Association between no-shows to scheduled appointments and 30-day Risk of Overdose in Patients Prescribed Methadone for Opioid Use Disorder

Henry K. Philofsky MD, Ian Cero Ph.D., Daniel D. Maeng Ph.D., Myra L. Mathis MD
Department of Psychiatry, University of Rochester Medical Center, Strong Memorial Hospital, Rochester, NY

Introduction

Opioid overdose rates have continued to rise since the introduction of synthetic opioids[1].

While research has examined long-term overdose risk[2], including in patients prescribed methadone[3], little is known about acute risk factors, which could enable timely intervention.

After May 19, 2020, clinic appointments became voluntary for patients taking methadone in Opioid Treatment Programs (OTP)[4]. Therefore, missed clinic appointments represent a clinical need, a barrier to attendance, and an absence of indicated medical care, all of which could increase the risk of overdose.

This study tests the hypothesis that no-shows to scheduled appointments are associated with 30-day overdose risk among patients prescribed methadone for opioid use disorder.

Methods

We analyzed 828,154 daily observations from 1,049 patients (May 2020-April 2024) during which 56 overdoses occurred. Inclusion required ≥1 methadone dose within the previous 30 days while enrolled in the OTP.

The outcome was overdose within 30 days (from critical event reporting).

The predictor was standardized (z-score) no-shows to scheduled clinic appointments in the previous 30 days. The increments of 30 days were chosen based on author experience.

We used logistic regression with mixed effects and patient-level intercepts within a generalized linear modeling framework

Control variables included

Patient characteristics: age, sex, race/ethnicity (dichotomized as White vs non-White due to small sample sizes in some categories)Prior overdoses during study period.

Temporal characteristics: study month, season,

Diagnostics included assessing for multicollinearity with generalized variance inflation factors (GVIF), and assessing the linearity of the relationship with generalized additive models with splines across multiple basis points. Goodness of fit was assessed with marginal R2.

The Institutional Review Board at the University of Rochester Medical Center determined that this study was exempt (STUDY00009188).

