# PEER REVIEW HISTORY



## ARTICLE DETAILS

### Title (Provisional)

Expansion and evaluation of Level II and III recovery residences for people taking medications for an opioid use disorder: Project HOMES (Housing for MAR Expanded Services) study protocol

### Authors

Wilkerson, J M; Gallardo, Kathryn R.; Rodriguez, Serena; Brown, Henry Shelton; Ganduglia Cazaban, Cecilia M.; Yang, James J.; Herrera, Estevan R.; Zoschke, Isaiah Niles; Stewart, Hannah L.N.; McCurdy, Sheryl A.

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## VERSION 1 - REVIEW

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| **Reviewer** | **1** |
| **Name** | **Miles , Jennifer** |
| **Affiliation** | **Rutgers The State University of New Jersey** |
| **Date** | **15-Feb-2024** |
| **COI** | **I have no competing interests.** |

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This manuscript describes the protocol for a research study examining the effects and cost-effectiveness of recovery housing for individuals with opioid use disorder who use medication for opioid use disorder during their stay in a recovery home. This study is well-designed to answer the research questions that are identified in the protocol. I have a few points of clarification that would strengthen the protocol and manuscript.

First, could the authors please provide more detail on how the resident acceptance process was unified across recovery homes to ensure that the criteria for entry was equivalent across providers/homes? Can the authors confirm if there is a form or specific interview questions asked of the potential residents or a corresponding means of determining whether operators are applying the same decision-making to determine eligibility for each potential resident? This gets at potential concerns over differences across resident characteristics from one residence to another.

Second, how is opioid use disorder diagnosis assessed? Is this based on resident self-report, assessment by a clinician or treatment provider? Assessment by the recovery home operator? Secondary administrative data?

Third, what is the rationale for including stimulant use disorder in the eligibility for recovery housing entry (see p. 10 line 17)?

Fourth, can the authors provide more detail on participant retention methods with this difficult to reach population? What efforts are/will be made by study staff to ensure that the response rate for resident participants, particularly once they leave the recovery home, is adequate to determine the study's impact?

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| **Reviewer** | **2** |
| **Name** | **Thompson, Robin** |
| **Affiliation** | **Fletcher Group, Inc** |
| **Date** | **05-Mar-2024** |
| **COI** | **No competing interests.** |


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Dear Dr. Wilkerson and co-authors,

In the manuscript titled, “Expansion and evaluation of Level II and III recovery residences for people taking medications for an opioid use disorder: Project HOMES (Housing for MAR Expanded Services) study protocol”, you and your team describe a protocol they are implementing to open and evaluate the effectiveness of recovery residences for people using MOUD.

Within this protocol, you and your team plan to conduct three aims: 1) expand the availability of recovery residences that meeting NARR standards in Texas and serve individuals taking MOUD, 2) evaluate the newly opened 14 recovery residences , and 3) compare the cost-effectiveness of recovery residences to treatment-as-usual. They report using a mixed-methods, prospective cohort design approach and the socio ecological theory to support evaluation – collecting different types of data to evaluate recovery residence effectiveness.

I commend you and your team for acquiring the required funding to conduct this research as the current evidence for recovery housing effectiveness is limited, yet the research conducted to-date, indicates substantial impacts on recovery. I mainly have suggestions for the inclusion of more detail what is known regarding recovery housing as well as more detail around study procedures you describe.

INTRODUCTION

Comment: It may be helpful to provide a definition of recovery housing and recovery coaching – potentially after the sentence, “Recovery residences and recovery coaching are two of these programs.” Later, you mention that recovery residences are based on the social model of recovery and emphasized peer support but would be helpful to provide a broader

definition, such as SAMHSA's Best Practices for Recovery Housing (page 9): https://store.samhsa.gov/sites/default/files/pep23-10-00-002.pdf

May also be helpful to set the stage with the estimated number of recovery residences nationwide (19,943) – Jason et al. (2021): https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7901811/

And potentially set the stage for what we know about TX – Jason et al. found 907. Not sure if this is the most recent. You all may be more attuned to latest TX numbers.

