Discordance Between Self-Reported and EHR-Documented Substance Use and Chronic Opioid Prescribing

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All of Us Research Program · Retrospective Cohort Study

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INTRODUCTION

Safe opioid prescribing depends on an accurate substance-use history, yet in an era of evolving CDC prescribing guidance[1,2] clinicians largely rely on the EHR, where patient-reported use is often never entered as a diagnosis. Incomplete documentation may reduce opportunities for risk counseling, closer monitoring, naloxone discussion, or addiction referral before opioid therapy starts. Using the All of Us Research Program[4], we tested (1) discordance between self-report and EHR documentation across six substances and (2) whether under-documentation itself — independent of clinical severity — predicts chronic opioid therapy.

METHODS

- All of Us Research Program: linked surveys, EHR, and biospecimens from a nationwide, diverse cohort.
- Self-report (Lifestyle Survey) cross-classified against ICD-10 diagnosis codes across full EHR history.
- Chronic non-malignant pain: Chronic-pain ICD codes on ≥2 dates 90+ days apart; pain score ≥4/10; ≥2 analgesic prescriptions 90+ days apart (cancer excluded).
- Primary analysis restricted to opioid-naive adults (no opioid fills in the prior 12 months).
- Chronic opioid use (outcome): ≥2 fills totaling ≥90 cumulative days supply within 12 months.
- Multivariable logistic regression adjusted for age, sex, race/ethnicity, BMI, diabetes, pain burden, and psychiatric diagnosis.
- Sensitivity model additionally adjusted for pre-index opioid exposure.

N = 52,463 adults with chronic pain identified in All of Us; primary analysis cohort **N = 27,114** opioid-naive adults.
Cohort flow: *All of Us adults → chronic-pain criteria met, cancer excluded → 52,463 → opioid-naive subset → 27,114 (primary analysis).*

Classification: self-report × EHR diagnosis

Concordant negative	**Over-documented**
Under-documented	**Concordant positive**

Under-documented
= self-report positive, EHR negative — the focus of this study.

Concordant positive
= agreement on positive use (small N; descriptive for most substances).

Results

A. A large documentation gap between self-report and the EHR

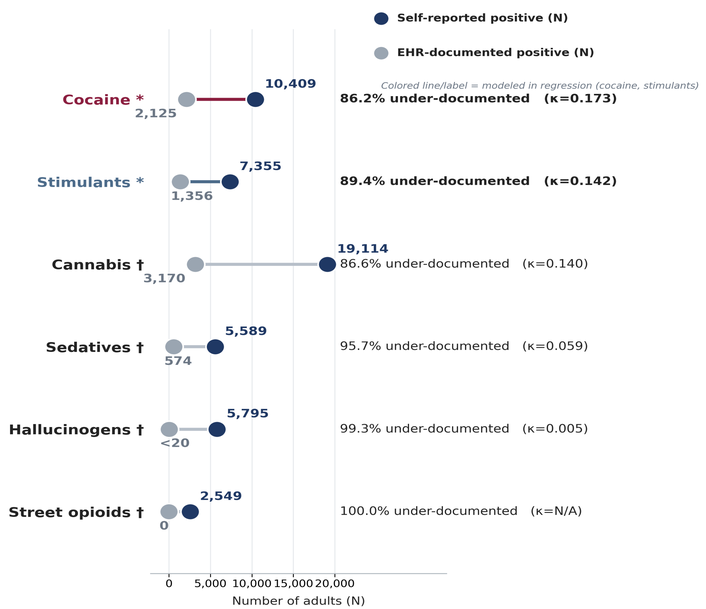


*Figure 1. Self-reported vs. EHR-documented positive substance use among 52,463 adults with chronic pain (All of Us). * Modeled in regression analyses. † Descriptive only (insufficient concordant-positive N). All gaps p<0.0001.*

By Landis & Koch benchmarks, Cohen's Kappa= 0.00–0.20 = slight agreement, 0.21–0.40 = fair. Every substance here fell at or below the boundary of slight agreement between self-report and the EHR, with cocaine and stimulants (the two modeled substances) showing the highest of the six kappas .

