vaccination of the 151 patients was 21.4% less expensive than empiric vaccination of all 221 patients.
Conclusion: The cost associated with hepatitis A vaccination includes cost of serology to confirm absence of immunity and cost of vaccine administration for those in whom it is needed. Vaccinating all patients empirically would be more economical only if the seropositivity rate is less than the ratio of cost of serology test to vaccine administration charges. Based on our results, we found it to be more cost-effective to verify absence of immunity before vaccinating our HCV patients. A possible limitation of this study is availability of vaccination records of all patients which may have led to serology tests on more patients. However, many patients receive care within our integrated system.

S1352 WITHDRAWN

S1353

Nephrotic Syndrome Is Associated With a Higher Risk of NAFLD: A Population-Based Study

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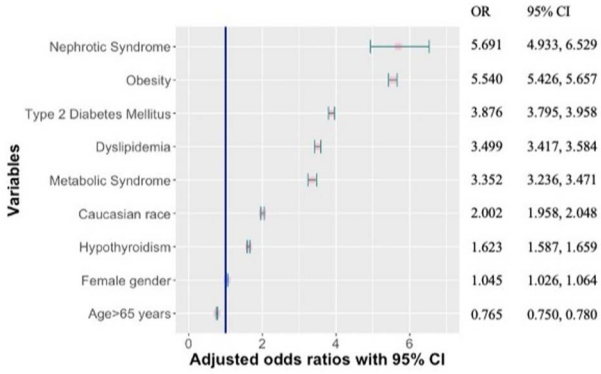
Introduction: Non-alcoholic fatty liver disease (NAFLD) is fast emerging as a global health prime concern with a prevalence of 25% with wide geographical variation worldwide with increased prevalence in patients with obesity, and metabolic syndrome, partly due to similar mechanisms of injury. In the later stages of NAFLD, pronounced liver inflammation leading to cirrhosis and subsequent protein loss is seen. A similar and often even more pronounced loss is seen in patients with nephrotic syndrome. Our aim is to identify the prevalence of NAFLD in patients with nephrotic syndrome.
Methods: A large multi-center database (Explorys Inc., Cleveland, OH, USA) of aggregated electronic health records of 26 different healthcare systems with a total of 360 hospitals and more than 70 million patients across the United States was utilized for this study. A cohort of patients with a SNOMED-CT diagnosis of "Non-Alcoholic fatty liver disease" between 1999-2022 was identified. We excluded all patients with a history of chronic kidney disease. Statistical Package for Social Sciences (SPSS version 25, IBM Corp) was used for statistical analysis, and for all analyses, a 2-sided p-value of < 0.05 was considered statistically significant. Multivariate analysis was performed to adjust for multiple factors including age, sex, race, nephrotic syndrome, type II diabetes mellitus, hypothyroidism, hyperlipidemia, obesity, and metabolic syndrome
Results: Among the 78,608,370 individuals screened in this database, there were a total of 49500 with NAFLD with a prevalence rate of 62 per 100,000 and a total of 17,360 with Nephrotic syndrome with a prevalence rate of 22 per 100,000. The baseline characteristics of patients with NAFLD and Nephrotic syndrome is shown in Table. In a multivariate analysis, the odds of having NAFLD amongst patients with

nephrotic syndrome were increased at 5.69 (95% CI 4.94-6.52). The odds of having NAFLD patients were also increased in patients that have type 2 diabetes mellitus OR 3.87(95% CI 3.79-3.95), hypothyroidism OR 1.62 (95% CI 1.58-1.65), obesity OR 5.54 (95% CI 5.42-5.65), Hyperlipidemia OR 3.49 (95% CI 3.41-3.58), and metabolic syndrome OR 3.35 (95% CI 3.23-3.47) as well (Figure).
Conclusion: This study highlights the increased risk of developing NAFLD in patients with nephrotic syndrome independently of other risk factors. Hence, routine surveillance for liver disease is recommended for patients with nephrotic syndrome.

Table 1. Baseline Characteristics of the patients with NAFLD

Parameters	NAFLD PATIENT (n, % of total)	NON NAFLD Patients (n, % of total)
Age	9030 (18.24)	19519940 (24.84)
Female	28800 (58.18)	42346370 (53.90)
Caucasian	39350 (79.49)	40531470 (51.59)
Obesity	27750 (56.06)	4869700 (6.19)
Type 2 Diabetes Mellitus	24740 (49.97)	4513130 (5.74)
Metabolic syndrome	3640 (7.35)	205670 (0.26)
Hyperlipidemia	33010 (66.68)	10134440 (12.90)
Nephrotic syndrome	70 (0.14)	17300 (0.02)
Hypothyroidism	11890 (24.02)	3466740 (4.41)
Total	49500	78558870



[1353] **Figure 1.** Multivariable Analysis of NAFLD in the study population.

S1354

Diabetes as a Risk Factor of Liver Fibrosis in Patients With Non-Alcoholic Fatty Liver Disease

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Introduction: Non-alcoholic liver disease (NAFLD) ranks first in the prevalence among liver diseases, affecting 20-30% of the population worldwide. Type 2 diabetes mellitus (T2DM) commonly co-exists with NAFLD and may act synergically to drive adverse outcomes. We aimed to compare the characteristics and severity of liver disease between diabetic and non-diabetic patients with NAFLD, in a tertiary referral center in Greece.
Methods: Data including demographics, blood results and liver stiffness measurements (LSM) of consecutive NAFLD patients presenting to the hepatology outpatient clinic were retrospectively reviewed. LSM and FIB-4 measurements were used to non-invasively assess the severity of NAFLD.
Results: Ninety-eight patients were included (54.3% females, mean 60.4±15 years, 51.8% cirrhosis) of whom 64 (65.3%) were non-diabetics and 34 (34.6%) were diabetics. When compared to the non-diabetic group, diabetic patients were more frequently females (67.2% vs 46.2%, p=0.07), older (65.8 vs 54.6 years, p=0.005) and had lower ALT levels (25.2 vs 60.2IU/l, p=0.04). Contrarily, AST levels (39.6 vs 51IU/l, p=0.26), γ-GT (99.3 vs 102.1IU/l, p=0.95) and BMI (35.6 vs 34.6 Kg/m^2) were not significantly different between the two groups. Regarding to severity of NAFLD, diabetic patients exhibited more advanced fibrosis, showing higher mean LSM (21.9 vs 11.9kPa, p=0.01) and FIB-4 (4.1 vs 2.2, p=0.01) values. The prevalence of cirrhosis (>11.5kPa by LSM) was significantly higher in diabetic compared to non-diabetic patients (75% versus 41.3%, p=0.01). By multivariate analysis, advancing age (OR=1.04, 95%CI: 1.00-1.08; p =0.03) and T2DM (OR= 6.45, 95%CI: 1.80-23.03; p=0.004) were independently associated with cirrhosis.
Conclusion: Our findings underline the importance of T2DM as a predisposing factor correlating with the severity of liver fibrosis in patients with NAFLD.

S1355

Associations Between Sleep Duration and Hepatic Steatosis in the USA

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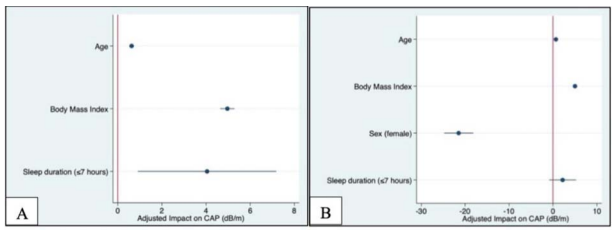
Introduction: To promote optimal health and well-being, adults aged 18-60 years are recommended to sleep at least 7 hours each night. Sleep disruption has evolved with industrialism and has been associated with metabolic diseases, such as obesity and diabetes in murine models. Almost 90% of patients with nonalcoholic fatty liver disease (NAFLD) have more than one feature of metabolic syndrome. Moreover, sleep disruption can interrupt the circadian rhythm and thus the body metabolism. Therefore, it can be speculated that sleep-related problems may trigger several pathophysiologic processes associated with NAFLD.
Aim: We hypothesized an association between sleep duration, steatosis, and advanced fibrosis.
Methods: Using the NHANES database, we identified all patients aged 18 and older from 2017 to March 2020 pre-pandemic surveys. The presence of fatty liver was determined using vibration-controlled transient elastography (VCTE) ultrasonographic findings. Sleep duration was grouped by short sleep duration (≤7 hours) and normal sleep duration (>7 hours). Linear regression models were used to examine the relationship between continuous CAP score and sleep duration, after adjusting for potential confounders.

Results: Cohort characteristics are displayed on Table. A total of 15,560 patients were examined. The mean age of the population was 47 (± 16) years. A greater proportion of patients were white (62%) and female (51%). Mean kPa and CAP were 6 kPa and 264 dB/m, respectably. On simple linear regression short sleep duration was significantly associated with hepatic steatosis (β = [8.4], p = [< 0.001]). Likewise, on multivariable linear regression after adjusting for age and body mass index (BMI), short sleep duration was significant associated with hepatic steatosis (β = [4.0], p = [0.013]). However, after adding sex to the model this association was no longer significant (β = [2.1], p = [0.152]). A relationship was not seen between sleep duration and hepatic fibrosis on unadjusted analysis or when controlling for the same variables described above.
Conclusion: Overall, FibroScan® data in NHANES 2017-2020 support a positive association between short sleep duration and hepatic steatosis independently of metabolic factors such as BMI. Prospective studies are required to confirm this association. (Figure)

Table 1. Cohort characteristics

	Overall	Sleep hours	
		≤7 hours	>7 hours
Age, (mean ±)	47 ± 16	46.6 ± 14	47 ± 16
Sex, female (%)	51	46	54
Race/ethnicity, (%)			
White	62	59	64
Black	11	13	9
Hispanic	16	17	15
Asian	5	5	6
Other	4	4	3
BMI, (mean ±)	29.6 ± 6.4	30 ± 7	29 ± 6
Diabetes, (%)	10	11	10
FibroScan®			
CAP, (mean ±)	264 ± 56	269 ± 56	260 ± 56
kPa, (mean)	5.8 ± 4	5.9 ± 4	5.7 ± 4

BMI, body mass index; CAP, controlled attenuation parameter; kPa, kilopascales.



[1355] **Figure 1.** A. adjusted for age (years) and body mass index (BMI). B. Model 2: adjusted for age (years), sex (female), and body mass index (BMI).

S1356

Correlation Between Systemic Inflammatory Markers and Evidence of Metastatic Disease in Patients With Hepatocellular Carcinoma

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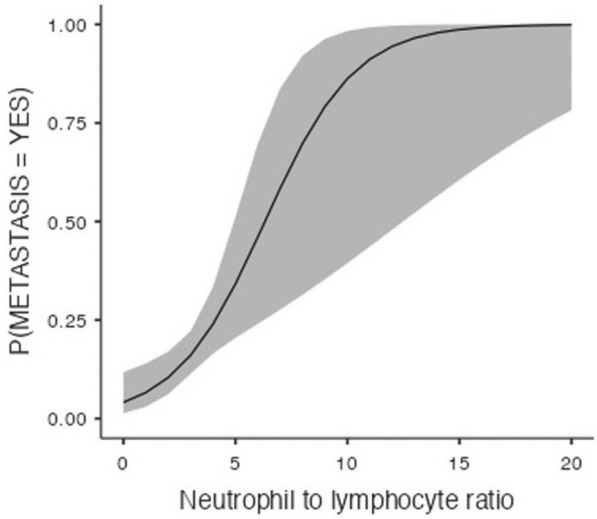
Introduction: Hepatocellular carcinoma (HCC) is a leading cause of cancer-related mortality worldwide. A wide variety of scoring systems such as Albumin-Bilirubin (ALBI), Platelet-Album-Bilirubin (PALBI), Monocyte-to-Lymphocyte ratio (MLR), and Neutrophil-Lymphocyte Ratio (NLR) along with tumor characteristics (tumor size, count, and vascular invasion) have been proposed as prognostic indicators. The aim of our study was to determine the correlation, if any between these scoring systems and evidence of metastatic disease at diagnosis in patients with HCC.
Methods: A cross-sectional study was conducted at Liver Associates of Texas Hepatology clinics in Houston, Texas. Included were patients diagnosed with HCC between January 2014 and December 2021. Demographic data, chronic liver disease, cirrhosis status, and evidence of metastatic disease at diagnosis were recorded. Laboratory parameters including serum albumin, total bilirubin, platelet count, absolute lymphocyte, neutrophil, and monocyte counts were collected for each patient at the time of diagnosis. The diagnosis of HCC was established by Magnetic Resonance Imaging (MRI). Albumin-Bilirubin (ALBI) score, Platelet-Albumin-Bilirubin (PALBI) score, Monocyte-to-Lymphocyte ratio (MLR), and Neutrophil-to-Lymphocyte ratio (NLR) were calculated by mathematical formulas previously described in the literature. A binomial logistic regression model was performed with the different scores and ratios as independent variables, and evidence of metastatic disease as the dependent variable. A *p*-value of less than 0.05 was considered significant. (Figure)
Results: 231 patients were identified with HCC. The mean age was 69 years old. 72.3% were male. 38.1% white, 21.6% Hispanic, 13.4% African American, 13.4% Asian/Pacific Islander, and 13.4% unspecified ethnicity. Out of the 231, all except one patient had cirrhosis; hepatitis C was the most common cause of cirrhosis (59.7%) followed by NASH (17.7%). 17.3% of the patients had evidence of metastatic disease at diagnosis. Patients with metastatic disease at diagnosis had a higher NLR (OR: 1.64 [1.18 – 2.29], $p = 0.003$). However, interestingly, patients with metastatic disease at diagnosis had a lower MLR (OR: 0.11 [0.01 – 0.77], $p = 0.027$). (Table)
Conclusion: Our study suggests that patients with metastatic disease at diagnosis had a higher NLR, hence this ratio is a promising non-invasive prognostic parameter for patients with HCC. However, further studies need to be performed to validate our results.

Table 1. Correlation among different steatosis scores and ratios with the evidence of metastatic disease at diagnosis in patients with HCC

	OR	*p* value	95% CI
ALBI score	8.99	0.141	(0.48 – 166.95)
PALBI score	0.59	0.219	(0.25 – 1.36)
MLR	0.11	0.027*	(0.01 – 0.77)
NLR	1.64	0.003*	(1.18 – 2.29)

ALBI= Albumin-Bilirubin; PALBI= Platelet-Albumin-Bilirubin; MLR= Monocyte to Lymphocyte Ratio; NLR= Neutrophil to Lymphocyte Ratio; OR= Odds Ratio; * = Statistically significant to the 95% CI; CI = Confidence Interval.



[1356] **Figure 1.** Positive correlation between NLR and metastatic disease in patients with HCC.

S1357

Effect of Continuous Positive Airway Pressure on Liver Enzymes in Obstructive Sleep Apnea: A Meta-Analysis of Randomized Controlled Trials

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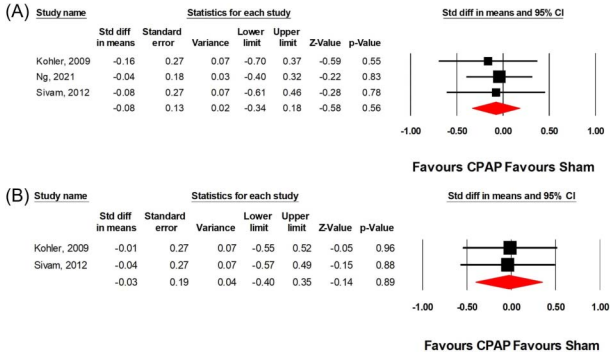
Introduction: It is known that obstructive sleep apnea (OSA) is associated with nonalcoholic fatty liver disease (NAFLD). However, the impact of OSA treatment using continuous positive airway pressure (CPAP) on liver enzymes remains unclear. Therefore, we conducted this meta-analysis to evaluate the effect of CPAP therapy on liver enzymes in patients with OSA.
Methods: We performed a comprehensive literature search using PubMed, Embase, and Web of Science databases through May 15, 2022, for all randomized controlled trials (RCTs) that assess the impact of CPAP therapy on liver enzymes in patients with OSA. Observational studies were excluded. The primary outcome of our study was the reduction of serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) pre- and post-CPAP treatment. The random-effects model was used to calculate the standardized mean difference (SMD) with the corresponding 95% confidence intervals (CI) of our desired outcome. A P-value < 0.05 was considered statistically significant. Heterogeneity was assessed using the Higgins I^2 index (I^2 values >50% implied the presence of significant heterogeneity).
Results: A total of three RCTs were included. There were 186 patients with OSA who received therapeutic CPAP therapy and 185 who received subtherapeutic CPAP therapy. The mean age was 50 years. The follow-up period ranged from 1 month to 6 months. There was no significant difference in the reduction of ALT (SMD -0.08; 95% CI -0.34, 0.18; P = 0.56, I^2 = 0%, Figure A) or AST (SMD -0.03; 95% CI -0.40, 0.35; P = 0.89, I^2 = 0%, Figure B) levels between the two groups.
Conclusion: Our meta-analysis demonstrated that CPAP did not improve the liver enzymes in patients with OSA. Our study is hampered by the limited number of studies and small sample size. Further large-scale RCTs with long-term follow-up are necessary to validate our findings.



[1357] **Figure 1.** CPAP therapy meta-analysis.

S1358

Nonalcoholic Fatty Liver Disease Outcomes in Patients With Comorbid Psychiatric Disorders Improved by Integrated Medical Weight Management and Hepatology Clinic Care

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Introduction: Nonalcoholic fatty liver disease (NAFLD) affects 25% of Americans and is associated with worse histological findings in patients with mood and anxiety-related disorders. Many psychopharmacotherapies cause weight gain, which can further worsen this disease. Thus, we studied clinical characteristics and characterized psychopharmacotherapy prescription patterns in patients of the Yale Fatty Liver Disease Program (YFLDP), which integrates weight management and hepatology care, including medication review to minimize obesogenic contributors.
Methods: We extracted clinical, laboratory, prescription, and non-invasive fibrosis testing data. Patients were classified as having NAFLD and psychiatric disorders using diagnostic codes. We compared patients with mood disorders (ICD-10 F30-F39) (M+), anxiety-related disorders (ICD-10 F40-F48) (A+), or both (MA+), to those without mood or anxiety-related disorders (MA-). Psychopharmacotherapy treatment

was defined as prescription for at least 90 days with consecutive breaks of < 32 days. We compared demographics, prescription rates, and non-invasive liver fibrosis changes. Statistical significance was set as a two-tailed p< 0.05.

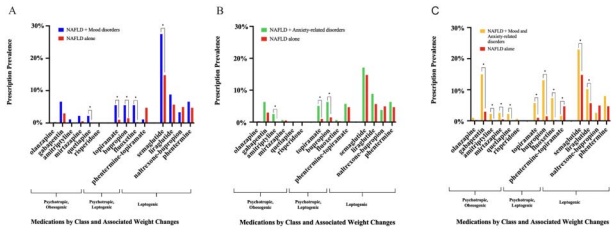
Results: There were 969 patients with NAFLD (91 M+, 158 A+, 314 MA+, and 406 MA-). Differences in gender and insurance status were observed between groups. NAFLD-related outcomes were not significantly different from MA- patients in M+, A+, and MA+ patients, though MA+ patients achieved significantly greater % weight loss than MA- patients (Table). Prevalence of several obesogenic and leptogenic psychopharmacotherapies were significantly greater in M+, A+, and MA+ patients (Figure).

Conclusion: The prevalence of weight-modifying psychotropic medications is high in patients with comorbid mood and anxiety-related disorders. Contrary to prior findings, we found no difference in non-invasive liver fibrosis changes between patients with comorbid mood and anxiety disorders, and some of these patients had more weight loss than those without these psychiatric disorders. This suggests that specialty weight loss management supports standard liver care regardless of the presence of comorbid psychiatric disorders. Future studies to compare NAFLD outcomes in these patient populations with and without specialty clinic care, and to evaluate the effects of these drugs on NAFLD outcomes, would further clarify differences in this patient population.

Table 1. Demographic Characteristics and Clinical Outcomes in Nonalcoholic Fatty Liver Disease Patients (NAFLD) with and without Comorbid Mood and Anxiety-related Disorders

NAFLD Patient Characteristics	*MA-, ref (n=406)*	M+ (n=91)	*p MA- vs.* M+	A+ (n=158)	*p MA- vs.* A+	MA+ (n=314)	*p MA- vs.* MA+
Mean Age years (SD)	*54.5 (13.3)*	55.3 (12.6)	0.57	53 (14.0)	0.25	51.3 (13.3)	
Sex n (%)			**0.0003***		**< 0.0001***		**< 0.0001***
Female	*178 (43.8)*	59 (64.8)		100 (63.3)		227 (72.3)	
Male	*228 (56.2)*	32 (35.2)		58 (36.7)		87 (27.7)	
Race n (%)			0.75		0.29		0.98
White	*317 (78.1)*	73 (80.2)		130 (82.3)		247 (78.7)	
Black	*33 (8.1)*	9 (9.9)		6 (3.8)		25 (8.0)	
Other	*45 (11.1)*	7 (7.7)		19 (12.0)		35 (11.1)	
Unknown	*11 (2.7)*	2 (2.2)		3 (1.9)		7 (2.2)	
Ethnicity n (%)			0.19		0.67		0.36
Non-Hispanic	*351 (86.5)*	76 (83.5)		132 (83.5)		267 (85.0)	
Hispanic	*47 (11.6)*	15 (16.5)		22 (13.9)		44 (14.0)	
Unknown	*8 (2.0)*	0 (0)		4 (2.5)		3 (1.0)	
Insurance Status n (%)			**0.0065***		**0.0472***		**< 0.0001***
Uninsured	*9 (2.2)*	4 (4.4)		1 (0.6)		6 (1.9)	
Medicaid	*46 (11.3)*	21 (23.1)		31 (19.6)		78 (24.8)	
Medicare	*99 (24.4)*	24 (26.4)		36 (22.8)		77 (24.5)	
Private	*252 (62.1)*	42 (46.2)		90 (57.0)		153 (48.7)	
Initial Mean BMI kg/m^2 (SD)	*35.0 (7.7)*	37.5 (9)	**0.01***	35.6 (8.1)	0.43	36.6 (8.5)	**0.01***
Average Change in NAFLD Clinical Outcomes mean (SD)							
% Weight	*-2.5 (10.2)*	-4.3 (10.8)	0.14	-3.1 (8.5)	0.43	-4.4 (9.9)	**0.01***
Hba1c	*-0.3 (1.2)*	-0.4 (1)	0.52	-0.1 (1.1)	0.35	-0.2 (1)	0.61
Total Cholesterol	*-2.9 (33.1)*	-4.7 (33.4)	0.75	-7.7 (37.8)	0.32	-5.5 (41.3)	0.52
INR	*0.1 (0.6)*	-0.1 (0.4)	0.15	0 (0.2)	0.30	0.1 (0.3)	0.84
FibroScan® Stiffness	*21.0 (61.1)*	38.8 (48.2)	0.54	4.7 (24.5)	0.28	8.7 (90.2)	0.71
Fibrosis-4 Score	*5.6 (48.3)*	-0.2 (40.9)	0.33	13.4 (67.7)	0.27	13.9 (176.8)	0.48
NAFLD Fibrosis Score	*-186.0 (1731.3)*	3.7 (266.9)	0.21	36 (552.5)	0.17	-96.6 (936.1)	0.58

*p<0.05. MA- = NAFLD patients without Mood or Anxiety Disorders (reference group), M+ = NAFLD Patients with Mood Disorders, A+ NAFLD Patients with Anxiety-related Disorders, MA+ NAFLD patients with Mood and Anxiety Disorders, BMI = body mass index, Hba1c = hemoglobin a1c.



[1358] **Figure 1.** Prevalence of Psychotropic and Weight Loss Medication Use Among Patients with Nonalcoholic Fatty Liver Disease (NAFLD) and Comorbid Mood and Anxiety-related Disorders. A) NAFLD + Mood Disorders (M+) vs. NAFLD. B) NAFLD + Anxiety-Related Disorders (A+) vs. NAFLD. C) NAFLD + Mood Disorders and Anxiety-Related Disorders (MA+) vs. NAFLD. *p<0.05.

S1359

Post-Liver Transplant Metabolic Changes After One Year

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Introduction: Elevations in HbA1c and BMI preoperatively and postoperatively are associated with post-transplant complications that impact long-term morbidity and mortality. The aim of this study is to evaluate the impact of transplant indications and demographic background on postoperative changes in HbA1c and BMI. Understanding factors associated with elevations in HbA1c and BMI can help determine at-risk patient groups.

Methods: We performed an IRB-approved retrospective study. We obtained records of patients who underwent liver transplantation at Thomas Jefferson University Hospital from January 2002 to December 2020. We analyzed changes in BMI/HbA1c at transplant and one year post-transplant by age, race, gender, and indication for transplant using STATA statistical software 14.2.

Results: Of the 100 liver transplant patients included in our study, 57 (63.3%) were male, and 33 (36.7%) were female. The average age was 63.26 years (61.13- 65.38, 95% CI), and the mean BMI and HbA1c at the time of transplant were 31.01 kg/m^2(29.90-32.13, 95% CI) and 6.26 (5.89-6.62, 95% CI), respectively. There was no statistically significant (P >0.05) change in preoperative and one year postoperative BMI in transplant patients who had the following indications: NASH, Alcohol Cirrhosis, HCV, HBV, PSC, HCC, and cryptogenic cirrhosis. There was also no significant change in preoperative and one year postoperative BMI when stratifying patients by gender, race, and age or in preoperative and one year postoperative HbA1c when stratifying by indication for liver transplant, gender, and race. Patients < 50 years

had a significantly greater one year postoperative HbA1c compared to their preoperative HbA1c (5.10 vs 6.09, p =0.048). There was no significant difference in preoperative and one year postoperative HbA1c in patients ≥50 years. (Table)

Conclusion: Significant elevations in HbA1c post-transplant may predispose patients to post-transplant diabetes, which is associated with transplant dysfunction and mortality, and may cause post-transplant metabolic syndrome, which increases the risk of and complications from cardiovascular events. Our data showed that patients under the age of 50 need careful monitoring to minimize modifiable metabolic abnormalities. Determining high-risk populations for post-transplant complications is crucial to reduce long-term post-transplant morbidity and mortality. Further research is needed to elucidate additional risk factors for post-transplant complications.

Table 1. Metabolic Changes After 1 Year Liver Transplant

	Total Patients (%)	Mean BMI (95% CI)		p-value
		At Transplant	At 1 year after Transplant	
Overall	90 (100)	31.01 (29.90-32.13)	30.88 (29.59-32.17)	0.16
Indication for Transplant				
NASH/NAFLD	27 (30.7)	33.08 (31.12-35.03)	32.30 (31.55-33.06)	0.21
Alcohol	11 (12.5)	26.19 (23.22-29.16)	25.96 (24.12-27.80)	0.45
HCV	9 (10.2)	30.81 (27.35-34.27)	31.23 (28.83-33.62)	0.36
HBV	2 (2.3)	37.2 (49.12-25.28)	34.40 (57.76-11.04)	0.13
PSC	1 (1.1)	25.8 (n/a)	26.3 (n/a)	n/a
HCC	3 (3.4)	29.00 (25.88-32.12)	28.53 (24.20-32.86)	0.30
Cirrhosis NOS/Cryptogenic	13 (14.8)	28.57 (25.65-31.49)	29.54 (27.89-31.19)	0.21
HCV + HCC	18 (20.5)	32.09 (29.65-34.53)	31.63 (30.47-32.79)	0.19
NASH + HCC	2 (2.3)	31.40 (19.48-43.32)	33.72 (10.36-57.08)	0.13
Alcohol + HCC	2 (2.3)	30.00 (20.45-39.55)	28.51 (9.80-47.23)	0.37

HCC=hepatocellular carcinoma, NASH= nonalcoholic steatohepatitis, HBV= Hepatitis B, HCV= Hepatitis C, PSC=primary sclerosing cholangitis.

S1360

Can Voice Assistances (VA) Help Guide Hepatitis B Vaccination and Liver Disease Screening for the General Population?

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Introduction: Engaging in behaviors that promote individual and population wellness continues to be a public health challenge; this pressing societal need requires innovative solutions. As the market for voice assistants (Amazon Alexa, Google Assistant, and Apple Siri) grows and people increasingly use them to assist in their daily tasks, there is a pressing need to explore how voice assistant (VA) technology can improve health-related behavior. Hepatitis B virus (HBV) infection is a major global cause of morbidity and mortality. Hepatitis B vaccines are highly effective in preventing infection and subsequent disease transmission and are safe. We did this study to determine if VAs provide clinically appropriate advice regarding Hepatitis B Vaccination and Hepatitis B virus.

Methods: Four voice assistants: Apple Siri, Amazon Alexa, Google Assistant, and Microsoft Cortana, were tested. Voice recordings were done for 5 commonly asked questions regarding Hepatitis B vaccination and Liver Disease. The authors decided if each of the four VAs provided clinically appropriate advice. Fisher exact testing was done to compare the results of each VA against each other.

Results: We found that clinically appropriate advice was provided 100% by Apple Siri, 60% by Amazon Alexa, 80% by Google Assistant, and 40% of the time by Microsoft Cortana (Table).

Conclusion: The VAs provided accurate advice about when to start Hepatitis B Vaccination, including the May 2021 USPSTF recommendation. However, none of the VAs instructed participants to speak to a healthcare provider, which we believe is vital to any medically related search results. Most of the VAs performed well in our study, but we believe there is a need for improvement, especially with technology becoming more ingrained in our everyday lives.

Number	Question	Clinically relevant reference				P-value
		Apple Siri	Amazon Alexa	Google Assistant	Microsoft Cortana	
1	**When should I start getting Hepatitis B Vaccine?**	YES	YES	YES	YES	0.45
2	**How often should I get Hepatitis B Vaccine?**	YES	NO	YES	YES	<0.03
3	**What are the different tests for Liver cancer?**	YES	YES	YES	NO	<0.01
4	**What can I do to reduce my risk of Liver cancer?**	YES	NO	YES	NO	<0.02
5	**What are the symptoms of Liver failure?**	YES	YES	YES	NO	<0.01

Table 1: Assessment of the clinical appropriateness of voice assistance results regarding Hepatitis B and Liver Disease

[1360] **Figure 1.** Assessment of the clinical appropriateness of voice assistance results regarding Hepatitis B and Liver Disease.

S1361

Association of Non-Alcoholic Fatty Liver Disease and Metabolic-Associated Fatty Liver Disease with Duration of Hospital Stay in Covid-19 Patients: A Systematic Review and Meta-Analysis

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[1]Saint Michael's Medical Center, Newark, NJ; [2]Green Life Medical College and Hospital, Dhaka, Dhaka, Bangladesh; [3]Universidade Positivo, Curitiba, Parana, Brazil; [4]Sawai Man Singh Medical College, Jaipur, Rajasthan, India; [5]Gandhi Medical College, Hyderabad, Telangana, India; [6]Keystone Health, Rochester, MN; [7]Mayo Clinic, Rochester, MN.

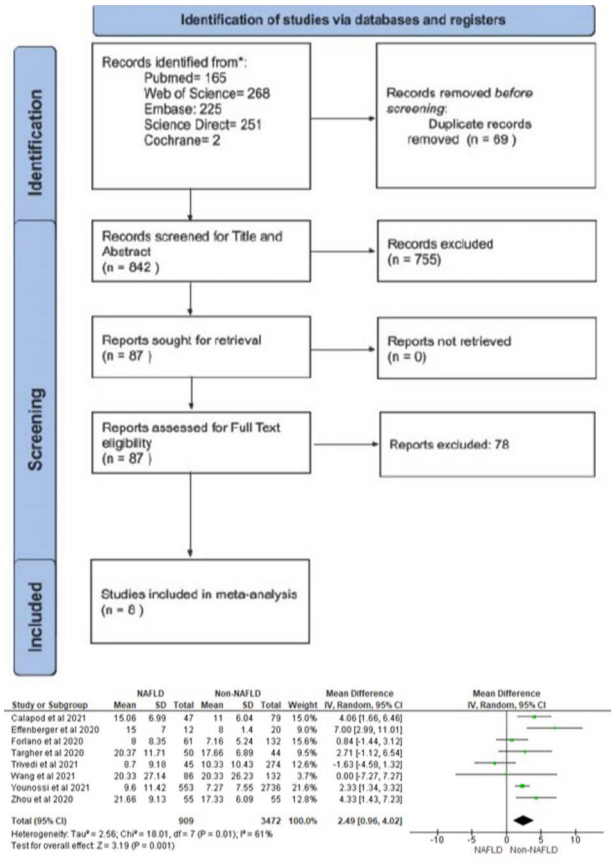
Introduction: With the ongoing SARS-CoV-2 pandemic there is a need to evaluate and investigate risk factors for COVID-19. Age, dyslipidemia, obesity, cardiovascular disease, and chronic kidney disease are established risk factors that lead to worse outcomes in COVID-19 Patients. The association between Non-Alcoholic fatty liver disease (NAFLD) and Metabolic Associated fatty liver disease (MAFLD) and COVID-19 infection is still in debate The discrepancies in the literature may be due to confounding factors, a small study population, and heterogeneity. We conducted a systematic review and meta-analysis to investigate the impact of NAFLD/MAFLD on the duration of hospital stay in COVID-19 patients.

Methods: A systematic review of literature databases Pubmed, Cochrane, Embase, Science Direct, and Web of Science was conducted from January 2022- to May 2022. Observational studies or clinical trials that studied hospital stay outcomes in COVID-19 patients were included. Studies that assessed NAFLD/MAFLD using lab assessment (FIB-4, APRI, FIBROSIS score, HSI index, etc), non-invasive imaging (Elastography, Liver Ultrasound, or CT scan, MR elastography, Liver stiffness measurement), or liver biopsy were included. The protocol of the study was registered in Prospero (CRD42022313259) and PRISMA

guidelines were followed (Figure). The meta-analysis was performed using RevMan software on studies for hospital length of stay. Mean differences were generated to describe the overall effect size using random effect models.

Results: A total of 4,381 patients from eight studies were included in the qualitative analysis. A total of 909 patients in the NAFLD group and 3472 patients in the Non-NAFLD group. A qualitative synthesis showed that the mean difference in the hospital length of stay was 2.49 days between the NAFLD and NON-NAFLD groups and a 95% Confidence interval (95%CI) of 0.96- 4.02. (Figure) I2 = 61%.This denotes on an average ~2.5 days additional hospital stay among NAFLD/MAFLD patients with COVID-19.

Conclusion: Our meta-analysis suggests that NAFLD patients remain in the hospital for a longer period than NON-NAFLD patients. Fatty Liver disease is a risk factor that leads to increased severity of COVID-19 infection.



[1361] **Figure 1.** PRISMA Flowchart outlining the study search and Forest Plot, meta-analysis of Hospital length of stay in COVID-19 with Fatty Liver disease.

S1362

Direct-Acting Antivirals [DAA] Are Effective as Sole Treatment of Porphyria Cutanea Tarda (PCT) With Chronic Hepatitis C [CHC]

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Introduction: CHC is a risk factor for PCT. DAA alone can both cure CHC and lead to remission of PCT. We treated patients with CHC+PCT with ledipasvir/sofosbuvir [Harvoni] and followed them for ≥1 y to assess cure of CHC and remission of PCT.

Methods: We enrolled 15 previously untreated patients, 13 M, all with HCV genotype 1. 14 were White; 1 was Black. Mean age was 58.9 y. At baseline, HCV RNA in serum ranged from 0.26-4.32 x 10^6 IU/mL; and Metavir fibrosis scores, by Fibroscan or Fibrometer, were F1 [2], F2 [5], F3 [3], and F4 [2], not done in 3. At baseline, 7/15 had elevated serum ferritin suggesting iron overload; 10 regular alcohol use; 15 current or prior tobacco use. 1 had a genetic defect in UROD [familial PCT type 2]. We measured plasma and urinary porphyrins at baseline and monthly for the first 12 months and, whenever possible, at 16, 20, and 24 mos. We measured HCV RNA in serum at baseline, end-of-treatment, 8-12, and 20-24 mos. Cure of HCV was defined as no detectable HCV RNA in serum ≥ 3 months after end-of-treatment [EOT]. Clinical improvement in PCT was assessed by skin exams for new PCT lesions. Remission of PCT was defined as normalization of plasma and urinary total porphyrins [< 0.9 mcg/dL and < 226 mcg/g creatinine, respectively] and normalization of porphyrin profile [< 41% uro-+ heptacarboxyl-porphyrins] by HPLC.

Results: 13/15 completed the study; 2 failed to return and were lost to follow-up. 11/13 who completed the study were cured of CHC and achieved clinical remission & biochemical improvement of PCT [no new blisters or bullae; decreased plasma & urinary total porphyrins]. 1 man had a complete virological response at EOT, followed by a low level of virological relapse. We treated him with Epclusa for 12 weeks with permanent cure of HCV. He continues to show clinical remission of PCT, albeit with an abnormal PCT-like pattern of urinary porphyrins. The other man, not cured after Harvoni, has active PCT & HCV; he has not yet been re-treated. Both continued alcohol and tobacco use. The other subjects who completed treatment and follow-up all achieved cure of CHC and are in clinical remission and biochemical amelioration of PCT.

Conclusion: DAA are effective treatment of both HCV and PCT. We recommend initial treatment of HCV + PCT only with DAA. PCT does not decrease DAA efficacy to cure HCV.

S1363

Utilization of Palliative Care Service in Patients With Liver Cirrhosis in an Underserved Area, 2015-2019

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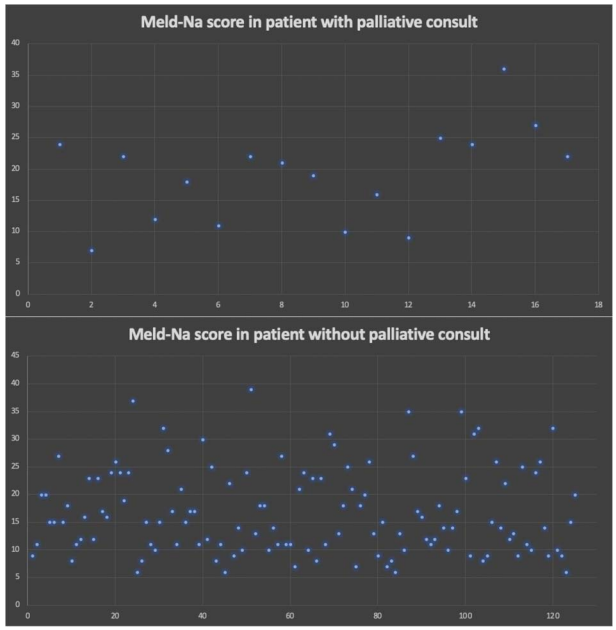
Introduction: Palliative care is a service with a very wide vision and potent tool. Palliative care applies early in the course of terminal illness in conjunction with therapies intended to prolong life; it is not limited to end-of-life care. Patients with liver cirrhosis only have one healing treatment, a liver transplant, but the limitation in the number of donor organs and eligibility criteria reduces the number of transplants. The MELD-Na score provides validated mortality prognostic for the next 90 days in patients with liver cirrhosis. This study aimed to determine if palliative care services are underutilized and could be more evident in uninsured or undocumented patients.
Methods: Objective: Describe the use of Palliative Care service in patients with liver cirrhosis stratified by MELD Na score. Data retrieved from Valley Baptist Medical Center in Harlingen Cerner included all patients 18 years or older with diagnoses of fibrosis or liver cirrhosis on admission or made during the hospital stay from January 2015 to December 2019. The total number of patients was 150.
Results: Distribution by sex, male 83 (55.33%), female 67 (44.67%). The mean age was 63.07 years. Predominant etiology of cirrhosis was alcoholism 64(42.67%), NASH 11 (7.33%), Viral 5 (3.33%), Other 15 (10%), and unknown 55 (36.67%). With legal status 140 patients (93.33%), and without 10 patients (6.67%). Patients with insurance 131 (87.33%) and without 19 (12.67%). Patients underwent palliative care services 16 (10.67%). A total of 50 (33.33%) patients underwent EGD. A total of 31 (20.6%) patients underwent paracentesis. (Figure)
Conclusion: Our result showed that the number of patients with palliative care consultations was under the expected percentage. In an external study, of 59,687 hospitalized adults with terminal decompensated cirrhosis, 29.1% received palliative care. In multiple studies, palliative care was associated with a lower procedure burden after adjusting for other factors; it was associated with a cost reduction of $8892. In our study, the cost was not evaluated, but it is expected that the patient with palliative care consults will reduce hospitalization costs. Most of the patients had insurance and legal status. The dispersion of the MELD-Na score was similar in patients with and without palliative care consultations. Our patients had a high number of EGD and paracentesis for ascites. (Table)

Table 1.

Palliative care/Hospice consult					
	Yes	%	No	%	Total
Female	11	68.75	56	41.79	67
Male	5	31.25	78	58.21	83
Total	16	10.67	134	89.33	150



[1363] **Figure 1.** MELD-Na score in patients divided by palliative care consult.