Comment: In the third paragraph, discussing evidence conducted on recovery housing, I suggest referencing John Kelly's systematic review of recovery support services in the United States – providing more justification that more research is needed. In Kelly's systematic review, he finds the scientific rigor on recovery residences collected to-date (starting on page 19), as "moderate": https://www.mass.gov/doc/recovery-support-research-literature-review-submitted-by-kim-krawczyk/download

Comments: In this section: "Researchers have also begun examining differences between residents who do or do not take medications for an opioid use disorder (MOUD) (Majer et al., 2018; Majer et al., 2020) or residents who do or do not have access to a recovery coach (Eddie et al., 2019)." I wonder about mentioning the barriers to accessing MOUD in recovery residences? Such as not all homes supporting MOUD? See Miles et al. (2020). Supporting Individuals using medication for opioid use disorder in recovery residences: challenges and opportunities for addressing the opioid epidemic. The American Journal of Drug and Alcohol Abuse, 46(3): 266-272 - https://www.tandfonline.com/doi/full/10.1080/00952990.2020.1719410

METHODS

Comment: The control arm includes individuals in recovery from opioid use disorder taking MOUD within community settings. It may be helpful to define even if providing examples within parentheses earlier on. I was wondering from which locations and how these individuals were being recruited earlier on.

Comment: How large was the pool of housing providers that were approached/recruited to be part of this expansion initiative? Was there a strategy to recruit X number in each part of the state, by other criteria?

Comment: How much was provided for start-up funds? Was this a variable amount dependent upon a case-by-case needs assessment?

Comment: For applicant/resident house inclusion criteria, how are 2) sincerely wanting to join a recovery community and 3) individual complement cohort – determined? Are there any specific criteria used to determine or is this process subjective?

Comment: Slight typo “influences” should be “influenced”: The model proposes that individual health behaviors are influences by intrapersonal, interpersonal, organizational, community, and policy-level factors

Comments: Authors state that “In San Angelo, Midland, and El Paso, the Project HOMES residences with a mix of residents taking MOUD and not taking MOUD, people having a primary diagnosis of stimulant use disorder were also eligible for the study beginning in June 2023.” Why did this occur – the inclusion of both MOUD users and on-MOUD users and individuals with diagnosis of stimulant use disorder? Explanation would be helpful.

Comment: Under “Recruitment”, authors mention that people in the community arm are recruited and referred through partnerships with MOUD and statewide recovery support providers. How many statewide? Types of recovery support providers? More detail on this arm would be helpful.

Lastly, in regard to the review checklist:

Are the methods described sufficiently to allow the study to be repeated? Currently, as the paper reads, seems there are some areas that require a bit more specificity. If provided, I believe repeatability of the study could occur.

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## VERSION 1 - AUTHOR RESPONSE

Please see the attached cover letter for our responses to reviewers' comments.

**Reviewer: 1**
**Dr. Jennifer Miles , Rutgers The State University of New Jersey**
**Comments to the Author:**
**This manuscript describes the protocol for a research study examining the effects and cost-effectiveness of recovery housing for individuals with opioid use disorder who use medication for opioid use disorder during their stay in a recovery home. This study is well-designed to answer the research questions that are identified in the protocol. I have a few points of clarification that would strengthen the protocol and manuscript.**

**First, could the authors please provide more detail on how the resident acceptance process was unified across recovery homes to ensure that the criteria for entry was equivalent across providers/homes? Can the authors confirm if there is a form or specific interview questions asked of the potential residents or a corresponding means of determining whether operators are applying the same decision-making to determine eligibility for each potential resident? This gets at potential concerns over differences across resident characteristics from one residence to another.**

Response: Thank you for the question. We added the following sentence to the end of the first paragraph in the section titled, *Project HOMES recovery residences*:

> To minimize variance in the acceptance process across residences and ensure equity in access to housing, the Texas Recovery Oriented Housing Network, our technical assistance and certification provider, ensures residence operators comply with the NARR's standards (2019) and code ethics (2016).

