Substance Abuse and Rehabilitation

Dovepress
Taylor & Francis Group

Open Access Full Text Article

REVIEW

# Risk of Relapse Following Discharge from Non-Hospital Residential Opioid Use Disorder Treatment: A Systematic Review of Studies Published from 2018 to 2022

Orrin D Ware[1], Gabriella Rose Geiger[1], Veronica D Rivas[2], Miracle A Macias Burgos[3], Lea Nehme-Kotocavage[4], Tara G Bautista[2]

[1]School of Social Work, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; [2]Department of Psychological Sciences, Northern Arizona University, Flagstaff, AZ, USA; [3]Clinical Translational Sciences, University of Arizona, Tucson, AZ, USA; [4]Department of Psychology, Florida International University, Miami, FL, USA

Correspondence: Orrin D Ware, University of North Carolina at Chapel Hill, School of Social Work, 325 Pittsboro Street, Chapel Hill, NC, 27599, USA, Email oware@unc.edu



**Abstract:** Relapsing on opioids after residential treatment may involve fatal outcomes, considering the potential for reduced tolerance and the potency of fentanyl in the illicit opioid market. The present paper examines recent literature on the risk of relapse among adults with opioid use disorder after discharge from residential treatment. We searched for published studies from 2018 to 2022 through database searches, including CINAHL, PsychINFO, PubMed, and Scopus. Across the N=10 studies included in this review, returning to substance use after residential treatment was captured differently, including self-report, hair samples, and urine samples. Follow-up relapse data after discharging from treatment was also captured across different time periods of included studies ranging from one month to six months. Variability was also identified in the percentage of individuals who relapsed after treatment, ranging from 0% to 95%. Considering the potential for a fatal overdose in the current fentanyl era, it is imperative to provide resources during residential treatment that can reduce the risk of relapse after discharge.

**Keywords:** adult, non-hospital residential, recovery, returning to patterns of use, review

## Introduction

Substance use disorder (SUD) treatment has varying levels of care, such as outpatient and residential treatment. Ideally, a multidimensional assessment[1–4] specifies an individual's biomedical, psychological, and social needs to select the appropriate setting focusing on personalized treatment.[5–9] Residential treatment is a higher level of care recommended for those with significant social or treatment needs.[8,10] The importance of residential treatment is signified by the often complex clinical and environmental needs of individuals for whom residential treatment is recommended.

Residential SUD treatment is categorized by services provided in a 24-hour setting that is substance-free.[11–13] Compared to those who receive outpatient treatment, individuals who receive residential treatment are more likely to complete treatment.[10] Also, relative to outpatient treatment, the protective environment of residential treatment is especially beneficial to individuals with environmental concerns or living arrangements that may hinder their treatment goals. Residential treatment, by providing a stable environment in which substances cannot be easily accessed, serves as a wedge between an individual and their typical living arrangements. This allows individuals receiving care to focus on treatment without being impacted by their typical environmental factors.

Discharging from the protective environment of residential treatment may pose a risk of relapsing on substance(s).[14] Relapse can be described as returning to previous patterns of substance use, although varying definitions for the word relapse exist in the literature.[15,16] Reasons for relapse can be multifactorial, extending across biological, psychological, or social

Received: 19 December 2024
Accepted: 15 April 2025
Published: 23 April 2025

domains. For example, having poorer physical health, co-occurring mental health disorders, greater SUD severity, greater stress, being of younger age, and having poorer social support systems are associated with a greater risk of relapse.[17–19] A systematic review on the effectiveness of residential treatment suggested that best practice should include aftercare/continuing care after discharge.[11] This aftercare/continuing care can further support individuals after treatment to sustain potential improvements obtained during residential treatment, such as reaching their recovery goals, and limit the potential of relapsing. It is, therefore, essential to consider the risk of relapse after discharge from residential treatment.

The risk of overdose makes relapsing on opioids after leaving residential treatment particularly problematic. After treatment, an individual's tolerance of opioids may be lower. Factoring in a lower tolerance to opioids, ingesting a posttreatment dose of opioids equivalent to a pretreatment quantity may increase the risk of an overdose or hospitalization.[20–22] The prominence of fentanyl,[23] a more potent opioid than heroin, in the illicit drug market is also a primary overdose concern. Specifically, fentanyl and its analogues have caused numerous overdoses worldwide.[24–27] Moreover, relapsing on opioids after treatment can be demoralizing to many individuals in recovery,[28] and impact the improvements that were acquired from treatment. Reviewing the literature concerning relapse following residential treatment for opioid use disorder (OUD) is essential, considering we are currently in the fentanyl era, where fentanyl and its analogues are implicated in numerous overdoses and have prominence in the illicit drug market.[29–34]

The Substance Abuse and Mental Health Service (SAMHSA) differentiates hospital-based inpatient treatment as facilities connected to hospitals from non-hospital residential treatment.[35] Non-hospital residential treatment facilities usually include treatment that lasts from one month to a year and may assist those with a more severe SUD such as a severe OUD diagnosis.[35] Other review articles have examined recovery outcomes among residential treatment facilities,[11] including those focusing on residential treatment in therapeutic communities, which tend to have a longer duration of treatment.[36,37] However, a gap in the research literature exists regarding a review paper on relapse with a focus on individuals with OUD in non-hospital residential treatment settings during the fentanyl era. This review paper examined the literature related to adults relapsing after receiving residential treatment for an OUD. Studies of interest were published during the years 2018 to 2022 with a focus on free standing non-hospital residential treatment facilities.

## Materials and Methods

A research librarian at the University of North Carolina at Chapel Hill was consulted to refine the search strategy by identifying the appropriate databases and key terms. The reporting of this protocol is guided by the standards of the Preferred Reporting Items for Systematic Review and Meta-Analysis extension for protocols (PRISMA-P).[38]

### Eligibility Criteria

This review included published studies that report on relapse among adults following discharge from non-hospital residential treatment for OUD. Articles were considered eligible if they met the following criteria: [1] adult sample (≥18 years old), [2] written in English, [3] published from 2018 to 2022, [4] includes data about relapse, returning to patterns of previous use, abstinence, using a substance after a period of abstinence or reduced substance use after discharge, [5] includes information about discharging from the facility, [6] includes a sample with OUD, and [7] did not describe their treatment setting as hospital-based. Due to the variability in how relapse is defined,[15,16] for the purpose of this paper, we operationalized relapse as using a substance after treatment or a period of abstinence reported in the studies included in this review. No restrictions were placed on the geographic area where the study was conducted. Included articles could be quantitative or qualitative. During the planning stages in September 2023, we limited eligible studies to those recently published in the last five years, between 2018 and 2022 to focus on papers published during the fentanyl era. Excluded studies were those that included only minors (≤17 years old), were not written in English, did not include individuals with an OUD, had hospital-based inpatient treatment as the setting, had outpatient treatment as the setting, did not include post-treatment data, did not include a description about post-treatment relapse/returning to patterns of previous use, were review articles, were meta-analyses, or focused on residential mental health disorder treatment instead of residential SUD treatment. Non-hospital residential treatment (inclusion criterion) was differentiated from hospital inpatient (exclusion criterion) using SAMHSA's definitions, which identify non-hospital residential treatment as typically longer and not connected to a hospital or clinic.[35]

## Search Strategy

Eligible studies were identified through database searches. Databases used for this review include CINAHL, PsychINFO, PubMed, and Scopus. When searching the databases, the following key terms were used: "opioid use disorder" OR "heroin use disorder" OR "opiate use disorder" OR "opioid related disorders" and "residential treatment" OR "residential rehabilitation" OR "residential therapy" OR "residential care" OR "institutional care" OR "group care" OR "therapeutic community" OR "therapeutic communities" OR "inpatient" and "Discharge" OR "post treatment" OR "post residential treatment" OR "release" OR "post care" OR "post rehabilitation" OR "relapse" OR "outcomes". The search was conducted between September 14, 2023 and March 6, 2024. The authors also checked for additional relevant cited and citing articles using included studies.