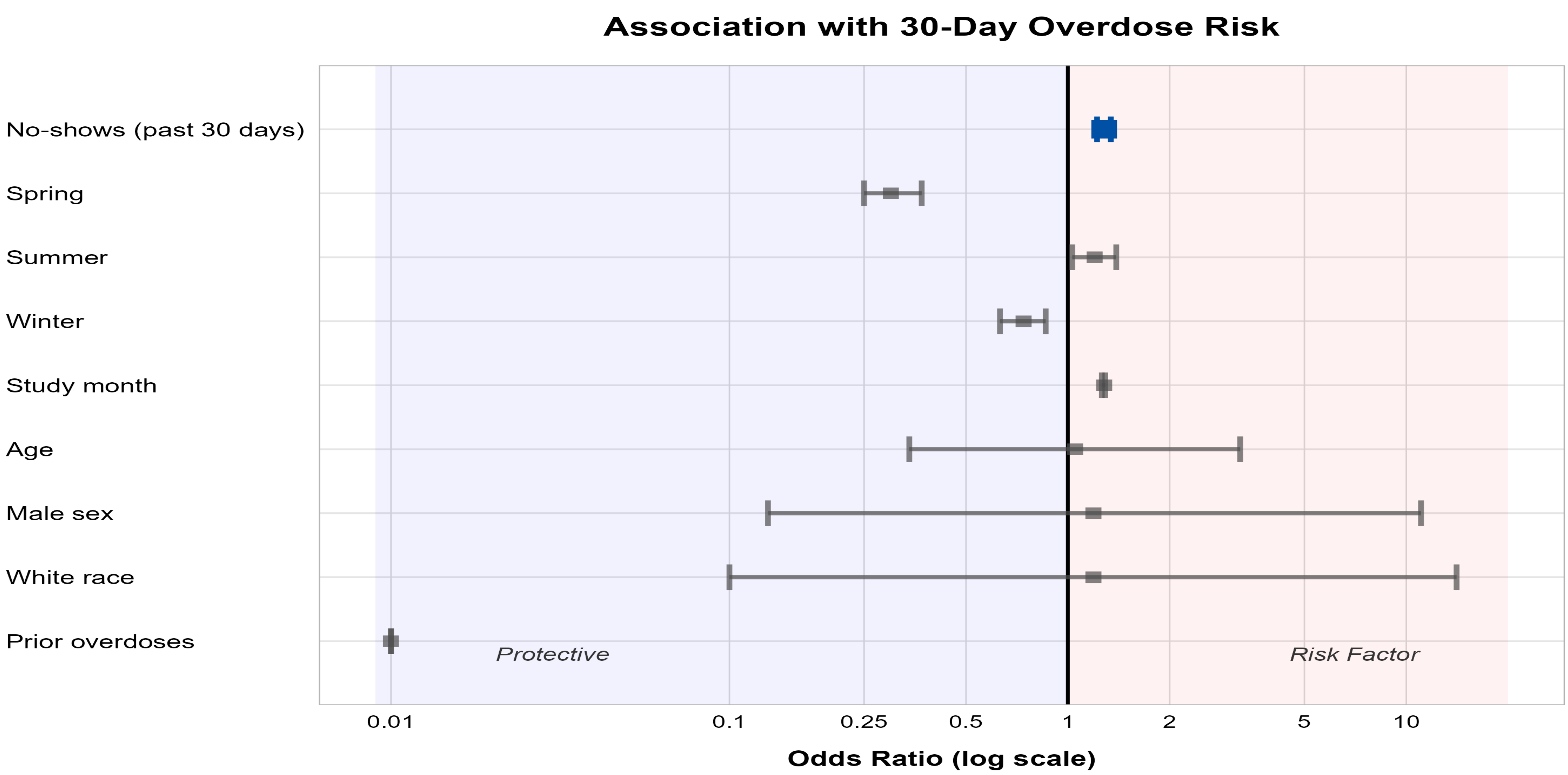
Results

Figure 1 presents the logistic regression results. Each standard deviation increase in no-shows was associated with a 28% increase in odds of 30-day overdose risk (OR=1.28, 95% CI: 1.22-1.34, p<0.001).

Diagnostics

Model diagnostics showed no multicollinearity (GVIF < 1.06) and linear predictor relationships (tested using splines). Marginal $R^2 = 0.042$

Figure 1. Logistic Regression Results: Mixed Effects Model with Patient-Level Intercepts



Conclusion

Recent no-shows represent a meaningful acute risk factor that can be tracked dynamically to guide efficient resource allocation in Opioid Treatment Programs, which could enable timely interventions (e.g., peer outreach, home visits) for high-risk patients.

Limitations: this observational design cannot establish causality; overdoses may be underestimated due to reliance on critical event reporting; findings may not generalize beyond this single treatment program.

Future research should validate these findings in other OTPs and explore additional acute risk factors.

References

1. Kariisa M, O' Donnell J, Kuman S, Mattson C, Goldberger B. Illicitly manufactured fentanyl–involved overdose deaths with detected xylazine — United States, January 2019–June 2022. MMWR Morb Mortal Wkly Rep [Internet]. 2023;72.
2. Saloner B, Chang HY, Krawczyk N, et al. Predictive modeling of opioid overdose using linked statewide medical and criminal justice data. JAMA Psychiatry. 2020 Nov 1;77(11):1155.
3. Nguyen AP, Glanz JM, Narwaney KJ, et al. Update of a multivariable opioid overdose risk prediction model to enhance clinical care for long-term opioid therapy patients. J Gen Intern Med. 2023 Sep 1;38(12):2678–85.
4. 42 CFR Part 8 Final Rule [Internet]. 2024 [cited 2025 Feb 17].