S1364

Effect of Cannabis on Mortality and Resource Utilisation in Patients With Acute on Chronic Liver Failure: Nationwide Analysis

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Introduction: Prior literature suggests that cannabis use may be associated with decreased progression of liver fibrosis in chronic liver disease patients. The effect of cannabis use on hospital outcomes in patients with acute on chronic liver failure (ACLF) has not been previously studied.
Methods: We queried the National Inpatient Sample (NIS) database using ICD-10 codes. Acute on chronic liver failure (ACLF) was defined as the presence of renal failure or hepatic encephalopathy and one other organ dysfunction or two non-renal organ failures in patients with cirrhosis and a decompensating event. Decompensating events were defined as presence of ascites, varices, hepatic encephalopathy, or infection. The relationship between cannabis use and mortality, length of stay, total hospitalization cost, and charge was examined using multivariate analysis
Results: A total of 1.78 million adult patients were admitted with acute decompensation of cirrhosis between 2016 and 2019. Of these, 830,365 patients (46.4%) met criteria for ACLF and 16,895 patients (2.04%) were reported to have cannabis use. Patients with cannabis use were younger (mean age 51.9 vs 61.3), and more likely to be male (70.7% vs 58.3%, $p< 0.001$) as compared to the patients without cannabis use. Patients who consumed cannabis were also more likely to have alcohol-related liver disease (66.5% vs 46.91%, $p< 0.001$) and hepatitis C (19.2% vs 10.5%, $p< 0.001$). The demographics of the patient population are presented in Table. Cannabis use was associated with a 24.1 % lower mortality risk on multivariate analysis (aOR-0.759, 95 % CI-0.68-0.85, $p< 0.001$) after adjusting for patient demographics, hospital characteristics and acute decompensations. Cannabis use was not associated with length of stay ($p=0.09$), but was associated with lower hospital charges and cost (-$10,820, $p< 0.001$ and -$2,180, $p< 0.001$, respectively) compared to patients without cannabis use.
Conclusion: Cannabis use is independently associated with decreased mortality risk in hospitalized patients with ACLF. Further research is necessary to understand the effect of cannabis use on hospital outcomes in patients with ACLF.

Table 1. Patient demographics, hospital characteristics and decompensations of patients admitted with ACLF stratified by cannabis use

Demographics	No Cannabis Use n (%)	Cannabis Use n (%)	p-value
Age Category			< 0.001
18-44	71,170 (8.75)	4,230 (25.04)	
45-64	420,960 (51.75)	10,835 (64.13)	
>65	321,340 (39.50)	1,830 (10.83)	
Sex			< 0.001
Males	480,475 (59.06)	12,375 (73.25)	
Females	332,995 (40.94)	4,520 (26.75)	
Race			< 0.001
White	537,885 (66.12)	10,815 (64.01)	
Black	81,695 (10.04)	2,495 (14.77)	
Hispanic	137,980 (16.96)	2,485 (14.71)	
Asian/Pacific Islander	18,230 (02.24)	155 (0.92)	
Primary Insurance			< 0.001
Medicare	401,630 (49.37)	4,825 (28.56)	
Medicaid	191,725 (23.57)	7,535 (44.60)	
Private	157,775 (19.39)	2,600 (15.39)	
Uninsured	36,800 (4.52)	1,295 (7.67)	
Median Household Income			< 0.001
Lowest quartile	273,700 (33.65)	6,500 (38.47)	
Second quartile	215,015 (26.43)	4,670 (27.64)	
Third quartile	187,925 (23.10)	3,585 (21.22)	
Highest quartile	136,830 (16.82)	2,140 (12.67)	
Hospital Location			< 0.001
Rural	47,335 (5.82)	800 (4.74)	
Urban	766,135 (94.18)	16,095 (95.26)	
Hospital Teaching Status			< 0.001
Non-teaching hospitals	215,155 (26.45)	3,770 (22.31)	
Teaching hospitals	598,315 (73.55)	13,125 (77.69)	
Elixhauser Comorbidities			< 0.001
0-1	845 (0.1)	0 (0)	
2-3	50040 (6.15)	265 (1.57)	
4 or more	762,585 (93.74)	16,630 (98.43)	
Etiology			
Alcoholic Liver Disease	389,545 (47.89)	11,710 (69.31)	< 0.001
Hepatitis C	79,870 (9.82)	3,030 (17.93)	< 0.001
Decompensations			
Hepatic Encephalopathy	451,700 (55.53)	9,885 (58.51)	0.0005
Ascites	500,290 (61.5)	10,635 (62.95)	0.0934
Varices	55,435 (6.82)	1,500 (8.88)	< 0.001
Bacterial Infection	346,430 (42.59)	6,285 (37.2)	< 0.001

S1365

Improving Screening and Vaccination Rate for Hepatitis B in Veterans Affair Primary Care Population: A Quality Improvement Study

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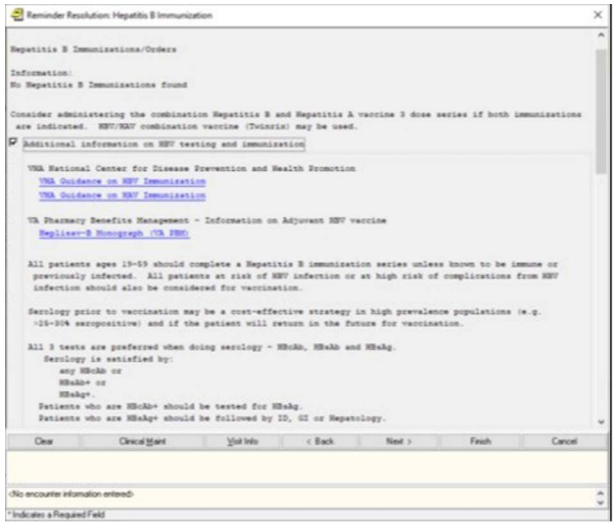
Introduction: According to Advisory Committee on Immunization Practices (ACIP), acute infection with Hepatitis B virus (HBV) is rising among adults 40 years and older. Hepatitis B (HepB) vaccines have long demonstrated safety and efficacy for decades, however less than a third of U.S. adults reported being vaccinated against HBV in 2018. In 2022, ACIP updated its recommendation and advised vaccinating all adults aged 19-59 and those 60 years and older with risk factors; adults 60 years and older without known risk factors may also be vaccinated. Our project aims to improve HBV screening and vaccination rate among Veterans Affairs (VA) primary care clinic patient population.
Methods: Data was collected from pre-intervention (October – December 2021) and post-intervention (March – May 2022); all patients seen in clinic during these months were included. Patients were considered immune against HBV from vaccination if they have positive anti-HBsAg; and susceptible to infection if hepatitis panel negative. Interventions include educating each resident group regarding update in vaccination guideline and hepatitis panel interpretation. Reminder poster regarding HBV vaccine was placed in each clinic room. In addition, reminder for checking HepB status was developed and embedded in VA electronic medical record (EMR) system, which will show up at the end of each visit. (Figure)
Results: In the pre-intervention period from October to December 2021, a total of 1242 veterans were seen in primary care clinic. 532 veterans were screened for immunity in the past with 378 veterans noted to have no immunity against hepatitis B. Out of 378 non-immune veterans, only 35 patients were vaccinated against HepB. (Table) In the post-intervention period from March to May 2022, 1174 veterans were

seen. 689 veterans were screened for immunity and 402 have no immunity against HBV on hepatitis panel; 123 veterans received HepB vaccine during clinic visit, which is more than 20% increase compared to prior.

Conclusion: Our data suggest that HBV vaccination rate was suboptimal among veteran population. A low-cost intervention along with the help of technology could be beneficial in integrating new vaccination guideline in VA standard of care. Our project strikes to encourage clinicians to bear the responsibility and offer the vaccine to adult patients proactively, rather than wait for patients to request for it. The goal of this project is to increase awareness of new vaccination guideline and reach for full vaccination rate among veteran population.

Table 1. Data gathered from pre-intervention and post-intervention period.

	Pre-Intervention (October to December 2021)	Post-Intervention (March to May 2022)
Total veterans seen in clinic	1242	1174
Veterans that were screened for Hepatitis B	532 out of 1242 (42.8%)	689 out of 1174 (58.7%)
Screened veterans found to have no immunity against Hepatitis B	378 out of 532 (71%)	402 out of 689 (58.3%)
Veterans without HepB immunity that received HepB vaccine	35 out of 378 (9%)	123 out of 402 (30.6%)



[1365] **Figure 1.** Example of electronic reminder that was developed and embedded in VA electronic medical record system. The reminder will show up at the end of each clinic visit, which will ask physicians to check veterans' hepatitis B status and offer vaccine if appropriate.

S1366

Impact of Hospital Teaching Status on Mortality and Procedural Complications of Percutaneous Paracentesis in the United States

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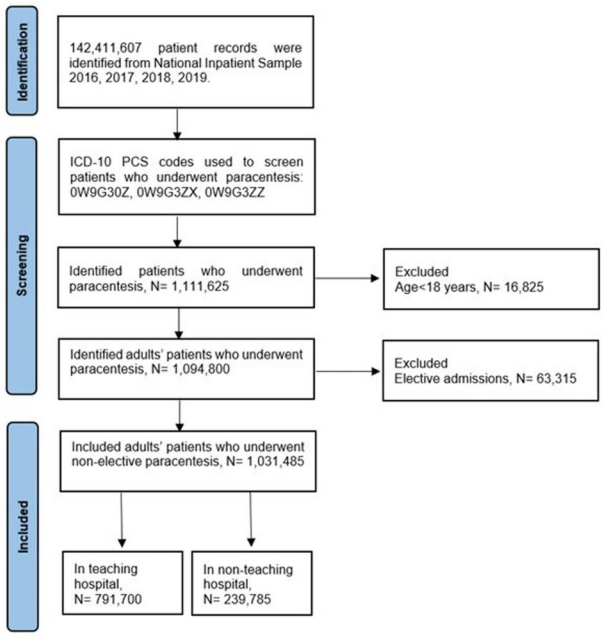
Introduction: Numerous previous studies investigated the impact of medical training settings on outcomes of hospitalized patients. Percutaneous paracentesis is frequently a bed-side procedure that is commonly performed by healthcare providers in training. However, impact of teaching hospital status on outcomes of percutaneous paracentesis to the best of our knowledge have never been studied before.
Methods: Hospitalized patients who underwent percutaneous paracentesis were identified from the National Inpatient Sample database 2016 to 2019 across United States teaching and non-teaching hospitals. Univariate and Multivariate logistic regression analysis was performed to determine the risk difference in mortality, postprocedural outcomes and healthcare resources utilization in the studied groups. Multivariate logistic analysis was performed using STATA software and results were adjusted for patient and hospital characteristics and comorbidities.
Results: Among 1,031,485 admitted adults' patients who underwent percutaneous paracentesis, 791,700 (76.8%) subjects were managed at US teaching hospitals, while 239,785 (23.2%) were admitted to non-teaching hospitals (Figure). Patients baseline comorbidities are listed in Table. Inpatient mortality rates (Figure) were significantly higher in individual undergoing paracentesis at US teaching hospitals (aOR 1.29, 95% CI 1.23 - 1.35, p< 0.001) compared to non-teaching hospitals. Similarly, higher risk of procedural complications including hemoperitoneum (aOR 1.90, 95% CI 1.65 – 2.20, p< 0.001), hollow viscus perforation (aOR 1.97, 95% CI 1.54 - 2.51, p< 0.001) and vessel injury/laceration (aOR 15.3, 95% CI 2.12 - 110.2, p=0.007) were noticed in study group when compared to controls. Furthermore, hospital teaching status was associated with prolonged mean length of stay (9.33 days vs 7.42 days, adjusted mean difference (aMD) 1.81, 95% CI 1.68 - 1.94, p< 0.001) and increased charge of care (106,014$ vs 80,493$, aMD 24,926$, 95% CI 21,617$ – 28,235$, p < 0.001).
Conclusion: Hospitalized patients undergoing paracentesis in US teaching hospitals have increased risk of mortality, postprocedural complications, prolonged length of stay and increased charge of care when compared to non-teaching hospitals. As the first study to answer this question, further studies are needed to confirm our findings and the relationship impact of new trainees involved in the care of ascites patients on the outcomes of those undergoing paracentesis.

Table 1. Baseline characteristics and comorbidities of patients managed with percutaneous paracentesis in US teaching and non-teaching hospitals

	Paracentesis %, NO.	Teaching %, NO.	Non-teaching %, NO.	P-value
	(100,0) 1,031,485	(76.8) 791,700	(23.2) 239,785	
Patient's characteristics				
Age, mean years	59.3	59.0	60.6	< 0.001
Female	43.8 (451790)	43.9 (347556)	43.3 (103827)	0.028
Racial distribution				

Table 1. (*continued*)

	Paracentesis %, NO.	Teaching %, NO.	Non-teaching %, NO.	P-value
White	66.0 (680780)	64.23 (508509)	72.15 (173005)	< 0.001
Black	12.6 (129967)	13.8 (109255)	8.70 (20861)	< 0.001
Hispanic	14.4 (148534)	14.7 (116380)	13.3 (31891)	< 0.001
Others	2.75 (28366)	2.88 (22801)	2.32 (5563)	< 0.001
Insurance type				
Medicaid	46.1 (475515)	45.2 (357848)	49.2 (117974)	< 0.001
Medicare	23.6 (243430)	23.9 (189216)	22.8 (54671)	< 0.001
Private	24.9 (256840)	25.7 (203467)	22.3 (53472)	< 0.001
Uninsured	5.33 (54978)	5.20 (41168)	5.75 (13788)	< 0.001
Charlson comorbidity index score				
1	9.47 (97682)	9.09 (71966)	10.7 (25657)	< 0.001
2	7.89 (81384)	7.71 (61040)	8.47 (20310)	< 0.001
≥3	75.2 (775677)	75.6 (598525)	74.0 (177441)	< 0.001
Median annual income, us$				
1–43,999	31.0 (319760)	30.8 (243844)	31.7 (76012)	< 0.001
44,000–55,999	26.0 (268186)	25.1 (198717)	28.9 (69298)	< 0.001
56,000–73,999	23.9 (246525)	24.1 (190800)	23.0 (55151)	< 0.001
≥74,000	19.1 (197014)	20.0 (158340)	16.3 (39085)	< 0.001
Hospital characteristics				
Hospital region				
Northeast	18.5 (190825)	20.7 (163882)	11.2 (26856)	< 0.001
Midwest	21.7 (223832)	22.8 (180508)	18.2 (43641)	< 0.001
South	38.0 (391964)	36.0 (285012)	44.6 (106944)	< 0.001
West	21.8 (224864)	20.5 (162299)	26.0 (62344)	< 0.001
Hospital bed size				
Small	15.8 (162975)	17.5 (138548)	10.3 (24698)	< 0.001
Medium	27.4 (282627)	27.0 (213759)	28.5 (68339)	< 0.001
Large	56.8 (585883)	55.5 (439394)	61.2 (146748)	< 0.001
Comorbidities				
Hypertension	27.7 (285721)	27.6 (218509)	28.1 (67380)	0.066
Diabetes mellitus	31.8 (328012)	31.5 (249386)	32.9 (78889)	< 0.001
Smoking history	39.9 (411563)	39.6 (313513)	40.9 (98072)	0.001
Hyperlipidemia	22.9 (236210)	22.7 (179716)	23.3 (55870)	0.039
Obesity	12.1 (124810)	12.1 (95796)	12.2 (29254)	0.745
Chronic kidney disease	28.1 (289847)	27.8 (220093)	29.1 (69777)	< 0.001
Coronary artery disease	15.4 (158849)	15.1 (119547)	16.5 (39565)	< 0.001
Peripheral vascular disease	1.87 (19289)	1.80 (14251)	2.30 (5515)	< 0.001
Chronic obstructive lung disease	13.5 (139250)	12.7 (100546)	16.3 (39085)	< 0.001
Human immunodeficiency virus	0.60 (6189)	0.70 (5542)	0.40 (959)	< 0.001
Congestive heart failure	19.0 (195982)	18.8 (148840)	20.0 (47957)	< 0.001
Nephrotic syndrome	0.20 (2063)	0.22 (1742)	0.15 (360)	0.002
Chronic liver disease	66.0 (680780)	65.2 (516188)	68.7 (164732)	< 0.001
Malignancy	12.5 (128936)	12.8 (101338)	11.6 (27815)	< 0.001
Pancreatitis	4.11 (42394)	4.10 (32460)	3.90 (9352)	0.028



[1366] **Figure 1.** Flow diagram of study sample.

S1367

Underlying Etiology of Chronic Liver Disease Impacts Serum Hepcidin Levels: A Meta-Analysis

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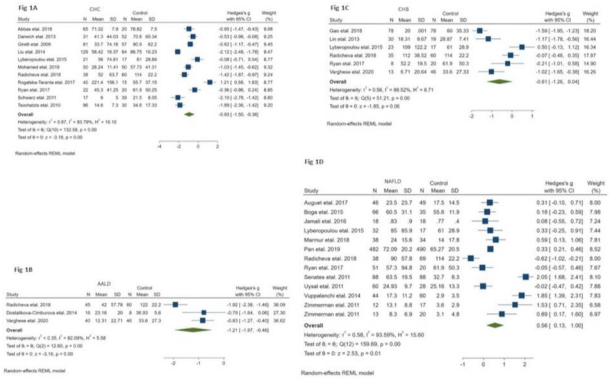
Introduction: Derangement of hepcidin-iron axis in chronic liver disease (CLD) has been implicated in the development of hepatic iron overload which is associated with accelerated progression of liver disease. Hepcidin is a proposed biomarker for monitoring CLD and has been shown to correlate with hepatic iron stores and histological activity index. Supplementing hepcidin has been suggested as a way of slowing down progression of liver disease. Studies comparing serum hepcidin in patients with CLD to that in controls have been fraught with discrepancies. We carried out a meta-analysis of these studies to gain a better understanding and investigate if serum hepcidin levels are affected by the underlying etiology of CLD.
Methods: Pubmed, Embase and Web of Science were searched for studies comparing serum hepcidin in patients with CLD to controls from inception till November 2020. Meta-analysis was carried out using the STATA software applying the random effects model.
Results: 1379 records were retrieved after removing duplicates. 24 studies met inclusion criteria. Compared to healthy controls, serum hepcidin was significantly lower in chronic hepatitis C (11 studies) [mean difference -0.93 (95% CI: -1.5 to -0.36), p< 0.01] [Figure A] and alcohol associated liver disease (3 studies) [mean difference -1.21 (95% CI: -1.97 to -0.46), p< 0.01] [Figure B]. There was a trend for lower serum hepcidin in chronic hepatitis B (6 studies) but this was not statistically significant [mean difference -0.61 (95% CI: -1.26 to 0.04), p=0.06] [Figure C]. There was a trend for higher serum hepcidin in non-alcoholic fatty liver disease (11 studies), but this was not statistically significant [mean difference 0.46 (CI: -0.02 to 0.94), p=0.06] [Figure D] [CI: confidence interval].
Conclusion: Serum hepcidin in CLD is influenced by several factors including systemic iron status, inflammation, liver synthetic capacity, presence of metabolic syndrome etc. Targeted therapy should be tailored based on the underlying mechanism.



[1367] **Figure 1.** Meta-analysis showing significantly lower serum hepcidin in CHC (11 studies) [mean difference -0.93 (95% CI: -1.5 to -0.36), p<0.01] [A]; AALD (3 studies) [mean difference -1.21 (95% CI: -1.97 to -0.46), p<0.01] [B]; trend for lower serum hepcidin in CHB (6 studies) [mean difference -0.61 (95% CI: -1.26 to 0.04), p=0.06] [C]; and trend for higher serum hepcidin in NAFLD (11 studies) [mean difference 0.46 (CI: -0.02 to 0.94), p=0.06] [D].Chronic hepatitis C (CHC), alcohol associated liver disease (AALD), Chronic hepatitis B (CHB), non-alcoholic fatty liver disease (NAFLD), number of patients (N), standard deviation (SD), confidence interval (CI).

S1368

Gender and Racial Disparities in NAFLD With Outcomes in the United States

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[1]Bassett Medical Center, Cooperstown, NY; [2]Al Kamil Health Center, Al Kamil, Janub ash Sharqiyah, Oman; [3]Beth Israel Deaconess Medical Center, Boston, MA; [4]Reading Hospital Tower Health, West Reading, PA; [5]Reading Tower Health, West Reading, PA; [6]Manipal College of Medical Sciences, Pokhara, Gandaki, Nepal; [7]APPL, Nongpoh, Meghalaya, India.

Introduction: Different races and genders have been known to have a different prevalence of Non-alcohol fattyliver disease (NAFLD). We conducted a nationwide study with National Inpatient Sample (NIS) database to identify the prevalence of NAFLD among races and gender, along with their associated mortality.
Methods: We used the 2019 NIS database to identify all adults (>18 years) diagnosed with NAFLDusing the relevant ICD-10-CM codes. Gender and racial distribution amongst NAFLD patients were obtained using the variables available within the database. We conducted univariate screen and multivariate logistic regression to adjust for potential patient and hospital level confounders to evaluate if there is any association of racial or gender groups with mortality. All statistical analyses were carried out using Stata 17.0 software.
Results: A total of 532,485 adult NAFLD patients were identified in the study. The racial distributionamongst this NAFLD group included: Whites (68.3%), Blacks (9.4%), Hispanics (16%), Asian/pacific islanders (2.3%), Native Americans (1%), and others (3.1%). NAFLD patients within our study were predominantly female with 54.5% and 45.6% males. On multivariate analysis, we found that the odds of mortality in blacks were lower as compared to whites [OR 0.75 (0.63-0.89); p=0.001]. Whereas there was no difference in odds of mortality among different genders.
Conclusion: Our study shows a significantly higher prevalence of NAFLD in Whites followed by Hispanicsand Blacks respectively. Interestingly, in our study, blacks were found to have lower odds of mortality compared to whites. Studies have found a higher rate of rs738409 SNP (G-allele) mutation in whites compared to blacks. This has been linked to severe fibrosis and increased mortality in whites with NAFLD possibly due to the development of cirrhosis and hepatocellular carcinoma. Also, we found more females with NAFLD in 2019. Our study findings of higher NAFLD prevalence in females and lower odds of mortality in blacks compared to white are based on a one-year analysis and needs more extensive studies to identify potential causes for the observed differences.

S1369

Outcomes of Gout in Patients With Cirrhosis - A NIS-Based Study

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Introduction: Hyperuricemia is a prerequisite for the development of gout. Elevated serum uric acid (UA) levels result from either overproduction or decreased excretion (whether by the kidneys or bowel). Some literary works denote a positive correlation between serum UA levels, cirrhosis-related complications and the incidence of non-alcoholic fatty liver disease. The exact relationship, whether hyperuricemia results in worsening cirrhosis outcomes or vice versa, is unknown. Despite these correlations, few studies explore the relationship between cirrhosis and gout. We aim to explore a possible link between them.
Methods: The National Inpatient Sample (NIS) was used to identify patients hospitalized with gout, stratified based on a history of cirrhosis, from 2001 to 2013 via the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9 CM) codes. Primary outcomes consisted of mortality, gout complications (rates of flare, tophi formation, nephrolithiasis, nephropathy, and septic arthritis), and joint interventions (arthrocentesis and joint injection). Chi-squared and independent t-tests were done to assess categorical and continuous data, respectively. Multiple logistic regression was used to control for confounders, including age, sex at birth, race, cardiac arrhythmias, chronic pulmonary disease, heart failure, diabetes, HIV, HTN, peripheral vascular disease, alcohol use disorder and renal failure.
Results: Patients without cirrhosis were older (70.37±13.53 years versus 66.21±12.325 years; $p< 0.05$). The majority of both groups were male, but cirrhotic patients had more males versus females (74.63% versus 66.83%; adjusted $p=0.121$). Cirrhotic patients had higher rates of mortality (5.49% versus 2.03%; adjusted $p< 0.05$), gout flare (2.89% versus 2.77%; adjusted $p< 0.05$) and tophi (0.97% versus 0.75%; adjusted $p=0.677$). Non-cirrhotic patients had higher rates of arthrocentesis (2.45% versus 2.21%; adjusted $p< 0.05$) and joint injections (0.72% versus 0.52%; adjusted $p< 0.05$). Rates of septic arthritis, nephropathy and uric acid nephrolithiasis did not differ significantly among both groups.
Conclusion: Cirrhotics had greater incidence of gout-related complications, representing a possible link between cirrhosis and elevated average serum UA levels. Non-cirrhotics had higher rates of more invasive interventions, which could be due to clinician hesitancy with performing these interventions given increased bleeding risk in the setting of cirrhosis-related coagulopathy. (Table)

Table 1. Patient Characteristics and Differences in Inpatient Gout Outcomes in Individuals With and Without Cirrhosis

		Non-Cirrhotics		Cirrhotics		OR	CI	*p*-value	AOR	ACI	Adjusted *p*-value
		Percentage	n	Percentage	n						
Sex at birth	*Female* *Male*	33.17 66.83	494,890 996,939	25.37 74.63	9,372 27,576	0.685	0.669-0.701	< 0.05	0.979	0.953-1.006	0.121
Mortality		2.03	30,286	5.49	2,029	2.804	2.678-2.937	< 0.05	3.092	2.939-3.252	< 0.05
Gout Flare		2.77	41,282	2.89	1,066	1.044	0.982-1.11	0.171	0.816	0.765-0.871	< 0.05
Tophi		0.75	11,202	0.97	358	1.293	1.164-1.438	< 0.05	1.025	0.914-1.149	0.677
Uric Acid Nephrolithiasis		0.02	374	0.02	9	0.972	0.502-1.882	0.932	1.037	0.53-2.03	0.915
Nephropathy		0.02	283	0.01	5	0.713	0.295-1.727	0.452	0.548	0.223-1.346	0.19
Arthrocentesis		2.45	36,611	2.21	818	0.9	0.839-0.965	< 0.05	0.741	0.686-0.8	< 0.05
Joint Injection		0.72	10,673	0.52	192	0.725	0.628-0.837	< 0.05	0.713	0.61-0.833	< 0.05
Septic Arthritis		0.31	4,637	0.31	114	0.993	0.824-1.196	0.939	0.997	0.821-1.211	0.977
	Mean	SD	SE Mean	Mean	SD	SE Mean	Mean difference	CI	*p*-value		
Age at admission (years)	70.37	13.53	0.011	66.21	12.325	0.064	4.167±0.071	4.027-4.306	< 0.05		

n: sample size; OR: odds ratio; CI: 95% confidence interval; AOR: adjusted odds ratio; ACI: adjusted 95% confidence interval; SD: standard deviation; SE: standard error.

S1370

Delayed Clinical Follow Is Not Associated With Lower SVR Rates in an HCV-Infected Cohort in Mumbai, India

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Introduction: Hepatitis C Virus (HCV) has a prevalence of 71 million cases worldwide. Regular follow-up can be challenging for patients in low middle income countries (LMIC) due to lack of access to healthcare facilities and transportation difficulties. Our aim was to determine if delayed vs regular follow up for patients being treated for HCV with direct acting antivirals (DAA) resulted in a difference in sustained virologic response (SVR).
Methods: We conducted a retrospective cohort study of 149 patients in Mumbai, India who had received treatment for Hepatitis C from 2015 to 2021. All patients had confirmed HCV by PCR and were treated with direct acting antivirals (DAA) approved by the FDA equivalent in India. Patients were asked to present for follow up 12 weeks after end of treatment for SVR12 (sustained virologic response) testing.
Results: 149 patients were included. 81 followed up on time (54%) and 68 did not (46%). The mean age at treatment in both groups was similar (51 vs 52, p = 0.29) while male/female distribution showed a significant difference (40% vs 54% male, 60% vs 46% female, p = 0.027). The most common genotype in the cohort was genotype 3 (52% vs 49%) and the second most common was genotype 1 (32% vs 20%). There was not a significant difference in genotypes between both groups (p = 1.0). History of hyperlipidemia (p = 0.12), thyroid disease (p = 0.20), and CKD (p = 0.16) did not show significant difference across both groups. On the other hand, diabetes (p = 0.026) and HTN (p < 0.01) were more prevalent in those who had delayed follow up. There was no significant difference in prior treatment experience

between the two groups (p = 0.13). Change in AST and ALT from the initiation of treatment until SVR also did not show significant difference across both groups (p = 0.58, 0.38). Patients with advanced liver disease were more commonly seen in the group which did not have on-time follow up (p < 0.01). SVR was seen more in the group which did not follow up on time (94% vs 79%, p < 0.01). (Table)
Conclusion: The likelihood of SVR was not impeded by delayed follow-up compared to regular follow-up in this cohort of infected patients. Further research is needed to determine if this is generalizable across different genotypes and geographic locations.

Table 1. Patients' baseline clinical characteristics stratified against delayed vs regular follow-up

Variable	Overall (n=149)	Delayed FU (n=68)	Regular FU (n=81)	P-value
Age (mean ± SD)	52 ± 13	53 ± 13	51 ± 13	0.29
Sex (n, %)				0.10
Male	71 (48)	27 (40)	44 (54)	
Female	78 (52)	41 (60)	37 (46)	
Genotype (n, %)				1.0
1	46 (31)	20 (20)	26 (32)	
2	1 (0.6)	0 (0)	1 (1.2)	
3	75 (50)	33 (49)	42 (52)	
4	4 (2.7)	2 (2.9)	2 (2.5)	
5	1 (0.6)	0 (0)	1 (1.2)	
Not collected	22 (15)	13 (19)	9 (11)	
DM (n, %)				0.06
No	120 (81)	50 (74)	69 (85)	
Yes	29 (19)	18 (26)	12 (15)	
HTN (n, %)				0.03
No	96 (64)	37 (54)	59 (73)	
Yes	53 (36)	31 (46)	22 (27)	
HLD (n, %)				0.18
No	144 (97)	64 (94)	80 (99)	
Yes	5 (3)	4 (6)	1 (1)	
Thyroid Disease (n, %)				1.0
No	131 (88)	60 (88)	71 (88)	
Yes	18 (12)	8 (12)	10 (12)	
CKD (n, %)				0.38
No	137 (92)	61 (90)	76 (94)	
Yes	12 (8)	7 (10)	5 (6.2)	
Treatment Experience (n, %)				0.73
Naive	101 (68)	45 (66)	56 (69)	
Experienced	48 (32)	23 (34)	25 (31)	
Liver Status (n, %)				0.03
No Cirrhosis	56 (38)	26 (38)	30 (37)	
Comp Cirrhosis	68 (46)	25 (37)	43 (53)	
Decomp Cirrhosis	25 (17)	17 (25)	8 (10)	
SVR (n, %)				< 0.01
No	21 (14)	4 (5.8)	17 (21)	
Yes	128 (86)	64 (94)	64 (79)	
Change in AST (mean ± SD)	35 ± 39	37 ± 38	33 ± 41	0.58
Change in ALT (mean ± SD)	42 ± 55	46 ± 64	37 ± 47	0.38

S1371

High SVR Rates, Regardless of Race or Socioeconomic Class, in Patients Treated With HCV DAAs in Community Practice Using a Specialized Pharmacy Team

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Introduction: Approved HCV DAA regimens can cure nearly all patients; however, socioeconomic disparities may impact access and outcome. This study assesses socioeconomic factors, differences in insurance coverage and the drug prior auth process in HCV-infected patients managed in community practices partnered with a dedicated pharmacy team with expertise in liver disease.
Methods: This IRB-approved, ongoing study captures data on a cohort of 2480 patients from community practices. Patients had chronic hepatitis C and were treated with DAA regimens selected by their physician. Median income is based on home zip code. The HCV Health Outcomes Centers (HOC) Network provides comprehensive patient management including a dedicated pharmacy support team with expertise in the prior auth process.
Results: In this cohort, 60.1% were male, 49% were Hispanic Whites (HW), 37% were Non-Hispanic Whites (NHW), and 14% were Black. Eighty-seven percent of patients were treatment naïve, 74% were infected with genotype 1 virus and 63% had advanced fibrosis/cirrhosis (F3/F4=68.2% HW, 65.6% Blacks, 55.4% NHW). Figure depicts the distribution of socioeconomic characteristics by racial group. Forty percent of patients were on disability with the highest % in the Black group and less than 1/3 were employed full time, regardless of race/ethnicity. Medicare covered 42% of Black patients vs 32% of HW and NHW. The vast majority of HW (80%) and Blacks (75%) had a median income below the median income of Texas residents. Additionally, 75% of HW and 71% of Blacks had median income below the poverty level in Texas. Despite the above socioeconomic factors, 92% of all prior authorizations were approved upon first submission and patients received DAAs an average of 17 days from prescription. DAA therapy resulted in cure in 95.3% of patients (SVR=94.8% HW, 94.0% Blacks, 96.5% NHW).
Conclusion: Despite having more advanced disease and more negative socioeconomic factors, > 94% of HW and Blacks patients were cured. Continued patient education and communication with the healthcare team can lead to high adherence and > 94% HCV cure rates regardless of race/ethnicity or underlying socioeconomic factors in the community setting.

	Hispanic White (n=1214)	Non-Hispanic White (n=916)	Black (n=350)	All (n=2480)
Employee Status				
Full time	28%	32%	26%	29%
Disability	42%	35%	47%	40%
Retired	12%	17%	19%	15%
Unemployed or Part Time	18%	16%	8%	16%
Insurance Type				
Private	35%	43%	28%	37%
Medicare	32%	32%	42%	34%
Medicaid	33%	24%	30%	29%
Income, Median	$34,456	$43,108	$32,202	$37,477
Median Income < TX Median Income	80%	58%	75%	71%
Income < Poverty Level (TX)	75%	46%	71%	63%

[1371] **Figure 1.** Distribution of socioeconomic characteristics by racial group.

S1372

Changes in Acute Hepatic Porphyria Health Impacts Since Initial Diagnosis: Results From the Porphyria Worldwide Patient Experience Research (POWER) Study

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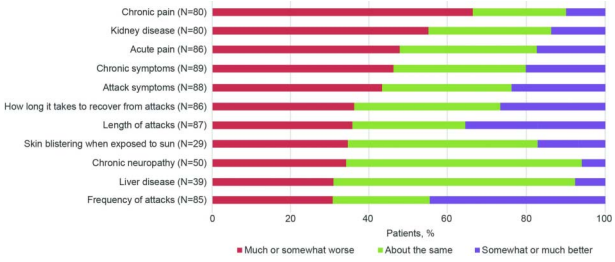
Introduction: Acute hepatic porphyria (AHP) is caused by genetic mutations in heme biosynthetic enzymes, affecting the liver. Patients can experience acute neurovisceral attacks, chronic symptoms, long-term complications, and negative impact on many quality-of-life domains. This study evaluated patient perceptions of changes in their disease characteristics and impacts on quality-of-life domains since AHP diagnosis among the overall study population and in subgroups based on time since first symptoms/diagnosis.
Methods: Adults with > 1 AHP attack within the past 2 years or receiving intravenous hemin and/or glucose for attack prevention were administered in an online survey from January 19 to April 26, 2021. Patients taking givosiran were excluded. Subgroup analyses evaluated differences in patients experiencing active disease for 0–5 years versus ≥ 6 years. Patient-reported outcomes for anxiety and depression were assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale (0–21) and the Patient Health Questionnaire (PHQ-8) scale (0–24), respectively.
Results: Of 92 patients with AHP, mean age was 41.1 years, and 90% of patients were women. Mean time to diagnosis was 6.4 years, and mean duration of disease was 16.9 years. Most patients experienced negative (very or somewhat negative) impacts on emotional health (90%), physical health (87%), financial health (75%), social health (70%), and cognitive health (66%) since diagnosis. Disease characteristics described as worsening (much worse or somewhat worse) since diagnosis, included chronic pain (66%), kidney disease (55%), and acute pain (48%) (**Figure**). Patients with active disease for 0–5 years (N=20, 22%) had mean age 33.9 years and experienced median 2.5 attacks in the past 2 years versus 43.4 years and 5 attacks in patients with active disease for ≥ 6 years (N=67, 73%). GAD-7 scores ≥ 10 and ≥ 15 (severe anxiety) were reported in 35% and 20%, respectively, of patients experiencing AHP for 0–5 years and in 51% and 28%, respectively, of patients experiencing AHP for ≥ 6 years. A PHQ-8 score ≥ 10, indicating moderate-to-severe depression, was reported in 30% of patients experiencing AHP for 0–5 years compared with 66% for those experiencing AHP for ≥ 6 years.
Conclusion: Patients with AHP experience negative impacts across multiple health domains and worsening in some disease characteristics since initial diagnosis. Patients with longer duration of disease activity (≥ 6 years) may have poorer perceived health status than those with 0–5 years.



[1372] **Figure 1.** Patient Perceptions of Changes in Disease Characteristics Since Disease Onset.

S1373

High Burden of Concurrent Mental Health and Substance Use Disorders Contribute to Gaps in the Hepatitis B Care Cascade Among Underserved U.S. Veterans

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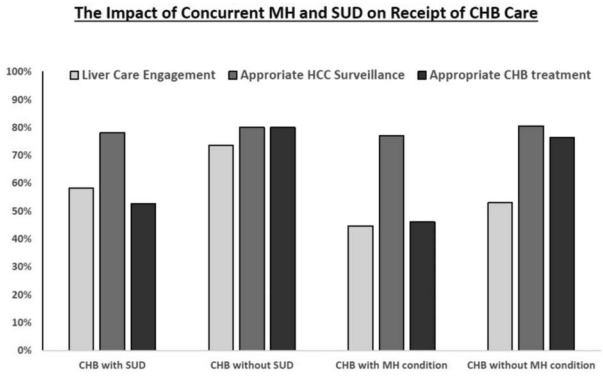
Introduction: Gaps in the chronic hepatitis B (CHB) care cascade contribute to delayed diagnosis, disparities in linkage to care, and missed opportunities for hepatocellular carcinoma (HCC) surveillance. High prevalence of mental health (MH) and substance use disorders (SUD) among US Veterans may exacerbate existing disparities in CHB care among this underserved cohort. We aim to evaluate the impact of concurrent MH and SUD on receipt of CHB care among Veterans with CHB.
Methods: We identified 108 CHB patients (≥2 positive hepatitis B surface antigen tests ≥6 months apart) via EHR query of health system laboratory data from 2017 to 2020. Liver care engagement (≥1 visit/year with liver clinic), CHB treatment (among eligible patients), and appropriate HCC surveillance were compared between groups using chi-square testing, and further evaluated with adjusted multivariable regression models. Qualitative assessments were performed to understand patient reported barriers in receiving CHB care.
Results: Among 108 CHB patients (89% men; mean age 60y; 51% Asian, 27% non-Hispanic White, 9% African American, 8% Hispanic; 15% cirrhosis), 47% had MH conditions and 66% had SUD. Overall, 62% were engaged into liver care, 79% received guideline-concordant HCC surveillance, and 63% of treatment-eligible patients were on CHB therapy. CHB patients with SUD had lower engagement with liver care (58% vs. 74% in those without SUD) and lower rates of CHB treatment (52% vs. 80%), but no difference in HCC surveillance. CHB patients with MH conditions had lower rates of CHB treatment (46% vs. 76% in those without MH), but similar rates of liver care engagement and HCC surveillance. On multivariable regression, race/ethnicity was strongly associated with receiving comprehensive CHB care (i.e., liver care engagement, HCC surveillance, and CHB therapy), with Asians more likely to meet all CHB care parameters compared to non-Hispanic whites (OR 4.45, 95% CI 1.49-13.31). On qualitative assessment, most common barriers to CHB care reported by patients involved unstable housing, transportation challenges, and lack of awareness about CHB diagnosis. (Figure)
Conclusion: Among an underserved cohort of US Veterans with CHB, high prevalence of MH and SUD were observed, which contributed to gaps in CHB care, particularly appropriate antiviral therapy. Efforts to improve the CHB care cascade must comprehensively address the complex psychosocial factors that further exacerbate existing disparities in CHB care.



[1373] **Figure 1.** The Impact of Concurrent MH and SUD on Receipt of CHB Care.

S1374

Prophylactic Anticoagulation for Portal Vein Thrombosis in Cirrhosis: A Systematic Review and Meta-Analysis

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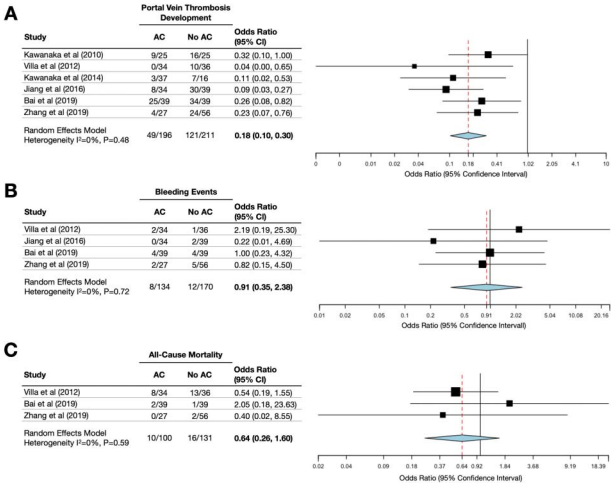
Introduction: Portal vein thrombosis (PVT) results in significant morbidity and mortality in patients with cirrhosis. Data on the safety and efficacy of anticoagulation for PVT prevention is limited, and there remains no consensus in clinical guidelines on the appropriateness of prophylactic anticoagulation for PVT. We performed a systematic review and meta-analysis on outcomes following anticoagulation as PVT prophylaxis in cirrhosis.
Methods: Pubmed, Embase, and Web of Science were searched from inception to February 13, 2022 for relevant studies. Full length studies comparing anticoagulation to other modalities as prophylaxis against PVT in cirrhosis with at least n=10 patients were included for analysis. Pooled odds ratios (OR) were calculated using a random-effects model for PVT development, bleeding events, and all-cause mortality. Heterogeneity among included studies was assessed using I^2 statistics and Cochran Q test. Low heterogeneity was defined as $I^2 < 50\%$ and Cochran Q p value >0.10. Risk of bias was assessed using the Cochrane risk-of-bias tool for randomized trials (RoB2) and the Risk of Bias in Non-randomized Studies - of Interventions (ROBINS-I) tool.
Results: Our literature search revealed 1,516 records of which 572 duplicates were removed, yielding 944 records for screening. Six studies (n=407) examining prophylactic anticoagulation for PVT were included for analysis, of which two were randomized controlled trials (RCTs) and four were observational studies. Four studies specifically examined prophylactic anticoagulation in patients undergoing laparoscopic splenectomy. Anticoagulation was associated with decreased PVT development (OR 0.18; 95% CI 0.10-0.30) with low heterogeneity (I^2=0%; p=0.48), no significant difference in bleeding events (OR 0.91; 95% CI 0.35-2.38) with low heterogeneity (I^2=0%; p=0.72), and no significant difference in all-cause mortality (OR 0.64; 95% CI 0.26-1.60) with low heterogeneity (I^2=0%; p=0.59). (Figure)
Conclusion: Anticoagulation is effective as prophylaxis against the development of PVT in patients with cirrhosis. Although anticoagulation was associated with lower rates of PVT development, there was no observed difference in bleeding event occurrence or survival. Additional studies will be necessary in order to better characterize the clinical utility of anticoagulation for PVT prevention, and to identify which patients would most benefit from anticoagulation.