## Study Records

Search results were pooled in Endnote and de-duplicated [www.endnote.com]. This set was uploaded to Covidence [www.covidence.org] for screening.

## Selection Process

Using Covidence [www.covidence.org], two screeners independently reviewed the titles and abstracts for eligibility criteria and made a yes, no, or maybe decision. The full texts were downloaded for studies coded as yes or maybe to be further reviewed for eligibility. At each stage of review, any conflicts were resolved through consensus with a third reviewer. The study team held regular meetings throughout the selection process to discuss article eligibility.

## Data Collection Process

Once the studies were identified for inclusion, the authors extracted data from each study to complete Table 1. For each study, there was a primary reviewer who extracted the data and a secondary reviewer to confirm the accuracy of the extracted data. Specifically, for each study, we reported [1] the lead author, [2] article title, [3] aim of the study, [4] total number of participants, [5] sample description, [6] inclusion criteria, [7] exclusion criteria, [8] country in which the study was conducted, [9] study design, [10] OUD treatment description, [11] post-discharge main outcomes, [12] post-discharge secondary outcomes, and [13] main findings related to outcomes of interest.

## Risk of Bias

To reduce the risk of bias, we assessed sources of funding, disclosure of conflicts of interests, the reliability and validity of the measures used for the outcome, collection of longitudinal data, and the inclusion of a comparison group.

# Results

The selection process for the articles included in this study may be found in Figure 1. A total of ten articles were retained for inclusion in this review.[39–48] Descriptions of the ten articles may be found in Table 1. Regarding the risk of bias assessment (Table 2), six studies[40,42–46] cited funding from the National Institutes of Health (NIH), two[41,48] studies specified other fundings sources, and one study[47] did not disclose their funding sources. The authors from four studies[42,44,46,47] declared no conflicts of interest and the authors of three studies.[41,43,48]

## Samples

When the average age of participants was included in the study, five studies described a sample with an average age of 30 to 39.[39,40,43,44,46] Exceptions included studies that focused specifically on younger samples, such as young adults,[41] and the Hartung et al, 2022 study, which presented age as categorical.[42] Another exception is the Uğurlu et al, 2020 study, which had a sample with an average age of 22.5 among a case group and 22.2 among a control group.[47] The study by Mukherjee et al, in 2021 identified the average age of a subsample that relapsed as being 31.9 years old and the subsample that remained abstinent as being 28.0 years old.[45] Regarding reported sex, females were in the minority across all studies,[39–46,48] including the Uğurlu et al, 2020 study in which 100% of the sample participants were male among the

https://doi.org/10.2147/SAR.S440214



**Table 1** Included Studies of Residential Treatment for OUD

| Author | Aim(s) | Sample Size & Demographics | Country | Study Design | OUD Tx | Results |
|---|---|---|---|---|---|---|
| Baxley et al (2019)[39] | To examine anxiety sensitivity on the withdrawal process, subsequent treatment engagement, and relapse. | N=90<br>Mean age 37.5 years old (SD = 10.3), 46% Female, 59% Caucasian, 36% African American, 63% never married, 12.1 years (SD = 1.7) of education, 78% unemployed, mean annual income $5828 (SD = $9946). | United States | Cohort Study | Buprenorphine initiation then tapering occurred for the participants. After five-day detoxification, participants were discharged without buprenorphine maintenance. Two different buprenorphine protocols were used with participants being initiated to either 4mg or 8mg. | Relapse was reported by approximately 57% of the participants who completed the follow-up study assessment. These individuals reported opioid use for 1 or more days with the average number of days in which they used an opioid after treatment as 14.3 (SD = 11.4). Having more days in an uncontrolled environment and using any substance after discharge was associated with relapsing onto opioids. |
| Cleveland et al (2021)[40,] | To examine changes in daily assessments of craving and whether craving was associated with relapse. | N=73<br>Mean age 30 years old and 23% were female. | United States | Cohort Study | Caron Treatment Centers' residential drug and alcohol treatment facility. Treatment details not discussed, but group therapy is mentioned. | Craving reduced across the 12 days that it was assessed. Having greater within-person changes in craving was associated with being less likely to relapse when compared to individuals with lower within-person craving changes. |
| Fishman et al (2021)[41,] | To examine the efficacy of an intervention: YORS, in increasing treatment engagement and medication adherence. | N=38<br>Mean age 23.4 (SD = 2.3) years old. Other characteristics included the sample being 65.8% male, 94.7% White, and 7.9% Hispanic. | United States | RCT | Treatment consisted of withdrawal management with a 7-to-10-day period of being opioid abstinent and receiving at least one dose of naltrexone. The TAU group were provided referrals for aftercare while the intervention group received the referrals and the YORS intervention. | The rate of relapse among the intervention group is 61% whereas the rate of relapse in the TAU group is 95%. Over 24 weeks the intervention group had fewer days in which opioids were used with a mean of 23.6 (SD = 21.3) compared to the TAU group 51 (SD = 35.2). |
| Hartung et al (2022)[42,] | To examine differences in clinical outcomes among individuals with Medicaid and OUD who received substance use disorder treatment. | N=957* Residential Sample<br>49.2% Female, 73.7% White, 0.8% Black or African American, 3.0%, 19.5% Two or more races, 9.0% Hispanic or Latinx, 89.0% Not Hispanic or Latinx, 54.0% 18–29 years old, 31.9% 30–39 years old, and 14.1% 40+ years old. | United States | Cohort study | Substance use treatment facilities that were publicly funded. | Among the sample who received residential treatment 2.5% had an opioid overdose and 15.4% had an opioid-related engagement with emergency department services. |
| Hayaki et al (2021)[43,] | To examine drug refusal self-efficacy when experiencing negative emotions, opioid use, and receiving MOUD. | N=220<br>The sample was 63.2% Male, 84.1% White, 9.1% Latinx, and were on average 30.7 years old. | United States | Cohort study | Withdrawal management, methadone tapering, individual counseling, group counseling, and case management. | The average stay of treatment was 5.7 days. Self-efficacy in refusing drugs when experiencing negative emotions had an inverse relationship with opioid use at follow-up. Relapsing on opioids was more prevalent at six months than within the first two weeks of discharge. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Knapp et al (2021)[44] | To examine changes in daily assessments of meaningfulness, negative social experiences, and relapse. | N=73<br>The sample was 77% male, with an average mean age of 30.1 years old. | United States | Cohort study | Caron Treatment Centers' residential drug and alcohol treatment facility. Treatment details not discussed, but group therapy is mentioned. | 51% of individuals relapsed with any substance.<br>Relapsing within four months was associated with having more meaningfulness reactivity to negative social experiences compared to individuals who were abstinent. |
| Mukherjee et al (2021)[45,] | To examine sleep and basal cortisol levels among individuals receiving long-term residential treatment. | N=55<br>The participant ages ranged from 22 to 45 years old and 71% were male. | United States | Case control study | Residential treatment for a month with the opportunity for continued care. | Approximately 38% of the participants relapsed.<br>It was reported that 32% relapsed on opioids and 5% relapsed on alcohol. |
| Stein et al (2020)[46,] | To examine if initiating buprenorphine would reduce illicit opioid relapse compared to treatment as usual. | N=115<br>The participants on average were 32.4 years old, 68% were males, 79% were White, and 11.0% were Latino/a. | United States | RCT | Withdrawal management, methadone tapering, individual counseling, group counseling, and case management. | The buprenorphine initiation group had lower average illicit opioid use at days 12, 35, and 95 compared to TAU. |
| Uğurlu et al (2020)[47,] | To Examine the impact of a psychodrama intervention. | N=12<br>There were 6 cases with an average age of 22.5 years old. There were 6 case controls with an average age of 22.2 years old. | Turkey | Case control study | The cases and controls received psychoeducation. | No relapse was reported by any of the participants at the follow-up periods of 1 month, 3 months, and 6 months. Follow-up data were missing from 17% of the cases and 67% of the controls at 3 months. Follow-up data were missing from 33% of the cases and 67% of the controls at 6 months. |
| Wenzel et al (2021)[48] | To examine patient perspectives of the implementation for young adults with OUD. | N=21<br>Majority men (71.4%), with an average age of 22.9 years, mostly Caucasian (80.9%), 14.3% African American/Black, and a median annual income of $14,400. | United States | Qualitative research | Extended-release naltrexone. | Approximately 24% of the sample relapsed after they received all doses of extended-release naltrexone. |

