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Lidocaine Infusion for Pediatric Pain: Initial Experience Beyond the OR

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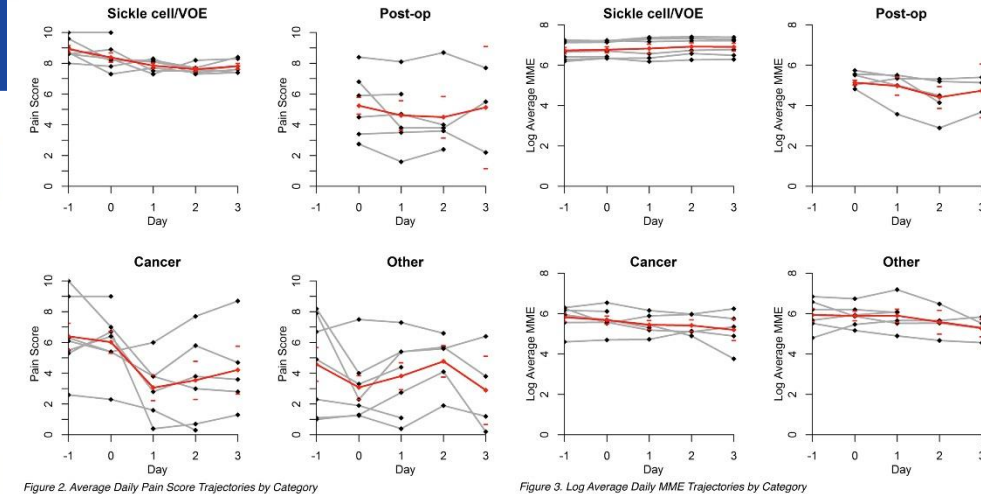
Introduction

- ❑ Intravenous (IV) lidocaine is increasingly part of inpatient multimodal analgesia – especially as non-opioid strategies are sought
- ❑ Pediatric literature is sparse regarding IV lidocaine use for pain management beyond the OR
- ❑ In 2015, we instituted a hospital policy for inpatient use of lidocaine infusions by the pain service
- ❑ Here we summarize our initial experience

Results

Table 1. Demographics and Infusion Characteristics

GROUP	Patients (count)	Treatments (count)	Age (years)	Sex M (%), F (%)	Infusion Duration (days)	Infusion Rate (mg/kg/hr)	Cp (mcg/ml)
Sickle cell/VOE	3	7	18.1±1.1 (16-19)	85.7, 14.3	7.6±4.1 (0.4-12)	1.10±0.19 (0.84-1.40)	2.03±0.46 (1.50-2.77)
Post-op	8	8	14.1±5.9 (2-21)	37.5, 62.5	2.7±2.1 (0.3-5.7)	0.93±0.18 (0.50-1.10)	2.83±0.55 (2.30-3.66)
Cancer	7	7	13.9±2.7 (11-17)	71.4, 28.6	5.5±4.3 (0.4-11.9)	0.93±0.30 (0.50-1.30)	2.07±1.04 (0.87-3.67)
Other	8	8	11.9±5.0 (5-18)	37.5, 62.5	3.27±1.8 (0.8-5.8)	0.86±0.26 (0.50-1.25)	2.71±1.19 (1.07-4.13)
AGGREGATE	26	30	14.4±4.6 (2-21)	56.7, 43.3	4.6±3.6 (0.3-12)	0.95±0.24 (0.50-1.40)	2.37±1.36 (0.87-6.08)



Methods

- ❑ We reviewed our use of IV lidocaine for pain care since 2015; there were 26 patients and 30 treatments
- ❑ 4 broad categories defined: SCD/VOE, Post-op, Cancer, Other
- ❑ Day 0 = lidocaine initiation; Baseline = Day -1 or Day 0 (Post-op)
- ❑ Lidocaine Cp target 2-4 mCg/ml per policy (now 1-5 mCg/ml)
- ❑ Graphical presentation (% change from baseline & trajectories)
- ❑ Linear mixed models also used to estimate pain score (PS) and opioid use (MME) trajectories (with age & POD as covariates)

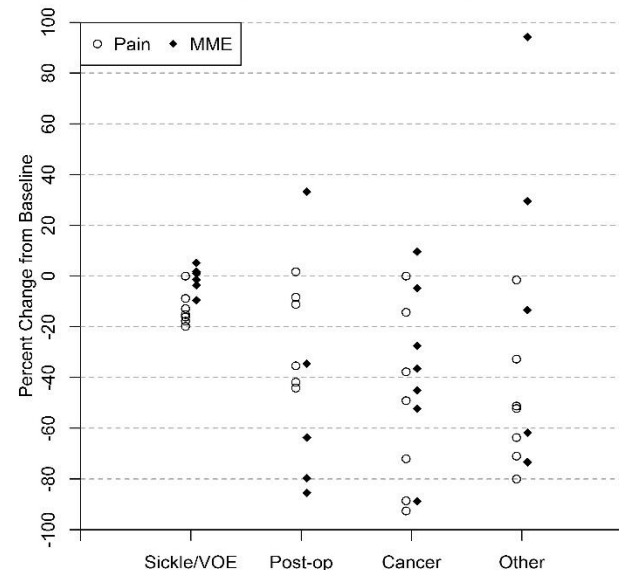


Figure 1. Lowest Pain Scores and MME as Percent Change from Baseline

Discussion & Conclusions

- ❑ Exact mechanism of action for IV lidocaine analgesia is unknown; classical neuronal Nav inactivation unlikely
- ❑ An anti-inflammatory effect has been described (Nav 1.3 on PMNs?); NMDA receptor modulation (glycine site?) may also be important
- ❑ IV lidocaine lowered PS and MME most in Cancer and Other groups
- ❑ Inflammatory (mucositis, typhlitis) and neuropathic pain (chemoTx-related, injury) at lower Cp; centralized pain likely needs higher Cp
- ❑ Take care: cardiac and seizure Hz, C.O., hepatic blood flow/function, polypharmacy, and CYP3A4 inhibition/variation (CYP1A2 lessor)