[1374] **Figure 1.** Forest plots for rate of (A) portal vein thrombosis development, (B) bleeding events, and (C) all-cause mortality following the use of anticoagulation as prophylaxis against portal vein thrombosis in cirrhosis.

S1375

Role of Rifaximin in the Prevention of Acute Variceal Bleeding in Cirrhosis: A Systematic Review and Meta-Analysis

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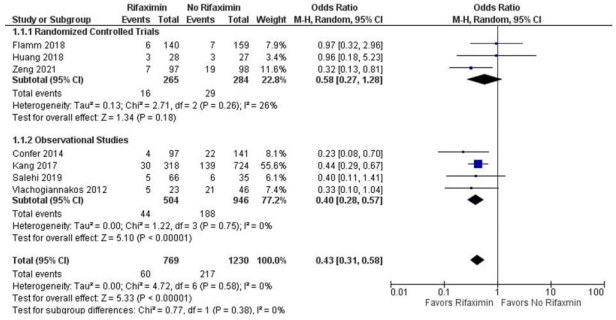
Introduction: Acute variceal bleeding is one of the most severe complications of cirrhosis and is associated with high mortality. Rifaximin has been shown to be efficacious in the treatment of hepatic encephalopathy (HE). Some studies have also shown rifaximin to be beneficial in decreasing the risk of initial episode of variceal bleeding and to decrease the risk of re-bleeding in those with prior variceal hemorrhage. We performed a systematic review and meta-analysis to evaluate the efficacy of rifaximin in prevention of acute variceal bleeding.
Methods: A systematic literature search was performed at PubMed, Embase, Web of Science and Cochrane library database until March 2022. All studies that evaluated the role of rifaximin in prevention of initial episode of variceal bleeding or risk of re-bleeding in cirrhotic patients were included in the meta-analysis. The analysis was performed using Revman 5.4 software.

Results: Seven studies including 1999 patients were included in the final meta-analysis. Of these, 3 studies were randomized controlled trials (RCTs) and 4 studies were observational studies. Out of 1999 included patients, 769 patients received rifaximin along with standard care management and 1230 patients received standard of care management only. Patients in the rifaximin group had significantly lower odds of acute variceal bleeding with OR= 0.43 (95% CI: 0.31, 0.58), I2=0. We also performed a subgroup analysis including only RCTs, which although showed trend toward lower risk of variceal bleeding in rifaximin group but did not reach statistically significance OR=0.58 (0.27, 1.28). In a second subgroup analysis, patients who received rifaximin also had significantly lower odds of spontaneous bacterial peritonitis (SBP) OR= 0.15 (0.10, 0.22), risk of acute kidney injury/hepatorenal syndrome (AKI/HRS) OR=0.39 (0.22, 0.68) and HE OR=0.37 (0.21, 0.68). Publication bias was deferred as number of studies were less than 10. (Figure)
Conclusion: Rifaximin is associated with lower odds of variceal bleeding, SBP, AKI/HRS and HE in patients with cirrhosis. Although the overall analysis demonstrates rifxamin can decrease the risk of variceal bleeding this loses statistical significance when only RCTs were included in the analysis. Therefore, additional RCTs are needed to further evaluate if there is any benefit of rifaximin in reducing the risk of variceal bleeding and to justify its use aside from the treatment HE.



[1375] **Figure 1.** Forest plot for variceal bleeding.

S1376

Evaluation of Elevated Liver Enzymes in Hospitalized Patients – A Quality Improvement Project

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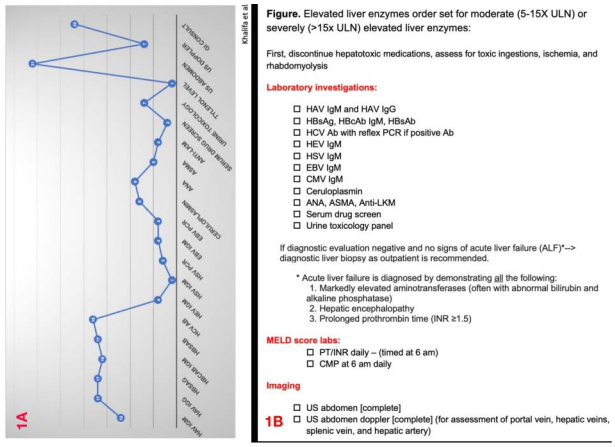
Introduction: Clinicians are required to assess abnormal liver chemistries on a daily basis. The ACG provides clear specific recommendations in management of patients admitted for elevated liver enzymes (LEs). We here aimed to evaluate to the current hospital practice in evaluation of elevated LEs and to highlight how we may further incorporate the appropriate guidance to provide evidence-based care.
Methods: We retrospectively identified 50 patients consecutively admitted for elevated LEs between 1/2021 and 1/2022 (utilizing ICD code R74.01). We focused our analysis on patients with moderate (5-15X ULN) and severe (>15X ULN) elevation in LEs since inpatient workup is highly recommended in these patients. The current ACG guidelines recommend the following tests in these patients: HAV IgM, HAV IgG, HBsAg, HBcAb IgM, HBcAb IgG, HBsAb, HCV Ab with PCR confirmation if positive, HSV, EBV, CMV, ceruloplasmin, iron panel, ANA, ASMA, Anti-LKM, IgG, serum drug and urine toxicology panels, and doppler abdominal ultrasound.
Results: In the 50 patients admitted for elevated LEs, 30 patients were men, and the majority were White (35 patients). The mean age of the cohort was 50±11 years. The mean and SD of liver tests were: ALT 338±336 U/L, AST 329±330 U/L, ALP 253±254 U/L, bilirubin 5.2±8.7 mg/dL, and INR 1.2±1.3. Overall, a complete workup for the elevated liver enzymes was performed in 12/50 patients only (24%) **(Figure A)**. Among the 33 patients who had "moderate" or "severe" elevations of LEs, the average number of tests and imaging studies ordered for each patient was 7/24 only (29%). Furthermore, complete evaluation, based on the ACG recommendation, was not performed at admission in any of the patients. After initial workup, a defined diagnosis was documented in 19/33 patients (58%). Gastroenterology (GI) consultation was requested in 21/33 patients (2/3rds). In 16/21 (76%) patients where GI was consulted, the diagnosis was established only after GI recommended further investigations based on the ACG guidelines. Length of stay was 2.6±2.7 days.
Conclusion: Our data suggest that in most of the patients the proper workup has been incomplete or delayed which may have prolonged the length of hospital stay and cost of care. Thus, we recommended education of the medical team on the existing guidelines (including consulting gastroenterology specialist) as well as incorporation of the recommendations in a proper order set to improve clinician efficiency and provide decision-making guidance **(Figure B)**.



[1376] **Figure 1.** (A) Laboratory tests and imaging studies ordered for the study cohort (50 patients), (B) Elevated liver enzymes order set for moderate (5-15X ULN) or severely (>15x ULN) elevated liver enzymes.

S1377

Seroprevalence of Hepatitis E Virus in Healthy Blood Donors at the Blood Bank of the Regional General Hospital Number 45 of the Mexican Institute of Social Security

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Introduction: Hepatitis E Virus (HEV) is currently considered one of the main causal agents of acute liver infection. The main route of transmission is fecal-oral, however, it is reported the possibility through blood transfusion specially with highest risk in immunosuppressed patients. In Mexico, HEV infection does not have a special epidemiological surveillance system even though is considered endemic. Mexico has reported a seroprevalence of 10.5%. This study was performed to determine the seroprevalence of Hepatitis E Virus in healthy donors from the Blood Bank of the Regional General Hospital Number 45 of the Mexican Institute of Social Security.
Methods: 691 serum were taken from subjects who attended the Blood Bank and who met the conditions for safe blood donation in accordance with the protocol previously established. A data collection card with information about factors associated with virus infection was obtained from each of the subjects. Serum samples were analyzed by ELISA for the determination of IgG and IgM anti-HEV antibodies. Categorical variables were analyzed for their relationship with the presence of anti-HEV antibodies in the blood culture by bivariate analysis using Chi-square or Fisher's Exact Test.
Results: 691 serum from healthy donors were analyzed, of which 65 were reactive to the ELISA test for anti-HEV antibodies. Of these serum, 19 (2.7%) showed reactivity to anti-HEV IgM and 49 (7.1%) to anti-HEV IgG. Only in 3 (0.4%) the presence of both types of antibodies was identified. It was observed that the average age among the positive cases was significantly higher than in the rest of the subjects studied, in addition to the fact that the presence of pets in the home was associated with a significantly higher risk of exposure to the virus. In the other factors studied, no statistical significance was found.
Conclusion: The seroprevalence of HEV in the study population is 9.4%. The presence of pets in the home and age over 40 years represent a risk factor for exposure to HEV. This coincides with what is reported in the international literature, where it is mentioned that the risk of infection increases with age and with close contact with animals. The present study demonstrates that HEV can be a public health problem dismissed by the authorities in Mexico and particularly in this Jalisco specially in the immunocompromised population that are due to receive blood transfusions. (Table)

Table 1. Epidemiological and demographic characteristics of the total population studied and confirmed cases

Characteristic	Total population	Confirmed cases	p*
N	691	65	
Reactive to IgM anti VHE (%)	19 (2.7)	19 (29.2)	
Reactive IgG anti VHE (%)	49 (7.1)	49 (75.4)	
Housing in the Metropolitan Area of Guadalajara (%)	663 (95.9)	65 (100)	0.08
Rural housing (%)	14 (2.0)	2 (3.1)	0.53
Non-drinking water in the house (%)	4 (0.6)	0(0)	0.52
Septic tank (%)	5 (0.7)	1 (1.5)	0.42
Consumption of pasteurized milk (%)	574 (83.1)	50 (80)	0.49
Consumption of unpasteurized milk (%)	9 (1.3)	2 (3.1)	0.32
Average days per week of consumption of pasteurized milk	2.2 ± 1.9	1.9 ± 1.6	0.07
Pork consumption (%)	641 (92.8)	61 (93.8)	0.72
Average days per week of pork consumption	1.5 ± 1.0	1.6 ± 0.9	0.36
Sausage consumption (%)	616 (89.1)	57 (87.7)	0.7
Average days per week of sausage consumption	1.6 ± 1.2	2 ± 1.1	0.78
Pets in the house (%)	381 (55.3)	50 (76.9)	< 0.05*
Average years with pets in the home	2.4 ± 4.3	3.6 ± 6.6	< 0.05*
Personal history of hepatitis (%)	13 (1.9)	0 (0)	0.24
Close contact with relatives with hepatitis (%)	19 (2.7)	1 (1.5)	0.53
Weight	78.3 ± 14.6	77.6 (12.9)	0.66
Size	1.69 ± 0.1	1.67 ± 0.1	0.74
Body mass index	27.5 ± 4.3	27.7 ± 3.7	0.6
Married (%)	440 (63.7)	46 (70.8)	0.21
Age	35.2 ± 11.0	38.9 ± 11.7	< 0.05*
>40 years	232 (33.6)	35 (53.8)	< 0.05*
Male (%)	433 (62.7)	38 (58.5)	0.46
Work with animals (%)	28 (4.1)	0 (0)	0.08
Average years working with animals	7.7 ± 2.3	0	
Personal history of transfusions (%)	8 (1.2)	1 (1.5)	0.76

S1378

Outcomes of Patients With Cirrhosis Treated with Indwelling Catheters and TIPS for Refractory Ascites: A 14-Year Single Center Review

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Introduction: Refractory cirrhotic ascites is defined as ascites that cannot be mobilized or recurs after paracentesis despite sodium restriction and diuretic therapy that occurs in 5-10% of patients with cirrhosis and is associated with poor survival.[1,2] Treatment options include serial paracentesis, transjugular intrahepatic portosystemic shunt (TIPS), indwelling abdominal catheters (IAC), and liver transplantation. Current guidelines do not recommend placement of permanent IAC due to few, low quality studies lacking safety and efficacy data on the topic.[3] In addition, there may be an increased risk of infection with IAC. We sought to describe the natural history and outcomes associated with IAC.
Methods: We retrospectively reviewed patients with cirrhosis treated for refractory ascites between 2007-2021 at a single center in Charlotte, NC with TIPS or IAC placement. Patients undergoing IAC insertion for refractory ascites were not TIPS candidates. We excluded those with malignant ascites or lost to follow up beyond day after intervention. Patient demographics, clinical and laboratory data, time to follow up, survival time from intervention, and cause of death were recorded where available.
Results: A total of 136 patients with cirrhosis underwent TIPS or IAC placement for refractory ascites, of which 4 were excluded due to lack of follow up after insertion leaving 132 patients for analysis (Table). The mean MELD at time of IAC or TIPS placement was 23.7 and 12.9 respectively. While 34.6% patients with TIPS placement were found to be deceased by the end of the study period mean follow up of 357 days, the 60 day and 6 month mortality rate was only 6.5% and 7.5% respectively. Ninety-six percent of patients died after IAC placement during the study period mean follow up of 106 days and 76% died within 60 days. The most common cause of death was liver failure for both TIPS and IAC groups, 35.1% and 87.5% respectively.
Conclusion: Patients treated with IAC rarely died from catheter-related complications, but instead from progressive liver decompensation and failure. Sixty-day mortality was high at 76%. These data may aid in planning for end of life care and inform family of the anticipated prognosis.

Table 1. Patient demographics and characteristics

	TIPS (n=107)	Catheter (n=25)
Age at Catheter Insertion	56.8	60.8
Sex (male, %)	62.6	80
Cirrhosis Etiology - Alcohol /Hepatitis B or C/Non Alcoholic Fatty Liver Disease/Other (%)	46/23/28/2.4	28/48/16/8
Encephalopathy / Spontaneous Bacterial Peritonitis /History of Variceal Bleeding (%)	25/3.7/41	60/28/28
Total bilirubin (mg/dL, average + standard deviation)	1.44 + 0.75	4.8+5.1
MELD-Na* at Intervention (average + standard deviation)	12.9 +4.3	23.7 +6.9
Mean follow up (days)	357.6	106
60 day mortality (%)	6.5	76
6 month mortality (%)	7.5	88

*MELD= Model for End Stage Liver Disease-Sodium.

S1379

Prevalence and Epidemiological Characteristics of Non Alcoholic Fatty Liver Disease in the U.S. Population

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Introduction: Non-alcoholic fatty liver disease is a biologically and clinically heterogeneous multisystem disorder that affects one-quarter of the global adult population and causes substantial social and economic implications. They may present as isolated hepatic steatosis, non-alcoholic steatohepatitis, hepatic fibrosis, cirrhosis, liver cancer, end-stage liver disease, and death. There is limited literature describing the national prevalence and epidemiological characteristics of NAFLD in the US population. The primary outcome of the study was to evaluate the concurrent prevalence and lifestyle diseases among NAFLD.
Methods: A retrospective cross-sectional study using the NHANES database from 2015-to 2018 was conducted. The datasets were downloaded from the NHANES web site and combined using SAS software (Version 9.4). Proper weighting procedures for weighting multiple years of NHANES data were employed for this study. We included participants that aged ≥18 years and had completed data from the NHANES questionnaires. Univariate and multivariate logistic regression analysis was conducted to evaluate the prevalence and epidemiology of NAFLD and the association of NAFLD with lifestyle disorders
Results: Of the total 255,968 sample size, the total number of people identified with NAFLD was 717 (0.26%). NAFLD was more prevalent in older (median: 62 years), males, Mexican American and other Hispanics, and in those with median household income >$100,000. People with NAFLD had a higher prevalence odds of having Diabetes Mellitus (OR: 10.40, 95% CI: 10.37-10.42 p < 0.001), cancer (OR: 2. 10, 955 CI: 2.09-2.10, p < 0.001), depression (OR: 2.528, 95% CI: 2.52-2.53 p < 0.001), hypersomnia (OR: 1.36, 95% CI: 1.34-1.36 p < 0.001), obesity (OR: 1.08, 95% CI: 1.08-1.08, p < 0.001), low dietary fibre intake (OR: 1.18, 95% CI: 1.18-1.19), a sedentary lifestyle (OR: 1.47, 95% CI: 1.46-1.472, p < 0.001)
Conclusion: People with NAFLD had a higher association of having lifestyle disorders including diabetes, obesity, depression, hypersomnia, low dietary fibre intake, and a sedentary lifestyle. Cancer was also found to be higher among people with NAFLD. Our study summarises the epidemiological characteristics of NAFLD in the US population. Early identification and risk mitigation strategies with active lifestyle might reduce the burden of NAFLD associated disorders.

S1380 WITHDRAWN

S1381

Outcomes of Portal Vein Thrombosis and Smoking With Cirrhosis: A Nationwide Inpatient Sample

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Introduction: Portal vein thrombosis (PVT) is a frequent complication in patients with cirrhosis. There is limited data on the outcomes of PVT in patients who smoke in relation to cirrhosis. Still, it may also exist as an independent vascular condition without liver damage, such as in prothrombotic states [1]. We aim to determine outcomes in patients diagnosed with PVT who smokes with and without cirrhosis.
Methods: A retrospective analysis was performed by utilizing the National Inpatient Sample database (2016, 2017, and 2018) and the International Classification of Diseases, Tenth Revision codes to identify the patients with the principal diagnosis of PVT and smoking. We assessed the all-cause in-hospital mortality, morbidity, length of hospital stay (LOS), and total costs between groups with and without cirrhosis. Categorical variables were compared using the chi-square test, and continuous variables were compared using the t-test.
Results: We identified 33,314 patients with PVT who are also smokers, of whom 14,991 had cirrhosis, and 18,323 were without cirrhosis. The in-hospital mortality was significantly higher in patients with cirrhosis (OR 2.95, 95% CI 2.40–3.63; P< 0.01). Diabetes (P< 0.01), obesity (P=0.001), cardiovascular comorbidity (P< 0.01), and older age (P=0.02) are identified as predictors of mortality. Patients with PVT and smoking with cirrhosis have high odds of upper GI bleeding (OR 1.87, 95% CI 1.48–2.37; P< 0.01), peritonitis (OR 2.0, 95% CI 3.82–6.82; P< 0.01), and acute kidney injury (OR 2.45, 95% CI 2.18–2.76; P< 0.01). We found that PVT patients with cirrhosis had a longer LOS (6.7 days vs. 6.1 days; P< 0.01) and higher total hospital costs ($12,324 vs. $10,238; P< 0.00).
Conclusion: In patients with PVT who are current smokers, cirrhosis is an independent significant risk factor for in-hospital mortality. Cirrhosis has been associated with increased complications like upper GI bleeding, peritonitis, and acute kidney injury in PVT. Mean LOS and resource utilization were also higher in patients with cirrhosis compared to patients without cirrhosis. (Tables) 1. Intagliata NM, Caldwell SH, Tripodi A. Diagnosis, Development, and Treatment of Portal Vein Thrombosis in Patients With and Without Cirrhosis. Gastroenterology. 2019;156(6):1582- 1599.e1. doi:10.1053/j.gastro.2019.01.265

Table 1. Primary and secondary outcomes of Portal Vein thrombosis and smoking with cirrhosis vs without cirrhosis

Table A				
Frequency in %	**With Cirrhosis (N= 14,991)**	**Without Cirrhosis (N= 18,323)**	**OR and CI**	**p-value**
In-hospital mortality	10.0	3.6	2.8 [2.40-3.630	0.00
Upper GI bleeding	6.2	3.4	1.87 [1.48-2.37]	0.00
AKI	31.6	15.8	2.45 [2.18-2.76]	0.00
Peritonitis	7.1	1.4	5.00 [3.82-6.82]	0.00
Sepsis	6.2	5.7	1.09 [0.89-1.33]	0.395
Ileus	2.53	2.95	0.85 [0.62-1.15]	0.31

Table 2. Patient's characteristics and comorbidities

Table B			
Age (mean)	61	60	
Female	29.6	38.3	0.000
Race			
Caucasian	66.6	72.3	0.000
African American	10.2	12.2	
Hispanic	15.4	9.0	
Asian	3.5	2.8	
Native American	1.0	0.3	
Others	3.1	3.0	
Insurance			
Medicare	50.2	46.2	0.000
Medicaid	21.1	15.81	
Private	25.1	34.1	
Others/Uninsured	3.4	3.8	
Bed size			
Small	12.8	14.3	0.25
Medium	21.2	21.6	
Large	65.5	64.5	
Hospital Region			
Northeast	19.2	22.1	0.32
Midwest	24.0	26.5	
South	31.4	30.8	
West	25.2	20.4	
Teaching hospital	83.8	81.8	0.03
Chronic comorbidity			
Hypertension	36.6	41.9	0.00
Diabetes mellitus	38.8	29.6	0.000
Chronic kidney disease	14.8	8.8	0.000
Chronic heart failure	8.2	6.8	0.03
Obesity	13.5	13.4	0.91
Dyslipidemia	20.5	30.3	0.00
Coronary artery disease	14.1	15.0	0.31

S1382

Hospital Admission Time and Paracentesis Administration Among Patients With Cirrhosis

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Introduction: Decompensated cirrhosis is a common presentation in patients requiring inpatient care. According to 2012 guidelines from AASLD, paracentesis should be performed in patients admitted to the hospital with ascites regardless of the reason for admission. This retrospective study hypothesizes that evening admission will be positively associated with delay in paracentesis (defined as 12-hour paracentesis delay) and non-optimal treatment choice of paracentesis being done after antibiotic administration.
Methods: 138 patients admitted with ascites secondary to cirrhosis between March 2017 and February 2021 were included. Variables studied included hospital admission of day (7 AM to 6:59 PM) versus evening (7 PM to 6:59 AM), paracentesis delay (Y/N), and whether paracentesis was performed before antibiotic administration, after antibiotic administration, or not performed. IBM SPSS Statistics Version 28 and Stata SE Version 17 were used for the analyses. P-values were two-tailed with alpha level for significance at $p < 0.05$.
Results: We found that of all patients, 39% had paracentesis after antibiotic administration, 43% did not have paracentesis at all and 37% had delayed paracentesis. During evening admission, fewer patients were likely to have paracentesis before antibiotic administration ($p=0.096$). In analyses comparing paracentesis after antibiotic administration with paracenteses before antibiotic administration, evening admission was significantly associated with an increased relative risk for paracentesis after antibiotic administration (p 0.046). Also, when combining the groups of paracenteses after antibiotic administration with paracentesis not done, evening admission was associated with the lowest frequency of paracentesis before antibiotic administration ($p=0.03$).
Conclusion: The benefits of early paracentesis outweigh the risks of infection or bleeding associated with the procedure. Performing paracentesis has a greater diagnostic yield if done prior to antibiotic administration, as even a 6-hour delay can decrease infection detection rate. We found that overall, fewer patients with ascites received paracentesis, and evening admission was associated with suboptimal management with paracentesis done after antibiotic administration. Based on the above findings, there is room for improvement in educating all clinicians, particularly those working during the evening shift, on the importance of performing paracentesis prior to antibiotic administration.

S1383

Patient Survival and Tumor Responses in Patients Undergoing Radiation Segmentectomy: A Large Tertiary Center Experience

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Introduction: UnresecTable hepatocellular carcinoma (HCC) can be treated with Selective Internal Radiation Therapy (SIRT) with Y-90, using either SIR-Spheres® (SS) or TheraSpheres® (TS). The aim of this study was to report the tumor response, overall survival, and tolerability of SS and TS.

Methods: We retrospectively analyzed charts of 137 patients who underwent SIRT with SS or TS at our center from April 2017 to January 2021, comprising 210 total procedures. Statistical analysis was performed using SAS.
Results: Stratification by therapy type showed 70% of total Y-90 therapy procedures were with SS and 30% with TS. Table contains the demographic breakdown, liver disease etiology, tumor characteristics, MELD score, BCLC stage, pre- and post-SIRT symptoms, and Modified Response Evaluation Criteria in Solid Tumors (mRECIST) for SS and TS. There was a decrease in size, enhancement, or both size and enhancement in 85% of SS and 88% of TS patients. The median overall survival was 18 months for SS and 20 months for TS. Tumor recurrence occurred in 26% of non-transplanted patients while 3 transplanted patients (out of 15) showed recurrence. The median injected dose of Y-90 SS (24.9 mCi, range 5.7-81.8 mCi) was significantly lower than that of Y-90 TS (39.6 mCi, range 4.6-90.1 mCi). This is likely due to different dosimetry models for each type of bead, which evolve as imaging modalities allow more accurate representations of absorbed radiation per dose. The procedures were well tolerated.
Conclusion: Our findings indicate that intermediate and advanced HCC patients have excellent response to Y-90 therapy with both SS and TS, as depicted by the decrease in size, enhancement, or both in 85% (SS) and 88% (TS) of patients, complete response in 37% (SS) and 49% (TS) of patients, and overall survival that ranges from 18 (SS) to 20 (TS) months, which is very favorable in this group of patients. Therapy is very well tolerated. Differences between SS and TS may possibly be explained by dosimetry; however, further comparative studies may be needed.

Table 1. Patient Demographic, Disease, and Tumor Characteristics by Treatment Type

	SIR-Spheres® (SS)	TheraSpheres® (TS)
Procedures	147	63
Gender		
Male	73%	62%
Female	27%	38%
Race		
Caucasian	56%	52%
African American	20%	21%
Hispanic or Latino	21%	22%
Asian	3%	5%
Etiology of Liver Disease		
Hepatitis C	55%	46%
Non-alcoholic Steatohepatitis (NASH)	24%	25%
Other	21%	29%
Tumor Characteristics		
Number of Lesions (median)	3	2
Total Tumor Diameter (median)	6.4 cm	5.1 cm
Bilobar Tumors	61%	31%
Portal Vein Thrombosis	46.9%	25.4%
Model for End-Stage Liver Disease (MELD) Score		
Score (median)	9	8
Barcelona Clinic Liver Cancer (BCLC) Stage		
Stage 0	1%	3%
Stage A	11%	13%
Stage B	45%	43%
Stage C	38%	35%
Stage D	5%	6%
Associated Symptoms Pre-Treatment		
Ascites	16%	16%
GI Bleed	16%	22%
Hepatic Encephalopathy	17%	17%
Associated Symptoms Post-Treatment		
Ascites	29%	16%
GI Bleed	3%	2%
Hepatic Encephalopathy	8%	0%
Modified Response Evaluation Criteria in Solid Tumors (mRECIST)		
Complete Response	37%	49%
Partial Response	21%	25%
Stable Disease	21%	10%
Progressive Disease	20%	16%

S1384

Gender and Ethnicity Are Predictors of Liver-Related Rehospitalizations in Patients With Hepatic Encephalopathy When Rifaximin Is Delivered Within 30 Days of Hospital Discharge

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Introduction: Hepatic Encephalopathy (HE) has high rate of recurrence and early hospitalizations in Liver Cirrhosis (LC). Rifaximin reduces HE recurrence and hospitalizations, but patients may not receive it timely due to difficulty obtaining prior authorization for insurance approval, or high co-payments. These issues disproportionately affect patients from underrepresented backgrounds and lower socioeconomic status. This study shows preliminary results of our Quality Improvement (QI) project where we provided initial fill of Rifaximin at the bedside prior to discharge and/or early delivery of outpatient refills after discharge.

Methods: Group-A (Intervention) was prospectively enrolled in QI project database - during Jan 2019 to Dec 2021. We performed retrospective analysis of patients admitted with recurrent HE. 30-day and 60-day liver-related hospitalizations were recorded for patients who had Rifaximin added during index hospitalization. Control (Group-B) was identified from historical readmission data at our center during November 1, 2018, to January 1, 2019, as patients who were written Rifaximin prescription at time of discharge, prior to initiation of our QI project.
Results: 80 patients constituted Group A - 23 received Rifaximin at the bedside (39% female) prior to discharge and 57 (19% female) received it within 30 days of discharge from hospitalization. 44 patients constituted Group-B. Proportion of patients readmitted within 30 days was lower in Group-A compared to Group-B (48% vs 73%; p=0.002). In 60 days after discharge, proportion of Group-A patients needing readmission was 56% compared to 73% (p=0.007). 12% of patients (n=10) had no readmissions. Males had a 16% reduction in 30-day readmission, and 45% reduction in 60-day readmissions. Female patients had 52% reduction in 30-day readmission, and 75% reduction in 60-day readmission. African American, Caucasian, and Hispanic patients showed 11%, 33%, and 71% reduction in 30-day rehospitalization, and 59%, 53%, and 64% reduction in 60-day rehospitalizations (Table).
Conclusion: Proactively working on the insurance coverage and cost of payment incurred to the patients for Rifaximin at the time of hospital discharge will reduce early readmissions. Hospitals should utilize the opportunity during each hospitalization to alleviate disparities in admission caused by poor access to Rifaximin. Thus, providing equiTable healthcare to all patients who need Rifaximin for chronic control of recurrent symptoms of HE.

Table 1. In the intervention groups (Group A), males had a 16% reduction in 30-day readmission, and 45% reduction in 60-day readmissions (p = 0.02). Female patients had 52% reduction in 30-day readmission, and 75% reduction in 60-day readmission (p < 0.001). African American, Caucasian, and Hispanic patients showed 11%, 33%, and 71% reduction in 30-day rehospitalization (p = 0.04), and 59%, 53%, and 64% reduction in 60-day rehospitalizations (p = 0.1)

	Total number of readmissions			
	30 Days		60 Days	
	Group A	Group B	Group A	Group B
Gender				
Male	31	37	42	77
Female	15	31	17	67
Ethnicity				
Caucasian	35	31	51	109
African American	8	9	9	22
Hispanic	2	7	4	11

S1385

Impact of Social Vulnerability Index on Outcomes in Patients With Alcohol-Related Liver Disease

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Introduction: Alcohol related liver disease affects diverse communities with individual and social characteristics that can impact outcomes. The Social Vulnerability Index (SVI) integrates a range of metrics and assigns a score between 0 and 1, where higher scores represent an increased risk of social vulnerability. Vulnerable patients with alcohol related liver disease have been reported to have worse outcomes. We sought to assess the impact of SVI on outcomes of patients hospitalized with alcohol related liver disease with access to social support services.
Methods: Hospitalizations for alcohol related liver disease at our institution between March and August 2019 were reviewed. All patients were assigned a low or high SVI score based on their residential census tract. Per our standard practice, patients were screened by multi-disciplinary care coordinators to identify needs for rehabilitation counseling, transplant workup, and care coordination after discharge. Demographics, hepatic decompensation, critical care needs, readmission and mortality were compared.
Results: Among 73 patients admitted for alcoholic hepatitis, 32 had a low SVI (mean 0.25) and 42 had a high SVI (mean 0.72). African American patients were more likely to have a higher SVI (35% vs 0%, p=< 0.001). Severity of alcohol hepatitis based on discriminant factor (DF) was similar between high and low SVI patients (mean DF 39.6 vs 42.8, p=0.72). After controlling for race, there was not a significant difference in hepatic decompensation, critical care needs, readmission rate or mortality based on SVI. There were 393 patients admitted for alcoholic cirrhosis including 166 with a low SVI (mean 0.26) and 227 with a high SVI (mean 0.73). Patients that were African American (23.6% vs 5.5%, p=< 0.001) or disabled (41.4% vs 29.5%, p=0.008) had a higher SVI. MELD-Na scores were similar between the high and low SVI patients (mean MELD-Na 21.7 vs 22.9, p=0.47). After controlling for age, race and employment, there was not a significant difference in hepatic decompensation, critical care needs, readmission rate or mortality based on SVI.
Conclusion: Most patients admitted for alcohol related liver disease had a high SVI; however, SVI did not impact outcomes in our cohort of patients. This may be a result of extensive care coordination efforts at our institution aimed at reducing barriers for vulnerable patients. These early interventions likely decrease the effect of SVI on outcomes.

S1386

The National Trends and Hospitalizations of Patients with Hereditary Hemochromatosis in the United States: Insights From the National Inpatient Sample

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Introduction: Hereditary hemochromatosis (HH) is a disorder of increased intestinal iron absorption leading to total body iron overload. Although it is among the most common genetic diseases globally, no large-scale nationwide data is available regarding HH-related hospitalizations in the United States. Our study aimed to find on a national level the demographics of the patients with HH, inpatient mortality, and resource utilization using the national inpatient database (NIS).
Methods: We queried the nationwide inpatient (NIS) 2016-2019 databases using the ICD-10 CM codes to identify all the patients hospitalized with hereditary hemochromatosis (HH). We excluded patients under 18 years. The primary outcome of our study was to do an exploratory analysis and determine the baseline demographic characteristics of patients admitted with HH. The secondary outcomes included in-hospital mortality, length of stay (LOS), hospitalization cost, and outcomes.
Results: A total of 196 adult patients with HH were admitted in the United States with a mean age of 59.3 years. The majority of the patients were males (55%) and Caucasians (97.2%). The mean length of stay was 6 days, and a total of 10 patients (0.5%) died in the hospital. Medicare (47.2%) was the most common insurance, and most of the patients were admitted to large tertiary care hospitals. Patients with concomitant Alcoholic Liver Disease (ALD) had greater LOS (7.5 days vs. 6 days) than patients without ALD. The rest of the demographics are shared in the Table.
Conclusion: Our study demonstrated that most of the patients admitted with HH are Caucasians and males. The mean LOS is 6 days. The total mean cost of hospitalizations is $21,763.The HH patients with concomitant Hepatitis C and Alcoholic Liver Disease have higher healthcare utilization and worse outcomes than other patients. So, patients with HH should be screened for Hepatitis C and alcoholic Liver disease to improve the outcomes for these patients.

Table 1. Baseline patient and hospital characteristics and outcomes for HH-related hospitalizations

Patient Characteristics	Hereditary Hemochromatosis (HH)	
No. of patients	196	
Male (%)	109 (55.7%)	
Mean age, (SD) years	59.38	
Race [N, %]		
Caucasian	190 (97.04%)	
African American	0	
Hispanic	0	
Asian	6 (2.96%)	
Charlson Comorbidity Index Score [N, %]		
0	56 (28.71%)	
1	47 (24.07%)	
2	19 (9.56%)	
3 or more	74 (37.63%)	
Median Income (Zip Codes) [N, %]		
$1-$38,999	25 (12.97%)	
$39,000-$47,999	48 (24.29%)	
$48,000-$62,999	38 (19.17%)	
>$ 63,000	85 (43.54%)	
Insurance Provider [N, %]		
Medicare	93 (47.28%)	
Medicaid	14 (7.03%)	
Private	84 (42.94%)	
Others	2.7%	
Hospital Characteristics		
Hospital teaching Status [N, %]		
Non-Teaching	94 (48.05%)	
Teaching	102 (51.94%)	
Hospital Bed Size [N, %]		
Small	35 (17.79%)	
Medium	63 (32.07%)	
Large	98.2 (50.12%)	
Hospital Location [N, %]		
Rural	4 (1.8%)	
Urban	192 (98.11%)	
Outcomes	HH	HH & Hep C	HH & ALD
Mortality, no. %	10 (0.5%)	10(50%)	0
Length of Stay (SD)	6	5.9	7.5
Hospitalization cost (SD)	$21,763	$38,161	$43,962

S1387

Patient Characteristics and In-Hospital Outcomes of Nonalcoholic Steatohepatitis in Patients With Stroke: A Propensity-Matched Analysis

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Introduction: Nonalcoholic steatohepatitis (NASH) is the commonest chronic liver disease which affects a large group of general population. NASH appears to increase risk of ischemic stroke, a leading cause of mortality and disability world-wide. Moreover, emerging data shows that patient with NASH experience more sever ischemic stroke and have more unfavorable outcomes after an acute ischemic stroke.
Methods: Adult patients admitted with NASH, with and without Stroke were analyzed from September 2015 to December 2020 using the National Inpatient Sample database. We used propensity score matching to balance the differences in baseline characteristics and comorbidities between the two groups. The primary outcome was to determine the burden of stroke in NASH hospitalization. Secondary outcomes included all-cause in-hospital mortality, length of stay (LOS), and total hospital costs. SAS 9.4 software was used for statistical analysis.
Results: Out of 435845 patients admitted with NASH, 3645(0.84%) had concurrent stroke. Stroke cohort consists of patients who are older in age (66.2 ± 11.7 vs. 61.8 ± 13.2 yrs.), with bimodal age variation (41-60 yr-25.8% and >80 yrs-10.4%) and predominantly female (61.7% vs. 38.3%) compared to those without stroke ($P < 0.001$). Comorbidities like hypertension, coronary artery disease, obesity, diabetes, peripheral vascular disease, A fib were higher in the stroke group compared to other. Propensity matching showed higher in hospital mortality (9.1% vs. 2.9%, $P < 0.001$) in patients with NASH and concurrent stroke. Patients with Stroke have a higher inpatient hospital stay [7.6 ± 9.1 vs. 6.1 ± 6.9 days, $p < 0.001$]. We noted the cost of hospitalization is significantly higher [25728$ ± 43929 vs. 17221$ ± 31454, $P < 0.001$] in the patient with stroke. Furthermore, our study showed increase need for acute/subacute rehab facility upon discharge (42.9% vs 17.3%) in patient with stroke.
Conclusion: Our study suggested that incidence of stroke is higher in Caucasians and females with NASH. In hospital mortality noted to be higher in patients with NASH who suffered from stroke. It also showed a higher cost burden, higher LOS and increase requirement of inpatient rehab post-hospital discharge among patients with NASH and concurrent stroke. Thus, it is important to manage patients with NASH more aggressively to prevent stroke. More studies need to be done in this field to establish whether management of NASH will reduce the risk and improve the outcome of stroke.

Table 1. Baseline characteristics, comorbidities and Outcomes of NASH patients with Stroke versus NASH patients without Stroke

Variables	NASH* with Stroke N= 3,645(0.84%)	NASH without Stroke N= 432,200(99.16%)	P-Value
Age, in years (Mean ± SD*)	66.2 ± 11.7	61.8 ± 13.2	< 0.001
Age groups, %			< 0.001
18 - 40 years	2.7%	7.3%	
41 – 60 years	25.8%	33.1%	
61 – 80 years	61%	54.1%	
>80 years	10.4%	5.5%	
Gender, %			0.7
Male	38.3%	38%	
Female	61.7%	61.9%	
Race, %			< 0.001
Caucasians	76.1%	74.7%	
African Americans	5.6%	4.2%	
Others	18.2%	21.1%	
Comorbidities, %			
Hypertension	77.4%	62.4%	< 0.001
Diabetes mellitus	68.2%	61.3%	< 0.001
Congestive heart failure	25.5%	22.1%	< 0.001
CAD*	33.3%	23%	< 0.001
Peripheral vascular disease	8.5%	4.5%	< 0.001
COPD*	20.2%	22.2%	0.002
Renal failure	25.1%	27.3%	0.002
Coagulopathy	26.9%	32.5%	< 0.001
Obesity	33.7%	36.7%	0.0002
Drug abuse	2.5%	2.4%	0.75
Alcohol abuse	3.6%	3.7%	0.69
Smoking	31.1%	31.9%	0.35
Atrial fibrillation	22.9%	14.2%	< 0.001
Admission Type, %			< 0.001
Emergent	95.%	87.2%	
Elective	4.4%	12.8%	
Insurance type, %			< 0.001
Medicare	62.4%	56.7%	
Medicaid	7.8%	11.9%	
Private	24.4%	26.2%	
Other	5.3%	5.1%	
Location/Teaching status of the hospital, %			0.01
Rural	7%	7.6%	
Urban nonteaching	16.7%	18.3%	
Urban teaching	76.3%	74.1%	
Propensity Matched Outcomes	NASH with Stroke N= 3,640(50%)	NASH without Stroke N= 3,640 (50%)	p-value
In-hospital mortality, %	9.1%	2.9%	< 0.001
Mortality adjusted odds ratio	3.66(2.87 – 4.66)		< 0.001
Length of stay, in days (mean ± SD)	7.6 ± 9.1	6.1 ± 6.9	0.0007
Total hospitalization cost, in US $ (mean ± SD)	25728 ± 43929	17221 ± 31454	< 0.001
Disposition, %			< 0.001
Discharge to home	28.2%	51.9%	
Transfer other: includes Skilled Nursing Facility, Intermediate Care Facility, or another type of facility	42.9%	17.3%	
Home health care	15.4%	23.1%	
Against medical advice	0.7%	1.1%	

*Abbreviations (NASH - Non-alcoholic steatohepatitis, SD - Standard deviation, CAD - Coronary artery disease, COPD - Chronic obstructive pulmonary disease).