**Second, how is opioid use disorder diagnosis assessed? Is this based on resident self-report, assessment by a clinician or treatment provider? Assessment by the recovery home operator? Secondary administrative data?**

Response: In Texas, physicians diagnose someone with an opioid use disorder prior to prescribing MOUD; it is not available over-the-counter. To be eligible to move into a Project HOMES residence, a potential resident must be taking MOUD prior to move-in. To increase clarity, the following sentence was modified in the section titled, *Project HOMES recovery residences*:

> Each house has its own interview protocol, but in general, house managers assess for the following: 1) if the applicant ~~has a prescription for~~ is taking MOUD as prescribed by their physician and can continue paying for MOUD after moving into the home…

We also modified the following sentence in the eligibility section:

Inclusion criteria are: 1) having a primary diagnosis by a physician of opioid use disorder and taking MOUD or being willing to take MOUD before the move-in date…

**Third, what is the rationale for including stimulant use disorder in the eligibility for recovery housing entry (see p. 10 line 17)?**

Response: Texas is fighting dual opioid and stimulant (mostly methamphetamine) epidemics. Our providers in the western half of the state, San Angelo, Midland, and El Paso, could not fill their beds with people taking MOUD for opioid use recovery and requested that people with a stimulant use disorder be allowed into the residences. The following sentence was added to the end of the *Eligibility* section: "People with a stimulant use disorder were added in response to requests from our community partners in the western half of the state who could not fill their beds with people taking MOUD for opioid use recovery."

**Fourth, can the authors provide more detail on participant retention methods with this**

**difficult to reach population? What efforts are/will be made by study staff to ensure that the response rate for resident participants, particularly once they leave the recovery home, is adequate to determine the study's impact?**

Response: Within the section, *Intrapersonal-Level Quantitative Data,* we added the following subsection and figure:

> Retention. To retain study participants, we employ a caseload model, meaning data are collected in person or virtually, allowing our research assistants the opportunity to form a human connection at baseline with study participants; each research assistant meets with the residents in his or her caseload throughout the data collection period. To maintain connection, research assistants follow a contact protocol that relies on regularly scheduled text messages, emails, and phone calls. When a resident misses their data collection appointment or is lost to follow-up, research assistants send "alert" text messages to the resident to reschedule and rely on contacts provided by the resident, including recovery coaches and close friends or family members to re-establish contact with the resident (Figure 3).

**Reviewer: 2**
**Dr. Robin Thompson, Fletcher Group, Inc**
**Comments to the Author:**
**Dear Dr. Wilkerson and co-authors,**
**In the manuscript titled, "Expansion and evaluation of Level II and III recovery residences for people taking medications for an opioid use disorder: Project HOMES (Housing for MAR Expanded Services) study protocol", you and your team describe a protocol they are implementing to open and evaluate the effectiveness of recovery residences for people using MOUD.**

**Within this protocol, you and your team plan to conduct three aims: 1) expand the availability of recovery residences that meeting NARR standards in Texas and serve individuals taking MOUD, 2) evaluate the newly opened 14 recovery residences , and 3) compare the cost-effectiveness of recovery residences to treatment-as-usual. They report using a mixed-methods, prospective cohort design approach and the socio ecological theory to support evaluation – collecting different types of data to evaluate recovery residence effectiveness.**

**I commend you and your team for acquiring the required funding to conduct this research as the current evidence for recovery housing effectiveness is limited, yet the research**

**conducted to-date, indicates substantial impacts on recovery. I mainly have suggestions for the inclusion of more detail what is known regarding recovery housing as well as more detail around study procedures you describe.**

**INTRODUCTION**

**Comment: It may be helpful to provide a definition of recovery housing and recovery coaching – potentially after the sentence, "Recovery residences and recovery coaching are two of these programs." Later, you mention that recovery residences are based on the social model of recovery and emphasized peer support but would be helpful to provide a broader definition, such as SAMHSA's Best Practices for Recovery Housing (page 9):**
https://store.samhsa.gov/sites/default/files/pep23-10-00-002.pdf

**May also be helpful to set the stage with the estimated number of recovery residences nationwide (19,943) – Jason et al. (2021):**
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7901811/