**Notes**: *Study included a larger sample, but only the residential sub-sample characteristics and findings are reported here.

**Abbreviations**: DSM-IV-TR, Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision; DSM-5, The Diagnostic and Statistical Manual of Mental Illnesses, Fifth Edition; MOUD, Medication for opioid use disorder; OUD, Opioid Use Disorder; RCT, Randomized Controlled Trial; SD, Standard Deviation; TAU, Treatment as usual; XR-NTX, Extended-release naltrexone; YORS, youth opioid recovery support.

https://doi.org/10.2147/SAR.S440214

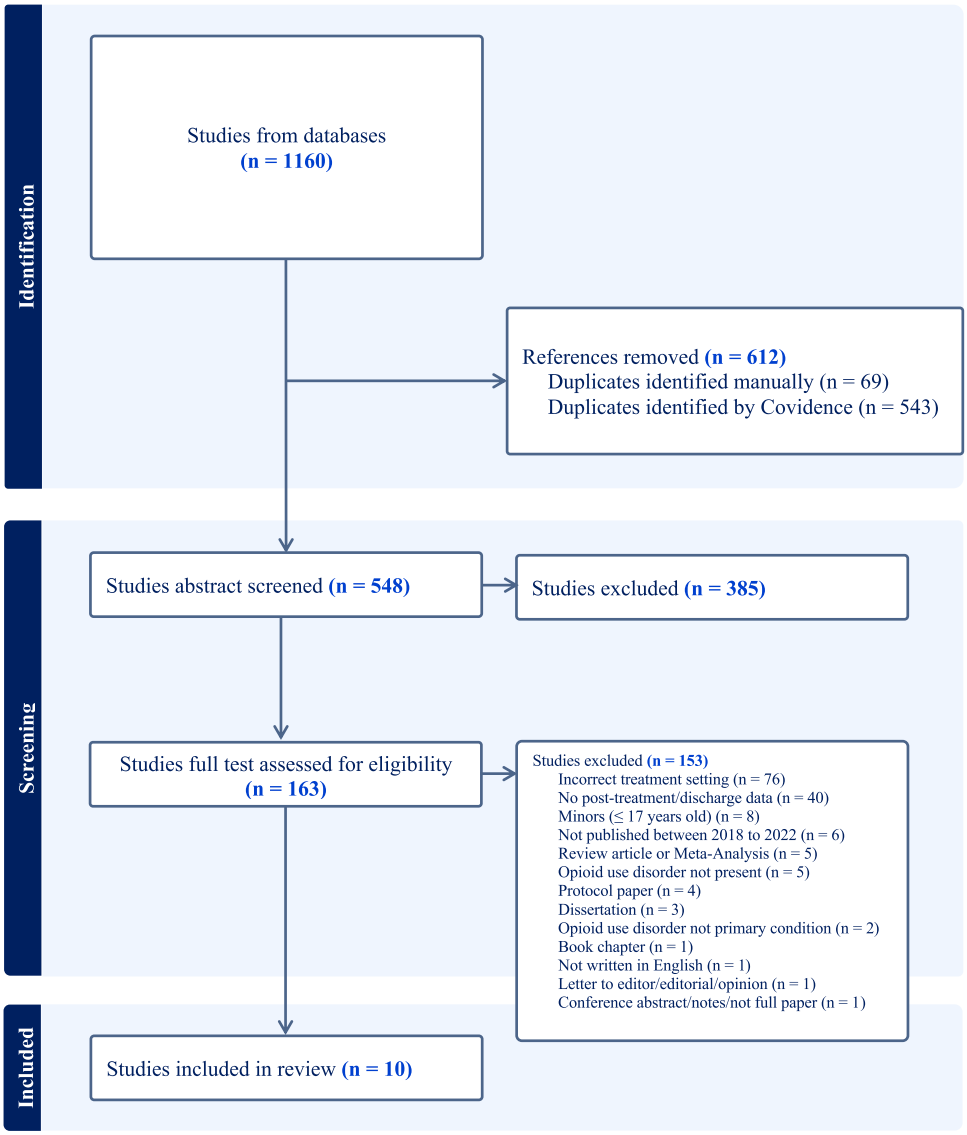


**Figure 1** PRISMA flowchart of included studies. Adapted from Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. Creative Commons.

case group.[47] Not all studies included the race and ethnicity of the participants. Among the six studies[39,41–43,46,48] that did include this information, the majority of participants were non-Hispanic White in all six studies. Nine of the ten studies were conducted in the United States, one study[47] was conducted in Turkey. Five studies used a cohort design, two were randomized controlled trials, two were case–control design, and one was a retrospective chart review, which analyzed notes made by the study team regarding communications with the participant or their significant other.