S1388

High Prevalence of Hepatitis B Virus Susceptibility Among Patients With Non-Alcoholic Fatty Liver Disease (NAFLD)

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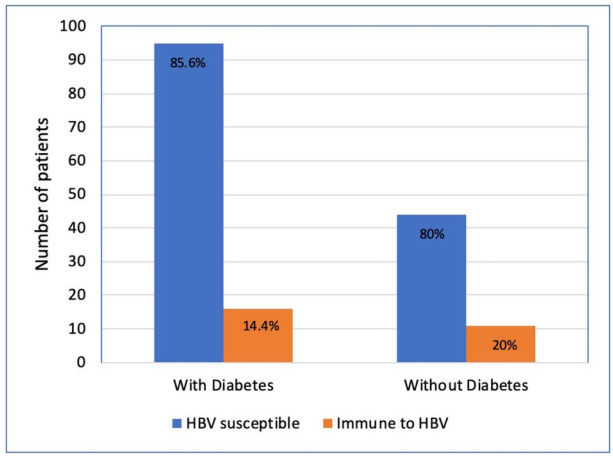
Introduction: As per Advisory Committee on Immunization Practices (ACIP) guidelines hepatitis B vaccination is recommended in all patients with chronic liver disease (CLD) including Non-Alcoholic Fatty Liver Disease (NAFLD). Superimposed hepatitis B infection in those with CLD can have severe disease. Despite availability of effective vaccine, hepatitis B vaccination coverage is 30% among adults in the US. We aim to look at the prevalence of hepatitis B susceptibility among patients with NAFLD.
Methods: We performed a systematic review of online charts for patients who were referred to our liver research center from January 2019 to October 2021. Patients with NAFLD were identified and their demographics, medical history, HBV serologies and hemoglobin A1c were recorded. Other causes of fatty liver were excluded using detailed medical history and serological testing. For analysis, HBV susceptibility refers to non-reactive HBsAg, anti-HBc, and anti-HBs; immune due to prior vaccination is non-reactive HBsAg, anti-HBc and reactive anti-HBs.
Results: A total of 166 patient charts were reviewed. 62.6 % (104) were female, 100% were Hispanic. Age ranged from 24 to 74 years (Median 54 years). 68% have hypertension, 72.8% have hyperlipidemia, 66.8% have type 2 DM with HbA1c ranging from 5.5 to 13.5 (Median 9.5), 33.2 % were non-diabetic with HbA1c ranging from 4.8 to 6.5. None tested positive for HBsAg or Anti-HCV. Overall, 83.7% were susceptible to Hepatitis B, 16.3% were immune due to vaccination, none with prior exposure to hepatitis B. There was no significant difference in prevalence of HBV susceptibility among patients with diabetes 85.6 % compared to patients without diabetes 80%. Immune status did not vary with age as younger patients (24-55 years) have similar immune status compared to older patients: 19% and 12% respectively.
Conclusion: In this study 83.7 % of patients with NAFLD were susceptible to HBV infection. Among those, the majority (66.8%) of them also have another coexisting comorbidity, I.e., diabetes which puts them at risk of getting severe hepatitis B infection. We found that even patients without diabetes have higher prevalence of hepatitis B susceptibility (80%) which suggests lack of immunization coverage playing a role rather than suboptimal response alone. This study shows there is a gap in immunization coverage among NAFLD patients and a need for HBV vaccination awareness strategy in the community. It is also important to explore factors like genetics and cultural differences.



[1388] **Figure 1.** Prevalence of HBV susceptibility among patients with NAFLD

S1389

The Impact of Race on the Overall Survival Rate of Hepatocellular Carcinoma in the African-American Population

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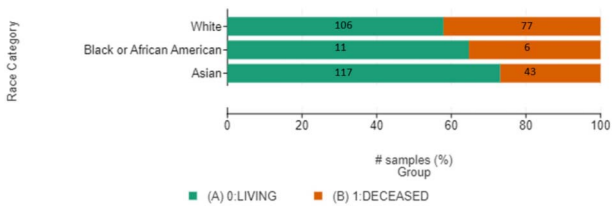
Introduction: Hepatocellular carcinoma (HCC) accounts for approximately 90% of the incidence of all primary liver cancers. It is also the fifth most prevalent malignancy worldwide and the fourth global leading cause of death. Previous U.S.-based studies on survival rates suggest ethnic disparities among HCC patients; however, this is incompletely understood due to a variety of risk factors. Notable risk factors include oncogenic viral infection with hepatitis B virus (HBV) or hepatitis C virus (HCV), alcohol abuse, and metabolic syndrome secondary to obesity and diabetes mellitus. This study aims to investigate whether race plays a role in the overall survival rate of hepatocellular carcinoma.
Methods: Using the cBioPortal platform and systematic bioinformatical-analysis of The Cancer Genome Atlas (TCGA) PanCancer Atlas dataset, we analyzed the effect of race on overall survival rate. The study included 360 HCC patients (234 living patients and 126 deceased patients). The following races were included: White, Black or African American, and Asian.
Results: The impact of race on the overall survival rate of hepatocellular carcinoma was statistically significant ($p < 0.0206$) and appeared to be higher in the African American group (64.71%) compared to the White (57.92%). Of note, the Asian group had the highest overall survival rate (73.13%). (Figure)
Conclusion: The findings in this study suggest that race may play a role in the risk of developing hepatocellular carcinoma and potential treatment options. Further studies are warranted to evaluate the genetic alterations in various race groups.



[1389] **Figure 1.** Hepatocellular carcinoma overall survival among the African American, White, and Asian populations.

S1390

Outcomes of Acute Exacerbation of COPD in Patients With NASH Compared With Non-NASH Patients: National Inpatient Database Analysis

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Introduction: Chronic Obstructive Pulmonary Disease (COPD) is known to be associated with low-grade inflammation, oxidative stress and ectopic fat/metabolic syndrome. There are studies showing increased prevalence of Non-alcoholic fatty liver disease/Non-alcoholic steatohepatitis (NASH) in patients with COPD. This study is to compare and evaluate the outcome of acute exacerbation of COPD in patients with NASH compared to non-NASH population.
Methods: We used the 2018 National Inpatient Sample (NIS) database. Using ICD-10 codes, we queried the database for adults with diagnosis of acute exacerbation of COPD with and without NASH. The primary outcome was odds of mortality and secondary outcome was mean length of stay.
Results: A total of 892220 AE of COPD discharges, 2150 discharges had diagnosis of NASH. The NASH group were relatively young (66.8 years vs 70.3 years), more female (67.9% vs 52.7%), more total hospital cost ($83263 vs $74340) and obese (43.2% vs 20.8%) however with less smokers (27.2% vs 35.3%), less pulmonary embolism (0.2% vs 1.7%). There was total of 160 deaths (7.4%) in NASH cohort versus 45950 (5.1%) in non-NASH cohort. Using univariate regression analysis, we found that the unadjusted mortality was higher in patients with NASH compared to the non-NASH patients and was statistically significant [Odds ratio (OR) 1.47, 95% CI (1.02 – 2.13), p-value = 0.03]. After adjusting for age, gender, race, Charlson index, hospital location, ACS, pneumonia, pulmonary embolism, obstructive sleep apnea, pulmonary hypertension, pleural effusion, respiratory failure, mechanical ventilation, atrial fibrillation/flutter using multivariate regression analysis revealed a similar result with increased odds of mortality among NASH patients compared to non-NASH patients and was statistically significant [OR 1.52 95% CI (1.03-2.23), p-value = 0.031].The mean length of stay was longer for patients in NASH group compared to non-NASH group, however after adjusting using multivariate regression analysis, it wasn't statistically significant (OR 1.4, CI:0.34 – 5.65; p-value: 0.63). The disposition of discharge was near evenly distributed among different groups.
Conclusion: Our study showed increased mortality among patients with NASH presenting for AE of COPD compared to patients with non-NASH. This was also associated with increased hospital cost without statistically significant longer length of stay. Further studies would be needed to assess the burden of disease on COPD patients and the subsequent outcome.

S1391

Population-Based Screening Strategy for Liver Stiffness Using Fibroscan in a Transition Society of South Kerala, India

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Introduction: Population based preventive hepatology strategy using transient elastography has not been evaluated in S India and hence we evaluated the utility of transient elastography (TE) in the primary care setting and the determinants for liver stiffness
Methods: Study was undertaken in Kerala, which has the highest literacy, and a diverse population in relation to diet, ethnicity and religion. The study was community-based, and included the 12 blocks with 78 panchayats in the rural area, and the 81 wards in the urban corporation area. We adopted a multistage cluster sampling to enroll the study participants. 12505 participants were eventually recruited by a field team, through house to-house survey. The study was approved by the ethical committee of Sree Gokulam Medical College. We calculated descriptive statistics of demographic characteristics for the study population, including age, sex, BMI, residential area, religion, the status of pan masala chewing and cigarette smoking, alcohol intake, . Liver stiffness was assessed by fibroscan (ECHOsens). Logistic regression model was used to obtain odds ratio (ORs) with 95 % confidence intervals (CIs) for potential risk factors in relation to the presence of higher liver stiffness (7.2 or greater). A p-value of < 0.05 is considered statistically significant. All statistical analyses were done by SPSS statistical software.
Results: 5931 were males and 6574 were females. 3131 (25.03%) had high liver stiffness (7.2 or greater).and 1183 (9.46%) had stiffness of more than 9.2. Liver stiffness (mean ± sd) was 7.5±5.6 in males and 6.29 ± 3.7 among females and !Q range was 5.1 to 7.3 and 4.5 to 6.9 respectively. 3131 had a median stiffness of 7.2 or more and men accounted for 56.53 %; higher median stiffness was in the rural domicile, those with a BMI of greater than 23 ($p< 0.001$). 22..5% had diabetes in this cohort and those with diabetes mellitus , hypertension and ischemic heart disease, any previous liver disease such as NAFLD had higher liver stiffnees ($p< 0.001$) . Coffee intake was seen in 11.1% of those with higher liver stiffness but not significant. In the multivariate logistic regression model, age greater than 60,rural domicile, male sex , BMI greater than 23, alcohol abuse, diabetes mellitus, and any previous disease are independent risk factors for higher liver stiffness of 7.2 and above
Conclusion: High degree of liver stiffness in our population needs intervention strategies and follow up.

S1392

Serum Lactate Thresholds in the Diagnosis of Septic Shock in Patients With Cirrhosis: Validation of 2016 Surviving Sepsis Guidelines

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Introduction: The 2016 Surviving Sepsis guidelines adjusted the septic shock definition and criteria to better represent known pathophysiology and patient outcomes. One significant change was the lowering of serum lactate cutoff (2 mmol/L) to include patients with higher risk-adjusted hospital mortality. However, this increased hospital mortality has not been demonstrated in patients with known derangements in lactate metabolism and hemodynamics such as those with cirrhosis.
Methods: Retrospective cohort study of patients admitted to a Mayo Health System ICU for treatment of septic shock between 2006 and 2021 using a validated ICU Datamart. Patients with identified infection source and who received vasopressors to maintain mean arterial pressure (MAP) greater than 65 mmHg were included (N=1,609). Patients with cirrhosis documented on imaging and ICD codes (N=856) were compared to patients without cirrhosis (N=753). Subgroups were created based on ICU-admission lactate levels, and in-hospital mortality was compared in both cirrhosis and control groups.
Results: For cirrhosis and non-cirrhosis groups, ICU admission lactates between 2-4 and >4 mmol/L were associated with significantly increased in-hospital mortality. The cirrhosis subgroups of lactate < 2, 2-4, and >4 were found to have in-hospital mortalities of 22.0%, 29.5%, and 47.6%, respectively ($P < 0.001$). Non-cirrhosis subgroups of lactate < 2, 2-4, and >4 were found to have in-hospital mortalities of 17.1%, 23.9%, and 30.0% ($P < 0.001$). In a logistic regression model adjusting for age and gender, the interaction between presence of cirrhosis and lactate >4 mmol/L on in-hospital mortality was not statistically significant (OR 1.56, 95% CI .090, 2.72; p=0.12). (Table)
Conclusion: Serum lactate levels at time of septic shock diagnosis between 2-4 mmol/L were associated with similarly increased in-hospital mortality in both cirrhosis and control groups. This supports the continued use of the 2.0 mmol/L lactate cutoff for septic shock definition in this population. Lactates >4 mmol/L were also associated with increased in-hospital mortality, demonstrating its importance in risk stratification for patients regardless of liver dysfunction.

Table 1. In-hospital death rates by lactate by cirrhosis

Non-Cirrhosis Group				
In-Hospital Death	**Lactate < 2 (n=280)**	**Lactate 2-4 (n=213)**	**Lactate > 4 (n=260)**	**Adjusted P-value**
No	232 (82.9%)	162 (76.1%)	182 (70.0%)	< 0.001
Yes	48 (17.1%)	51 (23.9%)	78 (30.0%)	

Cirrhosis Group				
In-Hospital Death	**Lactate < 2 (n=287)**	**Lactate 2-4 (n=302)**	**Lactate >4 (n=267)**	**Adjusted P-value**
No	224 (78.0%)	213 (70.5%)	140 (52.4%)	< 0.001
Yes	63 (22.0%)	89 (29.5%)	127 (47.6%)	

S1393

Outcomes of Patients With Decompensated Cirrhosis With Limited Life Expectancy or Anticipated Transplant in the Context of a Health Services Intervention Trial

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Introduction: Intervention studies for patients with cirrhosis that are aimed at improving quality of life for patients and reducing healthcare utilization often exclude those with limited life expectancy or those being evaluated for a liver transplant. However, excluding such patients creates a dearth of evidence on clinic interventions that are impactful and potentially scalable. We aimed to examine outcomes of patients excluded from a randomized trial due to limited life expectancy or anticipated transplant.
Methods: This is a cohort study of hospitalized patients with decompensated cirrhosis who were excluded from a randomized trial of health services intervention due to life expectancy < 6 months (*too sick*) or anticipated transplant < 6 months (*likely transplant*). These assessments were made by a team of investigators and incorporated standard measures of disease severity (i.e. MELD). Patients were followed from the time of screening for 6 months to assess outcomes, such as hospitalizations, death, and transplant.
Results: Out of 127 patients screened, 64 (50%) were excluded due to being *too sick* (n=39) or *likely transplant* (n=25). The mean age was 57, and 38% were female. Cirrhosis etiology was alcohol in 39% and NASH in 34%. The mean MELD-Na was 26. Those deemed *too sick* and *likely transplant* had similar characteristics at screening but with a trend toward more women in the *likely transplant* group (Table). Of the *too sick*, 60% discharged to hospice or died in the hospital. 28% of *likely transplants* discharged to hospice or died in the hospital, and only 48% of *likely transplants* received a transplant. In the *too sick* group, 56% saw palliative care compared to 12% in the *likely transplant* group. Those who saw palliative care were older, with more comorbidities including hepatocellular carcinoma. Palliative care was associated with discharge to hospice, and no patient who saw palliative care received a transplant. Overall, of those who died, 78% died in the hospital, but only 50% who saw palliative care died in the hospital. (Table)
Conclusion: During screening for a randomized trial of hospitalized patients with decompensated cirrhosis, half were excluded due to limited life expectancy or anticipated transplant, and prediction of 6-month outcomes were inaccurate. Palliative care was associated with fewer deaths in the hospital. Health services trials should include patients with advanced disease and incorporate principles of palliative care, which may improve some patient-centered outcomes.

Table 1.

	Too sick N=39	**Likely transplant N=25**	**p-value**	**Palliative care N=25**	**No palliative care N=39**	**p-value**
Characteristics at Screening						
Age, mean (SD)	58 (12)	56 (10)	0.50	63 (10)	54 (11)	0.002
Female sex, %	28	52	0.06	40	36	0.74
Cirrhosis etiology, %			0.50			0.24
Alcohol	41	36		24	49	
Hepatitis C	23	12		24	15	
NASH	31	40		44	28	
Other	5	12		8	8	
Charlson index, median (IQR)	2 (1-5)	2 (0-3)	0.32	3 (2-5)	2 (0-2)	< 0.001
MELD-Na, mean (SD)	26 (9)	27 (7)	0.48	24 (8)	27 (8)	0.18
Child-Pugh C, %	77	84	0.49	80	80	0.97
6-month Outcomes						
Discharge disposition, %			0.008			< 0.001
Home	21	64		8	56	
Facility	18	8		21	10	
Hospice	34	12		54	8	
Died	26	16		17	26	
Readmission, %	41	40	0.94	36	44	0.55
Palliative care, %	56	12	< 0.001			
Hospice, %	49	20	0.02	72	15	< 0.001
Transplant, %	0	48	< 0.001	0	31	0.002
Died, %	60	38	0.09	61	45	0.22
Death location, %			>0.99			0.03
Home	20	25		50	7	
Hospital	80	75		50	93	

S1394

Outcomes of Concomitant Opiate Use in Patients With Nonalcoholic Fatty Liver Disease (NAFLD)

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Introduction: NAFLD is a disease entity of global concern due to the large economic impact on the healthcare system. However, studies are limited regarding the prevalence of pain and associated opioid use in this population. Opiate use in patients with NAFLD is growing in recent years. Furthermore, prescribing rates of opioids have also increased. We aimed to investigate the outcomes of patients who have NAFLD with and without concomitant opiate use.
Methods: All patients aged 18 years and above with a diagnosis of NAFLD with and without opiate use from 2015-to 2019 were identified from the US Nationwide Inpatient Sample (NIS), a large publicly available all-payer inpatient care database. ICD-10 codes were utilized. The primary outcome was inpatient mortality. Secondary outcomes were hospital length of stay (LOS) and total hospital charges (TOTHC). Statistical analysis was performed using STATA.
Results: We identified 210,818 patients who had NAFLD, out of that we found 4,496 patients who had a concomitant diagnosis of opiate use. After propensity score matching, patients with opiate disorder and NAFLD had decreased mortality (OR 0.48, $p< 0.05$, CI: 0.38-0.58), but increased LOS (1.71 days, $p< 0.05$, CI: 1.52-1.89) and TOTHC ($5,015, $p< 0.04$, CI: $2,526-$7,504) compared to patients with NAFLD without opiate use disorder.
Conclusion: Patients with NAFLD are increasingly being prescribed opiates instead of nonsteroidal anti-inflammatory drugs due to the risk of hepatorenal toxicity associated with the latter. Thus, over the past few years, rates of opiate use have increased. This study investigated in-hospital outcomes of patients with NAFLD and opiate use and interestingly revealed that this patient population had lower mortality which is contrary to current literature. However, in comparison to NAFLD patients without opiate use disorder, patients who used opiates have a higher LOS and TOTCH which demonstrates that there is an increased economic burden on the national healthcare system. Additional prospective studies are necessary to clearly define these associations.

S1395

Neighborhood as a Social Determinant of Health in Liver Disease: A Scoping Review

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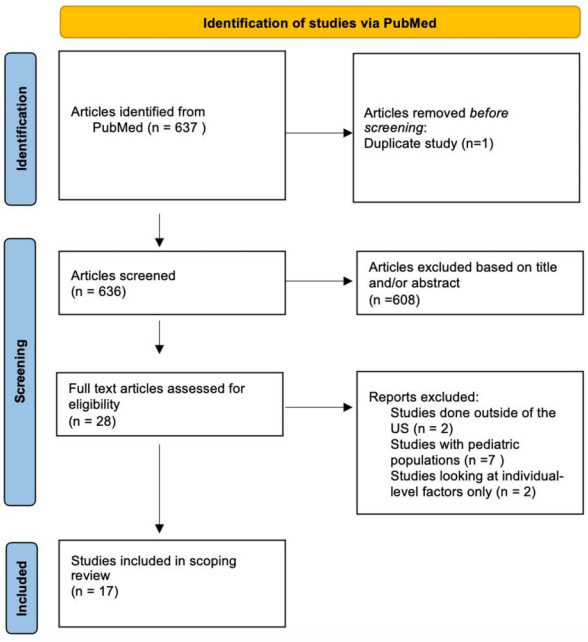
Introduction: In recent years, researchers and clinicians have had increasing interest in understanding the effects of a patient's neighborhood/community on his/her liver-related health. Due to the complexity of a place-based approach to study health equity (e.g., defining and measuring the multi-faceted nature of a patient's neighborhood), the tools used and results generated are variable. This study aims to define and compare measures of neighborhood-level social determinants of health (SDOH) used to study liver diseases.
Methods: In this scoping review, we searched PubMed for studies published from 1/1/12 to 12/31/22 containing keywords related to "neighborhood" and "liver diseases". We screened titles, abstracts, and full texts. We included studies about associations between neighborhood factors and liver diseases and excluded studies in pediatric patients. We reported findings following PRISMA guidelines (Figure).
Results: Of 637 articles from our initial search, we reviewed 28 full texts and we included 17 in the scoping review. We identified 10 validated neighborhood indices and 1 custom index (Table). We also determined 7 neighborhood variables that were assessed independently (education level, median income, poverty level, region of birth, employment status, primary language spoken at home, and supplemental nutrition assistance program (SNAP) assistance). The most common liver diseases assessed were hepatocellular carcinoma (6/17; 35.2%) and hepatitis C virus (4/17; 23.5%). Of the 11 indices, 8 (73%) included domains related to income, education and employment. The area deprivation index (ADI), which has been validated and extensively studied with a range of health outcomes, included the most domains related to neighborhood SDOH, some of which were not taken into account by the other indices. Of the 17 studies, 12 (70.6%) demonstrated a statistically significant association between neighborhood factors and liver disease outcomes, 3 studies (17.6%) showed no association.
Conclusion: This scoping review characterizes the variation, advantages, and disadvantages of several place-based approaches to measure the effect on patients with liver diseases. Despite the different variables used, more than 70% of studies demonstrated an association between neighborhood factors and liver outcomes, which highlights the need for future research. We have also demonstrated the multi-factorial considerations for the careful incorporation of neighborhood-level SDOH into methodological frameworks.

Table 1. Summary and characteristics of neighborhood indices identified

Neighborhood Index (# of studies utilizing index)	Geographic granularity	Index domains				
		Income	Education	Housing	Employment	Other
Area deprivation index (2)	Census block group	• Households below poverty level, %	• Adults ≥25y with high school diploma, %	• Median home value, $	• Unemployment amongst ≥16y, %	• Single parent households with dependents < 18y, %
		• Households < 150% poverty level, %	• Adults ≥25y with < 9y of education, %	• Median rent, $	• Employed individuals ≥16y in white-collar occupations, %	• Households without a motor vehicle, %
		• Income, $		• Median monthly mortgage, $		• Households without a telephone, %
		• Median household income, $		• Owner occupied housing units, %		• Occupied housing units without complete plumbing, %
				• Housing units with ≥1 occupant per room, %		
Community health score (1)	County	• Median household income, $	—	—	—	• Years of potential life lost
						• Children with low birth weight, %
						• Adults with poor or fair reported health, %
						• Days of self-reported poor physical health
						• Days of self-reported poor mental health
						• Individuals reporting tobacco use, %
						• Adult obesity prevalence
						• Physical inactivity prevalence
						• Rate of preventable hospital stays

Table 1. (*continued*)

Neighborhood Index (# of studies utilizing index)	Geographic granularity	Index domains				
		Income	Education	Housing	Employment	Other
Custom index (from DuPre et al) (1)	County	• Households below poverty level, %	• Adults ≥25y with high school diploma, %	• Families that are married homeowners, %	—	• Civilian noninstitutionalized population with a disability, %
			• Adults with educational attainment < 9th grade, %	• Families with different residence 1y ago, %		• Single-female head of household, %
						• Single-male head of household, %
						• County-level Gini index of income inequality
						• Grandparents responsible for grandchildren, %
						• Married women, except those living separate from spouse, %
						• Married men, except those living separate from spouse, %
Facility income quartiles (1)	Zip code	• Median income of each patient's zip code area of residence, divided into quartiles	—	—	—	—
Multiethnic Study of Atherosclerosis (MESA index) (1)	Census tract	• Median household income, $	• Adults ≥25y with high school diploma, %	• Median home value of owner-occupied units, $	• Employed individuals ≥16y in executive managerial or professional occupations, %	—
		• Households receiving interest, %	• Adults ≥25y with college degree, %			
		• Dividend or net rental income, $				
Neighborhood deprivation index (3)	Census tract	• Households below poverty level, %	• Adults ≥25y with high school diploma, %	• Housing units with ≥1 occupant per room, %	• Unemployment amongst ≥16y, %	• Female headed households with dependent children, %
		• Households with < $30k annual income, %			• Males in management positions, %	
		• Households receiving public assistance, %				
Roux index (1)	Census block group	• Median household income, $	• Adults ≥25y with high school diploma, %	• Median home value, $	• Employed individuals ≥16 in management, business, science, or arts occupations, %	—
		• Households receiving interest, dividend, or net rental income, %	• Adults aged ≥25y with college degree, %			
Social deprivation index (1)	Variable	• Households below poverty level, %	• Adults with ≤2y education, %	• Families living in rented housing, %,	• Unemployment amongst ≤65y, %	• Single-parent households, %
				• Housing units with ≥1 occupant per room, %		• Households without a car, %
Socioeconomic position index (1)	Variable	• Median household income, $	• Adults ≥25y without high school diploma, %	• Expensive homes, %	• Working class, %	—
		• Households below poverty level, %			• Unemployment amongst ≥16y, %	
Townsend index (1)	Variable	—	—	• Housing units with ≥1 occupant per room, %	• Unemployment amongst ≥16y, %	• Households without a car, %
				• Families living in rented housing, %,		
Yost index (1)	Census block group	• Median household income, $	• Liu education index (% aged ≥25y with college degree, high school diploma, or less than high school education)	• Median home value, $	• Individuals with blue collar jobs, %	
		• Households < 200% poverty level, %		• Median rent, $	• Unemployment amongst ≥16y, %	



[1395] **Figure 1.** PRISMA flowchart

S1396

Response-Guided Ascites Mobilization in Patients of Acute on Chronic Liver Failure (ACLF) With Acute Kidney Injury Treated With Slow Albumin, Furosemide and Vasoconstrictor Therapy (SAFI+T) versus Standard Treatment

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Introduction: Acute-on-chronic liver failure (ACLF) with increasing organ failure is associated with poor outcome. Severely deranged systemic hemodynamic and decreased effective arterial blood volume contributes to tissue damage and organ failure. Response guided therapy with albumin, vasoconstrictors and furosemide may help overcome effective hypovolemia improve diuresis and impact survival.
Methods: In observation cohort, 56 patients with ACLF (CANONIC criteria) complicated with AKI (S.Cr ^{3} 1.5, >50% increased S.cr from baseline), ascites (≥ Grade II) were enrolled. 30 patients (GROUP I) received response guided(Urine sodium >80mmol/day) slow albumin-furosemide infusion ± terlipressin (SAFI±T), while 26 patients (GROUP II) received standard medical therapy. 28-day survival, ascites mobilization (nil or grade 1), reversal of AKI and adverse events were noted. Laboratory evidences for improvement in various pathophysiological alterations; endotoxemia, cytokine storm, neutrophil dysfunction and secondary infections, following SAFI±T were evaluated.
Results: Alcohol and sepsis were the commonest etiologies for chronic and acute insult respectively. Ascites was completely mobilized in 18/30 (60%) patients in Group I (SAFI±T) and 7/26 (26.9%) in Group II ($p< 0.05$). At 28 days the survival analysis showed, Group I 23/30 (76.4%) and Group II 14/26 (53.8%) ($P=< 0.05$). There was a lower incidence of hospital acquired infection in Group I of 6.7% vs 38.4% in Group II ($p=0.05$) and the same was reflected in serum endotoxin and pro-inflammatory cytokine levels; IL-6 and IL-1b showed significant reduction in Group I. Serum endotoxin and TNF-a level increased in Group II despite SMT while it showed significant fall in SAFI+T arm post treatment. Renal artery resistive index was significantly lower after SAFI(T) therapy (0.84 to 0.72) ($p< 0.05$) as similar trend emulated in UNa level.
Conclusion: Patients with ACLF treated with SAFI+T protocol had higher natriuresis, enhanced urine output, complete ascites removal, and improved renal function with a faster mean duration of treatment and better 28-day survival. An in-hospital infection rate was lower. Ascites mobilization was associated with improvement in gut permeability, endotoxemia, pro-inflammatory cytokines, and NETosis in the SAFI+T cohort, showing an association between ascites mobilization and improved pathophysiologic dysfunctions.

S1397

Hospital Utilization and Survival Analysis in a Model of Outpatient Paracentesis by Interventional Radiology

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Introduction: There has been a significant change in outpatient cirrhosis care, as paracentesis is currently performed by interventional radiologists (IR) rather than gastroenterologists/hepatologists or internists. In this model of care, patients' access could be limited by scheduling availability, and there is no evaluation of their renal function or adjustment of their medications at the time of paracentesis. This study was aimed to analyze hospital utilization and cirrhosis complications within six months of index outpatient paracentesis by IR and to identify potential areas of improvement in care.
Methods: This is a retrospective study of patients with cirrhosis and ascites who underwent outpatient paracentesis by IR from October 2015 to October 2018 at a tertiary academic medical center. We collected demographics, data on cirrhosis etiology/complications, laboratory tests, provider notes, outpatient paracenteses dates, emergency department (ED) visits, hospitalizations, and ICU admissions within the following six months post-index paracentesis. Overall survival was analyzed using product-limited survival estimates (Kaplan-Meier). The log-rank test was used to test for differences by cause. Kaplan-Meier survival curves were plotted for overall and stratified survival. Cox regression analyses examined survival by cause while controlling for age and MELD score. Hazard ratios are reported. (Figure)
Results: Within 6 months from index paracentesis, 44 patients (64.7%) underwent repeat IR outpatient paracentesis (total 187 paracenteses, 4.25 paracenteses/patient); 42 (61.7%) had ER visits (total 118 ER visits, 2.8/patient), 40 (58.5%) had hospital admissions (total 88 admissions, 2.2/patient) and 11 had ICU admission. On multivariate analysis, the predictive factors for mortality were older age ($p=0.04$) and MELD score ($p=0.082$). Baseline MELD was predictive of acute kidney injury ($p=0.0184$), UGI bleed ($p=0.0096$), and ICU admission ($p=0.0064$). The mean overall survival was 35.6 (SD +/- 2.68) months. Mean survival stratified by cause was 36.2 (SD +/- 3.78) months for patients with cirrhosis due to alcohol use, and 41.7 (SD +/- 4.1) months for cirrhosis due to hepatitis B or C. (Table)
Conclusion: In this contemporary cohort of patients with cirrhosis undergoing IR outpatient paracentesis, we found a high rate of short-term cirrhosis complications and hospital utilization, while TIPS consideration was very low. Further data is needed to identify specific gaps in care and to analyze long-term survival.

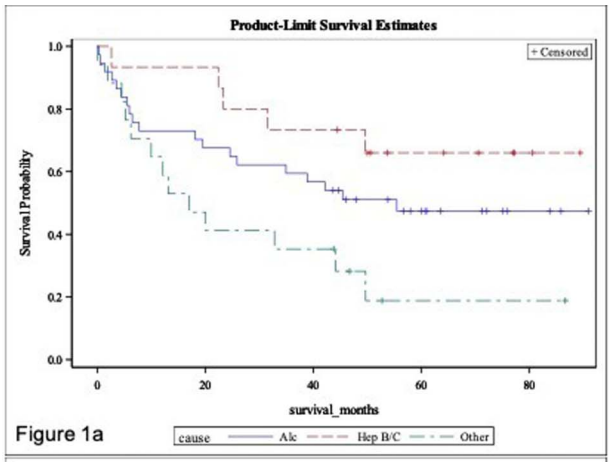

Figure 1a

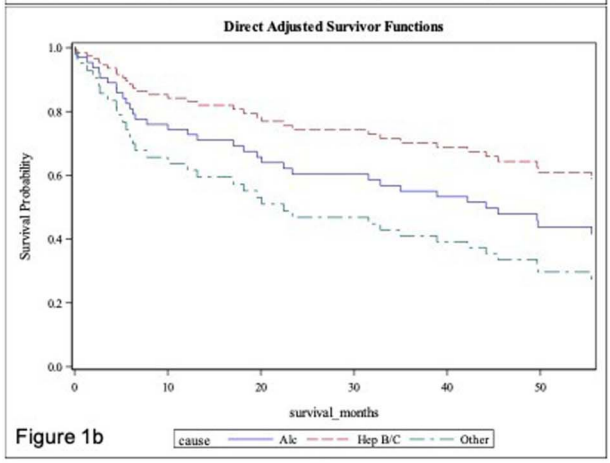

Figure 1b

[1397] **Figure 1.** (a) Survival curve using Kaplan-Meier estimator with the cause of cirrhosis as strata. (b) Survival curve for each cause at the average age (60.5) and average MELD score (17.7)

Table 1. demonstrates baseline demographics such as age, gender, and cause of cirrhosis, the most common reasons for readmissions with a 6-month mortality rate, and TIPS status

Age	n (%)
Less than 60	32 (46.37)
60 or more	37 (53.62)
Average	60.47
Gender	n (%)
Male	49 (71.01)
Female	20 (28.98)
Cause of Cirrhosis	n (%)
Alcohol	37 (53.62)
Hepatitis B and/or C	15 (21.74)
Other	17 (24.64)
Most common reasons for admissions	%
Hepatic encephalopathy	39.7%
Acute Kidney Injury	38.2%
Upper gastrointestinal (UGI) bleed	14.7%
Spontaneous bacterial peritonitis (SBP)	14.7%
6-month mortality rate	6.9%
TIPS	n (%)
TIPS performed	4 (0.09)
No documentation of TIPS consideration	31 (70.4)

S1398

Lifestyle Modifications Decrease Hepatic Steatosis in Taiwanese With Metabolic-Associated Fatty Liver Disease

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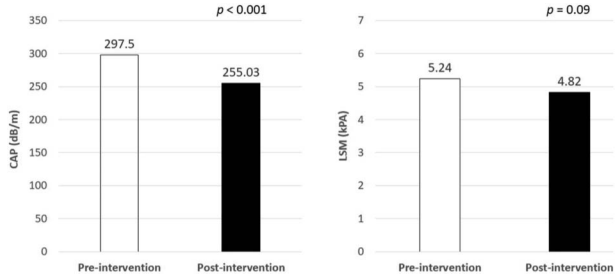
Introduction: Metabolic-associated fatty liver disease (MAFLD) represents a growing global problem and is associated with increasing obesity prevalence. Lifestyle modifications are the currently recommended approaches for MAFLD. Fibroscan device/transient elastography may be used to estimate the degree of liver scarring and steatosis using a controlled attenuation parameter (CAP) value. This study evaluated the short-term effect of lifestyle modifications on transient elastography values in an obese population with MAFLD.
Methods: Thirty-two MAFLD patients aged between 18-60 years old who had a body mass index (BMI) of ≧23 kg/m^2 with evidence of fatty liver disease by abdominal ultrasound were recruited for this prospective study. All subjects participated in a 3-month program of lifestyle modification. Sequential demographic parameters and biochemical tests were compared before and after program completion. Liver fat and fibrosis changes were measured using transient elastography with CAP and liver stiffness measurements (LSM).
Results: The mean age was 38.7 years old. The body weight (88.09 kg vs. 80.35 kg), body mass index (32.24 kg/m^2 vs. 29.4 kg/m^2), waist (103.19 cm vs. 95.75 cm) and hip circumference (111.67 cm vs. 104.75 cm), and blood pressure (128/78 mmHg vs. 119/71 mmHg) significantly improved after intervention. Aspartate aminotransaminase (24.06 U/L vs. 18.91 U/L), alanine aminotransaminase (33 U/L vs. 23.72 U/L), creatinine (0.75 mg/dL vs. 0.70 mg/dL), cholesterol (176.41 mg/dL vs. 166.22 m/dL), gamma-glutamyl transferase (26.59 IU/L vs. 19.81 IU/L), and low-density lipoprotein cholesterol (115.63 mg/dL vs. 103.19 mg/dL) also improved after the 3-month intervention. The average CAP significantly decreased after intervention (297.5 dB/m vs. 255.0 dB/m), however, no significant difference in LSM was observed (5.24 kPa vs. 4.82 kPa) after intervention. (Figure)
Conclusion: This study demonstrated that liver fat, assessed by CAP score, significantly reduced after a 3-month structured lifestyle modification program in patients with MAFLD. In addition, weight reduction, which is the major determining factor for MALFD improvement and/or resolution, was achieved with the structured program, and the CAP value may be used to monitor liver steatosis and respond to intervention. It is believed that this is the first study that evaluates the utility of CAP values for monitoring hepatic steatosis in an obese population with MAFLD through exercise and diet modification. (Table)



[1398] **Figure 1.** Controlled Attenuation Parameter (CAP) and Liver Stiffness (LSM) values before and after intervention.

Table 1. Comparison of Parameters and Biochemical Testing Before and After Intervention

	Pre-intervention	Post-intervention	Difference	*p*-value
Waist (cm)	103.19±13.12	95.75 ± 11.96	-7.44 ± 3.72	< 0.001
Hip (cm)	111.67 ± 10.72	104.75 ± 10.55	-6.92 ± 3.27	< 0.001
Weight (kg)	88.09 ± 20.75	80.35 ± 19.51	-7.74 ± 3.97	< 0.001
WHR	0.92 ± 0.06	0.91 ± 0.05	-0.01 ± 0.02	0.026
Body Fat (%)	37.07 ± 4.18	34.27 ± 4.44	-2.8 ± 1.44	< 0.001
BMI (kg/m^2)	32.24 ± 4.98	29.4 ± 4.72	-2.84 ± 1.35	< 0.001
SBP (mmHg)	127.66 ± 15.57	119.09 ± 12.02	-8.56 ± 10.61	< 0.001
DBP (mmHg)	78.03 ± 13.58	71.09 ± 8.29	-6.94 ± 13.23	0.006
Heart rate (BPM)	84.5 ± 11.45	76.03 ± 10.91	-8.47 ± 12.06	< 0.001
HbA1c (%)	5.44 ± 0.54	5.47 ± 0.36	0.03 ± 0.33	0.67
Fasting Glucose (mg/dL)	89.44 ± 8.06	92.22 ± 7.56	2.78 ± 6.59	0.023
AST (U/L)	24.06 ± 8.85	18.91 ± 6.4	-5.16 ± 8.76	0.002
ALT (U/L)	33 ± 20.76	23.72 ± 14.72	-9.28 ± 19.79	0.012
GGT (IU/L)	26.59 ± 18.23	19.81 ± 14.83	-6.78 ± 10.05	0.001
BUN (mg/dL)	11.09 ± 2.23	11.31 ± 2.29	0.22 ± 2.55	0.631
Creatinine (mg/dL)	0.75 ± 0.17	0.70 ± 0.14	-0.05 ± 0.08	0.002
Chol (mg/dL)	176.41 ± 31.32	166.22 ± 32.13	-10.19 ± 24.14	0.023
TG (mg/dL)	122.59 ± 49.11	113.28 ± 61.32	-9.31 ± 46.8	0.269
HDL (mg/dL)	42.88 ± 8.29	43.94 ± 8.86	1.06 ± 4.99	0.238
LDL (mg/dL)	115.63 ± 28.03	103.19 ± 29.83	-12.44 ± 20.59	0.002
HOMA-IR (mg/dL)	2.65 ± 1.61	2.45 ± 1.85	-0.2 ± 1.94	0.564

WHR, waist-hip ratio; BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; BPM, beats per minute. HbA1c, hemoglobin A1c; AST, aspartate aminotransferase; ALT, alanine aminotransferase; GGT, gamma-glutamyl transferase; BUN, blood urea nitrogen; Chol, total cholesterol; TG, triglyceride; HDL, high-density lipoprotein; LDL, low-density lipoprotein; HOMA-IR, Homeostatic Model Assessment for Insulin Resistance.

S1399

Impact of Time and Location of Diagnostic Paracentesis on Outcomes of Spontaneous Bacterial Peritonitis

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Duke University, Durham, NC.

Introduction: Prior evidence demonstrates higher inpatient mortality in hospitalized patients with cirrhosis and ascites who undergo diagnostic paracentesis 12 hours after first physician encounter. However, the initial location of patient presentation and its impact on time to paracentesis has not been thoroughly studied. This analysis compared outcomes in patients with Spontaneous Bacterial Peritonitis (SBP) by location, either in the Emergency Department (ED) or the Internal Medicine (IM) floor, and timeliness of paracentesis.
Methods: We performed a retrospective cohort analysis of all patients aged 18 and older admitted to Duke University Health System (Duke Hospital, Duke Regional Hospital, Duke Raleigh Hospital) from 2018 to 2020 for decompensated cirrhosis who were diagnosed with SBP after paracentesis. We excluded patients who were incarcerated, had ascites from a non-hepatobiliary source, or were presumptively diagnosed with SBP without paracentesis. Chi square tests assessed the association between time to and location of paracentesis with patient outcomes including appropriate administration of albumin and mortality. Timeliness was categorically organized by < 12 hours or ≥ 12 hours to paracentesis. Location was defined as paracentesis done in the ED or by the IM team.
Results: 76 patients were included, of whom 33 had paracenteses performed by the ED, 41 by the IM service, and 2 by the surgical service. The median time to paracentesis in the ED was 4.8 hours compared to 21.1 hours by IM ($p< 0.001$). The location of paracentesis did not significantly impact receipt of day 1 and 3 albumin administration (ED 66.7% vs IM 82.9%; $p=0.09$), inpatient mortality (ED 36.6% vs IM 17.1%; $p=0.06$), or 30-day mortality (ED 45.5% vs IM 22.0%; $p=0.06$). Completion of paracentesis before and after 12 hours did not significantly impact albumin administration rates (67.4% vs 84.9%; $p=0.08$), inpatient mortality (27.9% vs 24.2%; $p=0.72$), or 30-day mortality (36.6% vs 30.3%; $p=0.57$).
Conclusion: Diagnostic paracentesis is performed significantly sooner if done by ED rather than IM providers. However, the location and timeliness of the paracentesis did not alter mortality and albumin administration. Though limited by sample size, these results may suggest that providers are more likely to initiate appropriate antibiotics for suspected SBP given its morbidity, so time to paracentesis < 12 hours may not be as clinically important as time to initiation of treatment.

