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Treatment of Post-Operative Pain in Children with Severe Neurologic Impairment

Jordan Keys

Jessica L. Bettenhausen

Jessica L. Markham

Matthew Hall

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Jordan Keys, MD[1], Jessica Bettenhausen, MD[1]
Jessica Markham, MD, MSc[1], Matthew Hall,PhD[1,,2]

[1]Children's Mercy Kansas City; [2]Children's Hospital Association

BACKGROUND

- Children with medical complexity (CMC) account for 1% of all children, and compromise 56% of all hospitalized patients.
- Highest frequency and severity of pain occurs in children with severe neurologic impairment (SNI).
- No standard approach to pain and symptom treatment in children with SNI.

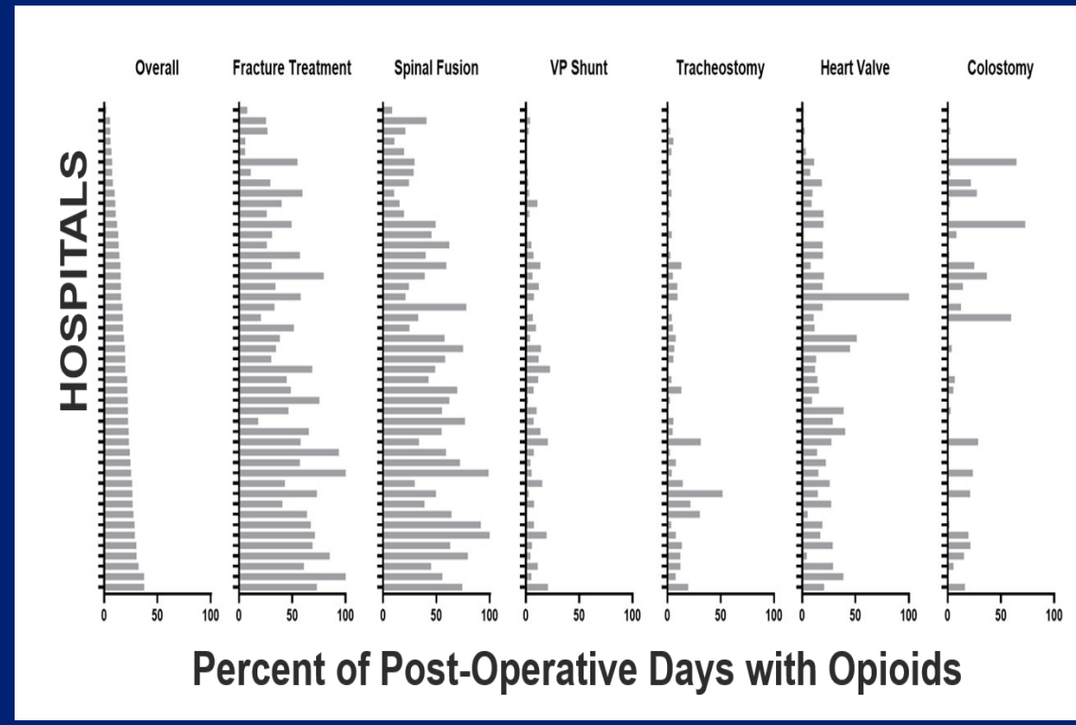
OBJECTIVE

- Describe the type, number of classes, and duration of post-operative pain medications for procedures common amongst children with SNI.
- Describe variability in pain management strategies across children's hospitals, with an emphasis on post-operative opioid administration.

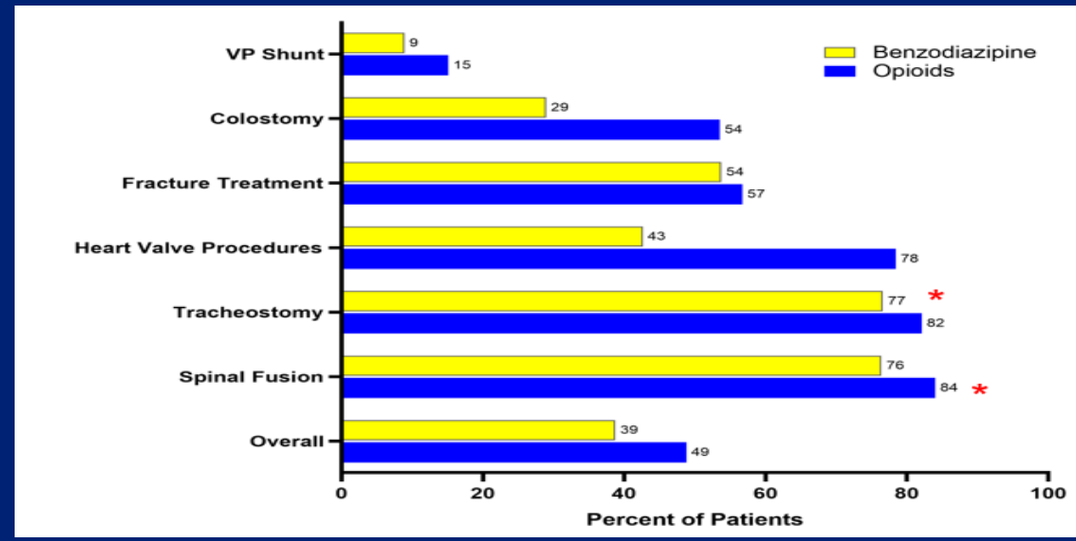
METHODS

- **Design**:
  - Retrospective cohort study that utilized the Pediatric Health Information System (PHIS) database.
  - SNI was defined using previously described high-intensity neurologic impairment (HINI) diagnosis codes
  - Identified 6 common procedures (>500 encounters):
    - Fracture treatment
    - Tracheostomy
    - Spinal fusion
    - Ventriculoperitoneal shunt placement (VP shunt)
    - Colostomy
    - Heart valve procedures
- Medication classes defined using the *Classification of Palliative Care Pain Medications*

Post-Operative Days with Opioids Administered



Proportions by Pain Medication Classes



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METHODS CONTINUED

- **Population**:
  - Children 0-21 years old with SNI
  - Underwent 1 of 6 surgical procedures
- **Analysis**:
  - Described the frequency of HI-NI diagnoses
  - Proportion of children that received pain medications by class and procedure
  - Proportion of post-operative days with pain medications by class and procedure
  - Hospital-level variation in prescribing pain medications
  - Hospital-level variation in prescribing opioids

RESULTS

- 7180 children (12 % with 3 or more HI-NI codes)
- Proportion of post-operative days with any pain medications ranged from 28.8% (VP shunt) to 71.7% (spinal fusion)
- Opioids and Benzodiazepines were the two major classes of medications used post-operatively
- Notable variability in opioid use across hospitals and by procedure (p-value <0.001)
- Fracture and Spinal Fusion procedures had the highest variability post-operative days with opioids

DISCUSSION

- Children with SNI experienced variability in the type, number of classes, and duration of all pain medications delivered post-operatively
- Variability across hospitals and procedures in opioid administration
- Few hospitals with high opioid usage

FUTURE WORK

- Standardized the assessment and treatment of post-operative pain management for children with SNI
- Investigate if communication status affects pain management
- Explore if parental insight improves pain management during hospitalizations

Contact: jrkeys@cmh.edu

Abstract: