Implementation of a Phenobarbital-based Alcohol Withdrawal Pathway in Critical Care

The Problem
- Alcohol abuse/dependence affects 20% of inpatients
- 9-30% of inpatients with alcohol withdrawal syndrome (AWS) require intensive care unit (ICU) management
- ICU admissions complicated by AWS result in increased ICU and hospital length-of-stay (LOS), hospital acquired infections (HAIs), risk of sepsis, and in-hospital mortality
- Symptom based administration of long-acting benzodiazepines has historically been the most-utilized treatment approach at BIDMC
- Problems:
  - Resource intensive
  - Assessment confounded by co-incident diseases (e.g. alternative etiologies of delirium, mechanically ventilated patients)
  - Difficult to differentiate between AWS and benzodiazepine intoxication
  - Cross tolerance with alcohol

Aim/Goal
To implement and evaluate a standardized phenobarbital pathway for the treatment and prevention of severe alcohol withdrawal in critically ill patients at BIDMC.

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The Interventions
- Development of a phenobarbital guideline for the treatment and prevention of severe AWS in critically ill patients
- Identification of unit-based nursing champions, in-service training of ICU nursing
- Attending and housestaff education
- Development of a POE order set
- Rolling implementation in all BIDMC ICUs

The Results/Progress to Date
Progress to date:
- October, 2013 – February, 2014: Rolling implementation in all ICUs at BIDMC
- 125 MICU patients have received phenobarbital for AWS
- Simplified guideline implemented using a single phenobarbital loading dose implemented in fall 2014
- Preliminary pre-post analysis of the first 67 phenobarbital patients as compared to patients admitted to the MICU prior to implementation of the intervention who had moderate to severe AWS and received symptom-based benzodiazepine treatment
- Median ICU LOS was 1 day (IQR 1-3) in the phenobarbital group and 2 days (IQR 1-3) in the benzodiazepine group (n=67). There was no statistical difference in ICU LOS on univariate analysis (p=0.61), and on multivariate analysis there remained no statistical difference in ICU LOS between the phenobarbital and benzodiazepine groups (5% reduction in ICU LOS with phenobarbital, p=0.77, 95% CI -0.72, 1.29).

Lessons Learned
- In patients with moderate to severe AWS admitted to the ICU, there was no difference in ICU LOS between phenobarbital and symptom-based benzodiazepine administration groups.
- Identification of stakeholders is critical in the implementation of a multidisciplinary treatment guideline

Next Steps/What Should Happen Next
- Completion of pre-post evaluation of the intervention, with assessment of:
  - Time to resolution of AWS
  - ICU and hospital length-of-stay
  - Hospital-acquired infections
  - Mean arterial blood pressure and heart rate
  - Rates of delirium as assessed by the Confusion Assessment Method for the ICU (CAM-ICU)
- Roll out of guideline to non-ICU care areas

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