S1400

The Complexity of NASH Cirrhosis Clinical Trials: Screen Failure Reasons and Baseline Patient Characteristics

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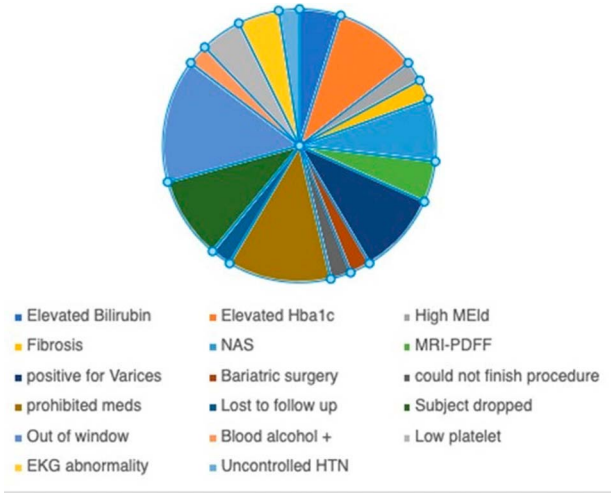
[1]Banner Medical Group, Mesa, AZ; [2]Arizona Liver Health, Chandler, AZ; [3]Arizona Liver Health, Phoenix, AZ.

Introduction: Patients with NASH cirrhosis has the highest likelihood of developing major adverse liver related events and an unmet need in terms of therapeutic options. Several drugs are being tested in patients with NASH cirrhosis in phase 2 trials. Screen failure (SF) reasons in non-cirrhotic NASH trials have been described; however, limited data exists on the reason for screen failure reasons in NASH cirrhosis trials. The aim of this study was to understand the reasons for screen failure in 5 NASH cirrhosis trials and to describe the patient's characteristics of both screens failed subjects and those who randomised.
Methods: Data on patients who were presented for screening visits for five phase 2 NASH cirrhosis trials at one research site were analysed. The reasons for screen failure were divided into 4 major categories: 1. Biopsy, 2. Laboratory tests, 3. Imaging tests, 4. Other. Baseline characteristics including demographics, clinical history, lab values, findings from imaging tests and biopsy were collected. Characteristics of patients that screen failed were compared to those who randomised using 2-sided t-test, p value < 0.05 was considered statistically significant.
Results: 68 patients were included in the analysis. 23 randomised (33.8%) and 45 screen failed (66.17%). The mean age was 57.98 years with 45% (31) of the population being male. Mean BMI in the whole population was 38.38 Kg/m2. 51.47% (35) of the patients were found to have type 2 diabetes. The reasons for screen failure were as follows: 4 (8.8%) on biopsy, 12 (26.6%) on labs, 11 (24.4%) in imaging tests, 15 (33.3%) for other reasons. The top 4 causes included in the other category were patients outside of the screening window, using prohibited medications, subject dropping out and presence of esophageal varices. There was no significant difference between the screen failure group and the randomised group in terms of platelet count, INR, bilirubin, FIB4 score and AGILE4 score ($p > 0.05$ for all). (Figure)
Conclusion: NASH cirrhosis trials have similar screen failure rates compared to non-cirrhotic trials; however, the reasons for screen failure are different. In NASH cirrhosis trials, fewer patients screen failed because of not meeting histologic criteria on liver biopsy which has been the major reason for screen failure in non-cirrhotic trials. Baseline laboratory and imaging tests were not different between patients who screen failed and those who randomised. (Table)



[1400] **Figure 1.** Minor causes of screen failure

Table 1. Comparison chart showing basic characteristics of randomised and screen failure population 2 sided T Test

	Mean Total Population	Mean Randomised population	Mean Screen Failure population	T-Test
Age	58.31	60.95	56.88	
BMI	37.38	39.88	37.05	
Hba1C	6.42	6.43	6.46	
% Diabetes	52.90%	48.50%	51.40%	
Platelets	177.23	159.26	187.30	0.13

Table 1. (*continued*)

	Mean Total Population	Mean Randomised population	Mean Screen Failure population	T-Test
Bilirubin	0.795	0.83	0.76	0.52
INR	1.13	1.15	1.12	0.24
kPa	23.31	24.03	22.24	0.79
Agile 4	0.44	0.518	0.42	0.23
CAP score	302.35	310.33	297.57	0.59
Fib 4	3.12	2.95	3.41	0.53

S1401

Trends and Disparities in Outcomes of Hospitalizations With Portal Vein Thrombosis: Analysis of the Nationwide Inpatient Sample

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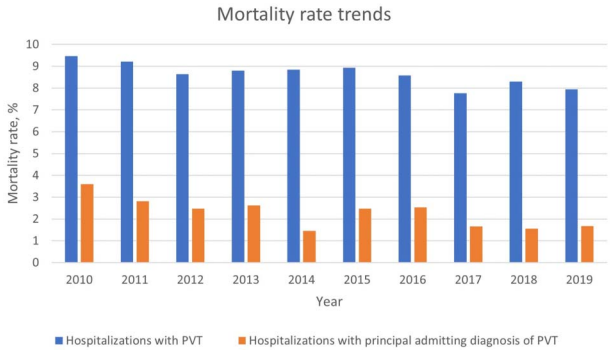
[1]John H. Stroger, Jr. Hospital of Cook County, Chicago, IL; [2]Englewood Hospital, Englewood, NJ; [3]Lincoln Medical Center, Bronx, NY.

Introduction: Portal vein thrombosis is a relatively rare disease, it is however becoming increasingly recognized in developed countries. Reliable data on epidemiological trends and outcomes of hospitalization is lacking. This study aimed to describe the epidemiological trends and the sociodemographic factors that affect outcomes of PVT hospitalization.
Methods: This was a retrospective longitudinal study involving hospitalizations with portal vein thrombosis (PVT) in the US from 2010 to 2019. We sourced data from the Nationwide Inpatient Sample databases from 2010 through to 2019. The study involved two cohorts of hospitalizations; any hospitalization with PVT, and hospitalizations with a principal discharge diagnosis of PVT. We calculated the admission rate and the incidence of PVT per million adult hospitalizations during each calendar year. We used multivariable regression trend analysis to obtain trends in mortality, length of stay (LOS), and total hospital charges (THC) adjusted for age categories, sex, and race.
Results: The adjusted incidence rate of PVT per million hospitalizations increased from 666 in 2010 to 1898 in 2019, with an annual percentage change (APC) of 13.8% ($p < 0.001$). PVT admission rate per million hospitalizations increased from 68 in 2010, to 189 in 2019, with an average APC of 14.8% ($p < 0.001$).There was a statistically significant reduction in trends of mortality rate from 9.5% to 7.9% over the decade (p 0.017). We also noticed a gradual decline in LOS, from 9.2 days in 2010 to 8.0 days in 2019. There was a significant uptrend in the mean THC over the decade from 99,626$ to 109,558$. Multivariate analysis showed that middle-aged and the elderly compared to young patients were more likely to have higher mortality rates. There was no significant difference observed in mortality rates, LOS and THC when both genders were compared. Blacks had a 30% higher odds of mortality over the period compared to Whites ($p < 0.001$). The THC was significantly higher in Hispanics compared to Whites ($p < 0.001$). (Figure)
Conclusion: While the crude incidence rate significantly increased over the years, we also noticed a gradual decline in the mortality rates over the same period; this observation is likely due to the advancements in the diagnosis and management of PVT over the decade. The middle-aged, elderly, Black and Hispanic populations are often associated with adverse outcomes during hospitalization for PVT. Additional studies are needed to further explore these findings.



[1401] **Figure 1.** Trends in mortality rates among total hospitalizations with PVT and admissions with PVT as principal diagnosis.

S1402

Racial Diversity in Hepatitis C Infection and Demographics of Hepatocellular Carcinoma in an Urban Medical Center Population

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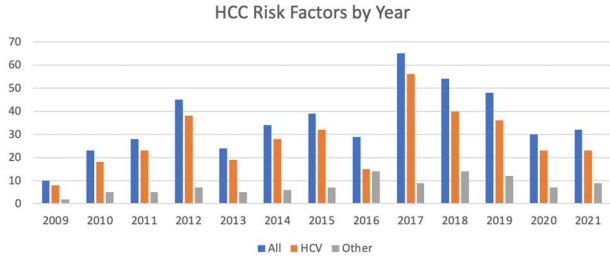
[1]Detroit Medical Center - Sinai Grace Hospital, Detroit, MI; [2]Wayne State University School of Medicine, Detroit, MI; [3]Wayne State University School of Medicine, Huntington Woods, MI.

Introduction: Chronic Hepatitis C Virus (HCV) infection can lead to liver cirrhosis and is a major cause of Hepatocellular Carcinoma (HCC) in the United States. Direct acting antiviral (DAA) therapies revolutionized HCV treatment by increasing the SVR of African Americans (AA) with HCV from 25% with interferon to greater than 95%. We hypothesized that our predominately AA medical center population would demonstrate a reduction in HCV-driven HCC diagnosis secondary to the initiation of DAA-mediated treatment beginning in 2014.

Methods: The patient dataset used ICD-9/10 codes for HCC as the primary diagnosis from 2010 to 2021. We excluded patients with a diagnosis prior to 2009, those seeking a second opinion, patients without accurate tumor measurement and confirmation of HCC, patients with only tumor measurement but no follow-up and patients with rare risk factors. SAS/JMP was used for statical analysis with ANOVA for numeric variables and Pearson chi-square for character variables.
Results: There were 465 HCC patients of whom 437 had self-identified race in the database (AA=353; Non-AA= 84). There was no difference in gender or age between both race groups with HCV as the dominant risk factor (Table). Non-AA patients were less likely to have an identified risk factor (cryptogenic) as compared to AA patients. There was a statistically significant difference between the prevalence of HCV in AA (85%) compared to Non-AA (53%) patients. When the diagnosis of HCC was evaluated between the years of 2009 and 2021, even in 2009, there was a significant proportion of the patients with HCV as the risk factor (Figure). There was a notable increase in HCC to a peak in 2017 corresponding to an increase in the number of HCC patients with HCV. The subsequent decline through 2021 corresponded to a decrease in patients with HCV as the primary risk factor for HCC. The number of patients without HCV as risk factor was similar throughout the period between 2009 and 2021. This observation was also seen when both groups were compared.
Conclusion: There was a significant increase in the number of patients with HCC diagnosed in our medical center prior to 2018 and a significant decrease between 2018 and 2021. Although observational data cannot prove causation, the introduction of DAA therapies to treat HCV in 2014 is indirect evidence that such therapy is responsible for the reduction in HCC cases.



[1402] **Figure 1.** HCC risk factors by year. The graph presents the number of patients with hepatocellular carcinoma (AA and Non-AA combined) diagnosed by year, along with risk factors sorted by HCV vs others. The primary risk factor for HCC in this patient population is infection with HCV.

Table 1. Racial Diversity in HCC at Diagnosis

	AA (n=353)	Non-AA (n=84)	
Gender (% Male)	72%	67%	p >0.1
Age (years)	65	65	p >0.1
Risk Factors (All)			
HCV	85%	52%	p=0.0001
Alcohol	5%	8%	
HBV	4%	4%	
Cryptogenic	5%	24%	
NAFLD/NASH	1%	12%	
Risk Factors (HCV vs Other)			
HCV	85%	52%	p=0.0001
Other	15%	48%	

S1403

Risk Stratification of Pre-Liver Transplant Polypectomy

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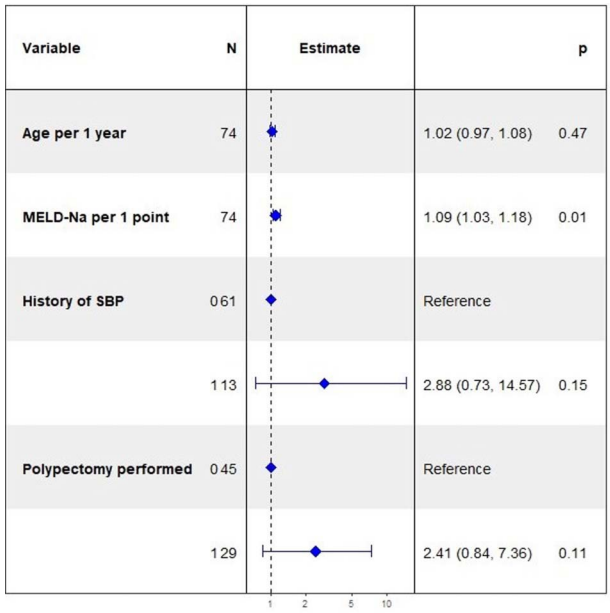
Introduction: Screening colonoscopies are frequently obtained during the pretransplant workup of a patient prior to liver transplant, however the utility is controversial. While colonoscopies are generally safe and well tolerated procedures, the patients in this population are at an elevated risk for procedural complications. Recent studies have shown the neoplastic yield of pre-transplant colonoscopies to be poor, and only significant in patients above 50 years old. Even so, the detection and treatment of pre-malignant abnormalities is of clinical relevance, as the required immunosuppression after transplantation increases the risk of progression to frank malignancy. There is currently no well-studied way to risk stratify these patients prior to colonoscopy and polypectomy.
Methods: This was a retrospective study of patients aged 18 and older who underwent liver transplant between April 1, 2012, and April 1, 2022. Included patients had undergone colonoscopy within 90 days of liver transplantation. Collected data included cause of ESLD, pre-colonoscopy lab work, colonoscopic findings, polypectomy method, polyp morphology and histopathology, and post-colonoscopy complications. Comparisons between groups were made using a Wilcoxon rank sum test or Fisher's exact test.
Results: Of 1000 patients with liver transplantation, 75 met inclusion criteria. Due to small sample size, a p-value of 0.10 was used to define statistical significance. 39.2% of patients underwent polypectomy during pre-transplant colonoscopy. Patients who underwent polypectomy experienced all-cause post-procedural complications at an increased rate (p=0.097). Every 1-point increase in pre-colonoscopy MELD-Na score was associated with increased rates of all-cause post-procedural complications (0.001). Complications of cirrhosis were also associated with post-procedural complications (ascites, p=0.070; SBP, p=0.073). (Figure)
Conclusion: Among patients undergoing pre-liver transplant colonoscopy, there was a statistically significant increase in risk for post-procedural complications based on increased MELD-Na score prior to colonoscopy. In addition, completing polypectomy during pre-liver transplant colonoscopy seems so be associated with an increased risk of post-procedural complications, although the number and size of polyps removed did not change risk. This study seems to show that pre-liver transplant colonoscopy is associated with complications around the time of liver transplantation, worsened still by polypectomy during said colonoscopy. (Table)



[1403] **Figure 1.** Multivariable Logistic Regression for Any Complication On multivariable analysis for any complication following pre-liver transplant colonoscopy, adjusting for age, MELD-Na, and prior SBP, a polypectomy approached significance (HR 2.41, 95% CI: 0.84-7.36, p=0.11)

Table 1. Baseline Characteristics Followed by Univariable Analysis and Unadjusted Logistic Regression Analysis for Any Complication or Acute Renal Failure Within 30 Days After Pre-Transplant Colonoscopy

Baseline Characteristics Median (IQR) or Fraction (%)		Univariable Analysis Median (IQR) or Fraction (%)			Logistic Regression Any Complication		Logistic Regression Acute Renal Failure	
	All Patients N=75	No Complication N=35	Complication N=40	P value	OR (95% CI)	P value	OR (95% CI)	P value
Age at liver transplant, per 1 year	58.5 (54.9-65.0)	58.5 (53.0-63.4)	58.5 (55.3-65.5)	0.51[1]	1.04 (0.99-1.09)	0.13	1.08 (0.997-1.17)	0.0594
Age ≥ 65 years	19/75 (25.3%)	7/35 (20.0%)	12/40 (30.0%)	0.43[2]	1.71 (0.59-4.99)	0.32	3.50 (1.05-11.65)	0.0411
Male gender	50/75 (66.7%)	23/35 (65.7%)	27/40 (67.5%)	1.00[2]	1.08 (0.41-2.83)	0.87	0.41 (0.13-1.28)	0.22
White Race	69/75 (92.0%)	33/35 (94.3%)	36/40 (90.0%)	0.68[2]	0.55 (0.09-3.18)	0.50	1.18 (0.12-11.34)	0.89
Never Smoker	31/73 (42.5%)	16/34 (47.1%)	15/39 (38.5%)	0.49[2]	0.70 (0.28-1.79)	0.46	0.94 (0.30-2.90)	0.91
Etiology of Cirrhosis								
HCV	17/75 (22.7%)	7/35 (20.0%)	10/40 (25.0%)	0.78[2]	1.33 (0.45-3.98)	0.61	1.08 (0.29-3.91)	0.91
NASH	25/75 (33.3%)	14/35 (40.0%)	11/40 (27.5%)	0.33[2]	1.38 (0.79-2.42)	0.26	0.86 (0.26-2.84)	0.81
Alcohol	18/75 (18.0%)	6/35 (17.1%)	12/40 (30.0%)	0.28[2]	2.07 (0.68-6.28)	0.20	2.15 (0.65-7.12)	0.21
Other	22/75 (29.3%)	11/35 (31.4%)	11/40 (27.5%)	0.80[2]	0.83 (0.31-2.23)	0.71	0.56 (0.14-2.24)	0.42
Complications from Cirrhosis								
Ascites	55/75 (73.3%)	22/35 (62.9%)	33/40 (82.5%)	0.0702	2.79 (0.96-8.09)	0.0595	1.23 (0.35-4.39)	0.75
Hepatocellular Carcinoma	12/75 (16.0%)	5/35 (14.3%)	7/40 (17.5%)	0.76[2]	1.27 (0.36-4.44)	0.71	1.18 (0.28-5.00)	0.82
Hepatic Encephalopathy	61/75 (81.3%)	26/35 (74.3%)	35/40 (87.5%)	0.23[2]	2.42 (0.72-8.08)	0.15	1.95 (0.39-9.81)	0.42
Grade 1 or 2	50/54 (92.6%	21/23 (91.3%)	29/31 (93.5%)	1.00[2]	1.38 (0.18-10.61)	0.75	1.06 (0.10-11.18)	0.96
Grade 3 or 4	4/54 (7.4%)	2/23 (8.7%)	2/31 (6.5%)	1.00[2]	0.72 (0.09-5.56)	0.75	0.94 (0.09-9.97)	0.96
Esophageal varices	38/75 (50.7%)	18/35 (51.4%)	20/40 (50.0%)	1.00[2]	0.94 (0.38-2.34)	0.90	1.04 (0.34-3.16)	0.95
Spontaneous bacterial peritonitis	13/75 (17.3%)	3/35 (8.6%)	10/40 (25.0%)	0.0732	3.56 (0.89-14.18)	0.0722	1.96 (0.50-7.61)	0.33
Hepatorenal syndrome	10/75 (13.3%)	6/35 (17.1%)	4/40 (10.0%)	0.50[2]	0.54 (0.14-2.08)	0.37	2.72 (0.66-11.20)	0.17
Hepatopulmonary syndrome	3/75 (4.0%)	2/35 (5.7%)	1/40 (2.5%)	0.60[2]	0.42 (0.04-4.9)	0.49	NA	NA
Hemodialysis-dependent	68/71 (4.2%)	2/35 (5.7%)	1/36 (2.8%)	0.61[2]	0.47 (0.04-5.45)	0.55	1.79 (0.15-21.17)	0.65
Labs prior at time of colonoscopy								
Sodium, per 1 mg/dL	135 (131-138)	135 (132.5-139.0)	134 (130.8-138.0)	0.23[1]	0.96 (0.89-1.05)	0.38	0.96 (0.87-1.07)	0.47
Total bilirubin, per 1 mg/dL	4.5 (1.9-8.7)	3.0 (1.4-6.4)	5.7 (2.7-16.2)	0.011[1]	1.09 (1.01-1.18)	0.0203	1.08 (1.02-1.14)	0.0059
INR, per 1 point	1.9 (1.4-2.4)	1.7 (1.3-2.1)	2.0 (1.6-2.5)	0.019[1]	2.65 (1.10-6.42)	0.0304	3.29 (1.14-9.55)	0.0282
Albumin, per 1 mg/dL	3.2 (2.8-3.7)	3.6 (2.9-3.9)	3.0 (2.7-3.4)	0.007[1]	0.34 (0.15-0.76)	0.0091	0.78 (0.32-1.92)	0.59
Creatinine, per 1 mg/dL	1.1 (0.9-1.8)	1.0 (0.8-1.5)	1.2 (0.9-2.0)	0.10[1]	1.19 (0.86-1.65)	0.29	1.16 (0.84-1.58)	0.37
MELD score, per 1 point	21 (15.5-26.5)	19.0 (12.0-22.5)	23.5 (18.0-29.3)	0.002[1]	1.11 (1.04-1.19)	0.0024	1.15 (1.05-1.25)	0.0017
MELD-Na score, per 1 point	25 (18.3-29.6)	21.0 (12.2-26.9)	27.3 (21.8-31.1)	0.001[1]	1.11 (1.04-1.18)	0.0020	1.18 (1.06-1.31)	0.0023
MELD-Na ≥ 30	17/75 (22.7%)	3/35 (8.6%)	14/40 (35.0%)	0.011[1]	5.74 (1.49-22.15)	0.0111	5.87 (1.71-20.18)	0.0049

Table 1. (*continued*)

Baseline Characteristics Median (IQR) or Fraction (%)		Univariable Analysis Median (IQR) or Fraction (%)			Logistic Regression Any Complication		Logistic Regression Acute Renal Failure	
	All Patients N=75	No Complication N=35	Complication N=40	P value	OR (95% CI)	P value	OR (95% CI)	P value
Colonoscopy Data								
Bowel Prep Adequate	59/74 (79.7%)	26/34 (76.5%)	33/40 (82.5%)	0.57[2]	1.45 (0.47-4.52)	0.52	2.00 (0.40-10.06)	0.40
Total Number of Polyps Found, per 1 polyp	0 (0-1)	0 (0-1)	0 (0-1)	0.14[1]	1.23 (0.85-1.79)	0.27	0.71 (0.37-1.35)	0.30
Polypectomy Performed	29/74 (39.2%)	10/35 (28.6%)	19/39 (48.7%)	0.0972	2.37 (0.90-6.23)	0.0791	0.87 (0.26-2.92)	0.82
Polyp > 10 mm Removed	8/29 (27.6%)	4/10 (40.0%)	4/19 (21.1%)	0.39[2]	0.40 (0.7-2.14)	0.29	0.46 (0.04-4.99)	0.53
Rectal varices present	8/75 (10.7%)	5/35 (14.3%)	3/40 (7.5%)	0.46[2]	0.49 (0.11-2.20)	0.35	0.46 (0.05-4.02)	0.48
Hemorrhoids present	10/75 (13.3%)	3/35 (8.6%)	7/40 (17.5%)	0.32[2]	2.26 (0.54-9.52)	0.27	0.98 (0.18-5.26)	0.98
Diverticula present	14/75 (18.7%)	10/35 (28.6%)	4/40 (10.0%)	0.0722	0.28 (0.08-0.99)	0.0475	NA	NA
Outcomes (Complications at 30 days post-colonoscopy)								
Any complications (primary composite outcome)	40/75 (53.3%)	NA	NA	NA	NA	NA	NA	NA
Acute renal failure	16/71 (21.3%)	NA	NA	NA	NA	NA	NA	NA
GI Bleed	5/72 (6.7%)	NA	NA	NA	NA	NA	NA	NA
New ascites	6/71 (8.0%)	NA	NA	NA	NA	NA	NA	NA
New hepatic encephalopathy	11/74 (14.7%)	NA	NA	NA	NA	NA	NA	NA
Cardiopulmonary, any	10/75 (13.3%)	NA	NA	NA	NA	NA	NA	NA
Infection, any	11/75 (14.7%)	NA	NA	NA	NA	NA	NA	NA

NA = Not Applicable.
1Wilcoxon Rank Sum Test.
2Fisher's Exact Test.

S1404

Outcomes and Complications of Hospitalized Cirrhosis Patients With *H. pylori* Infection

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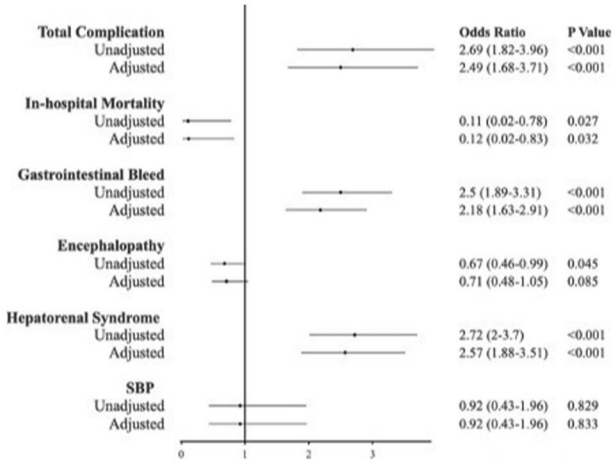
Introduction: *Helicobacter pylori* is a frequent cause of chronic gastritis, peptic ulcer disease, and gastric cancer worldwide. In patients with cirrhosis, *H. pylori* is associated with an increased risk of portal vein thrombosis, hepatocellular carcinoma, and hepatic encephalopathy. This study aims to evaluate the impact of *H. pylori* on cirrhosis complications and inpatient outcomes in the US population.
Methods: We queried the National Inpatient Sample (NIS) database from 2016 to 2019 for hospitalizations with a primary diagnosis of cirrhosis. We assessed demographics, in-hospital mortality, and complications of cirrhosis in patients with *H. pylori* and compared them to cirrhosis patients without *H. pylori*. We adjusted outcomes for potential confounders using multivariable logistic regression analysis.
Results: Of 416,410 patients with cirrhosis, 990 (0.2%) had a concurrent diagnosis of *H. pylori* infection. Cirrhosis patients with *H. pylori* were more likely younger (54.25 vs. 57.18 years, p=0.01), of Hispanic race (36.4% vs. 18.6%, p< 0.1), and of Black race (20.2% vs. 8.1%, p< 0.1). *H. pylori* patients were more likely in the bottom quartile of median household income (48.17% vs. 34.66%, p< 0.01). *H. pylori* exposed patients had lower in-hospital mortality (0.51% vs 4.44%, p=0.007), but longer mean length of stay (6.97 days vs 5.75, p=0.002). *H. pylori*-exposed patients had a higher overall rate of cirrhosis-related complications (84.85% vs. 67.59%, p< 0.001), gastrointestinal bleed (48.48% vs. 27.34%, p< 0.001), and hepatorenal syndrome (70.71% vs. 46.99%, p< 0.001) which persisted on multivariable analysis. Rates of hepatic encephalopathy were initially higher in *H. pylori*-non-exposed patients (21.57% vs. 15.66%, p=0.04), which was corrected after adjusting potential confounders in multivariable analysis (Figure).
Conclusion: In this study, *H. pylori* was associated with a higher length of stay in hospitalized cirrhotic patients but lower mortality. *H. pylori* patients had increased overall complications driven by gastrointestinal bleeding and hepatorenal syndrome. The lower mortality rate of *H. pylori* infection may partly be due to antibiotic use. Given the limitations of this retrospective cohort study, *H. pylori* as a causative factor for cirrhosis complications cannot be inferred with certainty. However, further studies are warranted to help elucidate the associations between *H. pylori* and cirrhosis complications. Eradicative therapy for *H. pylori* may be beneficial in select patients with Cirrhosis. (Table)



[1404] **Figure 1.** Odds of Complications in Cirrhosis Patients with H. pylori Infection Unadjusted and adjusted odds ratios* for overall complications, in-hospital mortality, gastrointestinal bleed,

encephalopathy, hepatorenal syndrome and spontaneous bacterial peritonitis (SBP). *Adjusted for age, race, female, hypertension, diabetes, hyperlipidemia, heart failure, CKD stage 3 or greater, alcohol use disorder, coronary artery disease.

Table 1.

Baseline characteristics	Overall (%) (N= 416,410)	Helicobacter Pylori Absent (%) (N= 415,420)	Helicobacter Pylori Present (%) (N= 990)	P-value
Cirrhosis				
Mean Age, (Mean ± Standard error) (Years)	57.17 (57.07 - 57.27)	57.18 (57.08 - 57.28)	54.25 (52.55 - 55.95)	0.001
Age (years)				0.01
18-49	24.73	24.71	33.84	
50-64	49.61	49.61	47.47	
65-74	17.83	17.84	12.12	
>= 75	7.84	7.84	6.57	
Gender				0.028
Male	63.13	63.11	70.71	
Female	36.87	36.89	29.29	
Race				< 0.001
White	64.01	64.10	26.26	
Black	8.13	8.10	20.20	
Hispanic	18.62	18.58	36.36	
Asian or Pacific Islander	1.72	1.71	5.56	
Native American	1.50	1.50	2.53	
Other	6.02	6.02	9.09	
Comorbidity[a]				
Obesity	14.29	14.30	11.62	0.275
BMI < 20	2.71	2.71	3.54	0.578
Hypertension	49.70	49.71	42.42	0.042
Diabetes	30.10	30.12	24.75	0.108
Hypercholesterolemia	16.33	16.35	8.08	0.002
Heart failure	11.95	11.96	7.58	0.059
Valvular Disease	0.74	0.74	0.51	0.701
CKD stage 3 or more	12.92	12.94	6.06	0.004
Alcohol use disorder	48.56	48.53	61.11	< 0.001
Peripheral vascular disease	3.72	3.73	1.52	0.101
COPD	12.94	12.94	10.61	0.327
Stroke	0.58	0.59	0.00	0.295
CAD	12.19	12.21	7.07	0.028
Cardiomyopathy	2.28	2.28	2.53	0.818
Coagulopathy	0.86	0.86	0.00	0.219
Bleeding Disorder	42.48	42.48	41.92	0.873
Smoking	22.28	22.27	25.25	0.325
Cancer	7.70	7.70	6.06	0.389
Autoimmune Disease	2.06	2.06	1.01	0.298
Median household income category for patient's Zip Code[d]				0.0002
0-25 percentile	34.69	34.66	48.17	
26-50 percentile	26.73	26.73	24.61	
51-75 percentile	22.64	22.64	19.90	
76-100 Percentile	15.94	15.96	7.33	
Primary Payer[e]				
Federal insurance	65.68	65.68	65.68	
Private insurance	21.86	21.88	12.12	
Other	3.22	3.22	5.56	
Uninsured	9.06	9.05	15.66	
Missing	0.17	0.17	0.00	
Hospital characteristics				
Hospital region				0.013
Northeast	16.76	16.76	17.17	
Midwest	19.27	19.27	19.19	
South	43.00	43.02	33.84	

Table 1. (*continued*)

Baseline characteristics	Overall (%) (N= 416,410)	Helicobacter Pylori Absent (%) (N= 415,420)	Helicobacter Pylori Present (%) (N= 990)	P-value
West	20.97	20.95	29.80	
Hospital bed size[f]				0.025
Small	17.11	17.11	13.64	
Medium	28.33	28.35	22.22	
Large	54.56	54.54	64.14	
Hospital teaching status[g]				< 0.001
Non-teaching	26.42	26.45	15.15	
Teaching	73.58	73.55	84.85	
Hospital location				0.066
Rural	5.51	5.52	2.53	
Urban	94.49	94.48	97.47	
Disposition				< 0.001
Home	63.25	63.21	80.30	
Facility/others	4.43	4.44	0.51	
Died	32.32	32.35	19.19	
Admission Type				0.446
Non-Elective	94.70	94.70	97.47	
Elective	5.14	5.14	2.53	
Missing	0.16	0.16	0.00	
In-hospital mortality	4.43	4.44	0.51	0.007
Length of stay (Mean ± Standard error) (Days)	5.76 (5.68 -5.83)	5.75 (5.68 - 5.83)	6.97 (6.21 – 7.72)	0.002
Cost of care (Mean ± Standard error) (USD)	16547.22 (16031.09 - 17063.36)	16543.49 (16026.53 - 17060.45)	18106.18 (15947.94 - 20264.41)	0.160
Elixhauser Comorbidity Index for Mortality (Mean ± 95% Conf. Interval)[h]	-1.86 (-1.91 to -1.81)	-1.86 (-1.91 to -1.81)	-1.77 (-2.51 to -1.03)	0.809

S1405

The Prognostic Value of Pretransplant QT Interval on 1-Year Outcomes After Liver Transplantation

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Introduction: Prolongation of QT-interval (QTc) on electrocardiogram (ECG) is associated with cardiac arrhythmia and death; it also remains supportive criteria for cirrhotic cardiomyopathy. The significance of QTc prolongation, particularly regarding post-transplant outcomes including sudden cardiac death, new onset heart failure (HF), HF death and readmission remain unclear. We investigated the 1-year post liver transplant risk of heart failure and overall death in patients with and without QT interval prolongation pre-transplant.
Methods: We conducted a retrospective analysis of patients undergoing liver transplantation (LT) from 2014 to 2018 at the Medical University of South Carolina. Preoperative electrocardiograms (ECG) were analyzed; a QTc > 440 milliseconds (ms) calculated by the Bazett method was considered prolonged. We also collected demographic data, etiologies of cirrhosis, laboratory results used to calculate the Model for End-Stage Liver Disease (MELD) score as a measure of liver disease severity, echocardiographic findings, and right heart catheterization (RHC) data if available. Subjects were followed for 1 year after transplant. The primary outcome was 1-year survival; secondary outcomes included post-operative heart failure (new onset heart failure, heart failure readmission, or heart failure death).
Results: There were a total of 258 subjects; the majority were male (69%) and Caucasian (85%). The distribution of cirrhosis etiologies was Non-alcoholic steatohepatitis (NASH) (97/258 29%), Alcohol (74/258, 29%), and Other (87/258, 34%). QT prolongation was common (217/258, 84%), but it was not associated with any 1-year post-operative outcomes including overall death (19/194, 9.8% vs.. 2/64, 3.1% p = 0.12), development of new HF (8/194, 4.1% vs 3/64, 4.7%, p 1.0), and an aggregate outcome of new HF, HF readmission, or HF death (12/194, 6.2% vs. 5/64, 7.8% p = 0.77). QTc prolongation was associated with echocardiogram findings consistent with elevated left ventricular filling pressures (peak e velocity, E/e', left atrial end-systolic and diastolic volume index) as well as left ventricular mass index.
Conclusion: QT-interval prolongation is a common finding in patients with cirrhosis that is associated with left ventricular hypertrophy (LVH) and elevated left ventricular filling pressure, but it was not associated with an increased risk of post liver transplantation outcomes including development of new heart failure, heart failure readmission, heart failure death, or overall death.

S1406

Trend of Hospitalized Patients With a Diagnosis of NAFLD Across a 4-Year Period From 2016-2019

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Introduction: The prevalence of Non-alcoholic fatty liver disease (NAFLD) has been increasing in the US and Non-alcoholic Steatohepatitis is the most rapidly increasing indication for a liver transplant. We evaluated the burden, contemporary trends, baseline characteristics, and overall mortality of hospitalized patients with NAFLD in the US using the National Inpatient Sample (NIS) database.
Methods: The 2016-2019 NIS database was used to identify all adults (age >18) with NAFLD using the relevant ICD 10 codes K76.0, K75.81. Baseline characteristics including gender, racial distribution, and mortality during hospitalization among these patients were obtained from the information available within the database. We used Stata 17.0 SE-Standard Edition (StataCorp, 4905 Lakeway Drive, College Station, TX). The data was tabulated to appreciate the trend.
Results: NAFLD patients accounted for 1-1.5% of all hospitalizations in the US (Table). We identified 373,135 hospitalized patients with NAFLD in 2016, which steadily increased to 532,485 patients in 2019. The majority of the patients were females (55 % vs. 45%; p < 0.01) across all years. We also found that NAFLD was more commonly associated with whites with a prevalence of ~70% across all years. The overall mortality rate of patients hospitalized with NAFLD across all years was 1.8%.
Conclusion: In this study, we found that there is a steady increase in the number of patients hospitalized with NAFLD from 2016 to 2019 in the US. This is similar to the increasing trend that was reported in a 2007-2014 study. White females were the most common group of patients that we found in the database. The mortality rate has remained stable at 1.8% from 2016 to 2019. Evidence supports that the primary pathophysiological derangement in most patients with NAFLD is insulin resistance and that weight loss helps in reversing the liver inflammation. Even though there have been recent advances in the treatment

of obesity and diabetes which are strongly associated with NAFLD, we did not notice any major difference in the prevalence of patients hospitalized with a diagnosis of NAFLD. The reasons could include that these treatment modalities may not be available to all patients or there may be a lack of awareness of these to the general population. More studies are needed to support our findings.

Table 1. Results

	2016	2017	2018	2019
Total NAFLD	373, 135 (1 %)	417504 (1.1%)	476215 (1.3%)	532485 (1.5%)
Males	167389 (45%)	187469 (45%)	216290 (45%)	242730 (45%)
Females	205384 (55%)	230014 (55%)	259904 (54%)	289715 (54%)
White	70%	69%	68%	68%
Black	9.3%	9.3%	9.3%	9.3%
Hispanic	15%	15%	15%	16%
Other	3%	3%	3%	3.1%
NAFLD died	6904.997 (1.8%)	7699.999 (1.8%)	8545.0079 (1.8%)	9854.998 (1.8%)

S1407

Potential Therapeutic Benefit of Ursodeoxycholic Acid (UDCA) in the Management of Non-Hepato-Biliary Upper Gastrointestinal Disorders: A Systemic Review

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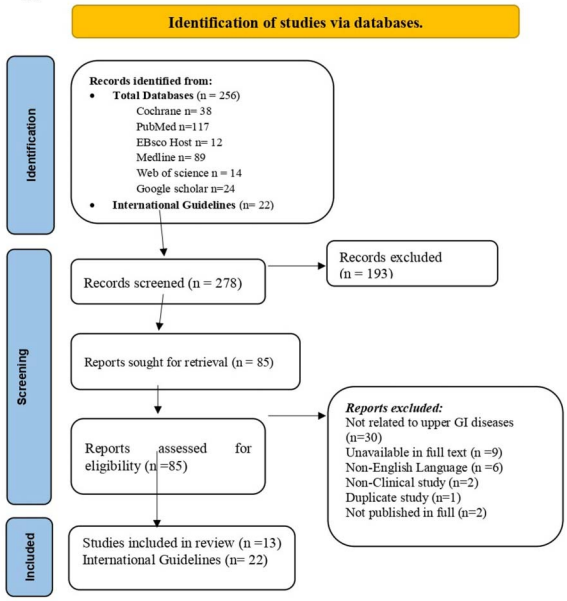
Introduction: Ursodeoxycholic acid (UDCA) is a secondary bile acid with different therapeutic effects on the hepatobiliary tree. Little is known of the local effects of UDCA as a therapy of upper gastrointestinal tract disorders. These diseases that relate to acid peptic, inflammatory and premalignant etiologies in which gaps of the current treatment do exist. Our aim to search for UDCA therapeutic effect and review its role on the management effect of diseases of the esophagus, stomach and Duodenum if exist and describe its therapeutic potential.
Methods: Search of Medline, PubMed, EBSO, Google Scholar, Web of Science and International guidelines using MESH terms describing therapy of UDCA for diseases of the upper gastrointestinal disorders in adult humans with no language or publication date restrictions.
Results: A 256 articles and 22 guidelines initially identified, in whom 221 excluded, Final revision of 13 article and 22 guidelines showed that UDCA is found to have a cytoprotective role in Barret's esophagus among esophageal disorders, it improves abdominal pain in functional dyspepsia and does not alter colonization of Helicobacter pylori and its inflammation. In the duodenum a conflicting result on the role of UDCA as chemoprevention for familial adenomatous polyposis, with regression of polyps and its growth characteristics with low doses used (10-25 mg/kg/day) alone. In contrary, no positive effect observed when combined with Celecoxib and with doses of 1000-2000 mg or 20-30 mg/kg/d. Side effects profile is predominantly related to Gastrointestinal side effects and no side effect attributed to morbidity or ICU admission. (Figure) (Table)
Conclusion: UDCA has limited therapeutic role in few uncontrolled small studies for functional dyspepsia. Its chemopreventive role is promising for Familial adenomatous polyposis and Barret's esophagus, await further studies to support these roles.

Figure 1: Search Protocol of the role of UDCA in the Management of Non hepatobiliary Upper Gastrointestinal Disorders.



