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## Prevalence of HIV Viral Load Suppression among Psychiatric Inpatients with Comorbid Substance Use Disorders

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### Abstract

**Introduction**—A consistently suppressed viral load enables HIV (+) patients to live longer, healthier lives and reduces the probability of transmitting the virus. Since the prevalence of HIV is four times higher among those with psychiatric disorders than in the general population, it is likely that this group would also have greater difficulty remaining in care and achieving viral suppression.

**Methods**—A secondary data analysis utilizing screening data from the PATH for Triples (PFT) Study were examined to assess HIV load suppression among 254 psychiatric inpatients with comorbid substance use disorders in Philadelphia. Viral load results from the past 12 months were obtained from medical records for 63 inpatients identified as HIV (+).

**Results**—The sample was predominately African American (76%), male (56%), and the average age was 43 years. Psychiatric disorders included depression (64%), schizophrenia (21%), and bipolar disorder (13%) with patients reporting use of alcohol (73%), cocaine (64%), cannabis (29%) and opioids (16%) prior to admission. Among this high risk sample of HIV (+) patients, about one half (52%) achieved viral suppression, with recent opioid users six times more likely to have a detectable viral load than non-opioid users (OR=6.0; CI=1.1–31.7,  $p=.035$ ).

**Discussion**—The 52% viral load suppression rate among psychiatric inpatient was higher than expected, given that the CDC's national suppression rate among those diagnosed with HIV in the general population is 58%. However, individuals with mental illness and substance use disorders require constant surveillance, monitoring, and supportive services to achieve viral suppression. Many of those who were virally suppressed were engaged in Philadelphia's extensive treatment network, whereas those who were detectable and enrolled in the PFT intervention were often homeless with unstable psychiatric symptoms and current substance use disorders, particularly opioid abuse.

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**Conflict of Interest:** The authors declare that they have no conflict of interest.

#### Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

## Introduction

A recent study found that individuals with mental illness were more likely to be tested for HIV than those without mental illness (Yehia et al., 2014). While testing is an important entry point in the HIV spectrum of care, it is also vital that those who are infected with HIV be linked to and retained in care. The START study (Strategic Timing of AntiRetroviral Treatment) is the first large-scale randomized trial to support the current U.S. HIV treatment guidelines that all HIV (+) patients receive antiretroviral treatment regardless of CD4 count (National Institutes of Health News, 2015). This study demonstrated that patients who received early treatment reduced their risk of developing serious illness or death by 53% compared to the deferred treatment group. Having a suppressed HIV viral load improves quality of life (Baker et al., 2008) and reduces transmission of the virus to others (Cohen et al., 2015).

Identifying specific groups who are more likely to drop out of care helps providers and policymakers develop more targeted interventions to monitor HIV progression and to improve outcomes. In general, African-Americans are less likely to be virally suppressed compared to other racial groups (Howe et al., 2014; Mugavero, et al., 2009; Robertson, Laraque, Mavronicolas, Braunstein, & Torian, 2015). Conversely, females (Robertson et al, 2015) and older HIV (+) patients (Hall et al., 2013; Meyer et al., 2014; Robertson et al., 2015) are more likely to have an undetectable viral load.

However, it is unclear whether individuals with psychiatric disorders including substance use, who require inpatient treatment are as likely to achieve viral suppression. The prevalence of HIV is four times higher among those with psychiatric disorders (Blank et al., 2014), and depression and other psychiatric disorders have been associated with poor medication adherence (Nanni, Caruso, Mitchell, Meggiolaro, & Grassi, 2015) and poor virologic response (Pence, Miller, Gaynes, & Eron, 2007). A review article by Leserman (2008) found that HIV (+) patients with chronic depression, stressful events, and trauma had lower CD 4 counts, higher viral loads, and greater mortality than those without these co-occurring disorders. A more recent study demonstrated that HIV (+) individuals with depression had more missed appointments, an increased risk of having a detectable viral load and double the mortality rate of those without depression (Pence et al., 2018). In addition, individuals with mental illness are more likely to engage in risky behaviors (Clum, Chung, & Ellen, 2009) such as unprotected sexual activity and drug use (Meade & Sikkema, 2005). Engagement in these risky behaviors is associated with poor rates of viral suppression (Arnsten, et al, 2002; Mattson et al., 2014; Qian et al., 2014).