## Defining Treatment

The details regarding treatment received greatly varied across studies. All studies included in the final synthesis (Table 1) presented data from participants who had attended or completed residential treatment, but the specifics of what was included in that treatment were not always provided. Five studies[39,41,43,46,48] specifically mentioned MOUD with either naltrexone, methadone, or buprenorphine. Six studies[40,41,43,44,46,47] mentioned some form of individual or group therapy or psychoeducation.

**Table 2** Risk of Bias Assessment

| Author | Funding | Conflicts of Interest | Reliability and Validity of Measurements | Longitudinal Data | Comparison Group |
|---|---|---|---|---|---|
| Baxley et al (2019)[39] | "This work was not supported by any outside funding sources". | Not discussed | Self-report single item question administered over the telephone. Participants were also asked about the number of days they were in an uncontrolled environment since detoxification over the telephone. | 1-month post-discharge | None; no comparison group for outcomes of interest (comparisons based on anxiety sensitivity). |
| Cleveland et al (2021)[40] | "R01 DA 035240–01 Prescription Opioid Dependence: Physiology, Emotion & Treatment Outcome" | Not discussed | Self-report 3-item assessment of craving. Relapse was self-reported over the telephone, by urine screen, and by hair sample. | Twelve days using items adapted from the Desires for Alcohol Scale. Substance use was relapse was collected up to 120 days after discharge. | No comparison group |
| Fishman et al (2021)[41] | Laura and John Arnold Foundation | "M.F. has been a consultant for and received funding from Alkermes and US World Meds" | Urine drug screen and Timeline follow-back | 24-weeks | Treatment as usual (TAU) vs youth opioid recovery support (YORS) |
| Hartung et al (2022)[42] | UG1DA015815, UH3DA044831, and Centers for Disease Control (U01 CE00278) | Authors declare no conflicts of interest. | Medical records reported to Treatment Episode Data Set and Medicare | Timeframe for each participant was not consistent. "The follow-up period was from index treatment episode date until an event occurred or the individual was censored by loss of Medicaid enrollment or the end of the study period". | Residential treatment compared to outpatient treatment. |

(*Continued*)

**Table 2** (Continued).

| Author | Funding | Conflicts of Interest | Reliability and Validity of Measurements | Longitudinal Data | Comparison Group |
|---|---|---|---|---|---|
| Hayaki et al (2021)[43] | NIH R01DA034261 | "Speakers bureau of Alkermes and Advisory boards of Braeburn Pharmaceuticals, Camurus AB, and Otsuka". Grant reviewer for Alkermes Young Investigator Award. | Timeline Follow-back. The Situational Confidence Scale was adapted from heroin to opioids for the current study and only 3 items, the current sample had strong internal consistency, Cronbach's alpha = 0.89. The scale was also scored differently than the original psychometric scale recommends. | Post discharge follow-ups at 1 week, 1 month, 3 months, and 6 months. | No comparison group |
| Knapp et al (2021)[44] | R01 DA035240; T32 DA017629 | "The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper". | Relapse was measured by self-report through telephone interviews twice a month, hair samples at 30- and 90-days post treatment, and random urine drug screens during aftercare program. | Data collected from patients up to 120 days following discharge from residential. | No comparison group |
| Mukherjee et al (2021)[45] | R01 DA035240 | Authors declare no conflicts of interest. | Follow-up contact, hair samples, and random urine drug screening. | Up to 120 days after treatment. | n=37 controls |
| Stein et al (2020)[46] | R01 DA034261 | Authors declare no conflicts of interest. | Urine toxicology screen, Timeline Follow-back, and the five-item Opioid Subjective Dependence Questionnaire | 1-, 3-, and 6-months follow-up after discharge | Yes, treatment as usual. |
| Uğurlu et al (2020)[47] | No financial disclosure | Authors declare no conflicts of interest. | Urine toxicology screen | 1-, 3-, and 6-months follow-up after discharge | Case control study. N=6 Cases and N=6 Controls for comparison. |
| Wenzel et al (2021)[48] | Arnold Ventures, LLC | "Dr. Fishman has been a consultant for and received research funding from Alkermes and US World Meds". | Not clearly specified, but mention of urine toxicology screen in a participant vignette. | Received intervention for 24-weeks after residential discharge. | No comparison group |


https://doi.org/10.2147/SAR.S440214

## Defining Relapse

Variability in the time that participants were followed after discharge for data collection purposes and how substance use was identified after discharge among these different studies exists. The follow-up periods ranged from 1 month[39] to 6 months.[43,46,47] Three studies captured follow-up substance use data using self-report only.[39,43,46] One study analyzed patient chart notes for mentions of lapse or relapse.[48] Other ways that follow-up substance use data were captured included hair samples,[40,44,45] urine drug screening,[40,41,44,45,47] overdose data,[42] and opioid-related emergency department engagement.[42]

## Relapse

There was a broad range across the studies regarding the reported percentage of individuals who relapsed. These ranges include 0% (n = 0 / 6) from the Uğurlu et al, 2020[47] study to 95% (n = 19 / 20) opioid relapse among the treatment as usual group in the Fishman et al, 2021 study.[41] Regarding percentages of the individuals relapsing, findings include: 24% (n = 5 / 21) relapsing onto opioids after receiving all doses of the study drug, extended-release naltrexone,[48] 38% (n = 21 / 55) relapsing onto any substance,[45] 51% (n = 36 / 70) relapsing onto any substance at follow-up,[44] 57% using a non-prescribed opioid,[39] and 61% (n = 11 / 18) opioid relapse of a study's intervention arm (intervention: youth opioid recovery support) relapsing.[41]

Percentages of other reported substances in the Baxley et al, 2019 study include cannabis at 29%, alcohol at 20%, benzodiazepines at 16%, and cocaine at 10%.[39] The Mukherjee et al, 2021 study identified three individuals using alcohol and 18 individuals using opioids at follow-up.[45] Cleveland et al, found that greater variability among within-person assessments of craving was associated with a lower likelihood of relapse when compared to participants with lower within-person variability of craving.[40] In the Hartung et al, 2022 study, 2.5% (n = 24 / 957) had an opioid overdose, and 15.4% (n = 147 / 957) had an opioid-related engagement with emergency department services.[42] Hayaki et al, found that lower self-efficacy in being able to withstand opioid use during negative states as measured at baseline was associated with using an illicit opioid at follow-up.[43] The study by Stein et al, found the buprenorphine induction group had lower illicit opioid use at follow-up days 12, 35, 95, and 185 than the treatment as usual group that received withdrawal management.[46] Wenzel et al, found that relapse occurred among 24% (n = 5 / 21) relapsing onto opioids after receiving all doses of the study drug, extended-release naltrexone.[48] In three descriptive patient vignettes, Wenzel et al, described one individual having a non-fatal opioid overdose and two individuals relapsing on opioids.[48]

# Discussion

After discharging from residential treatment, some individuals may decide to return to substance use,[14] which is concerning for those with an OUD, as fentanyl and its analogues are potent and largely dominate the illicit opioid market.[23–26,49] With fentanyl's potency, relapse onto opioids after residential treatment presents the possibility for an overdose due to a lower tolerance to opioids.[50,51] Therefore, this review paper focused on the risk of relapse following residential treatment.