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372: n71. doi: 10.1136/bmj. n71

[1407] **Figure 1.**

Table 1. Reported Side effects of UDCA use

Type	Events (n) Frequency
Gastrointestinal	•F020Abdominal Pain (1) 2.5 % •F020Anal and Perianal Pain (4) 10% •F020Heartburn (1) 2.5 % •F020Constipation (3) 7.5 % •F020Diarrhea (2) 5 % •F020Bloating (1) 2.5 % •F020Flatulence (1) 2.5 % •F020Nausea (1) 2.5 % •F020Vomiting (1) 2.5 % •F020Dyspepsia (3) 7.5 % •F020Terminal ileum Ulceration (1) 2.5 % •F020Elevated AST and GGT (1) 2.5 %
Neurologic	•F020Dizziness (1) 2.5 % •F020Mood alteration (1) 2.5 % •F020Neuropathy, Carpal tunnel syndrome (1) 2.5 %
Renal	•F020Lower urinary tract symptom, Prostatism (1) 2.5 %
Skin	•F020Hair loss (1) 2.5 % •F020Skin Rash (2) 5%
Hematology	•F020Anemia (1) 2.5 % •F020Leukopenia (1) 2.5 %
Auditory	•F020Otitis (1) 2.5 %
Infection	•F020Dental Infection (1) 2.5 % •F020Skin Infection (1) 2.5 % •F020Gastroenteritis (1) 2.5 %
Lymphatics	•F020Lower Limbs edema (2) 5%
Metabolic	•F020Hypokalemia (1) 2.5 %
Constitutional	•F020Fatigue (2) 5 % •F020Insomnia (1) 2.5 %
Malignancy	•F020Basal cell carcinoma, nose (1) 2.5 %
Total Events (n) %	40

S1408

Incidence of Coccidioidomycosis Infections in Endemic Region Among Patients With Autoimmune Hepatitis

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Introduction: Coccidioidomycosis is a dimorphic yeast endemic to the southwestern United States. In most patients, infections are often asymptomatic making detection of the fungi difficult unless a strong index of suspicion is present. Immunocompromised patients can have higher rates of complications such as meningitis, lytic bone lesions, and chronic pneumonia. Patients with autoimmune hepatitis in an endemic region present a unique group of patients who possibly could face more severe disease and most require immunosuppression. We set out to determine the incidence of coccidioidomycosis in patients with autoimmune hepatitis (AIH) to better understand the epidemiology of this disease in this patient population.
Methods: Patients with the diagnosis of autoimmune hepatitis were queried in the Banner Health System from the period of January 1st, 2016 to December 31st, 2021. The chart was queried for Coccidioidomycosis IgM antibody testing as well as sex, and race. Patients were excluded if they lived outside of the endemic regions of Arizona, Colorado, New Mexico and Utah. STATA was used to perform statistical analysis and pearson chi squared testing was used to determine if statistically significant differences were present.
Results: A total of 1680 patients with autoimmune hepatitis were included. Queried from January 1st, 2016 to December 31st, 2021 period with the diagnosis of coccidioidomycosis. The mean age (SD) was 57.1 (17.8) and 1304 (77.6%) patients were female and 376 (22.4%) males. 352 (20.9%) of these patients were tested for coccidioidomycosis. Of these, 28 were positive. The incidence rate of coccidioidomycosis in patients with AIH for this study was found to be 1667 per 100,000.
Conclusion: This study demonstrates a greater incidence of coccidioidomycosis infections in patients with autoimmune hepatitis compared to the general population. 1667 per 100,000 vs 98 per 100,000 as reported by the Arizona Department Public Health in 2017. The factors that can explain this are beyond the scope of this study. Further research needs to be undertaken to determine if patients with autoimmune hepatitis experience greater disease severity and hospitalization rates compared to the general population. This research may help further standardize immunosuppressive treatment for autoimmune hepatitis patients.

S1409

Improving Provider Adherence to Nutritional and Metabolic Recommendations in Patients With Acute Alcoholic Hepatitis: A Quality Improvement Initiative

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Introduction: Alcoholic hepatitis (AH) is an acute, inflammatory liver disease associated with high morbidity and mortality, both short and long term. Current medical therapy for severe alcoholic hepatitis relies on corticosteroids, which have modest efficacy. Alcohol abstinence is of critical importance but recidivism is high. Efficacious medical treatments for alcoholic hepatitis are lacking. Preliminary and Preclinical studies include use of Antibiotics, IL-1 inhibitors, GCSF and antioxidants. Malnutrition and sarcopenia are common among hospitalized AH patients with negative impact on outcome.[1] Current guidelines generally recommend daily protein intake of 1.2–1.5 g/kg/day and caloric intake of 30- 40 kcal/kg/day in alcoholic hepatitis patients. [2][3] Our objective is to implement methods to facilitate adherence to nutritional recommendations in hospitalized patients with AH.
Methods: We conducted a 12-month retrospective study followed by a 3-month prospective interventional study at Presbyterian Medical Center. Chart review was performed to evaluate adherence with nutritional recommendations in patients with AH. A 3-month intervention was performed to improve compliance. This included the creation of a customized best practice advisory alert (BPA) in the Electronic medical record (EMR). The triggers included elevated ALT/AST, bilirubin >3 and documented alcohol use within 8 weeks. Alert encouraged physicians to request a nutrition consult if the diagnosis of AH was appropriate.
Results: 105 patients with 82 in the pre- and 23 post-intervention periods were reviewed. No significant difference in patient characteristics and demographics was noted between the 2 groups. The intervention implemented revealed a 79% increase in adherence to nutritional recommendation ($P < 0.023$). Adherence was quantified as modified diet orders in EMR to include high protein diet (minimum of 60 grams/ daily) and/or addition of supplemental high protein milk shakes to meals and/or electronic consult to nutritionist.
Conclusion: AH has high morbidity and mortality. Current pharmacological options remain limited. Patients with AH are commonly malnourished and sarcopenic. System based auto-generated EMR alerts help increase compliance with the nutritional recommendations as well as enforce evidence-based practices in this select patient population.

S1410

Evaluating Liver Transplant Outcomes for Patients Transplanted for Nonalcoholic Steatohepatitis

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Introduction: Nonalcoholic fatty liver disease (NAFLD) is now the most common cause of chronic liver disease. Liver damage in NAFLD leads to nonalcoholic steatohepatitis (NASH), which can progress to cirrhosis. As NASH cirrhosis rates continue to rise, it is important to evaluate outcomes of NASH liver transplant (LT) patients. Long-term outcomes and overall survival of NASH LT patients have yet to be definitively determined. The aim of this study was to assess LT outcomes in NASH patients.
Methods: This single-center retrospective analysis included all adult patients who underwent a LT at a large hospital in Dallas, TX from 2010 to 2020. Demographic, clinical, and transplant-related outcomes were collected. Patients were stratified into two groups based on the etiology of their underlying liver disease: NASH or non-NASH. Groups were compared using the Mann-Whitney U, Chi square, or the Fisher's exact test.
Results: A total of 677 patients, 112 (16.5%) NASH and 565 (83.5%) non-NASH, underwent a LT from 2010 to 2020. The mean age of NASH patients was higher than the non-NASH patients (59.3 vs 56.0 years). Caucasians (OR=4.9; 95% CI=1.5–16.1; p=0.008) and Hispanics (OR=8.3; 95% CI=2.4–27.9; p=0.001) had higher odds of having a NASH-related LT compared to African Americans. A greater proportion of NASH patients were obese and had diabetes compared to non-NASH patients (47% vs 34%; respectively). The frequency of NASH-associated LT increased throughout the study period from 12.9% in 2010 to 33.9% in 2020. Mean hospital length of stay (p=0.18), Model for End-Stage Liver Disease scores (p=0.06), one-year survival (p=0.27), three-year survival (p=0.23), one-year graft survival (p=0.60), and three-year graft survival (p=0.45) were comparable between the two groups. (Figure)
Conclusion: Our 10-year cohort study showed a substantial rise in NASH cirrhosis-associated LT from 2010 to 2020 that coincides with the obesity epidemic. NASH patients are likely to have metabolic-related comorbidities such as obesity, diabetes, and coronary artery disease that can make post-transplant care difficult as they are prone to infections, poor healing, and death. Although not statistically significant, our data suggest that both one year and three-year patient survival was lower in NASH patients. Careful patient selection prior to transplantation remains critical in maintaining acceptable graft outcomes and overall survival.

	NASH	Non-NASH
	n=112	n=565
Age at Transplant (Median)	59 (55-67)	56 (51-63)
Sex Female (%)	50.0	33.8
BMI at Transplant	30.1	28.8
MELD at Transplant (Median)	25 (18-32)	23 (15-31)
Diabetes at Transplant (%)	53.5	28.8
Race (%)		
White	60.7	60.8
Black	2.6	13.2
Hispanic	35.7	21.2
Asian	0.8	4.6
Organ (%)		
Liver	80.3	89.5
Liver & Kidney	19.6	10.4
1 Year Patient Survival (%)	89.2	92.3
3 Year Patient Survival (%)	83.0	87.2
1 Year Graft Survival (%)	97.3	95.9
3 Year Graft Survival (%)	97.3	95.2
LOS in Days (Median)	10 (7-14)	9 (7-14)

[1410] **Figure 1.** Comparison of NASH and non-NASH patient demographics and outcomes.

S1411

The Impact of Hepatobiliary Multidisciplinary Tumor Board Review on Patient Management: A Descriptive Analysis

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Introduction: The importance of a multidisciplinary tumor clinic on patient outcomes has been well demonstrated, especially in the care of patients with hepatocellular carcinoma (HCC). Hepatobiliary tumor boards however have not been studied as closely and their impact is largely uncharacterized. We aimed to characterize the impact of our institution's hepatobiliary tumor board on patient management and outcomes, specifically regarding tumor characterization and diagnosis, treatment plan and avoidance of unnecessary testing.
Methods: We conducted a single-center retrospective review of patients discussed at our institution's Multidisciplinary Hepatobiliary Tumor Board (MDTB) during the study period of January 1st, 2017-December 31st, 2018.
Results: We reviewed 94 patients in total. The majority of patients presented with HCC (45%), followed by benign liver lesions (24%), bile duct/gallbladder cancers (6%), benign bile duct/gallbladder lesions (4%), colorectal liver metastasis (1%), neuroendocrine liver metastasis (1%) and the remaining were other hepatobiliary pathologies (18%). In 30% of total cases, review at MDTB led to further characterization or correction of initial diagnosis. In 12% of total cases, the diagnosis was corrected from concern for malignancy/malignant to non-malignant. In 20% of cases, an unnecessary intervention (described as imaging, procedure, or treatment) was prevented. The next step in management (described as further imaging, procedure, or biopsy) was suggested in 57% of cases. In total, 12 of the 94 patients analyzed were newly diagnosed with HCC. In these cases, 100% of the treatments recommended by the MDTB met adherence to 2018 AASLD practice guidelines. As an institution, the most frequent choice for locoregional therapy was TARE.
Conclusion: Expert case review at MDTB has a significant impact on patient morbidity and management strategy of complex hepatobiliary tumors. Of the patients reviewed, 30% had further characterization or correction of initial diagnosis (of these, 39% had their diagnosis corrected from concern for malignancy to non-malignant) and 20% avoided unnecessary interventions, 53% of which were procedures. Among newly diagnosed HCC cases, clinical practice at our institution adhered to AASLD guidelines with TARE being the preferred locoregional therapy. Further ongoing research will allow for a greater understanding of MDTB impact and allow for characterization of MDTB practice changes over the years. (Table)

Table 1. **MDTB Outcome Measures**

	2017 Cases (n=50)	2018 Cases (n=44)	Total Cases (n=94)	Percent of Total Cases
(A) Further characterization or correction of initial diagnosis				
(i) Diagnosis corrected from concern for malignancy/malignant to non-malignant	8	3	11	11.7%
(ii) Diagnosis corrected from non-malignant to malignant	1	1	2	2.1%
(iii) Non-malignant tumor diagnosis further characterized	9	6	15	16.0%

Table 1. (*continued*)

	2017 Cases (n=50)	2018 Cases (n=44)	Total Cases (n=94)	Percent of Total Cases
Total:	18	10	28	29.8%
(B) Unnecessary intervention prevented				
(i) Procedure	8	2	10	10.6%
(ii) Treatment	1	2	3	3.2%
(iii) Imaging	3	3	6	6.4%
Total:	12	7	19	20.2%
(C) Next step in management suggested				
(i) Imaging	18	18	36	38.3%
(ii) Biopsy	2	2	4	4.3%
(iii) Procedure	3	11	14	14.9%
Total:	23	31	54	57.4%

S1412

Non-Invasive NAFLD Screening in the Primary Care Setting of a Safety Net Hospital System

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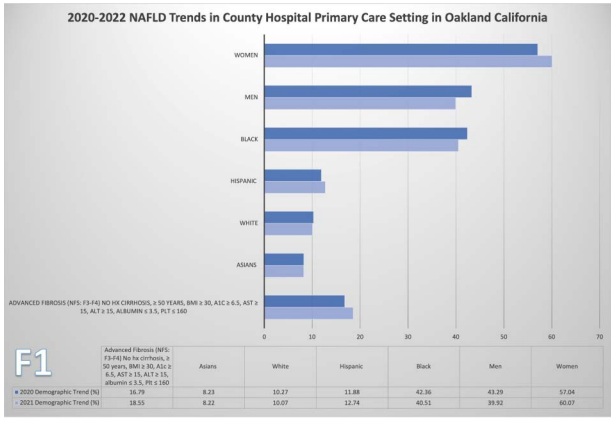
Introduction: Nonalcoholic fatty liver disease (NAFLD) is one of the most common etiologies of cirrhosis and fastest growing indications for liver transplantation in Western countries. Currently, there is no universal recommendation for NAFLD screening in the primary care setting. Clinical data analysis can be used to identify patients at risk for developing NAFLD with advanced liver disease so that these patients can be referred for liver elastography for further risk stratification.
Methods: 2528 patients from the Highland primary care clinic in Oakland California from 2020 to 2022 were evaluated using the Epic Software electronic medical record system. The inclusion criteria included patients at Alameda Health System (AHS) Highland Hospital Adult Medicine with a hemoglobin A1c $\geq$ 6.5%, BMI $\geq$ 30, age $\geq$ 50, with aspartate aminotransferase (AST) $\geq$ 15 U/L, alanine transaminase (ALT) $\geq$ 15 U/L, albumin $\leq$ 3.5 mg/dL, and platelets (PLT) $\leq$ 160 per microliter that, at a minimum, corresponds to a NAFLD Fibrosis Score (NFS) of 0.7 (Fibrosis stage 3-4). The exclusion criteria included a history of viral or autoimmune hepatitis, clinically significant alcohol use, or previously diagnosed cirrhosis from an etiology other than NAFLD.
Results: The percentage of patients with NAFLD who were at risk for advanced liver disease increased from 16.79% [Confidence Interval (CI) 0.61; 16.2-17.4] in 2020-2021 to 18.55% [CI 0.57; 17.9-19.2] in 2021-2022. The percentage was highest in Black patients (42.3%, $p < 0.01$) and female patients (57.0%, $p < 0.01$), and lowest in Asian patients (8.2%, $p < 0.01$) (Figure). The percentage of Black, White, Asian, and male patients was relatively unchanged from 2020 to 2022, while the percentage in Hispanic patients increased from 11.9% to 12.7%, and the percentage of women increased from 57.0% to 60.1% (Figure).
Conclusion: NAFLD with advanced liver disease is closely associated with diabetes and obesity. The United States Preventive Services Task Force currently does not recommend screening for NAFLD. However, non-invasive criterion-based screenings are feasible and effective at identifying patients with risk factors for developing NAFLD with advanced liver disease. Furthermore, screenings should be implemented in the primary care setting using criterion targeted clinical data, to identify patients who will benefit from liver elastography, so that early interventions can be performed to prevent cirrhosis and cardiovascular related complications.



[1412] **Figure 1** . (F1). Demographic trends for NAFLD in AHS county hospital primary care setting in Oakland California from 2020 to 2022.

S1413

Evaluating the Quality of Online Resources on Liver Disease and COVID-19 During the Pandemic

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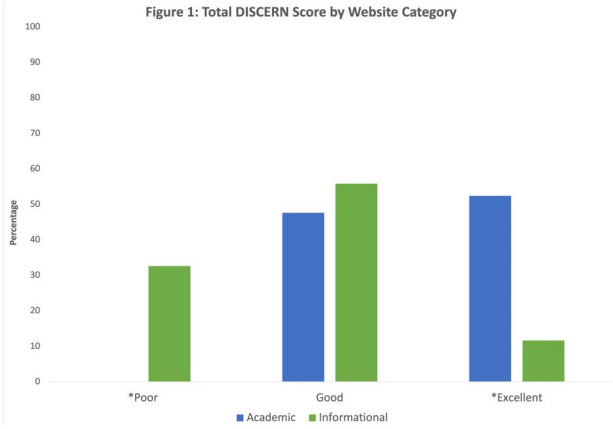
Introduction: Patients with underlying liver disease are thought to be at higher risk for severe illness in the setting of COVID-19. These patients are likely to use online resources for guidance on how to navigate the COVID-19 pandemic, particularly given the shift in focus to internet-based communication during this time. This study sought to evaluate the quality and readability of online information related to liver disease and COVID-19.
Methods: Google search engine was used to query "liver disease and COVID-19" to access the first 100 websites. Websites that were non-accessible, duplicates or videos without transcripts were excluded. Websites were categorized as academic/professional, informational, personal/blog or commercial. Quality of information was determined using the validated DISCERN score. Readability was determined using the validated Flesch-Kincaid Grade Level (FKGL) calculation. Acknowledgment of areas of uncertainty and references cited were noted. Statistical analysis was performed using two-tailed Fisher exact and t-testing with significance set at $p < 0.05$.
Results: Eighty-seven of 100 websites met the inclusion criteria. 42(48.3%) were academic, 43(49.4%) informational and one each (1.1%) personal and commercial. The average FKGL was 11.7, and academic websites had a significantly higher grade level compared to informational (14.0 vs 9.4; p=0.00001). The average DISCERN score for all websites was "Good" with a score of 48.5. Academic websites had a

significantly higher DISCERN compared to informational (55.6 vs 42.3; p=0.00001). Academic websites had significantly more "Excellent" scores compared to informational (52.4% vs 11.6%; p=0.0001) and informational websites had significantly more "Poor" scores (32.6% vs 0%; p=0.001). Cited references (100% vs 32.6%; p=0.0001) and areas of uncertainty (92.9% vs 7.0%; p=0.0001) were addressed more so in academic websites. (Figure)

Conclusion: Our study shows that academic resources on liver disease and COVID-19 published during the pandemic are of higher quality and are more likely to be unbiased and comprehensive, but that most are scientific literature geared towards professionals. The academic reading level is also too high for the average reader and while informational websites have a lower grade level, they are also of lower quality. As patients with liver disease seek resources on COVID-19 online, it is important that information remains of high quality but is also accessible.



[1413] **Figure 1.** Total DISCERN Score by Website Category (* denotes a statistically significant difference in total DISCERN score [Poor, Good, Excellent] among website categories)

S1414

Outcomes in Patients With Cirrhosis Undergoing Esophagogastroduodenoscopy for Upper Gastrointestinal Bleeding

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Introduction: Variceal hemorrhage is the most common cause of upper gastrointestinal bleeding (UGIB) in patients with liver cirrhosis. Endoscopic variceal ligation (EVL), along with pharmacotherapy, is the standard of care for treatment of bleeding gastroesophageal varices. Median re-bleeding rate in patients treated with EVL is about 7.6% at 2 weeks. We studied the rate of re-bleeding and difference in outcomes such as re-hospitalization, mortality in patients undergoing EVL compared to those that did not undergo EVL.

Methods: We identified adult patients with cirrhosis undergoing esophagogastroduodenoscopy (EGD) for UGIB, admitted over a 3-year period to a tertiary care center in New York City. Demographics, medical history, and rates of re-bleeding, rehospitalization and death at 60 days post-discharge were recorded. Patients undergoing EVL were compared to those who did not undergo EVL.

Results: 54 patients (median age 57 years, 44% male) underwent EGD for acute UGIB. Etiologies of UGIB were portal hypertensive gastropathy (34%), esophageal varices (34%), gastritis (32%) and gastric or duodenal ulcers (24.5%). 21 (38%) patients underwent EVL and 33 (61%) did not. Reasons for not undergoing EVL included other etiology of UGIB, varices less than 5mm or other. Age, gender, race, etiology of cirrhosis, MELD Na score, proton pump inhibitor (PPI) use and prior decompensating event, were similar between the 2 groups (Figure). There was no difference in rates of re-bleeding, re-hospitalization due ascites, portosystemic encephalopathy, and infection and 60-day mortality between the 2 groups (Table). Interestingly, gastritis or gastroduodenal ulcers were the likely cause of UGIB in 23 patients (42%).14 patients were re-hospitalized within 60 days of initial admission. The leading cause of rehospitalization was rebleeding (41%).

Conclusion: We found no differences in outcomes of cirrhotic patients hospitalized for UGIB based on etiology of UGIB and whether they underwent EVL. A significant proportion of patients rebled. Our study demonstrated that gastritis and gastric/duodenal ulcers were common etiologies of UGIB in cirrhotic patients. There is a higher risk of spontaneous bacterial peritonitis and liver-related mortality among cirrhotic patients on long term PPI. However, since a significant cause of UGIB in patients with cirrhosis may be peptic ulcer/gastritis related, future studies should focus on the length of PPI use after discharge in patients with cirrhosis who undergo EGD for UGIB.

	n (%)	EVL performed	EVL not performed	p value
ENDOSCOPIC FINDINGS				
	Esophageal varices	21 (100)	25 (75.8)	0.04
	EV size ≥ 5mm	11 (84.6)	6 (21.4)	<0.001
	Gastric varices/ Portal Hypertensive Gastropathy	12 (57.1)	18 (54.5)	1
	Gastritis	1 (4.8)	15 (45.5)	0.004
	Esophagitis	1 (4.8)	7 (21.2)	0.206
	Gastric/Duodenal Ulcers	4 (19.0)	8 (24.2)	0.911
OUTCOMES				
	Rehospitalization	4 (19.0)	10 (31.2)	0.505
	Cause of Rehospitalization			NaN
	Re-bleeding	3 (75)	3 (30)	
	Ascites	0 (0)	2 (20)	
	Hepatic Encephalopathy	0 (0)	0 (0)	
	Other	1 (25)	5 (50)	
	Death within 60 days	2 (14.3)	2 (7.7)	0.912

[1414] **Figure 1.** Endoscopic findings and outcomes in patients that underwent EVL compared to those that did not

Table 1. Patient characteristics and indication for Esophagogastroduodenoscopy (EGD)

Endoscopic variceal ligation (EVL)				
		EVL Performed	EVL Not Performed	P value
	n (%)	21	33	
Demographics	Age [mean (SD)]	58.1 (12.6)	57.6 (12.8)	0.892
	Female	3 (14.3)	10 (30.3)	0.31
	Race			NaN
	Caucasian	8 (47.1)	7 (30.4)	
	African-American	0 (0)	5 (21.7)	
	Hispanic	4 (23.5)	8 (34.8)	
	Asian	5 (29.4)	3 (13.0)	
Etiology of Cirrhosis				
	Alcoholic liver Disease	13 (61.9)	22 (66.7)	0.948
	Hepatitis B virus	1 (4.8)	2 (6.1)	1
	Hepatitis C virus	5 (23.8)	10 (30.3)	0.835
	Non Alcoholic Fatty liver Disease	2 (9.5)	2 (6.1)	1
	Unknown	3 (14.3)	2 (6.1)	0.593
MELD Na Score		16.6 (6.9)	17.0 (7.6)	0.831
Prior Decompensating Event				
	Variceal Bleed	8 (38.1)	9 (27.3)	0.593
	Ascites	6 (28.6)	11 (33.3)	0.947
	Spontaneous Bacterial Peritonitis	0	2 (6.1)	0.681
	Hepatocellular Carcinoma	1 (4.8)	3 (9.1)	0.953
	No prior events	7 (33.3)	10 (30.3)	1
Indication for EGD				0.087
	Hematemesis	9 (42.9)	5 (15.2)	
	Melena	3 (14.3)	3 (9.1)	
	Anemia	2 (9.5)	8 (24.2)	
	Other	7 (33.3)	17 (51.5)	

S1415

Non-Invasive Predictor of High-Risk Esophageal Varices: A Baveno VI Validation Study in Clinical Practice

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Introduction: The Baveno VI consensus proposed patients with liver stiffness > 20 Kpa and platelet count < 150.000 have a high risk of moderate to large esophageal varices, therefore endoscopy screening must be done in these patients. On the other hand, patients with liver stiffness < 20 Kpa and platelet count > 150.000 do not need to perform endoscopy screening. This study aims to evaluate the Baveno VI recommendation as a non-invasive method that could predict the presence of high-risk varices.
Methods: A cross-sectional study was conducted in a single centre, involving a newly diagnosed non Child-Turcotte-Pugh (CTP) C class liver cirrhosis, without a history of variceal bleeding and beta-blocker consumption. All the subjects underwent endoscopy screening to determine the presence and grading of the esophageal varices. The esophageal varices were graded as low risk (grade < 2) or high risk (grade ☐2). Liver stiffness and platelet were also measured. The patient was classified according to the Baveno VI criteria. Table 2x2 was used to identify the diagnostic performance of Baveno VI criteria.
Results: This study included 103 patients, the mean age was 53 ± 12.09 years and 80.6 % were male. The majority were CTP-A class (55.3%), and 44.7% were CTP-B class. The aetiology of liver disease was hepatitis B in 49 (47.6%), hepatitis C in 25 (24.3%), and other causes in 29 (28.2%). Esophageal varices were found in 59 (57.3%) patients, and the high-risk varices prevalence was 55.3%. Moderate to large varices were detected in 21 (36.8%) and 36 (63.2%) patients with CTP-A and CTP-B classes, respectively. About 83/103 (80.58%) fulfil the Baveno VI criteria, it was correctly predicted that 53.39% (55) of high-risk varices. About 33.7% of patients who did not have oesophageal varices were falsely predicted to have varices. The Baveno VI criteria had a sensitivity 96.49%, specificity 39.13%, positive predictive value 66.26%, negative predictive value 10%, positive likelihood ratio 1.58, and negative likelihood ratio 0.08 to predict high-risk varices.
Conclusion: The Baveno VI can be used as a non-invasive method to predict high-risk oesophageal varices, which high sensitivity but low specificity. Further studies are needed in combination with other non-invasive tests to increase specificity so as to avoid unnecessary endoscopic examinations.

S1416

Liver Transplantation Demographics and Indications Over Two Decades: Single Center Retrospective Analysis

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Introduction: Liver transplantation (LT) is a therapeutic treatment option for patients with acute liver failure and end stage liver disease. The aim of this study is to evaluate changes in LT indications and patient demographics over two decades.
Methods: Data on demographic information and indications for LT from 2002-2020 were collected from the Thomas Jefferson University transplant database. Demographic factors analyzed were age, race and gender. Indications for LT included non-alcoholic fatty liver disease (NASH/NAFLD), Alcohol Cirrhosis, drug use, viral hepatitis B and C (HBV, HCV), autoimmune cause, primary sclerosing cholangitis (PSC), primary biliary cholangitis (PBC), hepatocellular carcinoma (HCC), or common combinations of two indicators. Frequencies of demographic factors overall and within transplant indications were calculated. Comparisons between demographic factors were made using chi-square tests ($p < 0.05$).
Results: Of the 974 patients in our study, 685 were male, and 289 were female. The mean age at the time of LT was 56.0 years ± 10.7 years, and 758 were White 115, Black, 59 Hispanic, 42 Asian, and 9 Other. The most common indications for LT were HCV complicated by HCC (25.9%) and alcoholic cirrhosis (16.0%). For the entire population, there was no statistically significant relationship between age and race ($P=0.051$). Patients with alcoholic cirrhosis + HCC, Hispanics were significantly older than their White and Black counterparts (68.3 years vs 59.9 and 55.8 years, respectively, $P=0.044$). Men tended to be older at the time of transplant than women (56.54 years vs 54.59 years respectively, $p=0.0005$). When stratified by indication, male patients with Alcohol Cirrhosis + HCC were significantly older than their female counterparts (60.7 years vs 56.3 years). For our entire group, although White patients received 77.8% of LT, there was no statistically significant relationship between the racial distribution of LT and the gender distribution of LT. (Table)
Conclusion: Race was not significantly associated with age or gender in indication for LT. After stratifying by indication, we found that Hispanic patients with alcoholic cirrhosis and HCC were significantly older. When stratifying by age, older male patients underwent LT at higher rates than females regardless of indication. Determining to what extent female gender and Hispanic race play a role in transplant indication through studies focusing on potential causes and outcomes is essential to help physicians target and utilize LT resources.

Table 1. Liver Transplantation Demographics and Indications

	Total Patients N (%)	Age	Race (%)	p-value
Overall	974 (100)	W: 56.11 B: 55.53 H: 55.00 A: 56.80 O: 50.37	W: 758 (77.8) B: 115 (11.8) H: 59 (5.1) A: 42 (4.3) O: 9 (0.9)	0.051
NASH/NAFLD	94 (9.7)	W: 60.88 B: 55 H: 58.14 A: 67 O: n/a	W: 85 (90.4) B: 1 (1.1) H: 7 (7.4) A: 1 (1.1) O: 0 (0)	0.77
Alcohol Cirrhosis	156 (16.0)	W: 55.46 B: 59.89 H: 56.14 A: 57.33 O: 37	W: 136 (87.2) B: 9 (5.8) H: 7 (4.5) A: 3 (1.9) O: 1 (0.6)	0.15
HCV	110 (11.3)	W: 55.09 B: 60.48 H: 57.08 A: n/a O: n/a	W: 84 (76.4) B: 18 (16.4) H: 8 (7.3) A: 0 (0) O: 0 (0)	0.07
HBV	11 (1.1)	W: 47.20 B: 38 H: 42 A: 58.37 O: n/a	W: 5 (45.5) B: 2 (18.2) H: 1 (9.1) A: 3 (27.3) O: 0 (0)	0.10
Autoimmune	30 (3.1)	W: 51.51 B: 38.77 H: 5.80 A: n/a O: 58.65	W: 19 (63.3) B: 7 (23.3) H: 2 (6.7) A: 0 (0) O: 2 (6.7)	**0.001**
PSC	35 (3.6)	W: 46.37 B: 47.45 H: n/a A: 37.10 O: n/a	W: 21 (60.0) B: 11 (31.4) H: 0 (0) A: 3 (8.6) O: 0 (0)	0.84
PBC	25 (2.6)	W: 51.70 B: n/a H: n/a A: n/a O: n/a	W: 25 (100) B: 0 (0) H: 0 (0) A: 0 (0) O: 0 (0)	n/a
HCC	48 (4.9)	W: 59.44 B: 61.83 H: 57.5 A: 56.5 O:42	W: 36 (75.0) B: 6 (12.5) H: 2 (4.2) A: 4 (8.3) O: 0 (0)	0.54
Drug	14 (1.4)	W: 44.4 B: 51 H: 50 A: 59 O: 42	W: 9 (64.3) B: 1 (7.1) H: 1 (7.1) A: 2 (14.3) O: 1 (7.1)	0.09
Cirrhosis NOS / Cryptogenic	129 (13.2)	W: 52.16 B: 53.69 H: 54.14 A: 58.5 O: 48	W: 102 (79.1) B: 14 (10.9) H: 7 (5.4) A: 4 (3.1) O: 3 (2.3)	0.74
HCV+HCC	252 (25.9)	W: 58.19 B: 58.22 H: 57.58 A: 58.27 O: 56.5	W: 176 (69.8) B: 40 (15.9) H: 12 (4.8) A: 22 (8.7) O: 2 (0.8)	0.41
NASH+HCC	12 (1.2)	W: 63.17 B: n/a H: n/a A: n/a O: n/a	W: 12 (100) B: 0 (0) H: 0 (0) A: 0 (0) O: 0 (0)	n/a
NASH + Alcohol	3 (0.3)	W: 50 B: n/a H: n/a A: n/a O: n/a	W: 3 (100) B: 0 (0) H: 0 (0) A: 0 (0) O: 0 (0)	n/a

Table 1. (*continued*)

	Total Patients N (%)	Age	Race (%)	p-value
Alcohol+HCC	54 (5.5)	W: 59.88 B: 55.83 H: 68.33 A: n/a O: n/a	W: 45 (83.3) B: 6 (11.1) H: 3 (5.6) A: 0 (0) O: 0 (0)	**0.044**
HBV + HCC	1 (0.1)	W: 50 B: n/a H: n/a A: n/a O: n/a	W: 0 (0) B: 1 (100) H: 0 (0) A: 0 (0) O: 0 (0)	n/a n/a

W=White, B=Black, H=Hispanic, A=Asian, O=Other, HBV= Hepatitis B virus, HCV= Hepatitis C virus, HCC= hepatocellular carcinoma, NASH = Non-alcoholic steatohepatitis, NAFLD = non-alcoholic fatty liver disease, PBC=Primary biliary cholangitis, PSC=Primary sclerosing cholangitis

S1417

Validating the EVendo Score to Risk Stratify Patients With Child-Turcotte-Pugh Class a Cirrhosis Undergoing Endoscopic Variceal Surveillance in a Multicenter Study

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Introduction: Patients with cirrhosis often undergo repeat endoscopy (EGD) for variceal surveillance even when there are no varices (NV) or only varices not needing treatment (VNNT) on initial screening EGD. This practice exposes patients with compensated cirrhosis to procedural risk and may increase healthcare cost without definite benefit. The EVendo score, validated in 2019, predicts the presence of esophageal varices (EV) and varices needing treatment (VNT) in patients presenting for initial screening EGD. This study aims to extend and validate, in a multicenter patient cohort, the use of the EVendo Score for variceal *surveillance* purposes.
Methods: We performed a retrospective cohort study of outpatients with cirrhosis undergoing variceal surveillance EGD from January 2019 to August 2021 at Olive View UCLA Medical Center, Ronald Reagan UCLA Medical Center, and Greater Los Angeles VA Medical Center. Child-Turcotte-Pugh (CTP) Class A patients without prior variceal hemorrhage or VNT on screening EGD were included. VNT was defined as EV ≥ F2 (medium size) or any EV with high-risk stigmata. Patient data including sex, age, race/ethnicity, etiology of cirrhosis, MELD-Na score, Hgb, platelet count, AST, and BUN were abstracted. EVendo score was then calculated for each patient.
Results: A total of 101 patients were studied. There were 80 patients (79.2%) with NV or VNNT and 31 patients (30.7%) with VNT on surveillance EGD. Patients with NV/VNNT were older than patients with VNT (62.5 [55.5-70] vs 58.5 [47.5-62]) years, p=0.007). There were no statistical differences in sex, race/ethnicity, MELD-Na score, or etiology of cirrhosis between the two groups. Using the original EVendo Score cutoff, 23 patients (22.8%) had a score ≤ 3.90, none of whom had VNT. A total of 78 patients had an EVendo score > 3.90, 20 (25.6%) of whom had VNT. The EVendo Score had a sensitivity of 95.1%, specificity of 35.0%, positive predictive value of 50.0%, and negative predictive value of 91.3% (Table). Use of the EVendo Score would have reduced low-yield surveillance EGDs by 22.8% (23/101).
Conclusion: This study validates the extended use of the EVendo Score to risk stratify CTP A cirrhosis patients referred for EV surveillance and to defer low-yield surveillance EGDs. Similarly, the EVendo Score is a reliable tool to predict whether variceal surveillance EGD would be indicated to identify VNT.

Table 1. **EVendo Score Performance**

Sensitivity	95.1%
Specificity	35.0%
Positive Predictive Value	50.0%
Negative Predictive Value	91.3%

S1418

Exploring the Impact of COVID-19 on Liver Transplant Evaluation

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Introduction: The COVID-19 pandemic resulted in a disruption of healthcare delivery, including services for liver transplant evaluation (LTE) and an increase in alcohol consumption. Our aims were 1) explore the effect of telehealth services on LTE times with a focus on sociodemographic factors and 2) examine the changes in burden of alcohol associated liver disease (ALD) resulting in LTE during COVID-19.
Methods: Single-center retrospective review of patients who began LTE at our center from initiation of shelter-in-place 3/16/2020 to 10/1/2020 and during an identical time the year prior (3/16/2019 to 10/1/2019). Data collected included sociodemographic data, clinical data, encounter type (office, telehealth, inpatient) for LTE, and duration of evaluation.
Results: We noted shorter evaluation times in 106 subjects in 2020 compared to 82 subjects in 2019 (median 12 vs 33 days , p< 0.05) and higher MELD-Na scores in 2020 vs 2019 (median 21 vs 15, p< 0.05). Higher rates of inpatient LTE were noted in 2020 vs 2019 (42.5% vs 24.4%, p< 0.05). Telehealth rates in outpatient LTE were higher in 2020 vs 2019 (60.7% vs 0%, p< 0.05). No differences in time from outpatient LTE to committee review were noted in 2020 vs 2019 (median 32 vs 41 days, p=0.11). A quasi-Poisson multivariable linear regression analysis for time from LTE to committee review showed that Asian race (compared to white) and Medicare(compared to private insurance) were associated with longer time to committee review during COVID-19(p< 0.05) but not pre-COVID. No differences in the proportion of patients with ALD undergoing LTE in 2020 vs 2019 for inpatient or all evaluations noted. ALD was not associated with a difference in median time to committee review or likelihood of liver transplant (LT) in 2020 or 2019.
Conclusion: The COVID-19 period was associated with higher MELD-Na scores and a shorter LTE to committee review time which is explained by increased inpatient evaluations during this period. Under univariate analysis of outpatient encounters, there was no negative impact in time from LTE to committee review with the introduction of telehealth. However, multivariate analysis demonstrated that Asian race and Medicare use was associated with longer time from LTE to committee review during COVID-19, but the effect was not present pre-COVID. The prevalence of ALD remained stable during early COVID-19, and ALD did not impact LTE length or likelihood of LT. Future data is needed to define the impact of COVID-19 and telehealth practices on LTE. (Table)

Table 1. **Liver Transplant Evaluation Data**

Cohort Details	2019	2020	Significance
Median time to committee review all patient (IQR)	33 (11-66)	12 (5-42)	p=0.0026
Median time to committee review outpatient only (IQR)	41 (14-88)	32 (11-69)	NS
Median MELD-Na at evaluation (IQR)	15 (8-23)	21 (11-29)	p=0.0025

Table 1. (*continued*)

Cohort Details	2019	2020	Significance
Encounter Type			p=0.0131*
Office Visit	62 (75.6%)	24 (22.6%)	
Telehealth	0 (0.0%)	37 (34.9%)	
Inpatient	20 (24.4%)	45 (42.5%)	
Race			NS
Asian	11 (13.4%)	13 (12.3%)	
Hispanic	29 (35.3%)	48 (45.3%)	
White	39 (47.6%)	45 (42.5%)	
Other	3 (3.7%)	0 (0.0%)	
Insurance			NS
Medi-Cal	24 (29.3%)	35 (33.0%)	
Medicare	31 (37.8%)	34 (32.1%)	
Other/Government	2 (2.4%)	1 (0.9%)	
Private	25 (30.5%)	36 (34.0%)	
Language			NS
English	61 (74.4%)	78 (73.6%)	
Other	21 (25.6%)	28 (26.4%)	
ALD			NS
No ALD	36 (43.9%)	54 (50.9%)	
ALD	46 (56.1%)	52 (49.1%)	

*Pooled outpatient encounters vs inpatient encounters.

S1419

The Relationship Between Clinical Factors and High Ferritin in Metabolic Surgery Patients With Hepatic Iron Overload

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Introduction: Increased serum ferritin is a commonly used blood test that reflects iron stores including liver iron overload. However, the interpretation of ferritin levels is influenced both by iron stores and inflammation. In patients with obesity, ferritin levels may be elevated with iron overload and with inflammation. This study investigated the clinical factors associated with hyperferritinemia in patients with severe obesity and hepatic iron overload.

Methods: This study included 4359 patients that had a wedge liver biopsy and documented pre-operative serum ferritin at time of primary metabolic surgery between 2004 and 2021. The standard Perls'/Prussian Blue iron stain was used to diagnose hepatic iron overload. Patients with iron deficiency (ferritin< 30 ng/ml) and extremely high ferritin levels (ferritin >1000 ng/ml) were excluded. Elevated ferritin was defined as 300-999 ng/ml in males and 200-999 ng/ml in females. Clinical data collected on each patient included sex, age, BMI, race/ethnicity, smoking, transferrin saturation, diabetes, hypertension, hyperlipidemia, liver steatosis, liver fibrosis, and type of cells involved in liver iron overload. Multiple logistic regression was used to determine which clinical factors were independently associated with elevated ferritin.

Results: The 4351 metabolic surgery patients included 703 (16%) with hepatic iron overload. These 703 patients included 441 (63%) females with a mean age of 47.8 years (SD=10.6), mean BMI of 47.1 kg/m^2 (SD=8.1), and 37% (n=258) with elevated ferritin. The types of cells involved with the liver iron overload included Kupffer (34%), hepatocyte (37%), and both (29%) but cell type was not associated with elevated ferritin (p=0.317). Factors that were independently related to high ferritin included increasing levels of steatosis, increasing level of fibrosis, presence of hypertension, normal transferrin saturation (≥20%), male sex, and age 40-59 years (see Table).

Conclusion: The histopathological and demographic parameters significantly associated with hyperferritinemia in metabolic surgery patients with hepatic iron overload suggest the role of ferritin in clinical evaluation. The results support the potential association of chronic low-grade systemic inflammation with steatosis, fibrosis, and hypertension when differentiating between hyperferritinemia and normal ferritin levels in patients with severe obesity and excess hepatic iron.

