

**Title of Abstract:**

Outcomes After Implementation of a Withdrawal Prevention Protocol in the Neonatal Intensive Care Unit

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**Abstract Description:**

Background:

Optimal pain control and sedation is important in the management of the critically ill neonate. However, long-term exposure may lead to dependence and risk for withdrawal. In the neonate, there may be long term effects of these medications including gut dysmotility and prolonged hospitalization. It is therefore important to wean them off in a safe and consistent manner, as soon as tolerated. We implemented a weaning guideline entitled the Withdrawal Prevention Protocol.

Objective:

The impact of the Withdrawal Prevention Protocol (WPP) on the cumulative doses of continuous opioids, length of stay (LOS), central line days, and necrotizing enterocolitis rates in a level 4 Neonatal Intensive Care Unit (NICU) at a free standing children's hospital.

Methods:

The WPP was implemented in May 2016. A major educational intervention for all medical and nursing staff was undertaken, including assessment of withdrawal and weaning guidelines.

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**March 3-5, 2017**

Patients who received  $\geq 5$  days of continuous opioids were included in the analysis. Exclusion criteria were: Opioid weaning by pain service and patients not yet discharged from the NICCU. WPP cohort defined as May – December 2016. Bivariate non-parametric tests (Wilcoxon-Mann-Whitney, and Fisher's exact tests) were used to compare baseline demographics and clinical outcomes between WPP and non-WPP groups.

**Results:**

447 patients were identified from January 2014 to December 2016, of which, 57 patients were on the WPP from May - December 2016. There was a lower incidence of necrotizing enterocolitis (NEC) (1.69% vs 9.43%,  $p=0.0463$ ), decreased median central line days (8 vs 24,  $p<0.0001$ ) and decreased cumulative doses of continuous fentanyl drips (438.5 vs 258,  $p=0.0013$ ) in the WPP cohort compared to the non-WPP cohort. There were no statistically significant associations between median number of days on benzodiazepines and opioids between the cohorts. While the number of ventilator days were not different between the interventional periods, there was a non-significant trend towards lower LOS, and a statistically significant lower weight on discharge for the WPP cohort.

**Conclusion**

The implementation of a neonatal WPP was associated with a decrease in continuous intravenous sedation medications, central line days, and NEC. The reduced central line days may have been due to fewer days on infusions versus intermittent drug dosing. The lower discharge weight and trend toward shorter LOS may imply that the post-extubation period was shorter for the post-interventional period as a result of more efficient weaning of opioids and benzodiazepines.

**Funding Acknowledgement (if applicable):**

None