It may appear that psychiatric inpatients are engaged in HIV care because they are receiving treatment for mental illness or substance use disorders. However, mental health and HIV services are typically not integrated (Kaaya et al. 2013). When an individual experiences a drug relapse or psychological distress they often are not adherent to their HIV medications (Lucas et al., 2002; Naar-King et al., 2006) and there is a positive association between psychiatric symptom severity and HIV infection (Blank et al, 2014). Therefore, it could be reasoned that patients triply diagnosed with HIV, mental illness and substance use disorders severe enough to require inpatient treatment, would have difficulty adhering to medications

and thus have difficulty achieving viral suppression. On the other hand, Shacham, Önen, Donovan, Rosenberg, and Overton (2016) found that while mental illness and substance use were highly prevalent in an outpatient HIV clinic, only agoraphobia was associated with an unsuppressed viral load. To our knowledge, there has been no research to date evaluating HIV viral suppression among substance using psychiatric inpatients.

Gardner's care continuum (Gardner, McLees, Steiner, Del Rio, & Burman, 2011) has been used widely to identify gaps in linking HIV (+) individuals to care and includes the following five stages: 1) diagnosis of HIV infection, 2) linkage to care, 3) retention in care, 4) receipt of antiretroviral therapy, and 5) achievement of viral suppression. Along each stage of the care continuum large numbers of HIV (+) individuals are lost to care. Based on this treatment continuum, the Centers for Disease Control (CDC) estimated that 85% of individuals with HIV in the U.S. know their serostatus, yet only 58% of diagnosed HIV-infected persons had a suppressed viral load (CDC, 2017). Also of note, the CDC defines retention in care as individuals with diagnosed HIV who had two or more viral load or CD4 tests performed at least three months apart.

Although testing rates may be higher among psychiatric patients, it is likely that individuals triply diagnosed with HIV, mental illness, and substance use disorders would have greater difficulty achieving viral suppression. This research is based on prior work of these authors, the Preventing AIDS Through Health (PATH) Study, and the data used for the current analyses are based on The PATH for Triples (PFT) Study, an ongoing randomized trial that assesses the effectiveness of a Nurse Health Navigator (NHN) in helping patients who are triply diagnosed gain access and adhere to all three treatment regimens. PFT participants are recruited upon admission from psychiatric inpatient programs, and prior to discharge are randomly assigned to either six months with the NHN or treatment-as-usual (TAU).

A secondary data analysis utilizing screening data from the PFT trial were used to assess four aims of the current study which are to: 1) examine the rate of HIV testing and demographic characteristics among psychiatric inpatients; 2) evaluate viral suppression among subgroups of psychiatric inpatients triply diagnosed with HIV, mental illness and substance use disorders; 3) compare demographics, psychiatric diagnosis, and substance use for those who were virally suppressed with those who were not; and 4) examine variables that predict virologic failure in this vulnerable population.

## Methods

### Setting, Screening, and Participants

Potential participants for the PFT study were screened for study eligibility. Staff on the inpatient units referred documented HIV (+) patients (from medical records) as well as patients of unknown HIV status who were interested in being tested to the study. Patients were further screened by the research coordinator within 1 to 2 days upon admission to inpatient treatment. The research coordinator, a bachelor's level trained phlebotomist with a history of working with this population, administered a prescreen interview which included demographics, questions about HIV testing, and drug and alcohol use in the prior 30 days. Psychiatric diagnoses were accessed through medical records. A total of 254 patients were

screened at 14 psychiatric and addiction inpatient units in Philadelphia, Pennsylvania between February 2014 and May 2015. The majority of patients from this convenience sample were screened at four units located in two hospitals within the University of Pennsylvania Health System (UPHS). Additional patients were screened at three units at Episcopal Hospital of Temple University and seven units were at the Kirkbride Center, a non-hospital based behavioral health care facility in West Philadelphia.