Table 1. **Multiple logistic regression for elevated ferritin (versus normal ferritin) within metabolic surgery patients with hepatic parenchymal overload**

	OR	95% CI	p-value
Steatosis			
< 5%	Reference		
5-33%	1.63	[0.98, 2.69]	0.059
34-66%	2.69	[1.44, 5.03]	0.0019
67%+	6.66	[2.43, 18.24]	0.0002
Fibrosis			
Grade 0	Reference		
Grade 1	1.62	[1.06, 2.46]	0.025
Grade 2	2.58	[1.38, 4.81]	0.0029
Hypertension		[1.21, 2.45]	0.0024
Yes	1.72		
No	Reference		
Transferrin Saturation			< 0.0001
≥20%	2.67	[1.64, 4.35]	
< 20%	Reference		
Sex		[1.08, 2.16]	0.016
Male	1.53		
Female	Reference		
Age			
< 40	Reference		
40-59	1.79	[1.17, 2.75]	0.0075
60+	1.35	[0.74, 2.48]	0.328

S1420

Trends in Retail Alcohol Sales and Alcohol-Related Admissions at a Tertiary Medical Center in Pennsylvania During the COVID-19 Pandemic

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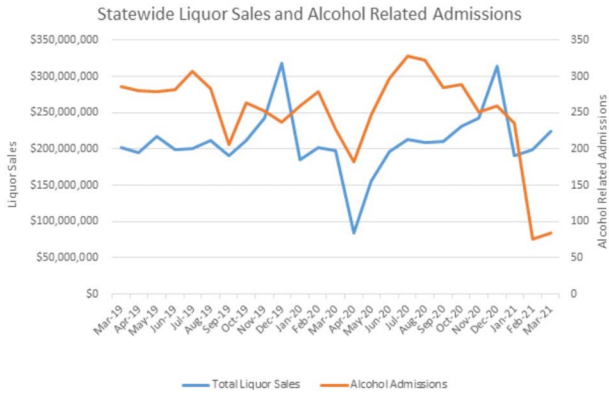
Introduction: Alcohol sales increased nationwide during the pandemic but this trend was reversed in Pennsylvania as state owned liquor stores closed for three months at the beginning of the pandemic. The effect of this change on hospital admissions for alcohol related diagnoses during the height of the pandemic is unknown. Our study aims to characterize the relation between alcohol sales during the early pandemic and the rates of alcohol related admissions compared to the year prior in a rural Pennsylvania area within a tertiary health system.
Methods: This is a retrospective chart review of the Geisinger network hospital admissions for alcohol-related diagnoses using CDC ARDI Alcohol-related ICD-10 codes between March 1, 2019 to February 29, 2020 (Period 1) and March 1, 2020 to March 31, 2021 (Period 2) compared with county-level sales data from the Pennsylvania Liquor Control Board and the Pennsylvania Department of Revenue. The relationship between monthly alcohol related admissions and monthly liquor sales was tested with linear regression models. Differences between male and female mortality between period 1 and period 2 were compared using generalized estimating equations. We also compared in-hospital, 30, 90, and 180 day all -cause mortality between the two periods.
Results: We identified 6297 admissions of 4335 unique patients in the study period. There was no statistically significant association between monthly alcohol- related admissions and alcohol sales ($p = 0.2758$) in the selected study period (Figure). Male mortality during the admission (1.8% vs 1.0%, $p = 0.0299$) and at 30 day post discharge (3.0% vs 2.4%, $p = 0.0306$) were greater in the second period compared to the first. Fewer women died in the second period from March 2020 to March 2021 compared to March 2019 to February 2020 (7.1% vs 10.7%, $p = 0.0002$).
Conclusion: The lack of a significant relationship between alcohol sales and related admissions may be related to fluctuations in the incidence of individual alcohol-related diagnoses or the limitations of using sales as a proxy for consumption. The difference in male vs female mortality between the two periods may be related to higher male mortality from COVID-19 which has been observed worldwide. Further studies are required to assess the impact of COVID-19 on alcohol-specific GI and liver diseases. Although measures restricting alcohol sales have been used to lower the health impact of alcohol, such measures may not be as effective in a setting of COVID-19 pandemic.



[1420] **Figure 1.** There was no association between monthly alcohol related admissions and monthly alcohol sales ($p = 0.2758$) in the period from March 1, 2019 to January 31, 2021. The drastic drop occurring in admissions in April through March 2020 is likely due to the transition of instore sales to online sales and overall decreased admissions at the start of the COVID pandemic.

S1421

The Prevalence and Prognosis of Portal Hypertension Polyposis in a Retrospective Cohort of Patients With Chronic Liver Disease

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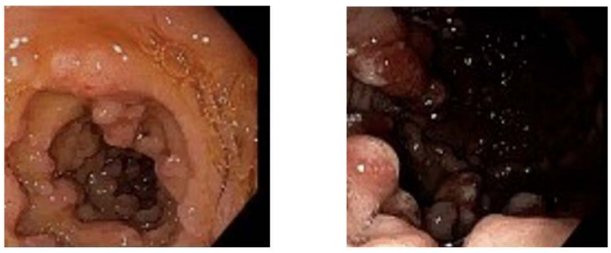
Introduction: Portal hypertension polyposis (PHP) is a condition encountered in advanced liver disease and cirrhosis, characterized by the presence of gastroduodenal polyps and portal hypertension. There are few studies regarding the natural course and prognosis of PHP, in particular in the United States. In one international, retrospective study, PHP was found to be common in patients with advanced fibrosis and was associated with thrombocytopenia, Child-Pugh score >6, MELD score >16, and previous band ligation. However, further studies are needed to understand the clinical implications of PHP in this patient population, including effects on prognosis, and short and long-term outcomes.
Methods: We conducted a retrospective study of 122 patients with PHP between 2008-2019 at a single, academic referral center. PHP was defined as the presence of 1 or more gastroduodenal polyps with either endoscopic, radiographic, or clinical evidence of portal hypertension. Inclusion criteria included patients over 18-years-of-age who underwent upper endoscopy between 2008-2019 with PHP. Exclusion criteria included patients < 18-years-of-age. Clinical and demographic data, including etiology of liver disease, MELD score, complications of cirrhosis, hospitalizations, and mortality, were collected from review of electronic health records (EHR).
Results: In total, 122 patients met the inclusion criteria. The average age was 59.07 +/- 10.67 (range: 21-91) comprising 90 male patients (67.61%). Complications of cirrhosis in this patient population were common and included ascites (80%), splenomegaly (72%), hepatic encephalopathy (56%), and gastroesophageal varices (56%). The most common etiologies of cirrhosis were alcohol (57.25%) and NASH (22.14%) (Table). At the time of diagnosis, the mean MELD score was 15, mean hemoglobin count 10.9 g/dL (SD = 2.45), and mean creatinine 1.23 mg/dL (SD = 1.24). The average number of hospitalizations since diagnosis of PHP was 4. The overall mortality rate was 32%.
Conclusion: Despite the scarcity of studies in the literature, PHP appears to be a common finding in patients with cirrhosis. In this large, retrospective cohort, patients with PHP had moderate MELD scores, with a high rate of complications and mortality. Further studies are needed to determine the prognosis and clinical implications of PHP. (Figure)



[1421] **Figure 1.**

Table 1. **Demographics and Clinical Characteristics**

Variable	Patients with PHP (n=71)
Age (years)	59.07 +/- 10.67 (21-91)
Sex (male/female)	90. (67.61%) / 41 (31.30%)
Race	
White	102 (77.86%)
Black	3 (2.29%)
Hispanic	8 (6.11%)
Asian	7 (5.34%)
Other	5 (3.82%)
Not listed	6 (4.58%)
Comorbidity	
Coronary Artery Disease	27 (20.61%)
Diabetes Mellitus	60 (45.80%)
Hypertension	88 (66.41%)
Chronic Kidney Disease / HD dependent	25 (19.08%) / 8 (6.11%)
Pulmonary Disease on Home Oxygen	1 (0.76%)
Complications of PHP	
Ascites	105 (80.15%)
Encephalopathy	86 (65.65%)
Splenomegaly	95 (72.52%)
Varices	74 (56.49%)
Etiologies of Liver Disease**	
EtOH	75 (57.25%)
NASH	29 (22.14%)
Cryptogenic	6 (4.58%)
Hepatitis	20 (15.27%)
Other	12 (9.16%)
Transplant Recipient	22 (16.92%)
Mortality	39 (29.77%)
Hospitalizations since diagnosis	4.04 +/- 5.23 (0-35)

**14 patients (10.69%) had multiple etiologies for liver disease.

S1422

NASH Clinic; A Multidisciplinary Team Approach to Assess the Efficacy of Diet, Lifestyle and GLP1 Agonists

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Introduction: Non-Alcoholic Steatohepatitis (NASH) is associated with increased morbidity and mortality. In this abstract, we will discuss the impact of a multidisciplinary team approach including diet and Glucagon Like Peptide-1 (GLP-1) agonists on improving comorbidities and NASH.
Methods: This is a retrospective study conducted at a large tertiary care center. Data were collected from 5/2019 to 12/2021 amidst patients with NASH, with or without liver biopsies, who are diagnosed with Type 2 Diabetes Mellitus (DM). Patients were identified at first clinic follow up and at their 12 month follow up after initiation of therapy with GLP-1 agonist, mainly Liraglutide and Simagultide for at least 6 months. Data on baseline characteristics and demographics were collected.
Results: Our study included a total of 28 patients with NASH cirrhosis, only 6 with biopsy proven NASH. Patients had a mean body weight of 115kgs with a mean BMI of 39.78 kg/m^2 at first clinic follow up compared to a mean BMI of 38.25 at the 1 year follow up. All patients followed up with our NASH clinic dietician and were complaint with GLP-1 therapy for at least 6 consecutive months. Patients had a statistically significant ($p< 0.0001$) reduction in A1c (Table). All other laboratory values were not statistically significant, although they were associated with a remarkable decrease at the 1 year follow up. Simaglutide and Liraglutide were compared and there was also no statistical significance associated with the use of either. We performed Subgroup analysis to compare lab values between patients who met 5% weight loss according to BMI and those who did not at 1 year follow up, A1c was again statistically significant among both groups with $P< 0.05$.
Conclusion: Recent studies have indicated that central obesity and insulin resistance are the major factors leading to the development of NASH. It is thought to be related to fat deposition in hepatocytes that will increase insulin resistance. NASH treatment is believed to be multimodal similar to what was applied at our institution, including a combination of lifestyle adjustments and drug therapy for all associated chronic illnesses and comorbidities. In the last few years there have been promising outcomes with the use Glucagon-like peptide-1 (GLP-1) receptor agonists in improving hepatic outcomes in patients with NASH, as they can impact both DM and NASH through their dual effect on glycemic control and weight reduction leading to improved outcomes and slowing the progression of NASH. (Table)

Table 1. **The effect of GLP1 agonist use on A1c values at first visit and 12- month follow up**

		First NASH visit	12-month NASH follow up	Difference (12 month – first NASH)	P-value
A1c	N	28	28	28	< 0.0001
	Mean (s.d.)	7.81 (1.19)	6.72 (0.77)	-1.09 (0.95)	
	Median (IQR)	7.70 [6.85, 8.10]	6.70 [6.20, 7.05]	-0.90 [1.55, -0.30]	

S1423

Liver Abnormalities in Celiac Disease and Response to a Gluten-Free Diet: A Systematic Review and Meta-Analysis

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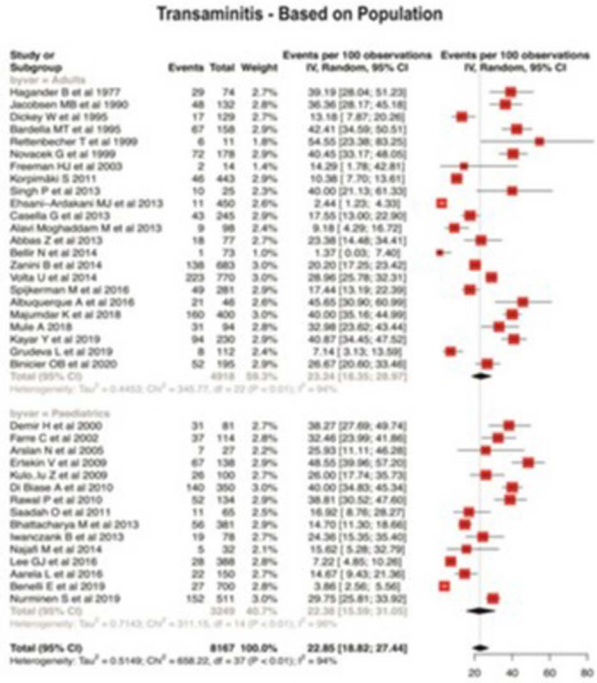
Introduction: Clinical presentation of Celiac's disease (CeD) may vary from asymptomatic to patients presenting with malabsorption, growth impediment, osteoporosis, and iron deficiency anemia. There is a paucity of data on CeD and liver involvement as well as the effect of a gluten free diet on hepatic function.
Methods: We searched PubMed, Medline & Embase databases from inception for studies reporting on CeD and liver abnormalities. Pooled proportion of patients of CeD with deranged transaminases, etiology of liver diseases with CeD, and the response to a gluten free diet in form of normalization of transaminases were estimated using a random effects model. Subgroup and influence analysis based on age group, geographic distribution, and duration of gluten free diet was also performed.
Results: Total 38 studies (8167 patients) were included. The pooled proportion of patients of CeD with elevated transaminases was 22.85% (95% CI: 18.82-27.44, I 2=94%) overall with similar prevalence noted among adults (23.24%) and children (22.38%). The commonest etiology for the liver abnormalities was reported as celiac hepatitis at 49.54% (95% CI: 31.79-67.4, I 2=87%) followed by other liver diseases. Compliance to a gluten free diet was noted in 88.16% of adults and 94.01% of children (overall 90.11%). The proportion of CeD patients with liver abnormalities who showed response to a gluten free diet was 86.83% (95% CI: 82.35-90.31, I2=66%) overall with similar response among adults (86.01%) and pediatric population (89.24%). Western studies reported better response to a gluten free diet at 87.75% compared to the east (78.84%)
Conclusion: Hepatic involvement was noted in 23% of CeD patients. Celiac hepatitis was reported in more than half of affected patients. Patients who had good adherence to a gluten free diet showed good recovery and normalization of liver transaminases.



[1423] **Figure 1.** Forrest plot demonstrating the pooled proportion of celiac disease patients having elevated transaminase levels.

S1424

Porphyrias Are Linked to Primary Liver Cancer, Particularly Hepatocellular Carcinoma: A Systematic Review and Pooled Analysis

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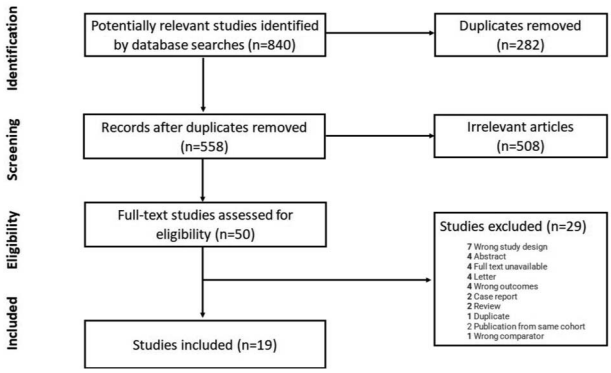
Introduction: Porphyrias are in-born defects in the heme biosynthesis pathway resulting in neurovisceral manifestations, cutaneous photosensitivity, and multi-systemic involvement. Its estimated prevalence nears 5 per 100,000 patients worldwide. Subclinical liver disease is common which carries a risk of malignancy. To this end, we aim to determine the risk of primary liver cancer and hepatocellular carcinoma (HCC) in patients with porphyria.
Methods: We conducted a comprehensive search of several databases, including PubMed, EMBASE, and Web of Science.We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Keywords used in the literature search included "porphyria," "hepatic porphyria," "delta-aminolevulinate-dehydratase deficiency porphyria," "acute intermittent porphyria," "porphyria cutanea tarda," "cirrhosis," "hepatocellular carcinoma," "cancer," "transplant," to identify relevant articles.
Results: In total, 19 studies, which included 7,381 patients with porphyria (3476 females), were considered for the final review. In eight studies, alpha-fetoprotein levels were elevated between 200 and 1000 IU/ml. Elevated urinary delta-aminolevulinic acid dehydratase, prophobilinogen, and other uroporphyrins were observed. Median follow-up time ranged from 3 to 24 years. Of the total cohort of patients with porphyria, primary liver cancer was diagnosed in 351 patients (4.8%), of whom 243 (3.3% of the total) were found to have HCC. A small subset of patients was found to have cholangiocarcinoma (n=18; 0.3% of the total). Interestingly, progression to HCC was seen despite the development of advanced liver disease or cirrhosis. Of the total cohort, 30 patients underwent liver resection, 48 patients underwent liver transplantation, and 327 patients died. Compared to those who did not undergo periodic screening, only four patients (28.6%) underwent tumor resection with a recurrence rate of 75% (n=3/4). (Figure)
Conclusion: Our study revealed that patients with porphyria are at increased risk for the development of primary liver cancer and HCC. Furthermore, we showed that malignancy can occur even in the absence of cirrhosis, supporting the need for appropriate screening. To this end, AFP should be used in conjunction with imaging modalities to screen for liver malignancy as frequently as every 6–12 months. Further studies should aim to develop diagnostic and prognostic models aimed at its early detection.



[1424] **Figure 1.** Flow chart of included studies

S1425

HELLP Syndrome and COVID-19: A Case Report and Literature Review

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Introduction: Liver disease affects approximately 3% of pregnant women and is associated with increased morbidity and mortality. This is worsened by the increased incidence of liver disease in pregnancy with COVID-19 infection. As incidence for these diseases rises, the importance of studying these conditions must also. We present a case of a patient with acute COVID-19 infection and HELLP syndrome as well as a summary of the associated literature. A 26-year-old G1P0 female at 32 weeks gestation with medical history of asthma, obesity, gestational DM, and HTN, presented to the ED for evaluation of general malaise. She had COVID-19 infection 2 weeks prior to presentation with symptoms of fever, chills, and dyspnea. Three days after admission, there was an acute drop in platelets and hemoglobin, elevated LDH, hypertension, and elevated LFTs, highly suggestive of HELLP syndrome. She underwent emergency cesarean delivery with rapid resolution of jaundice and LFT elevation.
Methods: We gathered relevant published articles through a PubMed search from March 2020 to May 2022 using the keywords: HELLP, COVID-19, SARS-CoV-2, liver injury in pregnancy. No case-control or cohort studies on the relationship between COVID-19 and HELLP syndrome identified. A total of 5 similar case reports/ series were identified, compiling a total of 8 peripartum women who developed HELLP syndrome and tested positive for COVID-19. We then performed a literature review of these cases alongside our case.
Results: The age of the patients ranged from 23-41 years (mean 29.2). 5 primigravida patients. The mean gestational age was 30.4 weeks. 6 patients diagnosed with COVID-19 on admission, 3 tested positive prior to admission. 6 patients presented to the hospital within 7 days of symptom onset, 3 within 10 days of symptom onset. Ground-glass opacities seen in 7 patients. 7 patients had undergone emergency cesarean section due to complications of HELLP syndrome. Outcomes included 6 living fetuses, 2 stillborn, 1 IUFD, and 1 maternal fatality. 6 of the patients had postoperative complications, including preeclampsia/eclampsia, hypertensive emergency, AHRF, ARF, acute blood loss anemia, sepsis, and CVA. (Table)
Conclusion: There is a paucity of literature detailing a possible correlation between COVID-19 infection and the development and progression of HELLP syndrome. This case report and review should remain hypothesis-generating and prompt larger, multi-center studies to better describe and elucidate the interplay between these two conditions.

Table 1. Comparison of 9 Cases of COVID-19 and HELLP Syndrome

Cases	Case 1 (our case)	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9
Source		Futterman et al.	Futterman et al.	Madaan et al.	Madaan et al.	Madaan et al.	Norooznezhad et al.	Braga et al.	Mahajan et al.
Patient History									
Age (in years)	26	41	31	32	29	26	24	31	23
Gestation History	G1P0	G9P8L8	G2P1L1	G1P0	G3P2L1D1	G1P0	G1P0	G1P0	G2P1A2
Gestational age at presentation (in weeks)	32	22	29	34	37	39	29	31	21
Chief complaint	malaise	–	–	Myalgia, Jaundice, RUQ discomfort	Fever, pedal edema	RUQ pain, headache	Low platelet count	Myalgia, Jaundice, dark urine, diffuse abdominal discomfort	SOB, palpitations
Days since symptom onset	10	7	7	4	–	2	–	1	3
Past Medical History	Asthma, obesity	None	None	None	None	None	ITP	None	DM1
Pregnancy complications	Gestational DM, Gestational HTN	None	None	None	None	Gestational HTN	None	Twin gestation	Grade 2 placenta previa, oligohydramnios
COVID-19 Status									
Prior COVID diagnosis	Yes, 2 weeks before admission	No	No	No	No	Yes, 2 days back	No	No	Yes, 5 months back
SARS-CoV-2 Test during this admission	Not done	Positive	Positive	Positive	Positive	Not done	Positive	Positive	Not done
Imaging findings on hospital admission	Not done	GGO	Peripheral opacities	GGO	GGO	GGO	GGO	GGO, bilateral pleural effusions	Consolidation
Admission vitals									
Blood pressure (mmHg)	–	99/57	124/83	116/82	144/98	160/100	–	110/60	110/70
	–	–	–	82	88	98	86	–	110

Table 1. (*continued*)

Cases	Case 1 (our case)	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9
Heart Rate (beats per minute)									
Temperature (degrees Fahrenheit)	Afebrile	–	–	Afebrile	101	–	Afebrile	Afebrile	Afebrile
Respiratory rate (breaths per minute)	–	–	–	24	20	–	14	16	–
Oxygen saturation (%)	–	90% on 15 liters NRB	–	–	–	95% on RA	95% on RA	98% on RA	–
Admission labs									
Total white Blood cell count (x10^9/L)	11.6	25.3	5.6	4.9	5.8	6	9.3	17.2	30.7
Hemoglobin (g/dL)	9.2	12.7	14.8	9.3	8.6	10.1	10.4	–	9.2
Hematocrit	27.8	87.4	44.2	–	–	–	31.3	–	–
Platelets	237	48	24	86	81	90	6	218	90
Sodium	139	–	–	134	137	139	–	–	141
Potassium	4.6	–	–	3.6	3.89	4.49	–	–	3.9
BUN	30	42	6	30	39	33	14	–	47
Creatinine	1.3	1.49	0.5	1.4	1	0.9	0.64	2.3	1.1
AST	292	192	43	626	524	589	346	–	546
ALT	425	88	17	228	230	300	477	558	287
Alkaline phosphatase	106	–	–	122	128	134	–	–	119
Total bilirubin	6.3	–	–	8.8	9.9	9.4	–	9.28	5.4
LDH	–	1366	–	2500	2700	3100	971	1000	2051
CRP	–	8.4	–	60	91.7	78.5	30	2.4	–
D-Dimer	–	>35.2	–	5.53	6.62	6.23	–	–	7.94
Ferritin	–	–	–	650	890	734	–	–	–
Prothrombin time (seconds)	15	14.4	12	–	–	–	–	–	–
Partial thromboplastin time (seconds)	31.5	31.5	32.4	–	–	–	–	–	–
International normalized ratio (INR)	1.1	1.35	< 1	–	–	–	–	–	–
Fibrinogen	696	185	97	–	–	–	–	–	–
Urine protein	–	1+	1+	–	–	–	–	0	–
Outcomes									
Fetus status on hospital admission	Fetal heart sounds present, regular	Fetal heart sounds present, regular	Decreased fetal tone	Absent fetal heart sound	Fetal heart sounds present, regular	Fetal heart sounds present, regular	–	Abnormal heart sounds, recurrent late decelerations	Fetal heart sounds present, regular
Days between hospital admission and delivery	3	5	0	0	0	0	9	1	5
Delivery method	Emergency cesarean section	Spontaneous vaginal delivery	Emergency cesarean section	Emergency cesarean section	Normal vaginal delivery	Emergency cesarean section	Emergency cesarean section	Emergency cesarean section	Emergency cesarean section
Fetal outcome	Living	IUFD	Living	Stillborn	Living	Living	Living	Living	Stillborn
Maternal outcome	Living	Living	Living	Living	Living	Living	Living	Living	Deceased
Post-operative complications	Preeclampsia	AHRF, ARF, Sepsis, CVA	Acute blood loss anemia	AHRF on postoperative day 3	Eclampsia, AHRF, Hematuria	None	None	Hypertensive emergency, abdominal wall hematoma, AHRF	Not applicable

SOB= shortness of breath, RUQ= right upper quadrant, ITP= immune thrombocytopenic purpura, DM1= diabetes mellitus type 1, DM= diabetes mellitus, HTN= hypertension, GGO= ground-glass opacities, NRB= nonrebreather mask, RA= room air, BUN= blood urea nitrogen, AST= aspartate aminotransferase, ALT= alanine aminotransferase, LDH= lactate dehydrogenase, CRP= C-reactive peptide, IUFD= intrauterine fetal death, AHRF= acute hypoxic respiratory failure, ARF= acute renal failure, CVA= cerebrovascular accident.

S1426

HIV Infection in African American Patients With HBV Seen in an Urban Medical Center

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Introduction: Hepatitis B virus (HBV) is understudied in the African American (AA) population, a population that has a greater incidence of co-infection with HIV. The objective of this study was to evaluate the differences in pretreatment status and treatment response to HBV anti-viral medications in AA patients with mono-HBV and AA patients with HIV-HBV co-infection.
Methods: Patients with HBV DNA measurement(s) and a minimum of two visits to the university practice clinic before 2021 were identified (n=229). Most of these patients (115) were not on treatment at their earliest visit. The population consisted of 70% AA, 22% Asian/Middle East, and 8% Caucasian individuals. In our study, HIV-HBV patients were on average younger than the mono-HBV patients at first visit (42 vs. 51 years p< 0.0005) and were predominately AA males (98%). In contrast to mono-HBV patients, none of the HIV-HBV patients were Asian. Three groups of AA patients were defined: 1) Mono-HBV not on treatment, 2) Mono-HBV on treatment, and 3) HBV-HIV co-infected on treatment with HBV-specific anti-virals. Statistical analysis was done utilizing t-tests (ANOVA and paired) for continuous variables and mosaic plots with Pearson chi-square analysis for character variables.
Results: In the untreated AA population, 98% (43/44) of HIV-HBV patients had high HBV DNA (>2000 IU/ml) in contrast to 51% (33/64) of mono-HBV patients. Mono-HBV patients who were subsequently treated had high HBV DNA (100%) and were more likely to be HBeAg positive (13/28=54%) as compared to patients who were not treated and were HBeAg negative (39/40=97%). Less than half of HIV-HBV patients were HBeAg positive (35/55=45%), and all were treated. The treatment response is shown in Table. HBV DNA was more likely to decrease in Mono-HBV patients than HIV-HBV patients (30% vs. 12%). As measured by APRI, fibrosis declined significantly with treatment compared to FIB-4, which did not.
Conclusion: In our clinic population, AA HBV patients were more likely to be co-infected with HIV than non-AA patients. Mono-treatment patients were more likely to be treated if they were HBeAg positive and had high HBV DNA than HIV-HBV patients who were more likely to have seroconverted to HBeAg negative. HIV-HBV patients were less likely than mono-HBV patients to have a decline in high HBV viral load but were similar with respect to a reduction in fibrosis as defined by APRI.

Table 1. Change in HBV DNA and Fibrosis with Treatment of AA Patients

HBV DNA	Pre	Post	p-value	Outcome
Mono-HBV Treatment	100%	12%	p=0.001	a decrease in HBV DNA
HIV-HBV Treatment	97%	30%	p=0.001	a decrease in HBV DNA
Mono-HBV Not Treated	20%	15%	p=0.55	no change in HBV DNA
APRI				
Mono-HBV Treatment	0.738	0.238	p= 0.012	reduction in fibrosis
HIV-HBV Treatment	1.107	0.596	p=0.0023	reduction in fibrosis
Mono-HBV Not Treated	0.295	0.228	p=0.076	no change in fibrosis
Fib-4				
Mono-HBV Treatment	1.48	1.17	p=0.237	reduction not significant
HIV-HBV Treatment	2.49	1.92	p=0.17	reduction not significant
Mono-HBV Not Treated	0.868	1.01	p=0.037	increase in fibrosis

S1427

Is Non-Alcoholic Fatty Liver Disease a Risk Factor for Ascending Cholangitis? A National Retrospective Cohort Study

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Introduction: Non-alcoholic fatty liver disease (NAFLD) represents a spectrum of liver disease that ranges from simple fat deposition in the liver, to fibrosis and even decompensated cirrhosis. While studies have suggested a relationship between ascending cholangitis (AC) and NAFLD in patients with choledocholithiasis, the association between NAFLD and ascending cholangitis (AC) independent of choledocholithiasis has not yet been evaluated. This study investigated the association, risk factors and mortality of AC in patients with and without NAFLD.
Methods: We conducted a retrospective study using the National Inpatient Sample (NIS) database, to analyze adult patients (≥18 years of age) with a diagnosis of AC and NAFLD from Jan 1, 2016, to Dec 31, 2019. Patients were split into two cohorts based on the presence or absence of NAFLD. Exclusion criteria included alcoholic or viral liver disease in both cohorts to accurately compare independent effects of NAFLD on AC outcomes. Furthermore, patients were excluded if they had toxic liver disease, biliary cirrhosis, liver infarction, or liver transplant as defined by the International Classification of Diseases tenth edition (ICD-10) coding systems.
Results: A total of 162,110 cases of AC were included in our study. Of these, 0.14% of cases had NAFLD as a comorbid condition after the patient selection process. There was an increased association of NAFLD with AC compared to patients without NAFLD, aOR 2.81 (95% CI [2.51-3.14], P < 0.001). Or study revealed revealed significantly higher mortality among the NAFLD cohort (5% vs. 4%, P = 0.03). There was also a higher association of portal vein thrombosis (aOR 4.17 [95% CI 2.55-6.81], P < 0.001), acute renal failure (aOR 1.83 [95% CI 1.45-2.31], P < 0.001), vasopressor use (aOR 2.11 [95% CI 1.18-3.75], P = 0.01), and mechanical ventilation (aOR 2.14 [95% CI 1.38-3.31], P = 0.001) in NAFLD patients compared to the control. (Table)
Conclusion: We found that patients with NAFLD were at a higher risk of developing ascending cholangitis than patients without NAFLD. Additionally, patients with NAFLD had increased length of stay, mean inpatient cost, medical co-morbidities and acute complications. Given the rising prevalence of NAFLD in the United States, future work should focus on delaying the progression of NAFLD. Reversal of steatosis and fibrosis through newer pharmacotherapy could help prevent future complications such as AC. (Table)

Table 1. Association of acute complications in patients with AC with NAFLD compared to those without NAFLD

Variable	Odds ratio	95% Confidence Interval	p-value
Acute cholecystitis	0.95	0.51-1.76	P = 0.8
Portal vein thrombosis	4.17	2.55-6.81	P < 0.001
Acute biliary pancreatitis	0.59	0.36-0.99	P = 0.04
Acute renal failure	1.83	1.45-2.31	P < 0.001
Sepsis	1.14	0.86-1.51	P = 0.3
Vasopressor use	2.11	1.18-3.75	P = 0.01
Mechanical ventilation	2.14	1.38-3.31	P = 0.001
ERCP	0.48	0.38-0.60	P < 0.001
Percutaneous Cholecystostomy Tube	0.44	0.20-0.99	P = 0.04

S1428

Outcomes of Pyogenic Liver Abscess (PLA) on Mortality and Hospitalization Cost Amongst Patients With History of Alcohol Use Disorder (AUD): Retrospective Study Using NIS (2016 – 2019)

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Introduction: Liver is the most common site for intra-abdominal abscess. Pyogenic liver abscess is more common in men compared to women. Risk factors include diabetes mellitus and chronic hepatobiliary disease. Alcohol abuse is known to cause bone marrow suppression and compromised immune system. Limited data are available regarding clinical outcomes in patients with history of alcohol use disorder who are admitted with pyogenic liver abscess.
Methods: Using National Inpatient Sample databases from 2016 to 2019. We identified patients presenting with pyogenic liver abscess, the population were then divided based on the presence and absence of alcohol use disorder using appropriate ICD-10-CM/PCS codes. STATA 16.0 software was used for the analysis. Pearson's Chi-Square test was used to analyze categorical variable, whereas the student t-test was used to analyze continuous variables. Univariate and multivariate logistic regression was used to adjust for potential confounders. Primary outcome was in hospital mortality due to Pyogenic liver abscess in patients with alcohol use disorder.
Results: Amongst total of 19,830 patients admitted with pyogenic liver abscess, 1,090 patients had history of alcohol use disorder and 18,740 patients did not. Both groups consisted predominantly of white male patients. Mean LOS was higher in alcohol use disorder group (8±6.08 days) than in non-alcohol use disorder group (7.35±6.34 days) (P=< 0.001). Mean total hospitalization charges were higher in AUD group ($ 20,968) than in the non-AUD group ($ 18,994) (P= < 0.001)
Conclusion: Patient with Pyogenic liver abscess with alcohol use disorder history had higher resource utilization, but less odds of mortality. (Table)

Table 1. **In-patient outcome comparison of patients with history of alcohol use disorder presenting with pyogenic liver abscess**

	PLA WITH AUD, N(%)	PLA WITHOUT AUD, N(%)	P value
Total	1090(8.92)	18740(91.07)	
Primary Outcome	OR	95 CI	P value
Mortality	0.511	0.067 - 3.86	< 0.001
Secondary Outcomes	Mean	Mean	P value
LOS(days)	8+/-6.08	7.35+/-6.34	< 0.001
Charges(US$)	20968	18994	< 0.001
Demographics			
Mean Age	57.65+/- 11.45	61.47+/-15.65	
Female(%)	205(18.81)	7404(41)	

S1429

Outcomes of Pyogenic Liver Abscess (PLA) on Mortality and Hospitalization Cost Amongst Patients With and Without Cirrhosis: 4-Year Retrospective Study Using National Inpatient Sample (2016 – 2019)

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Introduction: Liver abscesses are the most common type of intra-abdominal abscess. Risk factors for developing pyogenic liver abscess include diabetes mellitus, chronic hepatobiliary disease. Limited data is available comparing the clinical outcomes in cirrhotic patients who develop pyogenic liver abscess.
Methods: Using National Inpatient Sample databases from 2016 to 2019, we identified patients presenting with pyogenic liver abscess, the population were then divided based on the presence and absence of cirrhosis using appropriate ICD-10-CM/PCS codes. STATA 17.0 software was used for the analysis. Pearson's Chi-Square test was used to analyze categorical variable, whereas the student t-test was used to analyze continuous variables. Univariate and multivariate logistic regression was used to adjust for potential confounders. Primary outcome was in hospital mortality due to Pyogenic liver abscess in patients with cirrhosis vs without cirrhosis.
Results: Amongst total of 19,830 patients admitted with pyogenic liver abscess, 1,770 patients had cirrhosis and 18,060 patients did not. Both groups consisted predominantly of white male patients. Mean LOS was 9.47+- 8.17 days in cirrhotic group and 7.18 +- 6.08 in non-cirrhotic group. This difference was statistically significant. Mean total hospitalization charges were $26,845 and $18,347 in the cirrhotic and non-cirrhotic groups respectively. There was no difference in the in-hospital mortality between the groups. (Table)
Conclusion: Compared to those without cirrhosis, patients with cirrhosis who are admitted with pyogenic liver abscess showed had higher hospital resource utilization in terms of lenght of stay and charges. Though Mortality was higher in PLA with cirrhosis group, the result was not statistically significant

Table 1. **In-patient outcome comparison of cirrhotic patients presenting with pyogenic liver abscess**

	PLA with cirrhosis, N(%)	PLA without Cirrhosis, N(%)	P value
Total	1770(8.92)	18060(91.70)	
Mean age (Years)	60.93±14.23	61.30±15.59	
Female(%)	724(40.9)	7404(41)	0.946
Primary Outcome	Odds Ratio	95% Confidence Interval	P value
Mortality(%)	1.673	0.213-13.088	0.624
Secondary Outcomes	Mean	Mean	P Value
Lenght of stay(days)	9.47+/-8.17	7.18+/-6.08	< 0.001
Charges (US$)	26845	18347	< 0.001

S1430

Nonalcoholic Fatty Liver Disease and Risk of Cardiovascular Diseases Among Persons With HIV: A Large Multicenter Study

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Introduction: The prevalence of NAFLD may be as high as 40% among persons living with the human immunodeficiency virus (PLWH). Notably, Cardiovascular disease (CVDs) is an increasing concern among PLWH. However, the association of NAFLD with the risk of CVDs is unknown, and particularly, the relationship between NAFLD and CVD among PLWH has not been well elucidated. This study aimed to explore CVD events among PLWH with NAFLD compared to PLWH without NAFLD.
Methods: This population-based, multicenter, retrospective cohort study was conducted using the TriNetX platform. All adult patients(>18 years) with HIV were identified, and among these, patients diagnosed with NAFLD were identified after excluding other chronic liver disease etiologies and included as the main group, and patients without NAFLD were included as controls (Non-NAFLD). We performed a 1:1 propensity score matching (PSM) for demographics, BMI, and comorbidities. The main outcome was major CVD events. Hazard ratio (HR) was calculated to compare the association of NAFLD with CVD outcomes.
Results: A total of 151,868 PLWH were identified. Among these, 4,969 patients had NAFLD, and 146,899 patients without NAFLD were included in the control group. After PSM, PLWH with NAFLD and without NAFLD (4,463 patients) were well matched. The majority of the patients were men (60%) and White(70.1%) in both groups. Patients with NAFLD were more likely to have more comorbidities such as diabetes, hypertension, chronic respiratory disease, hypothyroidism, CKD, sleep apnea, and hyperlipidemia than the controls. In adjusted analysis (Table), the risk of ischemic heart disease (HR 2.14, 1.58-2.90), acute myocardial infarction (HR 1.80, 95% CI 1.01-3.20), heart failure (HR 3.53, 95% CI 2.13-5.87), atherosclerosis (HR 1.96, 95% CI 1.12-3.45), composite myocardial infarction (HR 1.80, 95% CI 1.01-3.20), cerebrovascular disease (HR 1.85,95% CI 1.11-3.10), stroke (HR 1.87,95% CI 1.31-2.70), arterial fibrillation (HR 2.25,95% CI 1.39-3.63), and coronary artery disease-related procedures (HR 1.89,95% CI 1.69-2.13) was significantly higher for patients with NAFLD than for patients without NAFLD
Conclusion: In this large, propensity score-matched multicenter study, CVD was independently associated with prevalent NAFLD after controlling for traditional CVD risk factors in PLWH compared to those without NAFLD. NAFLD is common in PLWH and is associated with increased CV risk as in the general population

Table 1. Incidence of cardiovascular diseases in patients with and without NAFLD among PLWH after propensity matching

Cardiovascular Outcomes	With NAFLD (N=4463), n (%)	Without NAFLD (N=4463), n (%)	Hazard ratio (95% CI)
IHD	135(3.02%)	60 (1.3%)	2.14(1.58-2.90)
HF	70(1.56%)	19(0.42%)	3.53(2.13-5.87)
Atherosclerosis	38(0.85%)	18(0.40%)	1.96(1.12-3.45)
AMI	34(0.76%)	18(0.40%)	1.80(1.01-3.20)
Composite MI*	43(0.96%)	22(0.49%)	1.85(1.11-3.10)
Cerebrovascular disease	134(3.0%)	59(1.32%)	2.19(1.61-2.97)
Stroke	88(1.97%)	45(1.0%)	1.87(1.31-2.70)
AF	56(1.25%)	24(0.53%)	2.25(1.39-3.63)
Composite Coronary artery procedures and surgeries	811(18.1%)	451(10.15)	1.89(1.69-2.13)

Abbreviations: IHD, ischemic heart disease; HF, heart failure; AMI, acute myocardial infarction; MI, myocardial infarction; AF, atrial fibrillation.
*Composite MI was defined based on the Non–ST-segment elevation myocardial infarction, ST-segment elevation myocardial infarction, myocardial infarction type 1, type 2, and type 3.

S1431

Hepatitis B Vaccination Rates in Ambulatory Patients With Chronic Liver Disease Before and After the Onset of the COVID-19 Pandemic

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Introduction: Hepatitis B (HBV) is one of the most prevalent infectious diseases worldwide. It is preventable with vaccination and experts recommend screening for HBV immunity in all patients with chronic liver disease. The 2019 novel coronavirus (COVID-19) pandemic disrupted ambulatory care clinics throughout the United States, interfering with normal vaccination screening and administration. In the subsequent years after the pandemic began, clinicians and patients alike have had to play catch up on healthcare maintenance. This study was done to determine if the rate of screening and vaccination of patients with chronic liver disease for Hepatitis B changed in the subsequent years after the onset of the COVID-19 pandemic at our single institution.
Methods: A retrospective study was performed from January 2000 to January 2019 and from February 2022 to April 2022 on patients seen in the ambulatory clinic of our community-based hospital. The criteria to be vaccinated for Hepatitis B was patients with chronic liver disease (defined as cirrhosis, nonalcoholic fatty liver disease, alcoholic liver disease, autoimmune hepatitis, and transaminitis (ALT or AST >2x ULN) not immune to HBV. Seven-hundred-and-ninety patients were selected from the first period and eighty-six patients were selected from the second period.
Results: We found that there were increases in the rate of screening for HBV immunity as well as the rate of vaccination against HBV in the post-COVID onset years compared to the pre-COVID onset years. (Table)
Conclusion: We believe that the increases in both screening rates and subsequent vaccination are due to both patient and physician driven motives. Our patients are requesting re-evaluation of vaccination history with increased compliance in vaccination course. We have also noticed a more thorough review of patient history by our physicians, focusing on what was missed during the years since the onset of the pandemic. Further studies qualifying these observations are underway, however, we believe it is important to present these results now to demonstrate that we can continue to improve the care we provide in the outpatient setting despite the pandemic. In fact, the COVID-19 pandemic itself may have improved the overall care we provide for patients.

