# Recovery Capital Among Patients Receiving Telehealth-Based Opioid Use Disorder Treatment

Christopher Rowe[1], Arthur Robin Williams[1], Adam Bisaga[1]

[1]Ophelia Health, Inc., New York, New York

This study was funded by Ophelia Health, Inc.

## BACKGROUND & INTRODUCTION

- Medications for the treatment of opioid use disorder (MOUD) such as buprenorphine are the most effective treatment available for OUD.[1]
- Beyond drug testing results and retention in care, systematically measured clinical outcomes to assess clinical success of treatment have proven elusive.[2, 3]
- There is growing interest in integrating systematic monitoring of patient-reported outcomes and measurement-based care as strategies to improve patients' success in treatment.[4]
- "Recovery capital" is a theoretical construct that represents personal, social, environmental, and cultural resources that can help individuals initiate and sustain recovery from a substance use disorder (SUD).[5, 6]
- The objective of the present study was to characterize changes in recovery capital assessed via the Brief Assessment of Recovery Capital (BARC-10)[6] from baseline as well as the association between baseline scores and retention among patients receiving treatment with buprenorphine in a telehealth setting.

## METHODS

- The study uses data from a cohort of individuals residing in Pennsylvania and initiating treatment for OUD at Ophelia from May through October 2023 (through October 2024 for evaluating the association of baseline BARC-10 scores and retention, see below).
- Ophelia is a group medical practice providing specialty OUD treatment with buprenorphine across multiple states, using a treatment approach that is patient-centered with a harm-reduction emphasis and delivered via a real-time videoconferencing platform.
- The study was determined to be exempt from IRB review by the WCG IRB.

**Baseline BARC-10 Scores and Changes Over Time**

- We analyzed changes in recovery capital assessed via the BARC-10 from baseline to the last assessment completed 30-120 days post-intake among patients who were retained for ≥90 days.
- Differences in baseline characteristics were assessed between patients with and without a baseline score ≥47 (a cutoff associated with sustained remission from substance use disorders in another study[6]) using chi-squared and t-tests.
- Changes in scores from baseline to follow-up were assessed using paired t-tests.

**Baseline BARC-10 Scores and Retention in Treatment**

- Among a larger sample of patients initiating treatment through October 2024, the association between baseline BARC-10 score and retention in treatment was assessed using a Cox proportional hazards model, controlling for baseline characteristics and allowing for an interaction by whether or not the patient required buprenorphine induction.
- Treatment discontinuation was defined as having a >30-day gap in prescribed buprenorphine coverage.

## BARC-10

The BARC-10 consists of 10 questions on a six-point scale: (1) strongly disagree; (2) disagree; (3) somewhat disagree; (4) somewhat agree; (5) agree; (6) strongly agree. Scores range from 10 to 60 with higher scores corresponding to higher levels of recovery capital. Patients are asked to indicate their level of agreement from 1 (strongly disagree) to 6 (strongly agree) with the following statements:

1. There are more important things to me in life than using substances.
2. In general I am happy with my life.
3. I have enough energy to complete the tasks I set myself.
4. I am proud of the community I live in and feel part of it.
5. I get lots of support from friends.
6. I regard my life as challenging and fulfilling without the need for using drugs or alcohol.
7. My living space has helped to drive my recovery journey.
8. I take full responsibility for my actions.
9. I am happy dealing with a range of professional people.
10. I am making good progress on my recovery journey.