The length of time patients were in treatment was typically 4–5 days on the psychiatric inpatient units and no more than 30 days on the addiction treatment units. None of the inpatient units routinely perform HIV or viral load testing. The patients obtained their HIV care at various HIV clinics throughout Philadelphia. While some of the patients received care at HIV outpatient providers within the hospital system, this care was not integrated with inpatient psychiatric treatment. We contacted the HIV provider directly to obtain the patient's last viral load result prior to inpatient treatment. The study was approved by the Institutional Review Boards of the University of Pennsylvania and Temple University. The authors have no conflict of interest to declare.

### **HIV (+) Sample**

A total of 68 HIV (+) patients were identified by clinical staff and screened by the study coordinator. After obtaining informed consent and releases of information from patients, prior viral load results were obtained from medical records of patients' HIV providers. To be comparable to the CDC rates of viral suppression among those diagnosed with HIV from the Medical Monitoring Project (MMP) and the National HIV Surveillance System (NHSS; CDC, 2017), a viral load of < 200 copies/mL was considered suppressed and only patients with a test within the last 12 months were included in the analysis. Two patients had an unknown viral load and three had a viral load result that was more than 12 months old. These five patients were excluded, resulting in a complete sample of 63 HIV (+) patients who were included in the final analysis.

### **Data Analysis**

The primary outcome for this two group comparison study was a binary measure of whether or not the participant had a suppressed viral load (i.e., suppressed vs. not suppressed/detectable). Comparisons between participants with suppressed (n=33) and detectable (n=30) viral loads used t-tests for continuous measures and chi-square tests for categorical measures. When cell frequencies included fewer than five participants we used Fisher's exact tests rather than chi-square tests. For HIV testing, the same tests that were cited above were conducted comparing HIV (–) individuals who were tested for HIV in the last year (n=83) versus those who were not tested (n=73). Please note, we had testing dates for 156 participants.

Logistic regression models were used to predict virologic failure from sample characteristics. We followed Hosmer and Lemeshow's (2000) suggestions for model building. In our first step we examined the individual associations between the covariates and the outcome, and included any covariate that had a significant association at the p=0.2 level or lower in a multivariate model. We also included other covariates such as gender and

age which did not fit the inclusion criteria for the logistic regression model ( $p = .2$ ), but there was theoretical support for including these variables as described in the introduction. We used a backwards stepwise approach to reduce this model to our final model. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS).

## Results

### Sample Characteristics of Screened Psychiatric Inpatients (HIV (+) and HIV (-))

Most of the 254 psychiatric inpatients were African-American (66%) and male (58%) with an average age of 43 years ( $SD=11.5$ ). Forty-one percent of the inpatients were diagnosed with depression, followed by bipolar disorder (27%), schizophrenia (21%), anxiety disorder (13%), PTSD (10%), and psychotic disorder not otherwise specified (NOS) (3%). Approximately 60% of the psychiatric inpatients reported using alcohol, over one-half used cocaine (52%), one third reported cannabis use (32%) and 26% used opioids in the 30 days prior to admission.

### HIV Testing

Ninety-one percent of the 186 HIV (-) psychiatric inpatients reported having been tested for HIV in the past and about one-half (53%) of the 156 HIV (-) patients (we had missing HIV testing dates for 30 participants) reported they had been tested within the last year. There were no significant differences in demographics, psychiatric diagnosis or recent drug use in terms of patients' testing status.