Table 1. Rates of Screening and Subsequent Vaccination Against Hepatitis B Virus in Patients With Chronic Liver Disease Before and After the Onset of COVID-19

	Pre-COVID Onset	Post-COVID Onset	Percent Change
Screening for HBV Immunity	88.5%	94.2%	+6.4%
Rate of 1st HBV Vaccine Given	46.1%	63.5%	+37.7%
Rate of 2nd HBV Vaccine Given	37.5%	48.3%	+28.8%
Rate of 3rd HBV Vaccine Given	27.5%	28.8%	+4.7%

S1432

How Common Is Type 2 Diabetes Mellitus and Nonalcoholic Fatty Liver Disease in Patients With Primary Biliary Cholangitis

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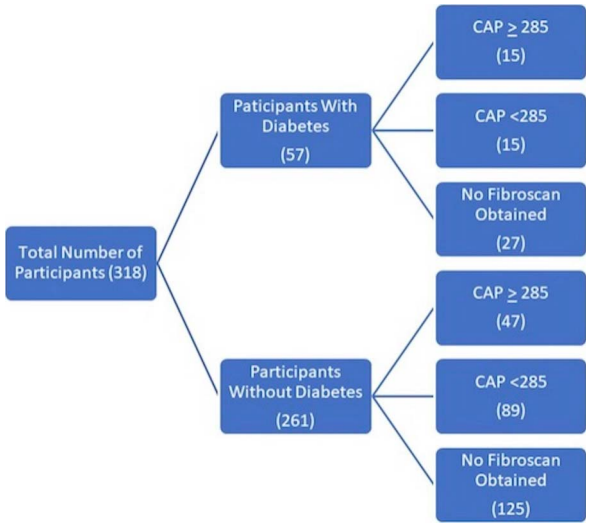
Introduction: Some studies report a higher prevalence rate of type 2 diabetes mellitus (T2DM) in patients with primary biliary cholangitis (PBC). The presence of T2DM was also associated with more severe fibrosis. In this study, we examined the prevalence of T2DM and nonalcoholic fatty liver disease (NAFLD) as well as the severity of hepatic fibrosis in patients with PBC in those who underwent vibration-controlled transient elastography by FibroScan.

Methods: An IRB approved protocol allowed us to identify patients with ICD9 or ICD 10 diagnosis code for PBC. Individual chart review was performed, and 318 patients met the AASLD criteria for the diagnosis of PBC with a median duration of follow-up of 3.9 years. Patients who underwent liver transplant within 6 months of initial visit were excluded from the current analysis. In addition to study demographics, these individuals were also evaluated for the presence of T2DM, defined as a hemoglobin A1c ≥ 6.5% or use of anti-diabetic drugs anytime during the study duration. NAFLD was identified based on the presence of controlled attenuation parameter (CAP) ≥ 285 dB/m. Student t-test and chi squared analyses were performed to examine the differences between the groups.
Results: The prevalence of T2DM was 17.9% in our study cohort. 52.2% of the study population had a FibroScan performed and 37.3% of them met criteria for NAFLD (Figure). Individuals with PBC and T2DM had significantly higher CAP values than those with PBC alone (mean CAP 292.5 vs. 263.8 dB/m, p = 0.013). A greater proportion of the population with PBC and T2DM versus those with PBC alone was noted to have a liver stiffness measurement (LSM) ≥ 8.5 kPa (80.6% vs. 46.4%, p ≤ 0.001) (Table).
Conclusion: The results suggest that about one in five patients with PBC have concomitant T2DM. PBC patients with T2DM have an increased prevalence of NAFLD and clinically significant fibrosis as evidenced by a higher proportion with LSM ≥ 8.5 kPa.



[1432] **Figure 1.**

Table 1.

	Whole Cohort, n=318 Mean (SD) / n (%)	PBC with T2DM, n=57 Mean (SD) / n (%)	PBC without T2DM, n=261 Mean (SD) / n (%)	P Value*
Age on Initial Visit (years)	59.2 (11.5)	57.7 (9.6)	59.5 (11.8)	0.273
Sex				0.755
Male	30 (9.4)	6 (10.5)	24 (9.2)	
Female	288 (90.6)	51 (89.5)	237 (90.8)	
Race				< 0.001
White	282 (88.7)	43 (75.4)	239 (91.6)	
African American	15 (4.7)	9 (15.8)	15 (2.3)	
Asian	6 (1.9)	1 (1.8)	6 (1.9)	
Native Hawaiian or Pacific Islander	2 (0.6)	0 (0)	2 (0.8)	
Unknown	13 (4.1)	4 (7)	13 (3.4)	
Body Mass Index (kg/m^2)	29.5 (6.7)	33.3 (7.7)	28.7 (6.2)	< 0.001
≤ 18.5	3 (1.1)	0 (0)	3 (1.3)	0.014
18.5 - 24.9	70 (24.9)	5 (10)	65 (28.1)	
25 - 29.9	94 (33.5)	16 (32)	78 (33.8)	
≥ 30	114 (40.6)	29 (58)	85 (36.8)	
Hypertension	160 (50.3)	41 (71.9)	11 (45.6)	< 0.001
Albumin (g/dl)	3.8 (0.6)	3.8 (0.6)	3.8 (0.5)	0.393
Total Bilirubin (mg/dl)	1.3 (2.4)	1.4 (3.0)	1.3 (2.2)	0.735
Alkaline Phosphatase (U/L)	266.3 (255.5)	247.8 (149.4)	270.5 (273.8)	0.274
AST (U/L)	53.8 (45.8)	44.4 (21.4)	55.9 (49.4)	0.004
ALT (U/L)	54.3 (51.2)	47.6 (31.9)	55.8 (54.5)	0.140
GGT (U/L)	321.33 (349.4)	451.09 (332.8)	300.34 (349.8)	0.093
INR	1.1 (0.2)	1.1 (0.2)	1.1 (0.2)	0.453
Platelets (k/cumm)	225.9 (92.1)	231.4 (105.3)	224.6 (89.0)	0.317
Hemoglobin A1c (%)	5.8 (1.3)	6.8 (1.7)	5.3 (0.5)	< 0.001
CAP (dB/m)	269 (57.4)	292.5 (61.3)	263.8 (55.4)	0.013

Table 1. (*continued*)

	Whole Cohort, n=318 Mean (SD) / n (%)	PBC with T2DM, n=57 Mean (SD) / n (%)	PBC without T2DM, n=261 Mean (SD) / n (%)	P Value*
LSM (kPa)	15.0 (28.8)	14.0 (9.9)	15.2 (31.5)	0.834
< 8.5	80 (47.3)	6 (19.4)	74 (53.6)	< 0.001
≥ 8.5	89 (52.7)	25 (80.6)	64 (46.4)	

*Based on chi-square test for categorical data and independent sample t-test for continuous data.

S1433

Improving Procedural Graduate Medical Education for Internal Medicine Residents: Increasing Resident Participation and Comfort with Bedside Paracentesis

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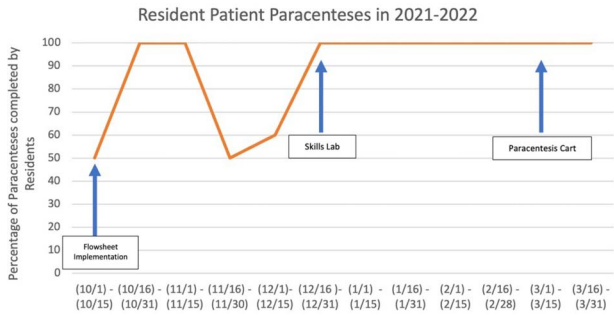
Introduction: Graduate medical education has been seeking to improve procedural education for internal medicine residents for many years. There has been a decline in the number of procedures performed and the comfort level for internal medicine residents and hospitalists over the past 30 years, with the American Board for Internal Medicine no longer requires procedural competency. At Inova Fairfax Medical Campus, bedside procedures are often outsourced to other non-resident procedure teams, especially advanced practice providers. Evidence suggests more procedural experience is associated with reduced complications and increased procedural competency.
Methods: Data from paracenteses performed by both medical residents and advanced practice providers (APP) were analyzed using chart review and online data gathering tools from October to March to determine the number of procedures performed on resident patients by APP's. Interventions included a procedure workshop and introduction of a paracentesis cart with data analyzed before and after interventions.
Results: Using the online data gathering tools, we successfully collected data on all paracenteses performed on resident patients between October and March in the current and previous academic year. In the 6-month period and with each PDSA cycle, there was in increase in the percentage of paracenteses for resident patients performed by residents. After our first PDSA cycle of flowsheet implementation, there was still fluctuation in the percentage of paracenteses. However, after the skills session and finally the implementation of the paracentesis cart, we have shown a consistent 100 percent rate of paracenteses completed by residents. Compared to the prior year, there was more consistency in achieving a high percentage of resident completed paracenteses. (Figure)
Conclusion: Residency is an important step in a physician's training and for internal medicine residents, becoming adept in certain procedures is a skill that can be utilized for the rest of their professional careers. By utilizing a simplified flowsheet, as well as introducing a paracentesis cart and providing skills training workshops, we have successfully increased the percentage of resident-performed paracenteses. Further steps may include creating a specific resident-run procedure team, as well as flowsheet/training for other bedside procedures including central lines, thoracentesis, and lumbar punctures.



[1433] **Figure.1.** Timeline of interventions during analyzed period for resident performed paracenteses

S1434

Online Resources for Hepatic Encephalopathy Treatment Are Lacking in Information for Caregivers

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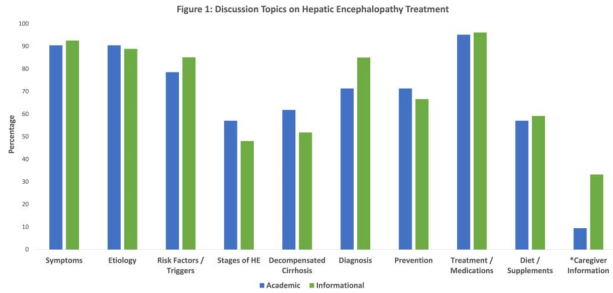
Introduction: Hepatic encephalopathy (HE) is a common and oftentimes challenging complication in patients with liver disease. There are a wide variety of online resources on the management of HE for patients and their caregivers to access. This study sought to analyze the quality and content of online information related to HE treatment.
Methods: Google search engine was used to query "hepatic encephalopathy treatment" to access the first 100 websites. Websites that were non-accessible, duplicates, videos without transcripts or about animals were excluded. Websites were categorized as academic/professional, informational, personal/blog or commercial. Discussion of pertinent topics related to HE treatment was reviewed. Discussion of shared decision making and quality of life was noted. Statistical analysis was performed using two-tailed Fisher exact testing with significance set at $p < 0.05$.
Results: Seventy of 100 websites met the inclusion criteria. 42(60.0%) were academic, 27(38.6%) informational and 1(1.4%) commercial. There were no personal/blog websites. HE symptoms were discussed in 64(91.4%) websites, etiology in 63(90.0%), risk factors/triggers in 57(81.4%), stages of HE in 38(54.3%), decompensated cirrhosis in 40(57.1%), diagnosis in 53(75.7%), prevention in 49(70.0%), treatment/medications in 67(95.7%), diet/supplements in 40(57.1%) and caregiver information in 13(18.6%). Information for caregivers was discussed significantly more in informational websites than in academic (33.3% vs 9.5%; $p=0.025$). There was no significant difference in discussion of other topics between the two categories. Shared decision making was noted in 16(18.6%) of websites with significantly more discussion among informational resources (40.7% vs 11.9%; $p=0.008$). Quality of life was noted in 28(40.0%) of websites with no significant difference between categories.
Conclusion: Our study showed that both academic and informational websites cover topics pertinent to the treatment of HE but that only one-fifth of resources discussed information for caregivers. Given that patients with HE are often reliant on others for their care, a lack of caregiver resources presents as an area to improve quality of life for this patient population. Similarly, few articles stressed the importance of the patient-provider relationship, which is particularly important in HE treatment. Overall, online resources for HE treatment must be comprehensive but also inclusive of caregivers and encourage discussion with medical providers. (Figure)



[1434] **Figure 1.** Discussion Topics on Hepatic Encephalopathy Treatment (* denotes a statistically significant difference in discussion of topic among website categories)

S1435

Increasing Hepatitis C Virus Screening Across Inner City Community Clinics: A Quality Improvement Project

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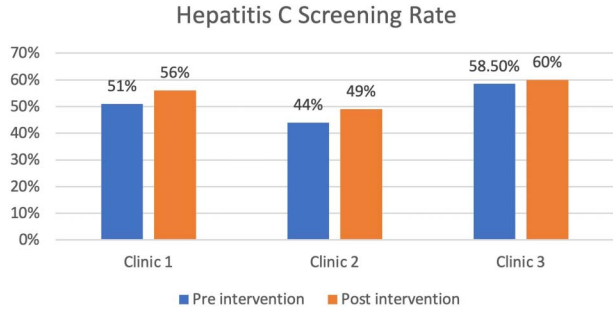
Introduction: Hepatitis C virus (HCV) infection is a chronic infection in the majority of patients, with important sequelae including the development of cirrhosis and hepatocellular carcinoma (HCC). HCV treatments are effective at reducing cirrhosis and HCC rates, but an estimated 51% of those infected with HCV are not aware of the diagnosis. The United States Preventive Services Task force (USPSTF) changed its HCV screening guidelines in 2020 to expand eligibility for screening to all those aged 18 to 79 years. We conducted a quality improvement (QI) project at three federally-funded primary care clinic sites in New York City, to raise awareness of the change in USPSTF guidelines and to improve screening rates.
Methods: We utilized the Plan-Do-Study-Act (PDSA) QI methodology for this project. We gathered pre-intervention data on which patients had a HCV screening antibody test logged in the electronic medical record, stratified by clinic site. Surveys were sent out to resident physicians to assess awareness of HCV presentation, treatment and screening guidelines. We deployed tailored interventions aimed at increasing awareness among both providers and patients at each site, including regular educational sessions for staff, informational posters in waiting areas, and reminders in consultation rooms. Interventions were implemented throughout the six-month period from August 2021 to January 2022. We gathered post-intervention data at 3 and 6 months to examine changes in screening rates.
Results: Pre-intervention, we found that HCV screening rates were moderate at all sites: 51% of adults at Clinic 1, 44% at Clinic 2, and 58.5% at Clinic 3 had at least one HCV antibody screen on record as of July 2021. However, 55% of residents surveyed were not aware of the recent changes in USPSTF guidelines. After implementation of the interventions described above, screening rates had increased to 56% at Clinic 1, 49% at Clinic 2 and 60% at Clinic 3 by February 2022. (Figure)
Conclusion: HCV screening rates at our sites, serving primarily underinsured patients in New York City, were higher than the 8-18% national average estimated by the USPSTF. Intensive education about screening guidelines to providers and patients was moderately effective at increasing screening rates at all three sites, though with variation in effect size. PDSA cycles continue, with interventions including altering workflow and daily reminders for providers. Further work is underway to understand reasons for lack of screening uptake.



[1435] **Figure 1.** Bar chart showing pre- and post-intervention HCV screening rates.

S1436

Hepatic Steatosis and Fibrosis in Patients With Gout Detected by Elastography

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Introduction: Gout is associated with non-alcoholic fatty liver disease (NAFLD), but neither the frequency nor severity of NAFLD in gout is well described. Elastography is a well-established ultrasonic method to evaluate both steatosis and fibrosis in the liver but has not been applied to evaluate gout patients.
Methods: We employed the FibroScan to evaluate patients with advanced gout at one center from 11/1/2016-11/12021. We assessed the Fibrosis score (kPA), which measures liver stiffness (E score), and the controlled attenuation parameter dB/m (CAP) score, which measures steatosis. In addition, we assessed the four-factor fibrosis (FIB-4) Index formula.
Results: 47 gout patients (7 females, 14.9%; 40 males, 85.1%) were evaluated. The mean age was 59.8 years and the mean BMI was 30.95 kg/m2. Tophi were present in 11. Disease duration ranged from 0-49 years. Comorbidities included: dyslipidemia (86.7%), DM (31.1%), HTN (63.6%), CHF (12.8%), CAD (12.8%), CKD (19.15%), known liver disease (33.3%) and current alcohol use (46.8%). 53.7% had hyperuricemia and 54.4% had elevations in ALT/AST. Hepatic steatosis was found in 40 (85.1%), but was not significantly different in males or females ($p=0.37$) or those with CHF ($p=0.87$), CAD ($p=0.94$), HTN ($p=0.17$), DM ($p=0.68$), dyslipidemia ($p=0.59$) or the presence of known liver diseases ($p=0.37$). CAP was correlated with BMI ($r=0.53$, $p=0.0001$) but not age, serum urate (SU), glucose, triglycerides (TGs), ALT, AST, FIB-4, or Fibrosis scores. By Fibroscan, 9 (19.1%) had evidence of fibrosis (E score >7), including one with moderate and 8 with severe fibrosis (cirrhosis). Moderate or severe fibrosis was significantly associated with age ($p=0.03$), known liver disease ($p=0.003$), but not ancestry, gender, BMI, TGs, HDL, glucose, gout duration, CHF, CAD, HTN, dyslipidemia, or DM. SU was comparable in those with or without moderate or severe fibrosis ($p=0.24$). The Fib-4 score was significantly greater in those with severe or moderate fibrosis (3.77) versus those with no or mild fibrosis (1.59, $p=0.0045$). There was a significant correlation between the Fibrosis score and FIB-4 score ($r2=0.24$, $p=0.0009$), but not between the Fibrosis score and ALT ($p=0.44$) or AST($p=0.41$).
Conclusion: Hepatic steatosis and fibrosis are common in patients with gout, but not associated with typical gout co-morbidities. Screening for NAFLD with elastography should establish the actual frequency of NAFLD in gout and provide a means to manage this co-morbidity more effectively.

S1437

Harnessing EHR to Improve Care of Patients With Cirrhosis

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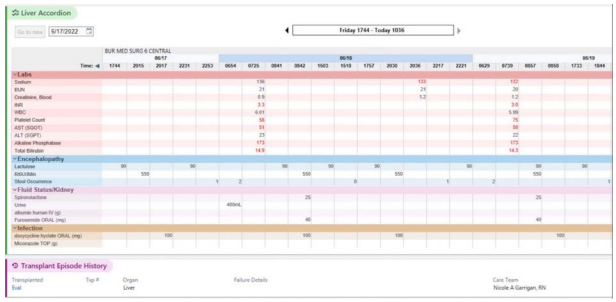
Introduction: There is an increasing prevalence of patients with decompensated cirrhosis. These patients have a high rate of admission, with over one third readmitted within thirty days. Ultimately, the burden of this chronic illness impedes patients' quality of life and has an enormous economic impact on the healthcare system. Due to their complex care it is challenging to transition care from inpatient to outpatient management, and if they are being managed by a non-hepatology service, it is likely that not all treatment guidelines are followed. Recent evidence suggests utilization of electronic health records (EHR) leads to improved guideline directed care and coordination. The aim of this project was to utilize the electronic health record (EHR) to improve the coordination, efficiency, and quality of inpatient cirrhosis management.
Methods: This project took place in a single tertiary liver transplant center. A group of stakeholders was formed from internal medicine residents, the hepatology and transplant team, and informatics team. Based on patients being managed, ideas were generated that were subsequently plotted on an impact effort matrix. This helped the team determine direction of EHR intervention.
Results: The "Liver Accordion" (Figure) was designed to eliminate steps of the workflow and compile necessary temporal information related to patients with cirrhosis or those transplanted for cirrhosis in one view. For example, a patient with a history of decompensated cirrhosis with history of hepatic encephalopathy and an acute kidney injury. The flow sheet would compile the number of recorded bowel movements and the amount of lactulose ordered and received, amount of albumin given, and if their beta blocker and diuretics were held. It also aims to coordinate inpatient care cognizant of their overall care by pulling information regarding patient's last hepatology appointment, endoscopy screening, or hepatocellular carcinoma screening in a separate tab linked below.
Conclusion: The objective of our solution was to develop and implement a temporal data view in the institution's EHR to allow clinicians to quickly formulate a clinical picture of the patient and thereby track and manage patient's disease. This will improve care coordination and workflow. Moreover, if adopted by hospitalist teams not trained in managing cirrhosis, patients will not miss recommended treatment. This project offers a novel EHR tool that can be easily adopted and implemented to change clinical practice.



[1437] **Figure 1.** Example of Liver Accordion in a patient being managed for hepatic encephalopathy

S1438

Incidence and Early Detection of Patients With Nonalcoholic Fatty Liver Disease: A QI Project

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Introduction: Non-Alcoholic Fatty liver disease (NAFLD) is under-recognized in Primary care clinics. Early diagnosis in Primary care clinics is essential to help understand the magnitude of the burden and initiate measures to prevent its silent progression. With the rising incidence of NAFLD, it will soon become a major health care burden in the future. We aim to establish a screening algorithm for early detection of NAFLD and educate patients on primary preventive measures to avoid the development of cirrhosis from fatty liver.
Methods: We created an algorithm that was tested in a cohort of patients recruited from the primary care center. Inclusion criteria: Presence of established Type two diabetes Mellitus (T2DM),Components of metabolic syndrome like BMI >27, CAD and dyslipidemia etc, Elevated Liver Enzymes or history of fatty liver by any imaging modality. Exclusion criteria : Alcoholics, known liver disease from other causes. Clinical and demographic data collected were age, sex, BMI, comorbidities, and lab results to calculate Fibrosis-4 and AST to Platelet Ratio Index (APRI) Scores. Patients with FIB-4 score greater than 1.45 and APRI score greater than 0.7 were instructed to get Fibroscan.
Results: Between August 2020 and October 2021, 203 patients were screened in the primary care clinic for NAFLD. A total of 51 patients met the inclusion and exclusion criteria. A total of 7 people (13%) had insufficient data. The median age in our study was 60 years. In terms of comorbidities, 52 % had T2DM, 77 % had hypertension, 52 % had hyperlipidemia, and the median for the BMI over 30.9. 9% had APRI score between 0.7 and 0.99, and 16% had an APRI score of > 1. 34% of our patients had their FIB-4 index between 1.45 and 3.25 and the remaining 16% had a FIB-4 index more than 3.25. A total of 26 patients had a Fibroscan to determine the stage. The Kpa ranges between 5.3-7.2 and the CPA ranges between 246 and 361 dB/m. Patients with high APRI and FIB-4 score and abnormal fibroscan results are referred to Liver clinic for further management. (Figure)
Conclusion: This study demonstrates that a stepwise prospective application of an algorithm using inclusion and exclusion criteria in clinical practice settings can lead to the early identification of patients with NAFLD. Increasing awareness among health care providers to implement screening strategies in Clinics is necessary. Further studies on implementation in larger size populations are needed along with education and long-term management of these patients. (Table)

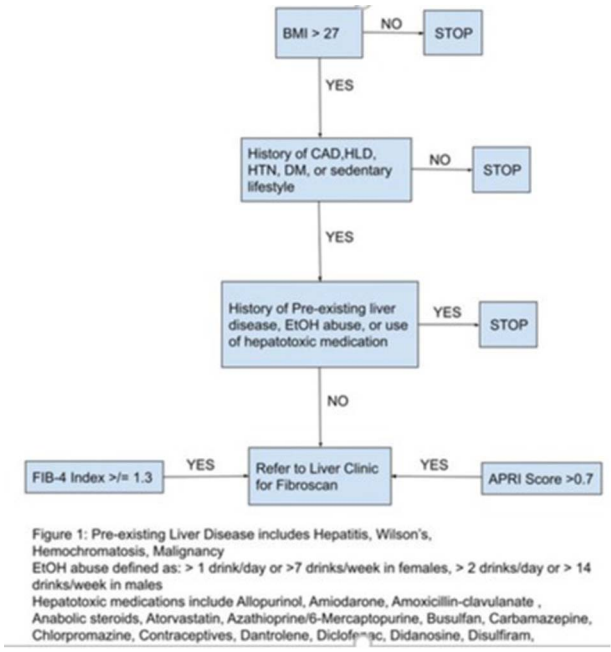

Figure 1: Pre-existing Liver Disease includes Hepatitis, Wilson's, Hemochromatosis, Malignancy
EtOH abuse defined as: > 1 drink/day or >7 drinks/week in females, > 2 drinks/day or > 14 drinks/week in males
Hepatotoxic medications include Allopurinol, Amiodarone, Amoxicillin-clavulanate , Anabolic steroids, Atorvastatin, Azathioprine/6-Mercaptopurine, Busulfan, Carbamazepine, Chlorpromazine, Contraceptives, Dantrolene, Diclofenac, Didanosine, Disulfiram,

[1438] **Figure 1.** Algorithm followed for the study

Table 1. Demographic and Clinical data of the study

Demographics	Total Patients (44)
Male, N (%)	22 (50)
Age, (Median, IQR)	60, (54.5- 68)
BMI, Median (IQR)	30.9, (27.97- 35.08)
Comorbidities	
Hypertension N, (%)	34, (77)
Diabetes N, (%)	23, (52)
Dyslipidemia N, (%)	23, (52)
Laboratory Parameters	
Aspartate Aminotransferase- U/L, (Median, IQR)	28 (19- 37)
Alanine Aminotransferase- U/L, (Median, IQR)	27 (21- 44)
Fibrosis Lab assessment	
FIB4 %(< 1.45, 1.45- 3.25, >3.25)	50, 34,16
APRI % (< 0.7, 0.7- 0.99, >1)	75, 9, 16
Non-Invasive imaging Liver Elastography (Range)	5.3- 7.2 kPa. 247- 361 CAP score (dB/m)

S1439

NAFLD in an African American Dominant Urban Medical Center Population

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Introduction: Obesity, DM, HTN and metabolic syndrome (MtS) are associated with nonalcoholic fatty liver disease (NAFLD). NAFLD is characterized into, nonalcoholic fatty liver (NAFL) and nonalcoholic steatohepatitis (NASH), which are increasingly prevalent chronic liver diseases in the US. Data shows that there is a high incidence of MtS in African American (AA) individuals, however the AA population is known to have a lower incidence of NAFLD as compared to Caucasian and Hispanic Americans. Given the high number of AA patients in our clinic and paucity of data on the reason for the low incidence of NAFLD in the AA population, we assessed risk factors and non-invasive serum markers for fibrosis between AA and nonAA patients at their earliest clinic visits to ascertain potential underlying causes.
Methods: Using the ICD-10 codes for NAFLD (K76.0) and NASH (K75.81), we identified patients between 2017 and 2020 with sufficient data to confirm accurate diagnosis. We defined NAFL patients as those with significant steatosis (by ultrasound) and minimal fibrosis and NASH patients as those with significant steatosis and advanced fibrosis (F2-F4). Statistical analysis was performed using JMP-SAS software.
Results: We identified 216 patients with NAFLD (NAFL=133, NASH=83). Despite the predominance (>80%) of AA patients in our clinic, AA patients constituted only 54% of the NAFLD patients (AA=116, Asian=18, Caucasian=48, Hispanic=17, Middle Eastern=16). Of the total AA patients with NAFLD, 34% had NASH which was not statistically significant in proportion when compared to the nonAA NASH patients. When differences between AA and nonAA NAFL patients were evaluated, age at diagnosis (AA older), APRI and FIB-4 (AA lower) were significantly different. APRI and FIB-4 scores were lower in AA NASH than nonAA NASH patients but the difference was not significant. Common risk factors for NAFLD (HTN, DM, obesity, and MtS) were not significant when compared in proportion of population between AA and nonAA patients (Table).
Conclusion: Our percentage of NAFLD AA patients did not reflect the percentage of the broader clinic population suggesting a potential protective effect of ethnicity with relation to NAFLD. Most of the risk factors were more pronounced in NASH as compared to NAFL, but there were no major racial differences in risk factors that could account for the known lower incidence of NAFLD in AA versus nonAA patients. Further study over a longer time period is necessary to elucidate the underlying causality.

Table 1. Racial Differences in NAFL and NASH patients

	NAFL			NASH		
	AA	Non-AA	p-value	AA	Non-AA	p-value
HTN	56%	52%	0.54	69%	52%	0.11
Diabetes	43%	43%	1.00	57%	57%	0.97
Obesity (BMI >30)	68%	61%	0.41	77%	75%	0.83
Metabolic Syndrome	38%	32%	0.51	46%	46%	0.95
Age	49	43	**0.04**	56	51	0.12
BMI	34.4	32	0.09	38	35.9	0.34
NFS	-1.4	-1.84	0.18	0.31	0.41	0.84
BARD	2.19	2.11	0.75	2.74	2.79	0.96
APRI	0.25	0.35	**0.03**	0.57	0.81	0.09
FIB-4	0.74	0.91	**0.04**	2.08	2.15	0.88

S1440

Inpatient Management of Decompensated Cirrhosis - A Quality Improvement Initiative

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Introduction: Cirrhosis management is centered on the treatment of the causes and management of the complications. The AASLD provides clear recommendations for inpatient management of cirrhosis decompensated by ascites, spontaneous bacterial peritonitis (SBP), hepatic encephalopathy (HE), and hepatorenal syndrome (HRS).
Methods: We evaluated the current hospital practice for 150 consecutively admitted patients with cirrhosis complications in the period between 2017 and 2021. Decompensated cirrhosis was identified using ICD code K70.30/K70.31 (alcoholic cirrhosis) or K74.69/K74.60 (cirrhosis without alcohol), in addition to R18.8 (ascites), plus/minus any of the following: K65.2 (SBP), K72.91 (HE), and K76.7 (HRS).
Results: 21/150 patients had no evidence of clinically decompensated cirrhosis on chart review and thus 129 patients represented the study cohort (decompensated cirrhosis, by at least ascites). The mean age of the cohort was 60±14 years. 83 patients were men, and the majority were White (88 patients, 68%). The most common cause of cirrhosis was alcohol related (72 patients, 56%), most patients had Child Pugh C (64%), and a mean MELD score of 21±7.7 and 20±7.5 on admission and discharge, respectively. Only 49/129 (38%) patients with cirrhotic ascites underwent diagnostic/therapeutic paracentesis. The second most common complication was esophageal varices (52 patients (40%)). SBP was noted in 8 patients, all of whom received appropriate medical treatment. SBP prophylaxis was indicated in 13 patients, and 10 of whom only received prophylaxis on discharge (77%). 41 patients had history of HE, and 21 of whom (51%) were on lactulose treatment. 14 patients developed HRS and were all started on albumin and octreotide therapy. 72 patients (56%) were placed on the appropriate cirrhotic diet, and daily weight was measured in 33/129 patients (26%) undergoing diuresis during the hospital stay. The mean length of stay was 5.9±4.4 days. 54 patients (42%) were re-admitted, and 13 patients (10%) died during the 90-day follow up period.
Conclusion: We here demonstrated that further improvement in the medical care provided to hospitalized cirrhotic patients remains necessary. We recommend further education of the medical staff on the current guidelines to improve the care provided as well as adopting an electronic medical record order set **(Figure)** topromote consistent evidence-based practice, decrease errors of omission, and support provider efficiency.

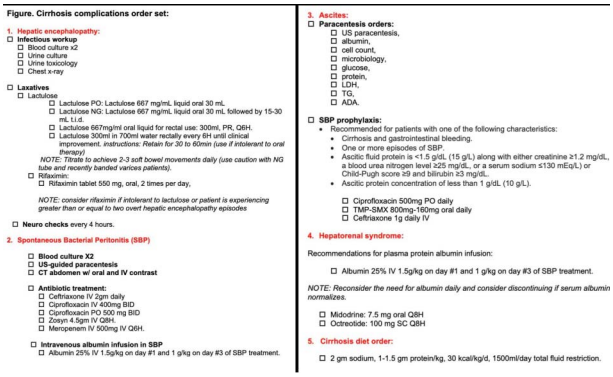
Figure. Cirrhosis complications order set:

1. Hepatic encephalopathy:
☐ **Infectious workup**
☐ Blood culture x2
☐ Urine culture
☐ Urine toxicology
☐ Chest x-ray

☐ **Laxatives**
☐ Lactulose
☐ Lactulose PO: Lactulose 667 mg/mL liquid oral 30 mL
☐ Lactulose NG: Lactulose 667 mg/mL liquid oral 30 mL followed by 15-30 mL t.i.d.
☐ Lactulose 667mg/ml oral liquid for rectal use: 300ml, PR, Q6H.
☐ Lactulose 300ml in 700ml water rectally every 6H until clinical improvement. *instructions: Retain for 30 to 60min (use if intolerant to oral therapy)*
NOTE: Titrate to achieve 2-3 soft bowel movements daily (use caution with NG tube and recently banded varices patients).
☐ Rifaximin:
☐ Rifaximin tablet 550 mg, oral, 2 times per day,

NOTE: consider rifaximin if intolerant to lactulose or patient is experiencing greater than or equal to two overt hepatic encephalopathy episodes

☐ **Neuro checks** every 4 hours.

2. Spontaneous Bacterial Peritonitis (SBP)

☐ **Blood culture X2**
☐ **US-guided paracentesis**
☐ **CT abdomen w/ oral and IV contrast**

☐ **Antibiotic treatment:**
☐ Ceftriaxone IV 2gm daily
☐ Ciprofloxacin IV 400mg BID
☐ Ciprofloxacin PO 500 mg BID
☐ Zosyn 4.5gm IV Q8H.
☐ Meropenem IV 500mg IV Q6H.

☐ **Intravenous albumin infusion in SBP**
☐ Albumin 25% IV 1.5g/kg on day #1 and 1 g/kg on day #3 of SBP treatment.

3. Ascites:
☐ **Paracentesis orders:**
☐ US paracentesis,
☐ albumin,
☐ cell count,
☐ microbiology,
☐ glucose,
☐ protein,
☐ LDH,
☐ TG,
☐ ADA.

☐ **SBP prophylaxis:**
- Recommended for patients with one of the following characteristics:
- Cirrhosis and gastrointestinal bleeding.
- One or more episodes of SBP.
- Ascitic fluid protein is <1.5 g/dL (15 g/L) along with either creatinine ≥1.2 mg/dL, a blood urea nitrogen level ≥25 mg/dL, or a serum sodium ≤130 mEq/L) or Child-Pugh score ≥9 and bilirubin ≥3 mg/dL.
- Ascitic protein concentration of less than 1 g/dL (10 g/L).

☐ Ciprofloxacin 500mg PO daily
☐ TMP-SMX 800mg-160mg oral daily
☐ Ceftriaxone 1g daily IV

4. Hepatorenal syndrome:

Recommendations for plasma protein albumin infusion:

☐ Albumin 25% IV 1.5g/kg on day #1 and 1 g/kg on day #3 of SBP treatment.

NOTE: Reconsider the need for albumin daily and consider discontinuing if serum albumin normalizes.

☐ Midodrine: 7.5 mg oral Q8H
☐ Octreotide: 100 mg SC Q8H

5. Cirrhosis diet order:

☐ 2 gm sodium, 1-1.5 gm protein/kg, 30 kcal/kg/d, 1500ml/day total fluid restriction.

[1440] **Figure 1.** Cirrhosis complications order set

S1441

Improving Rate of Compliance With Hepatitis C Virus Screening

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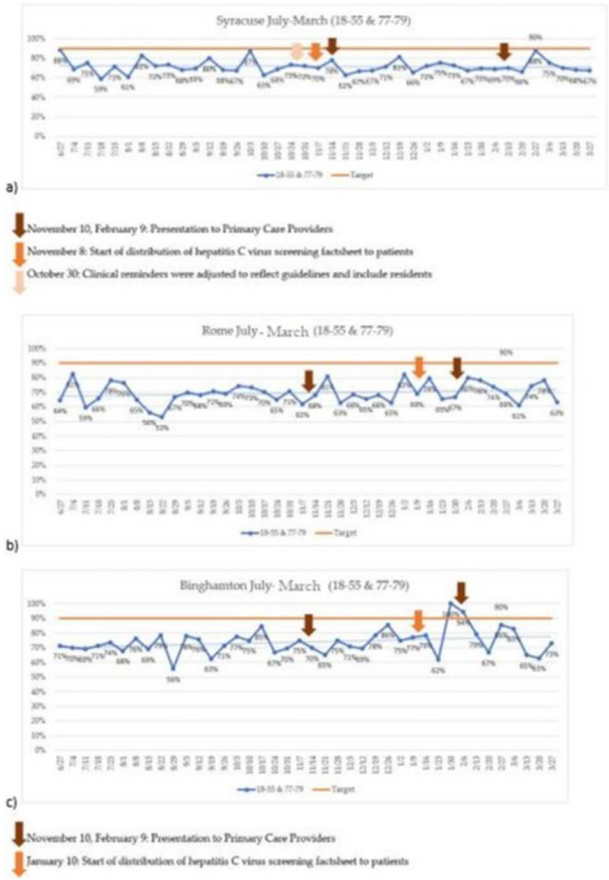
Introduction: Screening patients for hepatitis C virus infection is frequently overlooked. This is a leading cause of chronic liver disease in the US. The US Preventive Services Task Force determined screening is beneficial in patients aged 18-79. Previously, only those born between 1945-1965. The American Association for the Study of Liver Diseases recommends a one-time antibody test in adults 18 years and older. Even though treaTable, screening rate of hepatitis C virus antibody in patients aged 18-55 or 77-79 is only 70% in the primary care settings in Syracuse, Rome, and Binghamton. Inadequate detection leads to missed treatment opportunities and contributes to significant liver disease. Our quality improvement initiative aims to increase compliance rate with hepatitis C virus screening for all outpatient primary care visits for patients aged 18-55 or 77-79 by 20% from baseline of 70% to 90% in 6 months.
Methods: Data was obtained from internal medicine and family medicine outpatient clinics at three locations (Syracuse, Rome, and Binghamton). Eligible patients were divided into two groups: 18-55 or 77-79 years was the group of interest and 56-76 years (born between years 1945-1965) was the reference group as testing in this group of patients had previously been practiced. Completed testing from July-September 2021 served as baseline. Gap analysis was performed identifying causes of reduced compliance. Interventions were taken at the patient level (distribution of informational flyers and provider education), provider level (education on guidelines), and system level (electronic medical record alerts). Interventions were initiated in October 2021 and testing rates were tracked until the end of February 2022. IRB approval was not pursued.
Results: The rate of screening with hepatitis C virus antibody in patients aged 18-55 or 77-79 improved by 2.3% from 70% to 72.3% from October 1, 2021, to March 31, 2022, across three sites. Binghamton's rate improved by 5%. 397 tests have been ordered during this time and 240 were for the age group of interest. (Figure)

Conclusion: Compliance with hepatitis C viral screening is suboptimal in outpatient settings. Focused and simple interventions at the patient, provider, and system levels can increase compliance and help reduce the burden of significant liver disease. We hypothesize continued education and monitoring of data will demonstrate improved rates due to long time between primary care visits. Additional interventions may improve rates further.



[1441] **Figure 1.** Hepatitis C Virus Screening Rates Between July 2021-March 2022 in the Syracuse, Rome, and Binghamton Primary Care Clinics

S1442

Knowledge, Attitude, and Practice of Internal Medicine and Family Medicine Resident Physicians on Non-Alcoholic Fatty Liver Disease

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Introduction: Non-alcoholic fatty liver disease (NAFLD) is the most common liver disorder in Western countries and a leading indication for liver transplantation in the United States. Despite its high burden on public health, it is under-recognized in the primary care setting. The aim of the study is to assess the knowledge, attitude, and practice of internal medicine (IM) and family medicine (FM) resident physicians on NAFLD.
Methods: A questionnaire about NAFLD was sent to all residents of the IM and FM programs at a community teaching hospital. It was administered online via Microsoft Forms between July 27, 2020 and August 16, 2020. The questionnaire had a total of 25 questions.
Results: A total of 48 out of 60 IM residents and 22 out of 36 FM residents responded to the survey, representing a total response rate of 72.92%. 62.5% of IM residents and 72.3% of FM residents had not attended a lecture or reviewed guidelines on NAFLD. Majority (54.3%) of the residents believed that the prevalence of NAFLD in the general population was 20-40%. Majority of the participants acknowledged that patients with obesity (97.14%), diabetes (90%) and dyslipidemia (82.86%) are at the highest risks for development of NAFLD. 85.71% of the residents were aware of ultrasound examination as diagnostic modality for NAFLD; however, only 50% and 27.14% appreciated the role of liver biopsy and transient elastography as other diagnostic modalities, respectively. 72.9% of IM residents and 86.3% of FM residents did not feel confident in managing NAFLD. Although 94.3% of residents believed that NAFLD is a major health problem, only 42% expressed that they refer individuals with NAFLD to a gastroenterologist or hepatologist. While the majority of residents identified dietary modifications and physical activity as therapeutic approaches for NAFLD, only 20.8% of IM residents and 18.6% of FM residents knew that a hypocaloric diet is the preferred diet.
Conclusion: The majority of IM and FM residents do not feel confident in managing patients with NAFLD. A curriculum on NAFLD should be part of the learning requirements for trainees in IM and FM residency programs.