

Benzodiazepines and opiates for admitted patients with cirrhosis: Can we do better?

The Problem

- Patients with cirrhosis are at high risk for hepatic encephalopathy.
- Acute exacerbations of hepatic encephalopathy are associated with high mortality and can be triggered with medications, such as benzodiazepines or opiates.
- Despite this fact, patients with cirrhosis are commonly prescribed these medications during their hospital admissions, with unclear consequences.

Aim/Goal

- Our team sought to investigate the prescribing habits of BIDMC physicians of benzodiazepines and opioids to cirrhotic patients admitted to our hospital with an ammonia level checked on admission.
- We also looked at how being prescribed a benzodiazepine or opiate affected length of stay or in-hospital mortality for these patients.
- Our longer-term goal is to decrease the frequency with which cirrhotic patients are prescribed these medications when admitted to our hospital to decrease the adverse outcomes identified in our investigation.

The Team

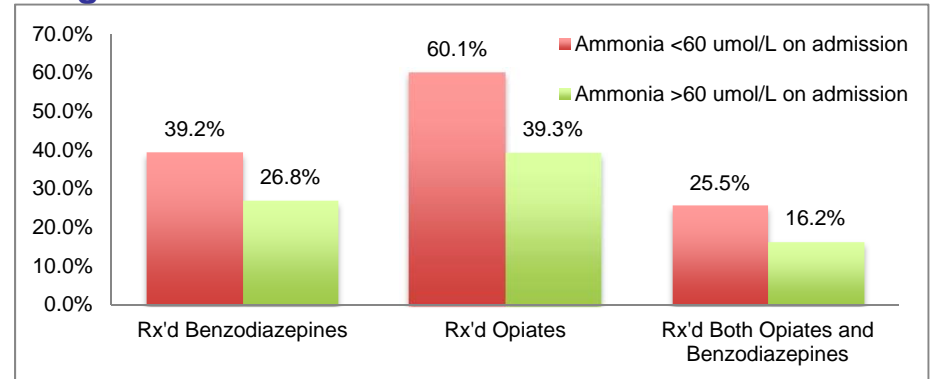
Yesenia Risech-Neyman, MD (Internal Medicine)
Vilas R. Patwardhan, MD (Gastroenterology)
Zhenghui G. Jiang, MD PhD (Gastroenterology)
Gail Piatkowski (Decision Support)
Elliot B. Tapper, MD (Gastroenterology, Internal Medicine)

The Intervention

Defining the problem: We analyzed the admissions of 492 cirrhotic patients to any service at BIDMC between April 25, 2007 and September 24, 2012 who had an ammonia level checked on admission.

- Prescribing rates were compared between patients with high (>60umol/L) and low (<60umol/L) ammonia levels on admission for benzodiazepines, opiates, non-benzodiazepine sleep aids and antipsychotics.
- Examined length of stay and risk of dying during the admission after adjusting for age, MELD, sodium, lactate, infection, acute kidney injury, variceal bleeding, DNR/DNI status or palliative care consult.

Progress to Date



Lessons Learned

- Ammonia level is associated with changes in management: Analysis revealed significantly lower prescribing rates for patients with admission ammonia of >60 umol/L for benzodiazepines, opiates or both.
- We are putting our patients at risk: We found increased odds of longer than median length of stay (5 days) for patients prescribed benzodiazepines (**OR 2.31**) or opiates (**OR 3.88**). Patients with an admission ammonia >60 umol/L were also more likely to die during their admission after prescription of a benzodiazepine (**OR 3.31**) or an opiate (**OR 4.68**).
- Room for improvement: About 1 in 4 cirrhotic patients with ammonia level >60 umol/L were prescribed a benzodiazepine during their admission, and about 2 in 5 were prescribed an opiate. Many were prescribed both (see bar graph above)..

Next Steps

- Education: Present to hepatology faculty, housestaff and nursing.
- Prompts: Similar to the decision support alerts for our GRACE protocol patients, we are in the process of creating a proposal for our Provider Order Entry system to include new prompts to help inform or remind clinicians of the potential for harm when prescribing opiates and benzodiazepines to patients with a diagnosis of cirrhosis or hepatic encephalopathy.