### Sample Characteristics of only HIV (+) Psychiatric Inpatients (Table 1)

Over one-quarter of the psychiatric inpatients ( $N=68$ ; 27%) were diagnosed with HIV infection. There were two patients with an unknown viral load. Among those with a known viral load, nearly all (63/66 or 95%) had a viral load test within the last year. Among the 63 patients with a viral load test within the last year, 33 patients or 52% (33/63; 52%) achieved viral suppression. Also of note is that 73% (48/66) of participants had a viral load test in the three months prior to inpatient treatment and among that subgroup 25 (25/48=52%) were virally suppressed. Interestingly, among the 14 patients who had a viral load test more than three months prior to inpatient treatment (but within the last year), eight (57%) were suppressed.

As with the psychiatric inpatients in general, most of the 63 HIV (+) psychiatric inpatients were African-American (76%) males (56%) with an average age of 43 years ( $SD=10.2$ ) (Table 1). These HIV (+) inpatients presented with a diverse array of psychiatric disorders including depression (64%), schizophrenia (21%), bipolar disorder (13%), anxiety disorder (11%), psychotic disorder NOS, (10%), and PTSD (10%). In the 30 days prior to admission almost three quarters (73%) reported alcohol use, nearly two-thirds (64%) used cocaine, 29% used cannabis and 16% reported opioid use.

### Univariate Analyses – Viral Suppression (Table 1)

Comparisons between those who were virally suppressed versus those with a detectable viral load are shown in Table 1. There were no significant demographic differences between the

two groups. Patients who used opioids prior to admission were significantly more likely to be have a detectable viral load ( $p=.038$ ). There was also a trend for patients diagnosed with a psychotic disorder NOS ( $p=.094$ ) and who used alcohol prior to admission ( $p=.099$ ) to experience viologic failure. There were no other differences in psychiatric disorders or substance use diagnosis.

### Logistic Regression – Viral Suppression (Table 2)

The five variables that met criterion for inclusion in the multivariate analysis (significance at  $p < .2$  in the univariate analysis) included race, psychotic disorder NOS, bipolar disorder, alcohol use, and opioid use were entered into the logistic regression model along with gender and age. The final logistic regression model yielded only one significant predictor, opioid use prior to inpatient admission, which predicted virologic failure (Table 2). The model showed significant variance explained (LR chi-square = 9.06,  $df=2$ ,  $p=.011$ ) with a Nagelkerke R square statistic of 0.179. The Hosmer and Lemeshow (2000) goodness-of-fit test statistic was nonsignificant ( $\chi^2 = .001$ ,  $df = 1$ ,  $p=.974$ ) indicating that the model had excellent fit. Moreover, the tolerance (greater than .2) and variance inflation factor (VIF; less than 5) statistics showed no evidence of multicollinearity. Participants who reported opioid use in the 30 days prior to inpatient treatment were six times more likely to have a detectable viral load compared to those who did not use opioids (OR=6.0, CI=1.14–31.73,  $p=.035$ ).

### Discussion

A secondary data analysis utilizing screening data from the PFT study were used to assess the extent of HIV testing and evaluate viral load suppression among a sample of HIV (+) inpatients with mental illness and substance use disorders. Consistent with a recent study (Yehia et al., 2014), the results of our first objective showed that lifetime HIV testing was high among this group, although only about one-half had been tested in the last year. Given the high prevalence of HIV among psychiatric inpatients (Blank et al., 2014), routine testing in inpatient psychiatric units is recommended.

The CDC reports that just 58% of diagnosed HIV (+) patients in the United States have a suppressed viral load (CDC, 2017). The rates for persons in Philadelphia, a site for the MMP, show a slightly higher rate of 64% (<https://www.phila.gov/health/pdfs/Philadelphia%20Fact%20Sheet%20MMP.pdf>). Regarding our second objective, the viral suppression rate of 52% among our sample of psychiatric inpatients with mental illness and substance use disorders was higher than what we anticipated; however, this rate is not directly comparable to CDC estimates. Our data is drawn from a convenience sample of psychiatric inpatients in one urban location from February 2014 through May 2015, whereas the CDC's rate is based on national data for 2014. Despite these clear differences we were surprised that the rate for psychiatric inpatients was close to the national rate.