Across the studies included in this review, returning to substance use after residential treatment was captured differently. However, this variability can be explained by the different definitions of relapse identified in the research literature[15,16,52] and the availability of time and resources needed to capture follow-up data. Different time periods in which the relapse data were collected ranged from 1 month[39] to 6 months.[43,46,47] Perspectives of individuals experiencing relapse while in recovery highlight a more substantial risk of relapse in the long-term compared to the earlier stages of recovery.[28] Further, some individuals may discharge from treatment initially confident that they will abstain from returning to substance use.[53] Regardless of when the relapse occurs, some individuals may feel a sense of powerlessness after relapsing.[28]

Even with the range in the time to follow-up across studies, the percentage of reported relapse across studies was high. Except for one study included in this review which reported 0% relapse among cases and controls at follow-up timepoints,[47] the percentages of individuals who relapsed ranged from a quarter to 95%.[39,41,44,45,48] The wide variation in the types of treatments delivered makes it difficult to assess differences in relapse rates between treatment modalities. Other studies in the literature have identified this broad range of the percentage of individuals relapsing.[52,54–58] Across

studies included in this review, how substance use was captured after discharge included the number of times data was collected from participants during the follow-up period and how substance use data were collected, including hair samples[40,44,45] and urine drug screening.[40,41,44,45,47] Utilizing biospecimens such as hair and urine samples may provide more accurate data than self-report.[59–62] However, factors such as the frequency that a substance was used, the window of time that biospecimen tests will identify substance use, and the cost of collecting biospecimen after residential treatment must be considered.[59–62]

Collecting biospecimen after a patient's discharge may be logistically challenging for treatment providers that provide follow-up outpatient telehealth services. Regardless of whether self-report and/or biospecimen collection are used to determine substance use, these strategies should be tools to support the individual after their recovery and not as a tool for punishment if substance use is detected. Post-treatment contingency management interventions could support individuals in continuing to reach recovery goals and remaining abstinent from opioids and other substances.[63–65] Contingency management is effective for increasing abstinence among individuals in recovery from opioids and other substances after treatment.[64,65] A common barrier that prevents clinical implementation of known effective treatments is the lack of funding to support efficacious programs. There is a need for policy changes to financially support these treatment options for individuals with and without private insurance. Future research is needed to conduct cost-effectiveness systematic reviews of interventions which can inform policies based on the interventions that show the highest return on investment (ROI). This area of study can bridge the gap between community dissemination/implementation and policy-level translational science.

Participants using other substances, such as alcohol and cannabis, were also identified in studies included in this review.[39,45] Some individuals with an OUD may engage in polysubstance use and use other non-opioid substances,[29,66–71] highlighting the importance of screening for and treating other potential SUD during treatment. This is especially important for some individuals receiving treatment who may have a treatment goal of not using any substances regardless of the drug class (ie, stimulants, opioids) after treatment.

Negative emotional states may be encountered after discharge which makes the findings by the Hayaki et al, 2021 study important since lower self-efficacy during these negative states was associated with a greater risk of relapse.[43] Self-efficacy interventions in treatment are needed to support recovery goals, such as not leaving treatment prematurely and reducing substance use after discharge.[43,72,73] One such intervention includes brief values clarification during treatment to improve self-efficacy towards reaching recovery goals.[74] Relapse prevention strategies that address and prepare individuals for the potential for negative states after treatment may improve self-efficacy.[75] Being able to cope with negative emotional states by using avoidance, cognitive, or distraction strategies may assist individuals with avoiding returning to substance use as a potential coping mechanism.[76]

Considering the risk of relapse after treatment, other proactive models of engaging people after treatment often provide extra support to help individuals continue to achieve their recovery goals even after treatment.[77] These continuing care and support services after treatment can assist individuals as they are discharged from the safe environment of residential treatment in which substances cannot be easily accessed.[77,78] A meta-analysis suggested that long-term treatment and support after discharge, compared to shorter treatment was associated with greater chances of remaining abstinent.[77] Other individuals may opt to receive outpatient services after discharging from residential treatment to continue engaging with treatment services.[79] Whether aftercare/continuing care or outpatient services are provided, individuals discharging from residential treatment must have the appropriate resources to support them as they achieve their recovery goals.[11]

Overall, the risk of relapse after residential treatment for OUD is a prominent concern, considering the potential for overdose. The rates of overdose and opioid-related emergency department encounters after residential treatment presented by Hartung et al, 2022 are indicative of the inherent risk of biomedical harm after relapsing.[42] There is a risk of death due to opioids after discharging from treatment,[50,80] such as one study in New York identifying crude overdose death rates as 71.6 per 1000 person-years in a 14-day period after discharging from treatment.[51] It is imperative to reduce these risks by including relapse prevention techniques during residential treatment that may assist individuals after discharge. Even when aftercare/continuing care services[11] are not available for the individual after treatment, providers must ensure that individuals leaving residential treatment

have appropriate resources to support them in their recovery. Doing so may be the difference between someone achieving their recovery goals after treatment or risking potentially harmful outcomes of returning to previous patterns of substance use.

## Limitations

Although this study focused on non-hospital residential treatment and studies specifically mentioning the study site as being hospital-based were excluded, some included studies may have occurred in a hospital setting, which may not have been explicitly described in their text. Studies included in this review were limited by the databases used: CINAHL, PsychINFO, PubMed, and Scopus, which may not include the full research literature. While this review focused on works published starting in 2018 to capture potential findings from the fentanyl era of OUD, other studies prior to 2017 were excluded as a result. Another limitation is this review included studies that were naturalistic and experimental, representing two different research approaches. This is further highlighted by differences in relapse that were identified in some of the experimental studies such the Fishman et al, 2021 study identifying relapse occurring among 61% of the experimental group and among 95% of the treatment as usual group.[41] While we examined funding and conflicts of interest for potential risk of bias assessment, other standardized Risk of Bias tools were not included in this current paper. Considering the importance of aftercare/continuing care, these factors not being examined in the current review is also a limitation. All the included studies except for one (Uğurlu et al, 2020) were based in the United States. Our a priori inclusion and exclusion criteria did not allow for excluding this study based on location. The Uğurlu et al, 2020 study also had the smallest sample size and was the only study to report a 0% relapse rate. This may reflect the greater focus on opioid-related treatments within the United States, which is likely based on need and severity of OUD. Another study limitation is some included studies were both the parent and secondary studies using different pools of the sample participants. Lastly, studies included in this review had both short-term and long-term residential treatment settings, which have varied lengths of stay.

