

## Case reports

# Emergency Department Management of Precipitated Opioid Withdrawal after Intravenous Buprenorphine/Naloxone Use: A Case Report

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Keywords: Opioid Use Disorder (OUD), Buprenorphine/Naloxone, Suboxone, Medication Assisted Treatment (MAT), Precipitated Opioid Withdrawal

<https://doi.org/10.62186/001c.116916>

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## Academic Medicine & Surgery

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The opioid epidemic in the United States continues to grow at staggering rates. More than 760,000 people have died of drug overdose since 1999, with the annual death toll increasing exponentially. In response, the use of medication assisted treatment (MAT) for opioid use disorder has grown considerably. Abuse of MAT is common, with studies showing rates as high as 28% of patients on MAT abusing the medications. There are case reports detailing precipitated withdrawal following intravenous buprenorphine/naloxone (Suboxone) misuse, but little literature exists regarding management of these cases. The current recommendation per other case reports is to treat with additional doses of Suboxone. We present the case of a 44-year-old male presenting to the emergency department in precipitated withdrawal after injecting Suboxone intravenously. In this case, the patient had eloped from inpatient rehabilitation about 36 hours after his last dose of Fentanyl. He then injected Suboxone to combat symptoms of opioid withdrawal. He felt markedly worse following the injection, prompting him to seek treatment. On arrival he was visibly uncomfortable and irritable during the exam. He was treated with additional Suboxone at the suggestion of other case reports, but this significantly worsened his symptoms. He was additionally treated with diazepam, resulting in improvement. He was discharged with resources for opioid use disorder and was successfully contacted six months after his initial presentation, at which time he reported continued opioid use as well as suboxone misuse.

## INTRODUCTION

The opioid epidemic in the United States continues to grow at staggering rates. More than 760,000 people have died of drug overdose since 1999,<sup>1</sup> with the annual death toll increasing exponentially.<sup>2</sup> In part due to the COVID-19 pandemic, the number continues to skyrocket with overdose rates increasing 31% from 2019 to 2020.<sup>3</sup> In response, the use of medication assisted treatment (MAT) for opioid use disorder has grown considerably. Abuse of MAT is common, with studies showing rates as high as 28% of patients on MAT abusing the medications.<sup>4</sup> One MAT option, buprenorphine/naloxone, is formulated in a sublingual form. If injected intravenously, however, the combination can precipitate withdrawal.<sup>5,6</sup> Limited information exists in the literature for addressing buprenorphine precipitated withdrawal as seen in this case, but management of buprenorphine/naloxone precipitated withdrawal per other case reports is to provide additional doses of buprenorphine-naloxone,<sup>7</sup> with potential additional management of withdrawal with antiemetics, antihistamines, antispasmodics, ketamine, or benzodiazepines,<sup>8</sup> though indications for these additional treatments are not well de-

finied. Given the increasing rates of MAT utilization, it is important for further research to determine the best management for such patients presenting to the emergency department (ED) with precipitated withdrawal.

## METHODS

We describe the case of a 44-year-old male with a past medical history of hepatitis C presenting to the ED after injecting buprenorphine/naloxone intravenously.

## CASE PRESENTATION

The patient reported to the ED stating that he had injected buprenorphine/naloxone intravenously and was feeling shaky and uncomfortable. He had left inpatient rehabilitation that morning and was feeling symptoms of opioid withdrawal leading him to dissolve the buprenorphine/naloxone and inject it. He verbalized feeling “100 times worse” than he had before injecting the medication. He denied any suicidal ideation or self-injurious intentions.

The patient's vital signs were notable for a blood pressure of 163/94 but were otherwise unremarkable. On exam, the patient appeared uncomfortable and was covering his head with a blanket. He was irritable during the interview. Laboratory testing was notable for hypokalemia (3.4 mEq/L) and anemia (12.9 g/dL). The remainder of a complete blood count and basic metabolic profile were within normal limits. An EKG was obtained and read as normal.

He was treated with 8mg/2mg buprenorphine/naloxone, 5mg diazepam, and a 1L normal saline bolus. He verbalized worsening of his symptoms following buprenorphine/naloxone administration and improvement with diazepam. He met with the addiction medicine team and refused treatment. He was discharged to follow up with his family physician or return to the ED if symptoms worsened. He was given a prescription for oral potassium and resources for opioid use disorder.