There are a few explanations for the higher than anticipated viral suppression rate in this study. First, our sample was comprised of psychiatric inpatients who by the fact they were inpatient could be considered already “retained in care.” A recent study by Biradavolu, Jia, Withers and Kapetanovic (2016) showed that providers believed that chronically ill HIV (+) inpatients are better served than outpatients in terms of engagement into care. While

engaged in inpatient treatment, HIV (+) patients are more likely to receive services and complete referrals. In our sample, 73% of psychiatric inpatients had a viral load test within three months prior to their inpatient admission and nearly all had a viral load test in the last year, indicating that many are engaged in care despite the fact that HIV and mental health services in Philadelphia and elsewhere are not integrated (Kaaya et al., 2013). Routine HIV and viral load testing are not typically performed on these inpatient units.

A second reason for our higher than anticipated viral suppression rate has to do with the possibility that medication adherence may be specific to a particular regimen. While other investigators have found a relationship between psychiatric comorbidities and poor medication adherence (Sternhell & Corr, 2002) and virologic response (Pence et al., 2007; 2018), our analysis demonstrated that a psychotic disorder diagnosis was the only mental health disorder that showed a relationship with viral load, and only at the level of a statistical trend. A study by Himelhoch and colleagues (2009) found that among a large multi-site sample of HIV infected persons in care, those with serious mental illness (SMI) were significantly less likely to discontinue antiretroviral therapy (ART) in their first and second years on treatment compared to those without a psychiatric disorder. These results are supported by another study by Walkup, Sambamoorthi, & Crystal (2004) who demonstrated that persons with schizophrenia were at least as likely to continue with ART as those without SMI. It is noteworthy that these psychiatric patients were on complex psychiatric medications with substantial side effect profiles. It may be that individuals requiring inpatient treatment have severe disorders that are more closely monitored due to their frequent contacts with health care and hence are more likely to engage in treatment. For example, the Himelhoch et al. (2009) study demonstrated that more frequent mental health visits resulted in better ART adherence. These findings suggest the importance of ongoing mental health treatment as a way to improve viral suppression rates for individuals with these co-occurring disorders. Importantly, our Nurse Health Navigator acknowledged during weekly visits that participants reported adherence with HIV medications despite a lack of adherence to psychiatric medications, suggesting that adherence is more selective to particular regimens.

Third there could be locally specific factors that explain our higher than expected viral suppression rate. Philadelphia has many high quality service organizations and HIV providers that reach high-risk populations with targeted outreach and prevention programs utilizing a broad range of services. As mentioned, our higher than anticipated viral suppression rate may also be attributable to greater contact with the health care system for psychiatric inpatients in addition to Philadelphia's extensive and comprehensive HIV treatment system. It would be important for future studies to examine the viral suppression rates among HIV (+) outpatients with mental illness and substance use disorders.

This by no means indicates that triply diagnosed patients do not need a high level of care, rather it demonstrates that this high risk group can benefit from extensive targeted interventions such as the PFT model. Our data show that slightly less than one half of patients were not virally suppressed and thus not fully engaged in HIV treatment and required better adherence to antiretroviral medications in order to achieve viral suppression. The current PFT model, which employs Nurse Health Navigators (NHN) to help patients'

adhere to medications, aims to improve viral suppression in this vulnerable population (Blank, & Eisenberg, 2013; Blank et al., 2011). A prior study showed that a NHN model was successful in reducing disease burden and improving quality of life for HIV (+) patients with serious mental illness (Blank, Hennessy, & Eisenberg, 2014). Clearly this model of care is needed to serve this triply diagnosed population and to help with medication adherence in order to achieve viral suppression.

Our third objective compared those who were viral suppressed to those who were not on several characteristics. We found no differences in race, gender, ethnicity, or age despite the fact that other investigations have found demographic differences in rates of viral suppression (Hall et al., 2013; Howe et al., 2014; Robertson et al., 2015).