## Conclusion

This review paper focused on the risk of relapse following non-hospital residential treatment for OUD. Pertinent clinical considerations are presented by merging findings from the papers included in this review. There was a broad range across the included studies regarding the percentage of individuals who relapsed from 0% to 95%. Differences in the time in which relapse data were collected across included studies ranged from 1 month to 6 months. Craving and negative emotional states were associated with relapse, pointing to the importance of interventions to address these factors during and after treatment. Considering the potential for a fatal overdose in the current fentanyl era, it is imperative to provide resources during residential treatment that can reduce the risk of relapse after discharge.

## Acknowledgments

The authors thank Angela Bardeen for her consultation and guidance during the planning and implementation stages of this review. The authors also thank the reviewers who dedicated this time to strengthen this paper.

## Disclosure

The authors report no conflicts of interest in this work.

## References

1. Padwa H, Mark TL, Wondimu B. What's in an "ASAM-based assessment?" Variations in assessment and level of care determination in systems required to use ASAM patient placement criteria. *J Addict Med*. 2022;16(1):18–26. doi:10.1097/ADM.0000000000000804
2. Dennis ML, Sitar SI, Modisette KC, Estrada BD, Welsh JW. Development and evaluation of the global appraisal of individual needs quick version 4 (GAIN-Q4) for ASAM dimension ratings and placement recommendations for adolescents and adults. *J Addict Med*. 2024. doi:10.1097/ADM.0000000000001413
3. Welsh JW, Sitar SI, Dennis ML. Utility of the global appraisal of individual needs recommendation and referral report for substance use diagnosis, treatment planning, and placement. *J Addict Med*. 2023;17(3):353–355. doi:10.1097/ADM.0000000000001108
4. Padwa H, Treiman K, Mark TL, Tzeng J, Gilbert M. Assessing assessments: substance use disorder treatment providers' perceptions of intake assessments. *Subst Abus*. 2022;43(1):451–457. doi:10.1080/08897077.2021.1946891

5. Volkow ND. Personalizing the treatment of substance use disorders. *Am J Psychiatry*. 2020;177(2):113–116. doi:10.1176/appi.ajp.2019.19121284
6. Kuhlemeier A, Desai Y, Tonigan A, et al. Applying methods for personalized medicine to the treatment of alcohol use disorder. *J Consult Clin Psychol*. 2021;89(4):288–300. doi:10.1037/ccp0000634
7. van der Stel J. Precision in addiction care: does it make a difference? *Yale J Biol Med*. 2015;88(4):415–422.
8. Waller RC, Boyle MP, Daviss SR, et al. *The ASAM Criteria: Treatment Criteria for Addictive, Substance-Related, and Co-Occurring Conditions, Volume 1: Adults*. 4th ed. Hazelden Publishing; 2023.
9. Marchand K, Beaumont S, Westfall J, et al. Conceptualizing patient-centered care for substance use disorder treatment: findings from a systematic scoping review. *Subst Abuse Treat Prev Policy*. 2019;14(1):37. doi:10.1186/s13011-019-0227-0
10. Tran K, McGill S. Treatment programs for substance use disorder. *CADTH Health Technol Rev*. 2021;1(6).
11. de Andrade D, Elphinston RA, Quinn C, Allan J, Hides L. The effectiveness of residential treatment services for individuals with substance use disorders: a systematic review. *Drug Alcohol Depend*. 2019;201:227–235. doi:10.1016/j.drugalcdep.2019.03.031
12. Reif S, George P, Braude L, et al. Residential treatment for individuals with substance use disorders: assessing the evidence. *Psychiatr Serv*. 2014;65(3):301–312. doi:10.1176/appi.ps.201300242
13. Gray C, Argaez C. Residential treatment for substance use disorder: a review of clinical effectiveness. CADTH rapid response reports. 2019
14. Pullen E, Oser C. Barriers to substance abuse treatment in rural and urban communities: counselor perspectives. *Subst Use Misuse*. 2014;49 (7):891–901. doi:10.3109/10826084.2014.891615
15. Moe FD, Moltu C, McKay JR, Nesvag S, Bjornestad J. Is the relapse concept in studies of substance use disorders a 'one size fits all' concept? A systematic review of relapse operationalisations. *Drug Alcohol Rev*. 2022;41(4):743–758. doi:10.1111/dar.13401
16. DiClemente CC, Crisafulli MA. Relapse on the road to recovery: learning the lessons of failure on the way to successful behavior change. *J Health Serv Psychol*. 2022;48(2):59–68. doi:10.1007/s42843-022-00058-5
17. Sliedrecht W, de Waart R, Witkiewitz K, Roozen HG. Alcohol use disorder relapse factors: a systematic review. *Psychiatry Res*. 2019;278:97–115. doi:10.1016/j.psychres.2019.05.038
18. Sinha R. New findings on biological factors predicting addiction relapse vulnerability. *Curr Psychiatry Rep*. 2011;13(5):398–405. doi:10.1007/s11920-011-0224-0
19. Del Palacio-Gonzalez A, Thylstrup B, Romer Thomsen K. Psychological factors predicting patients' risk of relapse after enrollment in drug use treatment: a systematic review. *J Subst Use Addict Treat*. 2024;161:209354. doi:10.1016/j.josat.2024.209354
20. Morgan JR, Barocas JA, Murphy SM, et al. Comparison of rates of overdose and hospitalization after initiation of medication for opioid use disorder in the inpatient vs outpatient setting. *JAMA Network Open*. 2020;3(12):e2029676. doi:10.1001/jamanetworkopen.2020.29676
21. Strang J, McCambridge J, Best D, et al. Loss of tolerance and overdose mortality after inpatient opiate detoxification: follow up study. *BMJ*. 2003;326(7396):959–960. doi:10.1136/bmj.326.7396.959
22. Park JN, Rouhani S, Beletsky L, Vincent L, Saloner B, Sherman SG. Situating the continuum of overdose risk in the social determinants of health: a new conceptual framework. *Milbank Q*. 2020;98(3):700–746. doi:10.1111/1468-0009.12470
23. Armenian P, Vo KT, Barr-Walker J, Lynch KL. Fentanyl, fentanyl analogs and novel synthetic opioids: a comprehensive review. *Neuropharmacology*. 2018;134(Pt A):121–132. doi:10.1016/j.neuropharm.2017.10.016
24. Rauf U, Ali M, Dehele I, Paudyal V, Elnaem MH, Cheema E. Causes, nature and toxicology of fentanyl-analogues associated fatalities: a systematic review of case reports and case series. *J Pain Res*. 2021;14:2601–2614. doi:10.2147/JPR.S312227
25. Onohuean H, Oosthuizen F. Multinational appraisal of the epidemiological distribution of opioid fatalities: a systematic review and meta-analysis. *Front Psychiatry*. 2023;14:1290461. doi:10.3389/fpsyt.2023.1290461
26. Martins SS, Sampson L, Cerda M, Galea S. Worldwide prevalence and trends in unintentional drug overdose: a systematic review of the literature. *Am J Public Health*. 2015;105(11):e29–49. doi:10.2105/AJPH.2015.302843
27. World Health Organization. Opioid overdose. Available from: https://www.who.int/news-room/fact-sheets/detail/opioid-overdose. Accessed April 16, 2025.
28. Klein M, Dixon J, Butler C. Multiple relapses into opiate and crack misuse among people in recovery: an interpretative phenomenological analysis. *J Addictions Offender Counseling*. 2022;43(2):97–110. doi:10.1002/jaoc.12106
29. Park JN, Schneider KE, Fowler D, Sherman SG, Mojtabai R, Nestadt PS. Polysubstance overdose deaths in the fentanyl era: a latent class analysis. *J Addict Med*. 2022;16(1):49–55. doi:10.1097/ADM.0000000000000823
30. Tsang VWL, Wong JSH, Westenberg JN, et al. Systematic review on intentional non-medical fentanyl use among people who use drugs. *Front Psychiatry*. 2024;15:1347678. doi:10.3389/fpsyt.2024.1347678
31. Gunn CM, Maschke A, Harris M, et al. Age-based preferences for risk communication in the fentanyl era: 'A lot of people keep seeing other people die and that's not enough for them'. *Addiction*. 2021;116(6):1495–1504. doi:10.1111/add.15305
32. Silverstein SM, Daniulaityte R, Martins SS, Miller SC, Carlson RG. "Everything is not right anymore": buprenorphine experiences in an era of illicit fentanyl. *Int J Drug Policy*. 2019;74:76–83. doi:10.1016/j.drugpo.2019.09.003
33. Socias ME, Wood E, Dong H, et al. Slow release oral morphine versus methadone for opioid use disorder in the fentanyl era (pRESTO): protocol for a non-inferiority randomized clinical trial. *Contemp Clin Trials*. 2020;91:105993. doi:10.1016/j.cct.2020.105993
34. Buresh M, Nahvi S, Steiger S, Weinstein ZM. Adapting methadone inductions to the fentanyl era. *J Subst Abuse Treat*. 2022;141:108832. doi:10.1016/j.jsat.2022.108832
35. Substance Abuse and Mental Health Services Administration. What to expect: treatment options. Available from: https://findtreatment.gov/what-to-expect/treatment. Accessed May 11, 2024.
36. Vanderplasschen W, Colpaert K, Autrique M, et al. Therapeutic communities for addictions: a review of their effectiveness from a recovery-oriented perspective. *Scientific World J*. 2013;2013(1):427817. doi:10.1155/2013/427817
37. Malivert M, Fatseas M, Denis C, Langlois E, Auriacombe M. Effectiveness of therapeutic communities: a systematic review. *Eur Addict Res*. 2012;18(1):1–11. doi:10.1159/000331007
38. Shamseer L, Moher D, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ*. 2015;350(jan02 1):g7647. doi:10.1136/bmj.g7647
39. Baxley C, Weinstock J, Lustman PJ, Garner AA. The influence of anxiety sensitivity on opioid use disorder treatment outcomes. *Exp Clin Psychopharmacol*. 2019;27(1):64–77. doi:10.1037/pha0000215

