Retrospective Study to Identify Predictors of Withdrawal in Pediatric Intensive Care Patients on Long-Term Sedation

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Purpose

The objective of this retrospective study is to examine elements of continuous sedation to determine if they are significant predictors of withdrawal in patients in the pediatric intensive care unit (PICU). This study will also evaluate the documentation of withdrawal symptoms, current weaning approach patterns in the PICU, and compare the approaches with national clinical guidelines for utilization of a sedation wean in this population.

Background

- Critically ill children routinely receive sedative medications in doses and over periods of time that can lead to tolerance and dependence.[1]
- Incidence of withdrawal symptoms has been shown to be related to duration of continuous sedation as well as dosage of medications used.[1,2]
  - Patients who receive 7-14 days of continuous sedation may not require weaning.[3]
  - Patients who receive more than 14 days will usually need a wean.[3]
- Withdrawal symptoms can lead to negative consequences such as increased morbidity, higher costs of hospitalization due to longer stays in the intensive care unit, and psychological distress.[2,4]
  - Typical withdrawal symptoms include agitation, restlessness, irritability, tremors, inconsolable crying, tachypnea, vomiting, diarrhea, and many others.[1-5]

Study Design

- IRB approved retrospective medical record review
  - Inclusion Criteria
    - Patients between 2 months and 18 years of age admitted to the LVHN PICU between July 1, 2009 and June 30, 2014
    - Patients must have required continuous sedation of fentanyl and/or midazolam for at least seven days without interruption
  - Exclusion Criteria
    - Patients 18 years of age or older
    - Patients younger than 2 months of age
    - Patients who were receiving opioids and/or benzodiazepines prior to admission to the PICU according to their home medication list
    - Patients with a documented diagnosis of diffuse axonal injury
    - Patients with a documented diagnosis of autonomic dysfunction syndrome during the admission
  - The primary outcome of this study will be to determine if length of continuous sedation, presence of wean from sedation (utilizing methadone and/or lorazepam), and total dose exposed (mg/kg) are significant predictors of withdrawal in patients in the PICU on continuous sedation for at least 7 days.
  - The secondary outcomes of the study will be to report:
    - Percent of patients weaned from continuous sedation based on length of sedation split into categories
      - 7 to 14 days
      - Greater than 14 days
    - To further characterize the approach utilized to wean patients from continuous sedation based on:
      - Frequency of dosing
      - Duration of wean
      - Utilization of as needed doses

Methods

- PICU admission records will be used to generate a list of patients
- Variables of interest include:
  - Utilization of a wean from sedative medications
  - Use of methadone and lorazepam to prevent withdrawal symptoms
  - Amount of time patients received continuous sedation
  - Total dose of sedation to which the patient was exposed
- Then the presence or absence of withdrawal symptoms will be evaluated in patients:
  - If they received a rescue dose of fentanyl, midazolam, morphine, methadone or lorazepam within 72 hours after discontinuation of sedation **and/or**
  - If withdrawal symptoms were documented in the medical record by the nurse or physician
- Additional data will be collected to describe the study sample and the various weaning techniques utilized

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Disclosure:

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