Low-Dose Dexmedetomidine: Repurposing an Intravenous Agent for Opioid & Alpha-2 Withdrawal

Presenting Authors: Phil Durney, MD [1,2]; Meg Carter, MD [1]; Kory London, MD [1,3]

Non-Presenting Authors: Sabrina Butt, MD [3]; Dennis C. Goodstein, PharmD, BCPS [1]; Maeve Montesi, PA-C [1]; TaReva Warrick-Stone, DO [1]; Jenna Fiore, MPH [1,2]

[1] Addiction Medicine, TJU; [2] Internal Medicine, TJU; [3] Emergency Medicine, TJU

Background

- The increased prevalence of synthetic opioids and alpha-2-adrenergic (A2A) receptor agonists (xylazine, medetomidine) has led to unprecedented withdrawal syndromes in some communities. [1,2]
- These novel withdrawal syndromes are poorly understood and present significant challenges in inpatient management.
- Our team previously demonstrated success in treating opioid/A2A withdrawal using oral alpha-agonists like tizanidine and guanfacine. [3]
- A pilot study explored the use of low-dose intravenous dexmedetomidine (0.2 - 0.7 mcg/kg/hr) outside the ICU to manage severe withdrawal symptoms.

Disclosures

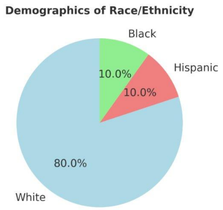
- None of the authors have any relevant financial or intellectual conflicts of interest.

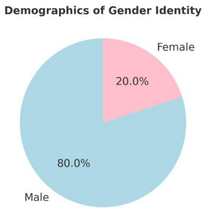
Methods

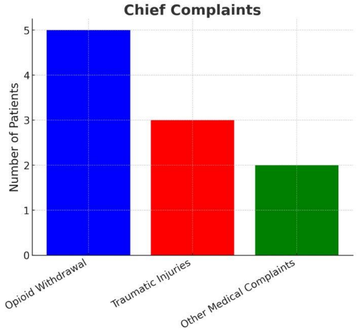
- **Patient Selection**: 10 patients presenting with refractory opioid and alpha-2 agonist withdrawal but no other indications for ICU level of care.
- **Treatment Protocol:** Patients had already received standardized withdrawal order sets, including short-acting opioids, oral/transdermal A2A, and adjuncts.
- **Intervention:** Low-dose IV (0.2 - 0.7 mcg/kg/hr) dexmedetomidine administered in intermediate care units.
- **Data Collection:** Patient demographics, chief complaints, adverse events, need for ICU upgrade, rate of patient-directed discharge (PDD).

Results

Study dates: 9/27/2024 - 3/7/2025
Demographics: 24 patients
- All fentanyl (+) toxicology screens, 3/3 with LC/MS:MS were (+) for 3-OH-Medetomidine



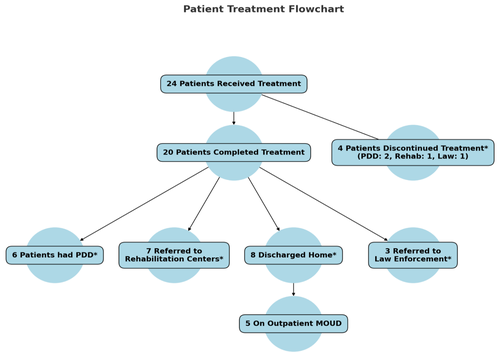




Outcomes of Cohort:
- Median Infusion Duration = 42.5 Hours
- Average LOS for Patients = 191 Hours
- Average LOS at PDD Disposition = 54 Hours

Adverse Events = 2

- Hypotension requiring discontinuation = 2
- Patients Requiring ICU Upgrade = 0



Conclusions

- Opioid and A2A withdrawal present with severe hypertension, tachycardia, hyper/hypoactive encephalopathy, and intractable nausea/vomiting.
- This toxidrome is increasingly common in the Philadelphia area.
- Low-dose IV dexmedetomidine shows promise as an effective withdrawal management adjunct in intermediate care settings, for appropriately selected patients.
- Further research is needed to refine dosing strategies and assess long-term outcomes.

Diversity, Health Equity, and Inclusivity

- The presence of xylazine and medetomidine in the drug supply necessitates urgent alternative therapies. Those impacted are some of the most vulnerable in our community.
- Identifying effective treatments improves patient retention and supports long-term recovery goals.
- Ensuring hospital-based care for individuals with severe substance use disorder aligns with health equity principles.

References

1.SUPHR: In Philadelphia, medetomidine, a potent non-opioid veterinary sedative, has been detected in the illicit drug supply. 5/13/2024. PDPH Health Alert: https://hip.phila.gov/document/4421/PDPH-HAN-0441A-05-13-24.pdf/
2. SUPHR: Hospitals and behavioral health providers are reporting severe and worsening presentations of withdrawal among people who use drugs (PWUD) in Philadelphia. PDPH Health Alert: https://hip.phila.gov/document/4874/PDPH-HAN-00444A-12-10-2024.pdf/
3. Tranq Dope: Characterization of an ED cohort treated with a novel opioid withdrawal protocol in the era of fentanyl/xylazine. The American Journal of Emergency Medicine [Internet]. 2024 Nov [cited 2025 Mar 12];85:130–9. https://www.sciencedirect.com/science/article/pii/S0735675724004303

@ResearchAtJeff