40. Cleveland HH, Knapp KS, Brick TR, Russell MA, Gajos JM, Bunce SC. Effectiveness and utility of mobile device assessment of subjective craving during residential opioid dependence treatment. *Subst Use Misuse*. 2021;56(9):1284–1294. doi:10.1080/10826084.2021.1921808
41. Fishman M, Wenzel K, Vo H, Wildberger J, Burgower R. A pilot randomized controlled trial of assertive treatment including family involvement and home delivery of medication for young adults with opioid use disorder. *Addiction*. 2021;116(3):548–557. doi:10.1111/add.15181
42. Hartung DM, Markwardt S, Johnston K, et al. Association between treatment setting and outcomes among Oregon Medicaid patients with opioid use disorder: a retrospective cohort study. *Addict Sci Clin Pract*. 2022;17(1):45. doi:10.1186/s13722-022-00318-1
43. Hayaki J, Conti MT, Bailey GL, Herman DS, Anderson BJ, Stein MD. Negative affect-associated drug refusal self-efficacy, illicit opioid use, and medication use following short-term inpatient opioid withdrawal management. *J Subst Abuse Treat*. 2021;126:108309. doi:10.1016/j.jsat.2021.108309
44. Knapp KS, Brick TR, Bunce SC, Deneke E, Cleveland HH. Daily meaningfulness among patients with opioid use disorder: examining the role of social experiences during residential treatment and links with post-treatment relapse. *Addict Behav*. 2021;119:106914. doi:10.1016/j.addbeh.2021.106914
45. Mukherjee D, Stankoski DM, Tilden SE, et al. Reregulation of cortisol levels and sleep in patients with prescription opioid use disorder during long-term residential treatment. *Drug Alcohol Depend*. 2021;227:108931. doi:10.1016/j.drugalcdep.2021.108931
46. Stein M, Herman D, Conti M, Anderson B, Bailey G. Initiating buprenorphine treatment for opioid use disorder during short-term in-patient 'detoxification': a randomized clinical trial. Article. *Addiction*. 2020;115(1):82–94. doi:10.1111/add.14737
47. Uğurlu TT, Oğuzhanoğlu NK, Ateşci F. Effect of psychodrama group therapy on remission and relapse in opioid dependence. *Archiv Neuropsychiatry*. 2020;57(3):197–203. doi:10.29399/npa.25001
48. Wenzel K, Fishman M, Wildberger J, Vo H, Burgower R. An assertive outreach intervention for treatment of opioid use disorder in young adults. *Heroin Addict Relat Clin Probl*. 2021;23(4):51–58.
49. Weber AN, Trebach J, Brenner MA, Thomas MM, Bormann NL. Managing opioid withdrawal symptoms during the fentanyl crisis: a review. *Subst Abuse Rehabil*. 2024;15:59–71. doi:10.2147/SAR.S433358
50. Morgan JR, Wang J, Barocas JA, et al. Opioid overdose and inpatient care for substance use disorder care in Massachusetts. *J Subst Abuse Treat*. 2020;112:42–48. doi:10.1016/j.jsat.2020.01.017
51. Jordan AE, Jette G, Graham JK, Burke C, Cunningham CO. Drug overdose death following substance use disorder treatment termination in new york city: a retrospective longitudinal cohort study. *J Urban Health*. 2024;101(5):1045–1057. doi:10.1007/s11524-024-00893-5
52. Greiner MG, Shulman M, Choo T-H, et al. Naturalistic follow-up after a trial of medications for opioid use disorder: medication status, opioid use, and relapse. *J Substance Abuse Treatment*. 2021;131:108447. doi:10.1016/j.jsat.2021.108447
53. Gauthier P, Greco P, Meyers-Ohki S, Desai A, Rotrosen J. Patients' perspectives on initiating treatment with extended-release naltrexone (XR-NTX). *J Subst Abuse Treat*. 2021;122:108183. doi:10.1016/j.jsat.2020.108183
54. Chalana H, Kundal T, Gupta V, Malhari AS. Predictors of relapse after inpatient opioid detoxification during 1-year follow-up. *J Addict*. 2016;2016:7620860. doi:10.1155/2016/7620860
55. Christopher PP, Anderson B, Stein MD. Civil commitment experiences among opioid users. *Drug Alcohol Depend*. 2018;193:137–141. doi:10.1016/j.drugalcdep.2018.10.001
56. Ivers JH, Zgaga L, Sweeney B, et al. A naturalistic longitudinal analysis of post-detoxification outcomes in opioid-dependent patients. *Drug Alcohol Rev*. 2018;37(Suppl 1):S339–s347. doi:10.1111/dar.12597
57. Lee JD, Nunes EV, Novo P, et al. Comparative effectiveness of extended-release naltrexone versus buprenorphine-naloxone for opioid relapse prevention (X:BOT): a multicentre, open-label, randomised controlled trial. *Lancet*. 2018;391(10118):309–318. doi:10.1016/s0140-6736(17)32812-x
58. Singh VV, Sarkar S, Chadda RK, Mishra AK, Dhawan A. Reasons for leaving treatment among patients with opioid dependence: a 3-month prospective follow-up study. *J Opioid Manag*. 2022;18(5):455–466. doi:10.5055/jom.2022.0739
59. Delaney-Black V, Chiodo LM, Hannigan JH, et al. Just say "I don't": lack of concordance between teen report and biological measures of drug use. *Pediatrics*. 2010;126(5):887–893. doi:10.1542/peds.2009-3059
60. Grekin ER, Svikis DS, Lam P, et al. Drug use during pregnancy: validating the drug abuse screening test against physiological measures. *Psychol Addict Behav*. 2010;24(4):719–723. doi:10.1037/a0021741
61. Gryczynski J, Schwartz RP, Mitchell SG, O'Grady KE, Ondersma SJ. Hair drug testing results and self-reported drug use among primary care patients with moderate-risk illicit drug use. *Drug Alcohol Depend*. 2014;141:44–50. doi:10.1016/j.drugalcdep.2014.05.001
62. Palamar JJ, Le A, Guarino H, Mateu-Gelabert P. A comparison of the utility of urine- and hair testing in detecting self-reported drug use among young adult opioid users. *Drug Alcohol Depend*. 2019;200:161–167. doi:10.1016/j.drugalcdep.2019.04.008
63. McPherson SM, Burduli E, Smith CL, et al. A review of contingency management for the treatment of substance-use disorders: adaptation for underserved populations, use of experimental technologies, and personalized optimization strategies. *Subst Abuse Rehabil*. 2018;9:43–57. doi:10.2147/SAR.S138439
64. Bolívar HA, Klemperer EM, Coleman SRM, DeSarno M, Skelly JM, Higgins ST. Contingency management for patients receiving medication for opioid use disorder: a systematic review and meta-analysis. *JAMA Psychiatry*. 2021;78(10):1092–1102. doi:10.1001/jamapsychiatry.2021.1969
65. Proctor SL. Rewarding recovery: the time is now for contingency management for opioid use disorder. *Ann Med*. 2022;54(1):1178–1187. doi:10.1080/07853890.2022.2068805
66. De Aquino JP, Sofuoglu M, Stefanovics E, Rosenheck R. Adverse consequences of co-occurring opioid use disorder and cannabis use disorder compared to opioid use disorder only. *Am J Drug Alcohol Abuse*. 2019;45(5):527–537. doi:10.1080/00952990.2019.1607363
67. Boileau-Falardeau M, Contreras G, Gariépy G, Laprise C. Patterns and motivations of polysubstance use: a rapid review of the qualitative evidence. *Health Promot Chronic Dis Prev Can*. 2022;42(2):47–59. doi:10.24095/hpcdp.42.2.01
68. Compton WM, Valentino RJ, DuPont RL. Polysubstance use in the U.S. opioid crisis. *mol Psychiatry*. 2021;26(1):41–50. doi:10.1038/s41380-020-00949-3
69. Ellis JD, Rabinowitz JA, Ware OD, Wells J, Dunn KE, Huhn AS. Patterns of polysubstance use and clinical comorbidity among persons seeking substance use treatment: an observational study. *J Subst Use Addict Treat*. 2023;146:208932. doi:10.1016/j.josat.2022.208932
70. Jarlenski MP, Paul NC, Krans EE. Polysubstance use among pregnant women with opioid use disorder in the United States, 2007-2016. *Obstet Gynecol*. 2020;136(3):556–564. doi:10.1097/aog.0000000000003907