## RESULTS

**Table 1:** Baseline characteristics among all patients and stratified by baseline BARC-10 score (<47 and ≥47) (n=477)

| Patient Characteristics | All Patients (n=477) n (%) | Baseline BARC-10 Score <47 (n=220) n (%) | Baseline BARC-10 Score ≥47 (n=257) n (%) | *p*-value* |
|---|---|---|---|---|
| **Age at intake visit, mean (SD)** | 39.4 (9.3) | 38.0 (9.0) | 40.6 (9.5) | 0.001 |
| **Non-Hispanic white** | 409 (87.2%) | 190 (88.8%) | 219 (85.9%) | 0.349 |
| **Sex** | | | | >0.999 |
| Male | 239 (50.3%) | 110 (50.2%) | 129 (50.4%) | |
| Female | 236 (49.7%) | 109 (49.8%) | 127 (49.6%) | |
| **Urbanicity** | | | | 0.723 |
| Urban | 402 (84.6%) | 182 (83.1%) | 220 (85.9%) | |
| Rural | 73 (15.4%) | 37 (16.9%) | 36 (14.1%) | |
| **Payment type at intake** | | | | 0.335 |
| Insurance | 417 (87.4%) | 196 (89.1%) | 221 (86.0%) | |
| Cash | 60 (12.6%) | 24 (10.9%) | 36 (14.0%) | |
| **Buprenorphine induction status** | | | | <0.001 |
| Did not require induction | 356 (76.9%) | 141 (65.6%) | 215 (86.7%) | |
| Required induction | 107 (23.1%) | 74 (34.4%) | 33 (13.3%) | |
| **Heroin or fentanyl use at intake** | 64 (13.4%) | 47 (21.4%) | 17 (6.6%) | <0.001 |

*p-values calculated using chi-squared and t-tests.

**Table 2:** Changes in BARC-10 scores from baseline to follow-up among all patients and stratified by baseline BARC-10 score (<47 and ≥47) (n=477)

| Measure | All Patients (n=477) n (%) | Baseline BARC-10 Score <47 (n=220) n (%) | Baseline BARC-10 Score ≥47 (n=257) n (%) |
|---|---|---|---|
| **Baseline BARC-10 Score, mean (SD)*** | 46.1 (9.0) | 38.4 (6.6) | 52.7 (4.1) |
| **Follow-Up BARC-10 Score, mean (SD)*** | 51.1 (8.0) | 47.6 (8.4) | 54.2 (6.2) |
| **Direction of change in BARC-10 score from baseline to follow-up** | | | |
| Decrease | 107 (22%) | 24 (11%) | 83 (32%) |
| No Change | 35 (7.3%) | 4 (1.8%) | 31 (12%) |
| Increase | 335 (70%) | 192 (87%) | 143 (56%) |
| **Absolute change in BARC-10 score from baseline to follow-up, mean (SD)** | 5.0 (8.2) | 9.2 (8.5) | 1.4 (5.9) |
| **Absolute change in BARC-10 score from baseline to follow-up, median (IQR)** | 5.0 (0.0-10.0) | 9.0 (4.0-14.0) | 2.0 (-1.0-5.0) |
| **Percentage change in BARC-10 score from baseline to follow-up (%), mean (SD)** | 14.2 (25.9) | 27.2 (31.3) | 3.0 (11.7) |
| **Follow-up BARC-10 score >= 47** | 363 (76%) | 129 (59%) | 234 (91%) |

*Differences between baseline and follow-up scores were significantly different among all patients (p<0.001), patients with baseline BARC-10 score <47 (p<0.001), and patients with baseline BARC-10 score >= 47 (p<0.001) as assessed using paired t-tests.

- 791 patients with OUD initiated treatment during the study period, 742 (93.8%) of whom had a baseline BARC-10 score, 542 (73.0%) of whom were retained in treatment for ≥90 days, and 477 of whom (88.0%) had a follow-up BARC-10 score and represent the analysis sample.
- Older patients, those not requiring buprenorphine induction, and those not using heroin or fentanyl at intake were more likely to have baseline BARC-10 scores ≥47 ($p < .05$) (**Table 1**).
- Patients with baseline scores ≥47 (n = 257) had a mean increase of 1.4 (SD = 5.9) from 52.7 (SD = 4.1) (P < .001), and 234 (91%) sustained remission-predictive scores throughout the assessment period (**Table 2**).
- Patients baseline scores <47 (n = 220) had a mean increase of 9.2 (SD = 8.2) from 38.4 (SD = 6.6) (P < .001), and 129 (59.0%) achieved a score ≥47 at follow-up (**Table 2**).
- Among the larger sample (n=3,446) of patients initiating care through October 2024, there was a positive association between baseline BARC-10 scores and retention that was more pronounced among patients not requiring buprenorphine induction (hazard ratio [HR] = 0.975, 95%CI = 0.967-0.983 for a 1-point increase in baseline BARC-10 score; HR = 0.778, 95%CI = 0.716-0.845 for a 10-point increase) than those requiring induction (HR = 0.986, 95% CI = 0.976-0.997 for a 1-point increase; HR = 0.872, 95%CI = 0.788-0.966 for a 10-point increase).