Our findings show that engagement in drug treatment is important, especially for opioid users as they were less likely to be virally suppressed. This finding was still significant in the logistic regression analysis with opioid use in the 30 days prior to admission being the only variable predicting virologic failure (objective #4). This is especially relevant given the rise of opioid abuse in the United States (CDC, 2015) and points to the need for these patients to be linked to drug treatment. Individuals with opioid use disorder have a chronic relapsing condition due to the powerful physiological effects of these drugs leading to severe withdrawal symptoms after the drug is discontinued. Opioid users often resume drug use immediately after leaving treatment, with many individuals relapsing within one month of discharge (Gossop, Stewart, Browne, & Marsden, 2002). As a result, opioid users have higher relapse rates compared to other drug users (Hser, Evans, Huang, Brecht, & Li, 2008; Hser, Huang, Brecht, Li, & Evans, 2008). Thus, medication assisted therapies (MET) such as methadone, buprenorphine, or extended release naltrexone should be encouraged as effective treatments for HIV (+) psychiatric inpatients prior to discharge in the community. Without access to MET before or immediately upon discharge, this group is likely to have a high potential for relapse which leads to less adherence to antiretroviral medications.

There are likely much lower suppression rates for those mentally ill substance abusers who are out of the treatment system and/or homeless (Muthulingam, Chin, Hsu, Scheer, & Schwarcz, 2013). While we did not collect screening data on housing instability we found that many of those eligible for PFT, and thus had a detectable viral load (an inclusion criteria), were homeless and many of these individuals were opioid users. These findings point to the fact that these HIV (+) individuals triply diagnosed with HIV, substance use disorders and mental illness need extensive supportive services across a broad range of medical, psychiatric and economic supports to engage them in care

The CDC may be underestimating the number of individuals retained in care in the United States by using criteria that may be too strict (Cairns, 2013; Horberg, et al, 2013). For example, with less frequent medication monitoring the 'retained in care' definition may not be appropriate. Although many psychiatric inpatients had a viral load test three months prior to admission, over half of the patients (57%) who did not have a viral load test within three months were still virally suppressed. While our findings show that many psychiatric inpatients had a recent viral load test, the advances in HIV medication regimens point to the need to reassess a strict definition of "retained in care." It is interesting to note that the CDC



recently changed its viral suppression reporting by adding a suppression rate among those diagnosed with HIV (58%). In the past the CDC only reported the prevalence rate among all HIV (+) individuals which included those who were undiagnosed, resulting in a lower viral suppression rate (49%).

### Limitations

There are several limitations to the current study. First, this is a small non-representative sample of HIV (+) psychiatric inpatients in one urban city in the northeast and may not be generalizable to all psychiatric inpatients in the United States, particularly those in rural areas where access to treatment is more limited. Similarly, our sample was relatively homogeneous, especially in terms of race and age, which further restricts the generalizability of the conclusions that can be drawn. Moreover, our data is not directly comparable to CDC estimates and thus the generalizability is limited to known HIV infected psychiatric inpatients who have some element of engagement in care. Second, regarding the opioid use as a predictor of virologic failure, caution is advised in the interpretation of these results as there were small number of opioid users in this sample (n=10). Finally, this study lacks screening data on other variables that may be associated with viral suppression such as homelessness (Muthulingam et al., 2013) and transmission risk (Hall, Holtgrave, Tang, & Rhodes, 2013) which would be important variables to include in future studies.