- **Cocaine and stimulants were modeled in the regression analyses; sedatives, Street opioids and hallucinogens are descriptive given insufficient group sizes.**

B. Documentation gap predicts chronic opioid initiation

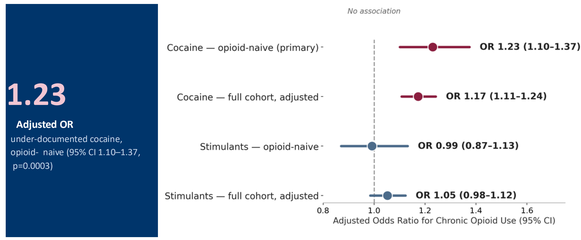


Figure 2. Under-documented cocaine use — but not stimulants — independently predicted chronic opioid initiation, and the association held after adjustment.

Table 1. Primary analysis, opioid-naive adults (N=27,114)

Group	N	Opioid use N	Rate	aOR (95% CI), p
COCAINE				
Concordant negative (ref)	22,107	2,152	**9.7%**	1.00 —
Under-documented	4,218	471	**11.2%**	1.230 (1.101–1.374) p=0.0003
Concordant positive	562	88	**15.7%**	1.121 (0.831–1.512) p=0.45
STIMULANTS				
Concordant negative (ref)	23,671	2,049	**8.7%**	1.00 —
Under-documented	2,945	233	**7.9%**	0.992 (0.870–1.132) p=0.91
Concordant positive	2,91	41	**14.1%**	1.547 (1.087–2.203) p=0.016

Table 1. Chronic opioid use by cocaine and stimulant concordance group, opioid-naive adults (N=27,114). Adjusted for age, sex, race/ethnicity, BMI, diabetes, pain burden, psychiatric diagnosis.

Table 2. Secondary analysis, full cohort (N=52,463

Group	Model A: aOR (95% CI), p	Model B: aOR (95% CI), p
COCAINE		
Under-documented	1.225 (1.161–1.293) p<0.0001	1.173 (1.108–1.242) p<0.0001
Concordant positive	1.456 (1.294–1.639) p<0.0001	1.304 (1.150–1.478) p<0.0001
STIMULANTS		
Under-documented	1.080 (1.015–1.149) p=0.015	1.052 (0.985–1.123) p=0.13
Concordant positive	1.406 (1.204–1.642) p<0.0001	1.167 (0.991–1.375) p=0.064

Table 2. Sensitivity analysis, full cohort. Model A: adjusted for age, sex, race/ethnicity, BMI, diabetes, pain burden, psychiatric diagnosis. Model B: Model A + pre-index opioid use. Reference group (concordant negative) omitted

DISCUSSION

- Cocaine and stimulant signals diverge: cocaine use predicts new opioid initiation, while the stimulant association more likely reflects continuation of existing therapy rather than new prescribing.
- This pattern echoes broader concerns that structured EHR data alone under-capture substance use relevant to opioid-prescribing decisions[3], particularly as prescribing norms continue to shift under updated CDC guidance[2].
- Under-documented patients looked clinically similar to fully concordant-negative patients on pain severity, ED visits, and prior analgesic burden — severity alone does not explain the documentation gap.

CONCLUSIONS

- **EHR substance-use documentation was highly incomplete among adults with chronic pain.**
- **Cocaine under-documentation was independently associated with subsequent chronic opioid prescribing, while the stimulant association was attenuated after accounting for pre-existing opioid exposure.**
- **These findings support systematic integration of patient-reported substance use screening into EHR workflows when opioid prescribing is considered for patients with chronic pain.**

Acknowledgements

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References

1. Bohnert ASB, Guy GP Jr, Losby JL. Opioid prescribing in the United States before and after the CDC's 2016 opioid guideline. Ann Intern Med. 2018;169(6):367–375. doi:10.7326/M18-1243
2. Dowell D, Ragan KR, Jones CM, Baldwin GT, Chou R. CDC clinical practice guideline for prescribing opioids for pain — United States, 2022. MMWR Recomm Rep. 2022;71(3):1–95. doi:10.15585/mmwr.rr7103a1
3. Campbell AG, Naz S, Gharbi S, et al. The concordance of electronic health record diagnoses and substance use self-reports among reproductive aged women. Inquiry. 2024;61:469580241237051. doi:10.1177/00469580241237051
4. All of Us Research Program Investigators. The "All of Us" Research Program. N Engl J Med. 2019;381(7):668–676. doi:10.1056/NEJMsr1809937