71. Ware OD, Manuel JI, Huhn AS. Adults with opioid and methamphetamine co-use have lower odds of completing short-term residential treatment than other opioid co-use groups: a retrospective health services study. *Front Psychiatry*. 2021;12:784229. doi:10.3389/fpsyt.2021.784229
72. Hser YI. Predicting long-term stable recovery from heroin addiction: findings from a 33-year follow-up study. *J Addict Dis*. 2007;26(1):51–60. doi:10.1300/J069v26n01_07
73. Kelly JF, Greene MC. Where there's a will there's a way: a longitudinal investigation of the interplay between recovery motivation and self-efficacy in predicting treatment outcome. *Psychol Addict Behav*. 2014;28(3):928–934. doi:10.1037/a0034727
74. Ameral V, Palm Reed KM. Envisioning a future: values clarification in early recovery from opioid use disorder. *J Subst Abuse Treat*. 2021;121:108207. doi:10.1016/j.jsat.2020.108207
75. Melemis SM. Relapse prevention and the five rules of recovery. *Yale J Biol Med*. 2015;88(3):325–332.
76. Gossop M, Stewart D, Browne N, Marsden J. Factors associated with abstinence, lapse or relapse to heroin use after residential treatment: protective effect of coping responses. *Addiction*. 2002;97(10):1259–1267. doi:10.1046/j.1360-0443.2002.00227.x
77. Beaulieu M, Tremblay J, Baudry C, Pearson J, Bertrand K. A systematic review and meta-analysis of the efficacy of the long-term treatment and support of substance use disorders. *Soc Sci Med*. 2021;285:114289. doi:10.1016/j.socscimed.2021.114289
78. McKay JR. Continuing care research: what we have learned and where we are going. *J Subst Abuse Treat*. 2009;36(2):131–145. doi:10.1016/j.jsat.2008.10.004
79. Monico LB, Ludwig A, Lertch E, Schwartz RP, Fishman M, Mitchell SG. Post–residential treatment outpatient care preferences: perspectives of youth with opioid use disorder. *J Substance Abuse Treatment*. 2021. doi:10.1016/j.jsat.2021.108692
80. Fishman M, Vo HT, Burgower R, et al. Treatment trajectories during and after a medication trial for opioid use disorder: moving from research as usual to treatment as usual. *J Addict Med*. 2020;14(4):331–336. doi:10.1097/adm.0000000000000592