**And potentially set the stage for what we know about TX – Jason et al. found 907. Not sure if this is the most recent. You all may be more attuned to latest TX numbers.**

Response: Thank you for the suggestions and citations. We modified the second paragraph to read as follows. We cited Mericle 2022 rather than Jason when reporting the estimated number of residences because her citation is more current. The other were included as recommended:

> Recovery support services are frequently operated by businesses and nonprofit organizations and include a variety of programs to help people access programs that support long-term recovery maintenance (Mericle et al., 2022; SAMHSA, 2023c). Recovery residences and recovery coaching are two of these programs. The Substance Abuse and Mental Health Services Administration (SAMHSA) defined recovery residences as, "safe, healthy, family-like substance free living environments that support individuals in recovery from addiction. While recovery residences vary widely in structure, all are centered on peer support connection to services that promote long-term recovery" (2023a). Recovery coaches are peer workers who offer and receive help, "based on shared understanding, respect, and mutual empowerment between people in similar situations" (SAMHSA 2016; SAMHSA 2023b). The National Alliance of Recovery Residences (NARR, 2019), a national professional association that developed standards for operating recovery residences, has categorized recovery residences into four levels based on staffing credentials and availability of in-house services. Recovery residences are based on the social model of recovery, which emphasizes the importance of peer support in the recovery process (Dodd, 1997; Polcin et al., 2014). Level IV residences include clinical staff and Levels II and III include paid peer staff. Level I residences are self-governed by the

residents and studies surrounding these homes compose most of the published literature on recovery residence effectiveness (Jason & Ferrari, 2010). The exact number of recovery residences in the USA is difficult to quantify as homes regularly open and close and not all recovery residences are cataloged by national organizations as certification is optional in many states. Mericle et al. (2022) estimated there were 10,358 recovery residences nationally, 583 in Texas (NSTARR, 2022).

**Comment: In the third paragraph, discussing evidence conducted on recovery housing, I suggest referencing John Kelly's systematic review of recovery support services in the United States – providing more justification that more research is needed. In Kelly's systematic review, he finds the scientific rigor on recovery residences collected to-date (starting on page 19), as "moderate":** https://www.mass.gov/doc/recovery-support-research-literature-review-submitted-by-kim-krawczyk/download

Response: Thank you for suggesting this citation. The third paragraph now begins with the following sentence: "In a 2017 review of the scientific literature on recovery residences, Kelly described the rigor of research conducted as moderate and called for additional research."

**Comments: In this section: "Researchers have also begun examining differences between residents who do or do not take medications for an opioid use disorder (MOUD) (Majer et al., 2018; Majer et al., 2020) or residents who do or do not have access to a recovery coach (Eddie et al., 2019)." I wonder about mentioning the barriers to accessing MOUD in recovery residences? Such as not all homes supporting MOUD? See Miles et al. (2020). Supporting Individuals using medication for opioid use disorder in recovery residences: challenges and opportunities for addressing the opioid epidemic. The American Journal of Drug and Alcohol Abuse, 46(3): 266-272 -** https://www.tandfonline.com/doi/full/10.1080/00952990.2020.1719410

Response: Thank you for the suggestion. We added the following sentence to the end of the third paragraph in the introduction: "Unfortunately, for people taking MOUD and wanting to live in a recovery residence, barriers exist including MOUD-related stigma, concerns about medication cost and diversion, and a lack of technical assistance for house managers and operators (Gallardo et al., 2024; Miles et al. 2020). Providers' MOUD preferences in different geographic locations across Texas also determine the types of MOUD available to residents (S. A. McCurdy fieldnotes, April 30, 2024)."

**METHODS**

**Comment: The control arm includes individuals in recovery from opioid use disorder taking MOUD within community settings. It may be helpful to define even if providing examples within parentheses earlier on. I was wondering from which locations and how these individuals were being recruited earlier on.**

Response: To increase clarity, we added the underlined phrase in the setting paragraph:

> The study is being conducted in Texas-based recovery residences serving individuals in recovery from opioid use disorder taking MOUD as part of their recovery (intervention arms) and in community settings serving individuals in recovery from opioid use disorder also taking MOUD as part of their recovery and not living in a recovery residence (control arm). Recovery residences are located in Austin, El Paso, Houston, Midland, and San Angelo, Texas. Community arm participants are recruited statewide (Figure 1).