**Figure 1:** Changes in BARC-10 scores from baseline to follow-up (n=477)

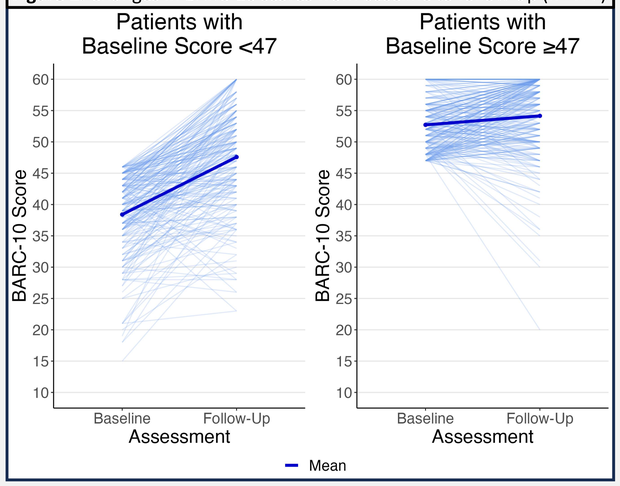
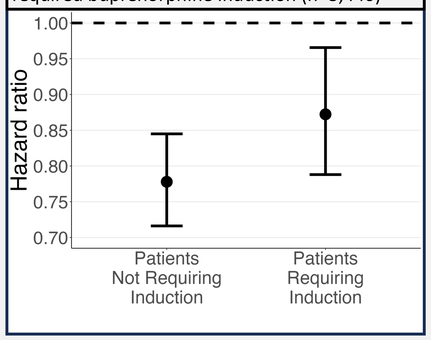



**Figure 2:** Association between a 10-point increase in baseline BARC-10 score and retention in treatment, stratified by whether patient required buprenorphine induction (n=3,446)*




*Hazard ratios for discontinuing treatment were estimated using a Cox proportional hazards model, controlling for age, sex, race ethnicity, urbanicity, and payment type at intake, and allowed for interaction by whether or not the patient required induction.

## CONCLUSIONS

- Most patients increased or sustained already high levels of recovery capital, an established predictor of sustained remission, at follow-up.
- Higher baseline BARC-10 scores were associated with better retention in treatment, suggesting that recovery capital may be a useful measure for predicting success in treatment beyond demographic and clinical characteristics.
- Further research is required to better understand variability in trends across patients and how it may relate to additional long-term outcomes.

## LIMITATIONS

- The sample only included patients residing in Pennsylvania and receiving care from one telehealth-based provider, which may limit generalizability.
- The analysis restricted to patients initiating treatment and retaining for 90 days, thus we cannot assess whether the changes in recovery capital among these patients differ from those among patients who did not initiate treatment or did not retain for 90 days.

### REFERENCES

(1) National Academies of Sciences, Engineering, and Medicine. Medications for Opioid Use Disorder Save Lives. The National Academies Press; 2019.; (2) Biondi BE, Zheng X, Frank CA, Petrakis I, Springer SA. A Literature Review Examining Primary Outcomes of Medication Treatment Studies for Opioid Use Disorder: What Outcome Should Be Used to Measure Opioid Treatment Success? American J Addict. 2020;29(4):249-267. doi:10.1111/ajad.13051; (3) Martin SA, Chiodo LM, Wilson A. Article Commentary: Retention in Care as a Quality Measure for Opioid use Disorder. Substance Abuse. 2019;40(4):453-458. doi:10.1080/08897077.2019.1635969; (4) Marsden J, Tai B, Ali R, Hu L, Rush AJ, Volkow N. Measurement-based care using DSM-5 for opioid use disorder: can we make opioid medication treatment more effective? Addiction. 2019;114(8):1346-1353. doi:10.1111/add.14546; (5) Granfield R, Cloud W. Coming Clean: Overcoming Addiction without Treatment. New York University Press; 1999.; (6) Vilsaint CL, Kelly JF, Bergman BG, Groshkova T, Best D, White W. Development and validation of a Brief Assessment of Recovery Capital (BARC-10) for alcohol and drug use disorder. Drug and Alcohol Dependence. 2017;177:71-76. doi:10.1016/j.drugalcdep.2017.03.022

### DISCLOSURES

CR was employed by and ARW and AB received compensation from Ophelia Health, Inc., which funded the study, during the conduct of the study.