Maine Medical Center
Department of Emergency Medicine
Journal Club Summary Template

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Herring AA, Vosooghi AA, Luftig J, et al. High-Dose Buprenorphine Induction in the Emergency Department for Treatment of Opioid Use Disorder. JAMA Netw Open. 2021;4(7):e2117128. doi:10.1001/jamanetworkopen.2021.17128

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United States

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Purpose

Research Question(s):

Is high-dose (>12 mg) buprenorphine induction safe and well tolerated in patients with untreated opioid use disorder who present to the emergency department?

Hypotheses:

x☐None Stated

Study Purpose:
Opioid Use Disorder (OUD) has a high and growing morbidity and mortality rate nationwide. The existing treatment guidelines are for office-based practice and at a lower dosage. Researchers have hypothesized that accelerated induction with therapeutic buprenorphine levels achieved within hours instead of days could increase coverage of the gap between ED discharge and outpatient therapy continuation.

Methods

Study Design:
Retrospective electronic health record (EHR) review of patients aged 18 years or older treated with SL-buprenorphine at a large, urban, safety net ED

Outcome(s) *[or Dependent Variable]:* Primary Outcomes (1) the occurrence of precipitated withdrawal and (2) any other serious adverse event attributable to buprenorphine administration, including sedation, decreased respiratory rate, hypoxia, and/or naloxone rescue administration in ED or in the 24 hours after discharge.

Intervention *[or Independent Variable]:* Selecting patients for high-dose buprenorphine induction, defined as more than 12 mg of SL-buprenorphine during the ED stay, and based on the patient's history, vital signs, physical examination findings, clinical judgment using scoring systems such as the Clinical Opioid Withdrawal Scale (COWS; mild, 5-12; moderate, 13-24; severe, >25), and evaluation of complicating factors.

Ethics Review: X IRB Review Alameda Health System institutional review board

Research Setting: large, urban, safety net ED between January 1, 2018, and December 31, 2018

Study Subjects:
All patients receiving treatment with SL-buprenorphine were included in the analysis.

Inclusion Criteria:
18 years or older

Exclusion Criteria:

Study Interventions:
The high-dose ED buprenorphine induction pathway included a dose option up to 32 mg SL to increase the magnitude and duration of opioid withdrawal suppression. All patients appropriate for buprenorphine induction were recommended to receive an initial buprenorphine dose of 4 to 8 mg SL on the basis of their level of withdrawal and to be reassessed in 30 to 45 minutes. Patients with improvement in withdrawal symptoms after the initial dose and same-day access to a dispensed buprenorphine prescription after discharge were offered the standard-dose induction pathway. Doses of up to 12 mg could be administered to achieve minimal to mild withdrawal (COWS score <8)

Study Groups:
High dose induction and standard dose induction pathway

Instruments/Measures Used:
Clinical Opioid Withdrawal Scale (COWS)
Emergency Severity Index
Opioid-32 questionnaire - buprenorphine toxicity

Data Collection:
All relevant clinical documentation was abstracted from the EHR at Alameda Health System by a trained primary reviewer (A.A.V.) blinded to the study aims and a secondary reviewer (A.A.H.) blinded to the abstraction of the primary reviewer. Key study variables included SL-buprenorphine dosing, respiratory rate, symptoms associated with opioid withdrawal or excessive buprenorphine toxicity, and adverse events.

Data Analysis:

***A priori* sample size calculation?** ☐Yes ☐No **x** Not Described ☐N/A

Statistical analyses used:
Percentages for categorical variables, means for continuous variables. Between buprenorphine doses and variables, all tests were two sided, chi squared or Kruskal-Wallis tests.

Adjustment for potential confounders? ☐Yes ☐No **X** Not Described ☐N/A

Results
Study participants: 391 unique ED patients, mean age 36 years, 68% male across a total of 579 ED visits. Of the patients, 40% were Black, and 15% Hispanic or Latino. OVer 1/5th of patients were homeless and 40% had comorbid non–substance use–related psychiatric disorders. More than one-half had never been treated with (or self-prescribed illicitly) buprenorphine.
Brief answers to research questions *[key findings]:* Outcome 1 (precipitated withdrawal): event rate of 0.8%, and 4 of the 5 cases were from the standard dose pathway and thus unrelated to high dose induction Outcome 2 (adverse events): There were no serious adverse events associated with buprenorphine administration, including sedation, hypoxia, and/or naloxone rescue in the ED or 24 hours after discharge. No patients were admitted for treatment of buprenorphine precipitated withdrawal. Return rates within 24hrs ranged from 4-14%, increasing rate of return for higher dose buprenorphine groups. Less than 20% of patients were unsuccessful accessing follow-up treatment immediately after discharge and required repeat dosing in the ED.
Additional findings: Over time, clinicians tended toward use of an increasing total dose of buprenorphine.

Limitations:
- Retrospective design in a single site
  - Raises risk of incomplete and/or inconsistent documentation from the EHR and the reliability of abstracting it accurately
- Clinicians did not always document a complete COWS score
  - Unable to use all COWS score for analysis
- Generalizability:
  - Staff and training: Fifty-eight emergency medicine attending and resident physicians and 21 advanced practice practitioners (APPs) received training on the high-dose buprenorphine pathway, and had two substance use navigators available live during weekday office hours
  - substance availability: only monotherapy with buprenorphine was used, whereas some departments may have buprenorphine-naloxone available

Clinical Implications
A high-dose buprenorphine treatment pathway has been shown to be a safe and effective method of induction. It did not result in increased incidence of precipitated withdrawal, oversedation, or other adverse events attributable to buprenorphine. Furthermore, a therapeutic dose of buprenorphine can be achieved within less than 3 hours of ED stay. Staff training on high dose induction treatment pathway and

a ED pathway for APP buprenorphine withdrawal may be key in widely implementing such a process in other emergency departments.
Level of evidence generated from this study
n/a

Additional Comments/Discussion/Notes