**Comment: How large was the pool of housing providers that were approached/recruited to be part of this expansion initiative? Was there a strategy to recruit X number in each part of the state, by other criteria?**

Response: Thank you for the question. While this is a good question, we are unable to answer it in the manuscript. When approaching potential housing operators with whom we could collaborate, we were met with hesitation from many operators because we would require them to operate a MOUD house. We did not track the number of phone calls or conversations we had with potential providers.

**Comment: How much was provided for start-up funds? Was this a variable amount dependent upon a case-by-case needs assessment?**

Response: Good question. We added the underlined sentence in the section, *Expanded availability of recovery residences:* "The amount of funds provided for start-up varied by residence based on the cost of living in each location and the needs of each operator."

**Comment: For applicant/resident house inclusion criteria, how are 2) sincerely wanting to join a recovery community and 3) individual complement cohort – determined? Are there any specific criteria used to determine or is this process subjective?**

Response: This is also a good question. These criteria are subjective, although residence operators must comply with NARR's certification standards and code of ethics. We added the following sentence to the end of the first paragraph in the section, *Project HOMES recovery residences:* "*To minimize variance in the acceptance process across residences and ensure equity in access to housing, the Texas Recovery Oriented Housing Network, our technical assistance and certification provider, ensures residence operators comply with NARR standards (2019) and code ethics (2016)*."

**Comment: Slight typo "influences" should be "influenced": The model proposes that individual health behaviors are influences by intrapersonal, interpersonal, organizational, community, and policy-level factors**

Response: Thank you. We corrected the typo.

**Comments: Authors state that "In San Angelo, Midland, and El Paso, the Project HOMES residences with a mix of residents taking MOUD and not taking MOUD, people having a primary diagnosis of stimulant use disorder were also eligible for the study beginning in June 2023." Why did this occur – the inclusion of both MOUD users and on-MOUD users and individuals with diagnosis of stimulant use disorder? Explanation would be helpful.**

Response: The following sentence was added to the end of the *Eligibility* section: "People with a stimulant use disorder were added in response to requests from our community partners in the western half of the state who found it difficult to fill their beds with people taking MOUD for opioid use in recovery."

**Comment: Under "Recruitment", authors mention that people in the community arm are recruited and referred through partnerships with MOUD and statewide recovery support providers. How many statewide? Types of recovery support providers? More detail on this arm would be helpful.**

Response: To provide more detail, we modified the first sentence of the recruitment section to read, "People in the community arm are recruited and referred through formal partnerships with two MOUD providers and informal partnerships with MOUD and statewide recovery support services providers who share flyers and other promotional materials we provide to them with their clients."

**Lastly, in regard to the review checklist:**
**Are the methods described sufficiently to allow the study to be repeated? Currently, as the**

**paper reads, seems there are some areas that require a bit more specificity. If provided, I believe repeatability of the study could occur.**

Response: Thank you for the excellent review. We hope that the revisions address the questions raised and provide enough specificity to allow the study to be repeated.

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## VERSION 2 - REVIEW

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| **Reviewer** | **2** |
| **Name** | **Thompson, Robin** |
| **Affiliation** | **Fletcher Group, Inc** |
| **Date** | **13-Sep-2024** |
| **COI** | |

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In the manuscript titled, “Expansion and evaluation of Level II and III recovery residences for people taking medications for an opioid use disorder: Project HOMES (Housing for MAR Expanded Services) study protocol”, the authors describe a protocol they are implementing to open and evaluate the effectiveness of recovery residences for people using MOUD.

I have re-reviewed your manuscript and appreciate all the additional detail included. The protocol is very thorough and clear. This knowledge to be gained from this study will have major implications on the recovery residence landscape. I look forward to seeing the results gathered. Thank you for allowing me to review your study protocol. I truly enjoyed the opportunity.