The patient was successfully contacted at six-month follow-up and reported continued daily fentanyl use with additional sporadic use of IV buprenorphine/naloxone, but always longer than 48 hours after his last use of Fentanyl. He commented that he was irritable on initial presentation because the buprenorphine/naloxone he injected precipitated his withdrawal. He also remarked that the additional dose of buprenorphine/naloxone he was given in the emergency department worsened his symptoms further.

## DISCUSSION

With the worsening opioid epidemic and compensatory increase in MAT, ED physicians will inevitably see more pa-

tients in precipitated withdrawal after intravenous misuse of buprenorphine/naloxone. In the absence of consensus guidelines regarding management of these cases, physicians must rely on clinical judgment or sparse case-report findings, some of which show improvement of symptoms with additional administration of Suboxone. In the case of this patient, additional Suboxone significantly exacerbated his withdrawal symptoms. For this patient, administration of diazepam was associated with improvement in symptoms.

## CONCLUSION

Given worsening of this patient's symptoms with the proposed treatment by other case-reports, further study is necessary to gauge the efficacy of various treatments for precipitated opioid withdrawal after intravenous Suboxone misuse. Ultimately, additional research and clear clinical practice guidelines could help better treat patients presenting with buprenorphine/naloxone precipitated withdrawal who do not respond well to additional buprenorphine treatment.

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## ACKNOWLEDGEMENTS

This report was prepared with verbal and written consent from the patient.

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Submitted: April 22, 2024 EDT, Accepted: April 23, 2024 EDT



## REFERENCES

1. Digital Communications Division. Opioid Facts and Statistics. HHS.gov. Published November 15, 2022. Accessed January 31, 2023. <https://www.hhs.gov/opioids/statistics/index.html#:~:text=More%20than%20760%2C000%20people%20have,epidemic%20data%20from%20the%20CDC>
2. Jalal H., Buchanich J. M., Roberts M. S., Balmert L. C., Zhang K., Burke D. S. Changing dynamics of the drug overdose epidemic in the United States from 1979 through 2016. *Science*. 2018;361:6408. [doi:10.1126/science.aau1184](https://doi.org/10.1126/science.aau1184)
3. Hedegaard H, Miniño A, Spencer MR, Warner M. Drug Overdose Deaths in the United States, 1999–2020. Published online December 30, 2021. [doi:10.15620/cdc:112340](https://doi.org/10.15620/cdc:112340)
4. Lugoboni F, Zamboni L, Cibin M, Tamburin S. Intravenous Misuse of Methadone, Buprenorphine and Buprenorphine-Naloxone in Patients Under Opioid Maintenance Treatment: A Cross-Sectional Multicentre Study. *European Addiction Research*. 2019;25(1):10-19. [doi:10.1159/000496112](https://doi.org/10.1159/000496112)
5. Mendelson J. Clinical and pharmacological evaluation of buprenorphine and naloxone combinations: why the 4:1 ratio for treatment? *Drug and Alcohol Dependence*. 2003;70(2):S29-S37. [doi:10.1016/s0376-8716\(03\)00057-7](https://doi.org/10.1016/s0376-8716(03)00057-7)
6. Yokell M A, Zaller N D, Green T C, Rich J D. Buprenorphine and Buprenorphine/Naloxone Diversion, Misuse, and Illicit Use: An International Review. *Current Drug Abuse Review*. 2011;4(1):28-41. [doi:10.2174/1874473711104010028](https://doi.org/10.2174/1874473711104010028)
7. Quattlebaum THN, Kiyokawa M, Murata KA. A case of buprenorphine-precipitated withdrawal managed with high-dose buprenorphine. *Family Practice*. 2021;39(2):292-294. [doi:10.1093/fampra/cmab073](https://doi.org/10.1093/fampra/cmab073)
8. Spadaro A et al. Buprenorphine precipitated opioid withdrawal: Prevention and management in the ED setting. *The American journal of emergency medicine*. 2022;58:22-26. [doi:10.1016/j.ajem.2022.05.013](https://doi.org/10.1016/j.ajem.2022.05.013)