Despite these limitations, we were surprised to find that over one-half of HIV (+) psychiatric inpatients were virally suppressed and many reported adherence with HIV medications even when they were non-adherent to psychotropic regimens. These findings may be due to improvements in efficacy of HIV medications, less stringent medication dosing regimens, fewer side effects, and more extensive monitoring and integration into the health care system of these triply diagnosed patients as a result of the severity of their mental illness and addiction problems despite the lack of integration of mental health and HIV care. It would be important for future studies to examine the viral suppression rates among HIV (+) outpatients with mental illness and substance use disorders. This by no means implies that these vulnerable individuals do not need a high level of care to remain healthy. Quite the contrary, just under one-half (48%) of these HIV (+) individuals with mental illness and substance use disorders were not virally suppressed and require constant surveillance, monitoring, and supportive services to achieve viral suppression. Many of those who were virally suppressed were engaged in Philadelphia's extensive treatment network, whereas those who were detectable and enrolled in the PFT intervention were often homeless with unstable psychiatric symptoms and current substance use disorders, particularly opioid abuse. While opioid users were a small percentage of our sample, their treatment is very costly given the high rates of drug relapse. Although the relatively high rates of HIV testing in this population are somewhat encouraging from a public health perspective, a substantial proportion of these triply diagnosed individuals are out of care and in need of an intervention such as PFT.

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**Table 1**

Demographics, Psychiatric Disorders and Recent Drug Use by Viral Load

	Suppressed (n=33)	Detectable (n=30)	Total (N=63)	p
	% (n)	% (n)	% (n)	
<b>Gender</b>				.898
Male	58 (19)	53 (16)	56 (35)	
Female	39 (13)	43 (13)	41 (26)	
Transgender (M to F)	3 (1)	3 (1)	3 (2)	
<b>Race</b>				.192
African American	76 (25)	77 (23)	76 (48)	
Caucasian	12 (4)	23 (7)	18 (11)	
Asian	6 (2)	0 (0)	3 (2)	
Multiple races	6 (2)	0 (0)	3 (2)	
<b>Ethnicity</b>				
Hispanic	3 (1)	3 (1)	3 (2)	1.00
<b>Age</b>				.596
35	27 (9)	17 (5)	22 (14)	
36–49	46 (15)	53 (16)	49 (31)	
50+	27 (9)	30 (9)	29 (18)	
Average – mean, +SD	42.3 ± 11.5	43.0 ± 8.6	42.6 ± 10.2	.789
<b>Psychiatric Disorder</b>	%	%	%	
Depression	61 (20)	67 (20)	64 (40)	.618
Schizophrenia	24 (8)	17 (5)	21 (13)	.458
Bipolar Disorder	18 (6)	7 (2)	13 (8)	.194
Anxiety	9 (3)	13 (4)	11 (7)	.700
Psychotic Disorder NOS	3 (1)	17 (5)	10 (6)	.094
PTSD	12 (4)	7 (2)	10 (6)	.674
<b>Recent drug use (last 30 days)</b>	%	%	%	
Alcohol	82 (27)	63 (19)	73 (46)	.099
Cocaine	64 (21)	63 (19)	64 (40)	.980
Cannabis	30 (10)	27 (8)	29 (18)	.750
Opioids	6 (2)	27 (8)	16 (10)	.038

**Table 2**

Logistic Regression: Predictors of a Virologic Failure Among Psychiatric Inpatients

Variable	Odds Ratio	95% CI	<i>p</i> value
Age	1.00	0.94–1.07	.982
Gender			
Male	0.85	0.26–2.73	.782
Female	1.0		
Transgender <sup>a</sup>			
Race <sup>a</sup>			
Caucasian	0.45	0.06– 3.19	.421
African-American	1.0		
Asian <sup>a</sup>			
Multiple races <sup>a</sup>			
Bipolar Disorder			
Yes	0.31	0.05 – 1.98	.218
No	1.0		
Psychotic Disorder NOS			
Yes	7.02	0.74–66.26	.089
No	1.0		
Alcohol use			
Yes	0.48	0.14–1.70	.255
No	1.0		
Opioid use			
Yes	6.0	1.14–31.73	.035
No	1.0		

<sup>a</sup>Too few cases (n=2 each in Asian and multiple races and n=2 for transgender) to produce results