

# Predictors of Retention During and After Residential Treatment for Substance Use Disorders



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## INTRODUCTION

- Residential (ASAM Level 3+) treatment for SUD is necessary for certain patients and associated with positive outcomes; however, long-term retention in outpatient treatment may offer a greater chance of successful abstinence.
- Few studies have examined associations between residential treatment and subsequent retention in outpatient treatment.
- This study examined a cohort of patients who were referred to residential treatment to determine the demographic, clinical, and utilization variables associated with subsequent outpatient treatment retention.

## METHODS

Retrospective, cohort study of adult members of KPNC referred to residential treatment from 2016-2022

### Exposure variables:

- Demographics
- Primary SUD diagnosis
- Medical / psychiatric comorbidity

### Service utilization exposure variables:

- Referring department
- Pre-referral outpatient addiction medicine engagement
- ED/Hospital visits in preceding 12 mo.
- Length of stay (LOS) in residential was included for post-discharge outcomes

### Outcomes:

- Early treatment dropouts defined as LOS < 5 days.
- Post-discharge outpatient treatment retention (number of weeks out of 24: categorized as 0-2 weeks, 3-9 weeks, and 10+ weeks)
- Occurrence of re-referral to residential treatment within 12 mo. of discharge.

**Analyses:** Chi-squared tests were used to examine associations between all variables and outcomes. Variables that had significant bivariate associations with each outcome at a p-value < 0.10 were included in multivariable models. Odds ratios, 95% confidence intervals, and p-values were reported for each exposure variable.

## RESULTS

	Multivariable Associations with Outcome Measures							
	Total Sample (N= 4574)	Early Treatment Dropout (ETD)		Post-discharge Outpatient Retention (10+ weeks vs. 0-2 weeks)		Post-discharge referral		
Sample Sizes:	No. (%)	All patients (N = 4575) ETD (N=645) LOS ≥5 (N=3930) OR (95% CI)	p	LOS ≥5 (N=3930) 10+ weeks (N=1321) 0-2 weeks (N=1254) OR (95% CI)**	p	LOS ≥5 (N=3930) Post d/c referral (N=904) OR (95% CI)	p	
<b>Age</b>								
18-24 (reference)	800 (17)			1.00	—	1.00	—	
25-44	1708 (37)			2.84 (2.16-3.73)*	<0.001	0.67 (0.54-0.83)	<0.001	
45-64	1736 (38)			2.53 (1.91-3.35)*	<0.001	0.60 (0.48-0.75)	<0.001	
65+	331 (7)			1.80 (1.22-2.65)*	0.003	0.53 (0.38-0.76)	<0.001	
<b>Sex</b>								
Female (reference)	1833 (40)			1.00	—			
Male	2740 (60)			0.71 (0.60-0.84)*	<0.001			
<b>Race/ethnicity</b>								
White (reference)	3197 (70)			1.00	—			
Asian/Pacific Islander	713 (16)			0.67 (0.43-1.04)	0.076			
Black/African American	304 (7)			0.70 (0.49-0.99)*	0.047			
Hispanic/Latino	184 (4)			1.06 (0.83-1.36)	0.624			
Other	177 (4)			1.11 (0.73-1.70)	0.617			
<b>Primary substance use disorder</b>								
Alcohol (reference)	2885 (63)			1.00	—			
Cannabis	133 (3)		0.96 (0.56-1.64)	0.880		1.11 (0.65-1.91)	0.701	
Opioid	657 (14)		1.40 (1.10-1.79)*	0.006		1.27 (0.98-1.66)	0.075	
Sedative/hypnotic/anxiolytic	116 (3)		0.81 (0.43-1.51)	0.508		0.77 (0.43-1.37)	0.375	
Stimulant	487 (11)		1.15 (0.86-1.53)	0.346		0.76 (0.57-1.01)	0.062	
Other	297 (6)		2.03 (1.31-3.15)*	0.002		0.75 (0.46-1.22)	0.241	
<b>Psychotic disorder</b>	477 (10)					0.82 (0.62-1.09)	0.170	
<b>Anxiety</b>	3285 (72)		0.90 (0.73-1.11)	0.335		1.20 (1.00-1.44)	0.046	
<b>Depression</b>	3402 (74)		0.77 (0.62-0.95)*	0.015				
<b>Post-traumatic stress disorder</b>	768 (17)					1.26 (1.03-1.55)	0.023	
<b>Referral department</b>								
Addiction Medicine (reference)	4352 (95)			1.00	—			
ED/hospital	196 (4)		2.06 (1.44-2.95)*	<0.001				
Other	27 (1)		1.17 (0.34-4.02)	0.805				
<b>SUD ED/hospital visits in prev 12 mo</b>								
0 (reference)	2886 (63)					1.00	—	
1	1008 (22)					1.44 (1.19-1.74)	<0.001	
2+	681 (15)					2.17 (1.76-2.66)	<0.001	
<b>Weeks of pre-referral Addiction Medicine engagement</b>								
0-2 weeks (reference)	2182 (48)			1.00	—			
3-9 weeks	1649 (36)		0.72 (0.59-0.88)*	0.001		1.80 (1.48-2.17)*	<0.001	
10+ weeks	744 (16)		0.62 (0.47-0.83)*	0.001		5.71 (4.34-7.52)*	<0.001	
<b>Length of stay in residential treatment</b>								
5-25 days (reference)	1134 (25)			1.00	—	1.00	—	
26-50 days	1991 (44)			1.45 (1.17-1.79)*	0.001	0.58 (0.48-0.69)*	<0.001	
51-80 days	641 (14)			2.33 (1.76-3.07)*	<0.001	0.49 (0.38-0.63)*	<0.001	
81+ days	164 (4)			2.20 (1.41-3.43)*	0.001	0.33 (0.20-0.53)*	<0.001	

\*Indicates p < 0.05. \*\*Odds ratios from multinomial logistic regression model.

Blank spaces in the table indicate that the variable was omitted from the multivariable model because of non-significance in bivariate analyses (p < 0.10 required for inclusion) or non-significance in multivariable model.

## CONCLUSION

- Early Treatment Dropout associated with:
  - Referrals originating from the ED
  - Opioid use disorder
  - Less pre-referral outpatient engagement
- Subsequent outpatient retention associated with:
  - Greater pre-referral engagement
  - Longer LOS in residential treatment
  - Older age
- Higher rates of re-referral to residential treatment associated with:
  - Younger age
  - PTSD and anxiety
  - Higher number of ED/hospital visits
- Limitations:
  - Outcomes of retention do not perfectly correlate with global well being, abstinence, etc.
  - Data captures outpatient treatment within KP treatment programs, but not outside groups (AA, NA, etc)
- Areas for future study:
  - Cluster analyses may identify groupings of patients based on utilization (i.e. preference for short-term/acute care vs. long-term outpatient engagement) and provide more insight into risk factors or other outcomes such as morbidity and mortality

## AFFILIATIONS AND DISCLOSURES

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## Slide 1

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**AA0** Maybe explain the “areas of future study” a bit more. It is not very clear.

Asma Asyyed, 2025-03-18T16:27:35.867

**CD1** For the results table, I don't understand the statement, “(10+ weeks vs. 0-2 weeks).” Are the p values in that column showing retention for 10+ weeks compared to early dropout (0-2 weeks)?

I wonder if it should just say (10+weeks)...maybe it's clear to others, could be just me!

Cimone E Durojaiye, 2025-03-18T17:05:30.294