When Prescribed Opioids Fail: Comparing Recall Patterns between Medications for Opioid Use Disorder versus Other Opioids Used for Pain

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SUBMISSION DETAILS

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Summary Opioid safety discussions in addiction psychiatry often center on overdose, diversion, and the illicit drug supply. Far less attention has been paid to failures within the regulated pharmaceutical opioid supply itself. In the United States, most drug recalls are initiated by manufacturers and communicated through the Food and Drug Administration (FDA) enforcement reports, yet this system is reactive and poorly integrated into routine clinical practice. Consequently, physicians may never learn of manufacturing defects, contamination, labeling errors, or delivery system failures that could plausibly contribute to undertreatment, withdrawal, overdose, apparent medication nonresponse, or erosion of trust in treatment.

We conducted a secondary analysis of the national FDA enforcement dataset of opioid medication recalls from 2002 through 2025 to compare recall patterns involving medications for opioid use disorder (MOUD), specifically buprenorphine and methadone, with recall patterns involving other prescribed opioids commonly used for pain treatment, including fentanyl, hydrocodone, hydromorphone, oxycodone, and morphine. The parent dataset included 286 recall events across seven opioids. In this derivative analysis, we focused on differences between MOUD and non-MOUD opioids. Variables included recall frequency, severity class, formulation type, and clinically meaningful examples of product failure. Recall reasons were categorized into five domains to facilitate analysis: wrong dose or potency, contamination, mispackaging or mislabeling, defective product or delivery system, and quality assurance deviation.

Twenty-nine recalls involved MOUD, including 20 involving buprenorphine and 9 involving methadone. MOUD recalls were generally less severe than recalls involving other opioids: buprenorphine had no Class I recalls, and methadone had only one. Within MOUD, 14 of 29 recalls

were due to quality assurance deviations. Buprenorphine recalls spanned sublingual tablets, films, injectables, and transdermal systems, whereas methadone recalls were fewer but included both labeling failures and defects that could plausibly contribute to underdosing. Particularly striking was a Class I methadone recall in which bottles labeled as containing 20 mg actually contained 260 mg, illustrating how product failures can create immediate overdose risk even within medications central to addiction treatment.

By contrast, 257 recalls involved other prescribed opioids used for pain, and these accounted for 34 of the 35 Class I recalls in the dataset. Fentanyl, hydromorphone, and morphine accounted for most severe recalls overall, and known affected units exceeded 354 million. Non-MOUD recalls included defective fentanyl transdermal systems with the potential for altered drug delivery, high volume morphine and hydromorphone potency failures, and numerous events involving injectables and extended-release products. Together, these findings suggest that the regulated opioid supply may introduce clinically meaningful risks that are far more concentrated in non-MOUD opioids, but still relevant across the full spectrum of prescribed opioid treatment.

Although the lower frequency and severity of MOUD recalls is reassuring in comparison, these events remain clinically relevant because even infrequent failures may affect overdose risk, withdrawal, or trust in treatment. These findings have implications across domains. For clinical practice, they suggest that unexpected opioid treatment responses may sometimes reflect product quality failures rather than only patient nonadherence, tolerance, or misuse. For research, they highlight the need to link recall data to real world outcomes such as withdrawal, overdose, and treatment interruption. For education, they support greater training in recall awareness as part of safe opioid and addiction treatment. For policy, they underscore the need for more complete, standardized recall reporting and better communication systems to clinicians and patients.

The questions following the above will ask you to breakdown your summary.

Background Opioid safety in addiction psychiatry is usually framed around overdose, diversion, and the illicit drug supply. By contrast, failures within the regulated pharmaceutical opioid supply have received far less clinical attention, despite their potential relevance to both addiction treatment and pain management. In the U.S., drug recalls are generally initiated by manufacturers and communicated through FDA enforcement reports. Although this system can identify manufacturing defects, contamination, potency failures, mislabeling, and delivery system problems, it is reactive and poorly integrated into routine clinical care. As a result, prescribing clinicians may never learn of product failures that could plausibly contribute to undertreatment, withdrawal, overdose, apparent medication nonresponse, or erosion of trust in prescribed treatment.

Public concern about pharmaceutical quality has increased in recent years following well publicized recalls involving antidepressants, antiepileptics, thyroid medications, and stimulants. These events drew attention to the possibility that product quality failures may disrupt treatment, provoke adverse effects, and undermine patient confidence even when medications are obtained through legitimate channels. Similar concerns have emerged around opioid products, yet opioid specific recall patterns remain understudied, particularly from the perspective of addiction care.

