# Clinical Outcomes for Patients with NAFLD and Acute Hepatitis: An Analysis of the National Inpatient Sample

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## Abstract

Non-alcoholic fatty liver disease (NAFLD) is the most common form of chronic liver disease in the United States affecting approximately 1 in 4 Americans. NAFLD has been found to play a significant role in cardiovascular disease risk through several mechanisms including dyslipidemia, insulin resistance, coagulability, and inflammation. Acute-on-chronic liver disease continues to contribute to worse health outcomes via Hepatitis A viral (HAV) infection. HAV remains a common cause of acute hepatitis worldwide. Though a vaccine is available, barriers to access remain, leaving at-risk individuals unvaccinated and unprotected by herd immunity. This case-control study investigated the relationship between NAFLD and Acute Hepatitis infection using data extracted from the National Inpatient Sample (NIS) Database for the years 2019 and 2020. The NIS was searched for hospitalizations of adult patients with Acute Hepatitis with and without a concomitant diagnosis of NAFLD. Using multivariate logistics to adjust for confounders, the primary outcome was inpatient mortality, and the secondary outcomes were hospital length of stay (LOS), and total hospital charges. The study found a statistically significant higher inpatient mortality (OR:1.041, CI:1.1.036-1.046, $p<0.001$). While mean LOS as well as hospital charges were less for patients with acute hep and NAFLD ( 6.1 days VS 6.0 days, $p < 0.001$; 68,745$ vs. 67,460$, $p < 0.001$). Secondary analysis found that patients with acute hepatitis and NAFLD had statistically significantly higher odds of high output heart failure, shock, arrhythmias and acute kidney injury compared to those with NAFLD and no acute hepatitis.

These results are consistent with the current literature supporting that HAV contributes to the severity of liver disease and additionally, negative adverse outcomes. With vaccination being less common, and the risk of co-infection a cause of increased mortality among those with NAFLD, new anti-viral treatments should be investigated in the absence of preventative measures.

## Recent Publications

**Dutton KG, Rothschild DA, Pastore DB, Emge TJ, Lipke MC.** The Influence of Redox-Active Linkers on the Stability and Physical Properties of a Highly Electroactive Porphyrin Nanoprism. *Inorganic Chemistry.* 2020;59(17):12616-12624.

**Elias T, Lee LH, Rossi M, Caruso F, Adams SD.** In Vitro Analysis of the Antioxidant and Antiviral Activity of Embelin against Herpes Simplex Virus-1. Microorganisms. 2021 Feb 19;9(2):434. doi: 10.3390/microorganisms9020434. PMID: 33669814; PMCID: PMC7922599.

**Williamson B, Wilk A, Guerrero KD, Mikulski TD, Elias TN, Sawh I, Cancino-Prado G, Gardam D, Heath CH, Govender NP, Perlin DS, Kordalewska M, Healey KR.** Impact of Erg11 Amino Acid Substitutions Identified in Candida auris Clade III Isolates on Triazole Drug Susceptibility. Antimicrob Agents Chemother. 2022 Jan 18;66(1):e0162421. doi: 10.1128/AAC.01624-21. Epub 2021 Oct 11. PMID: 34633842; PMCID: PMC8765314.

**Stamos JD, Lee LH, Taylor C, Elias T, Adams SD.** In Vitro and In Silico Analysis of the Inhibitory Activity of EGCG-Stearate against Herpes Simplex Virus-2. Microorganisms. 2022 Jul 20;10(7):1462. doi: 10.3390/microorganisms10071462. PMID: 35889181; PMCID: PMC9315604.

**Elias T, Lee LH, Rossi M, Caruso F, Adams SD.** In Vitro Analysis of the Antioxidant and Antiviral Activity of Embelin against Herpes Simplex Virus-1. Microorganisms. 2021 Feb 19;9(2):434. doi: 10.3390/microorganisms9020434. PMID: 33669814; PMCID: PMC7922599.