This gap is especially relevant because opioids occupy two distinct but overlapping clinical roles. Some, such as buprenorphine and methadone, are essential medications for opioid use disorder (MOUD). Others are more commonly prescribed for pain. Comparing recall patterns across these groups may inform whether manufacturing failures pose different risks depending on clinical use, formulation, and therapeutic context. In this dataset, MOUD accounted for a small minority of recall events and had fewer severe recalls than non-MOUD opioids, while fentanyl, hydromorphone, and morphine accounted for most Class I events (serious risk of death or injury). These differences suggest that the regulated opioid supply may not fail uniformly across products, and that clinicians may benefit from understanding which medications have historically carried greater recall burden and why.

The principal practice gaps are in knowledge, competence, and performance. Many clinicians may not recognize pharmaceutical quality failure as part of opioid safety. Many may be unfamiliar with how recalls are communicated, what types of failures are most common, or how such failures might appear in practice. In turn, recall awareness is rarely integrated into routine assessment of unexpected opioid responses, patient counseling, or clinical decision making. This presentation addresses those gaps by comparing recall patterns in MOUD and non-MOUD opioids and translating those findings into clinically meaningful implications for addiction care.

This information may enhance clinician practice by broadening how opioid related risk is conceptualized. It may help clinicians consider product quality failure when faced with abrupt changes in efficacy, unexplained withdrawal, unexpected toxicity, or loss of patient trust, while also reinforcing the need for better recall communication, surveillance, and education across addiction treatment settings.

Educational Learning Objectives

Learning Objective 1 Compare recall patterns between buprenorphine and methadone versus other prescribed opioids, including differences in frequency, severity, and formulation specific failures.

Learning Objective 2 Identify clinically relevant opioid product failures that may contribute to undertreatment, withdrawal, overdose risk, or apparent medication nonresponse.

Learning Objective 3 Apply recall awareness to addiction treatment by integrating product quality concerns into opioid assessment, patient counseling, and medication safety monitoring.

Methods We conducted a secondary descriptive analysis of a previously assembled national dataset of opioid medication recalls drawn from FDA Enforcement Reports from January 1, 2002 through August 15, 2025. The parent dataset included recalls involving buprenorphine, methadone, fentanyl, hydrocodone, hydromorphone, oxycodone, and morphine. For this derivative analysis, buprenorphine and methadone were grouped as MOUD and compared with non-MOUD opioids more commonly prescribed for pain. Variables included recall frequency, FDA recall severity class, formulation type, units recalled when available, and clinically salient examples of product failure.

Recall reasons were adjudicated into five domains: wrong dose or potency, contamination, mispackaging or mislabeling, defective product or delivery system, and quality assurance deviation.

Results Of 286 opioid recall events, 29 involved MOUD, including 20 involving buprenorphine and 9 involving methadone, while 257 involved non-MOUD opioids. MOUD recalls were less severe overall: buprenorphine had no Class I (serious risk of death or injury) recalls and methadone had one, whereas non-MOUD opioids accounted for 34 of the 35 Class I recalls. Within MOUD, 14 of 29 recalls were due to quality assurance deviations. Buprenorphine recalls involved sublingual tablets, films, injectables, and transdermal systems; methadone recalls were fewer but included a Class I event in which bottles labeled as 20 mg contained 260 mg. By contrast, fentanyl, hydromorphone, and morphine accounted for most severe non-MOUD recalls. Known affected units exceeded 4.0 million MOUD units and 354 million non-MOUD units.

Conclusion Failures in the regulated opioid supply are an underrecognized patient safety issue in addiction psychiatry. Compared with non-MOUD opioids, recalls involving buprenorphine and methadone were less frequent and generally less severe, which is somewhat reassuring. However, clinically important MOUD failures still occurred, including events with potential overdose or underdosing implications. These findings suggest that unexpected opioid treatment responses may sometimes reflect product quality failures rather than only nonadherence, tolerance, or misuse. For clinicians, recall awareness should become part of opioid and addiction treatment safety. For researchers, these data support linking recall events to real world outcomes such as withdrawal, overdose, and treatment interruption. For policy, they highlight the need for more complete recall reporting and better communication to frontline prescribers.

Scientific Significance This study extends prior opioid recall research by shifting the focus from overall recall burden to a clinically meaningful comparison between MOUD and non-MOUD opioids. Using a national FDA recall dataset, it shows that product failures were not evenly distributed across prescribed opioids: MOUD recalls were fewer and generally less severe, whereas most serious Class I recalls involved non-MOUD opioids, particularly fentanyl, hydromorphone, and morphine. These findings are scientifically significant because they reframe opioid recalls as a pharmacovigilance issue directly relevant to addiction care, not only regulatory oversight. The work also highlights important surveillance gaps, including incomplete quantity reporting and limited clinician facing communication, and supports future studies linking recall events to overdose, withdrawal, and treatment interruption outcomes.

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